



Control gear and lighting control systems

Catalogue 2014





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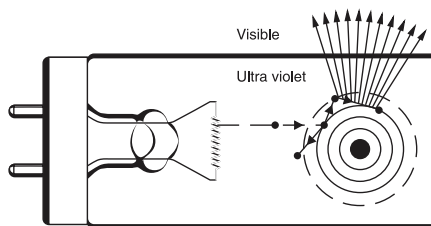
## Fluorescent lamps

### Operation

A fluorescent lamp is a type of low pressure mercury discharge lamp. A discharge arc operates in a glass tube internally coated with a phosphor powder. The electrical discharge produces mostly ultraviolet and some blue and green light. The phosphor coating converts the ultraviolet energy produced by the discharge into light. Cathodes, coated with an electron emitting material are sealed into each end of the glass envelope and connected to the pins of the lamp caps. The lamp contains gases such as argon and krypton with a drop of liquid mercury.

A control circuit is required which first causes an electric current to flow through each cathode. When the cathode filaments are heated, the emitter coating emits a cloud of electrons, which are negatively charged. The electrons are accelerated by a voltage applied across the lamp, producing ionisation. The current flow through the lamp is then limited by the external control circuit.

The inert gas used in traditional fluorescent lamps is argon, krypton or a mixture of both. The improvement in efficacy achieved using krypton offers a power saving approaching 8% which translates directly into lower energy costs.



De-activation of excited mercury atoms produce UV photon and is converted to visible light by the internal phosphor coating of the fluorescent lamp.

### Flicker

Fluorescent lamps typically exhibit very little flicker (flicker factor 0.5% or less). However, stroboscopic effects from rotating parts or parts with reciprocal motion can cause problems. These can be reduced by connecting lamps to different phases or by the use of lead-lag circuits or electronic (high frequency) ballasts.

### Electrical measurements

All electrical measurements on lamp or circuit voltage, current and wattage have to be made with instruments of the true RMS type allowing for crest factors of up to 2.5.

## Operating performance

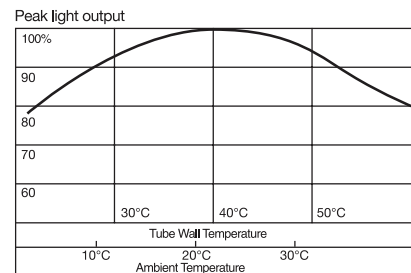
The performance of a fluorescent lamp is dependent upon not only the control circuit, but also on the ambient temperature. This influences the gas pressure in the lamp which in turn determines the yield of UV radiation. The optimum light output occurs when the lamp wall temperature is approximately 40°C ( for T8/T12 lamps) at the cold spot ( fig.1 ).

This highlights the problems encountered in brightness control of fluorescent lamps if widely varying ambient temperatures prevail. It also shows that high open circuit voltages are required to reliably start the lamp in low temperature conditions ( fig. 2 ).

The more reliable starting, however, of control gear with high open circuit voltages is negated by the increased probability of cold starts occurring. "Cold start" is striking the arc before the cathodes are fully heated. It has a detrimental effect on lamp life and, coupled with frequent switching, can reduce lamp life to one quarter or less. "Cold starts" are more likely to occur with lamps of low operating voltage, such as 18W 600 mm lamp with only 57V across the lamp. The life of a fluorescent lamp is dependent to a certain degree on the frequency of switching on and off. A lamp which is switched infrequently will last considerably longer ( fig. 3 ).

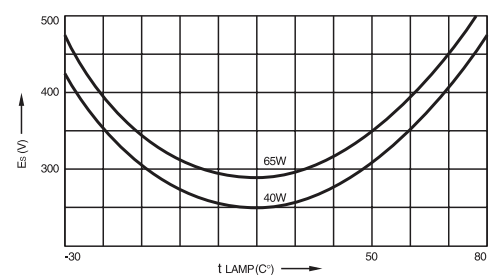
The effect of mains voltage variations on the operating characteristics of fluorescent lamps is indicated in the graph ( fig. 4 ). Increases in the mains voltage can influence lamp life in proportion to the increases in the lamp current.

Fig. 1



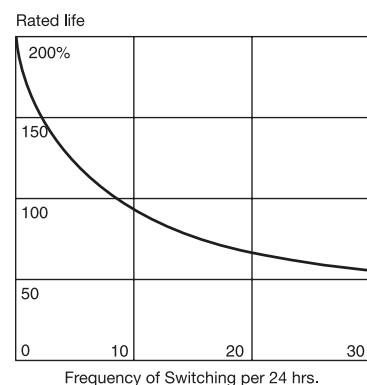
Typical relationship between temperature and lumen output

Fig. 2



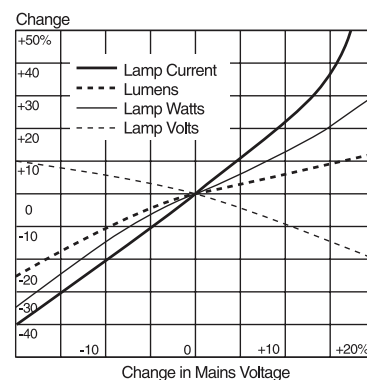
Start voltage versus ambient temperature

Fig. 3

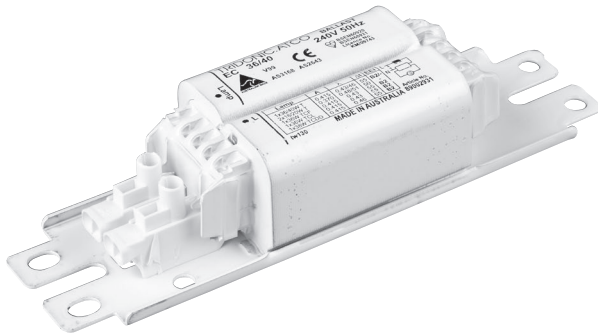


Typical effect on life of switching

Fig. 4



## Magnetic ballasts for fluorescent lamps



A ballast is required to run a fluorescent lamp. This is a current limiting device which works on the self inductance principle. The impedance of the ballast is set to match the arc voltage of the lamp which ensures that the correct current is supplied. In some cases a ballast can be used for more than one lamp but the lamp should never be used with any other ballast than the one specifically designed for the job. Also any supply voltage or frequency variation will affect the optimum performance of the ballast, and hence the lamp, so the type with the correct values should always be used.

### Optimum performance

This is achieved by maintaining careful control of the main parameters.

### Preheat current

This is supplied to the cathodes prior to the striking voltage. Without the correct preheat current, the cathodes would be progressively damaged resulting in short lamp life.

### Strike voltage

In the case of a glow starter, this is produced by the ballast when the starter switch opens. The required voltage increases at high and low temperatures, and electronic starters may be required in abnormal temperature conditions.

For a fluorescent lamp to operate constantly the supply voltage must be at least twice the lamp voltage. If it is less, then an auto transformer is required to step up the voltage.

### Lamp current

The tight tolerances used in manufacture ensure that the impedance is the correct value for the correct lamp current and hence lamp wattage and luminous flux.

### Minimum power losses

An inefficient ballast means high losses, which in turn leads to high temperatures. This means the lamp runs out of its optimum temperature range and, in some cases, other components in the luminaire, such as capacitors, will also run too hot and fail prematurely.

CMP have designed ballasts with minimal losses through the optimum use of windings within the bobbin. They have compact dimensions and use the highest quality materials in their manufacture.

The losses ( lamp and ballast ) are rated in accordance with the ballast-lamp circuit ( EEI ) classification.

### Selection of the right ballast

CMP offers ballasts in the following energy classes:

- standard ( EEI = C )
- low loss ( EEI = B2 )
- low loss ( EEI = B1 )

Each version has the same impedance and provides the same lamp current. The difference is that the losses, and temperature rise, are progressively less, which can be seen from the data.



There are two reasons to select lower loss ballasts:

- Energy consumption

A low loss B2 ballast typically consumes 30 % less power than a standard C ballast, and a low loss B1 ballast uses 67% less power than a standard C ballast.

- Temperature rise

A typical standard C ballast will increase in temperature by 55K ( Kelvin ) above its surroundings, a low loss B2 ballast 35 - 40K and a low loss B1 ballast 25K.

When considering dimensions, CMP ballasts have optimised dimensions to minimise losses but lower loss ballasts do have increased dimensions.

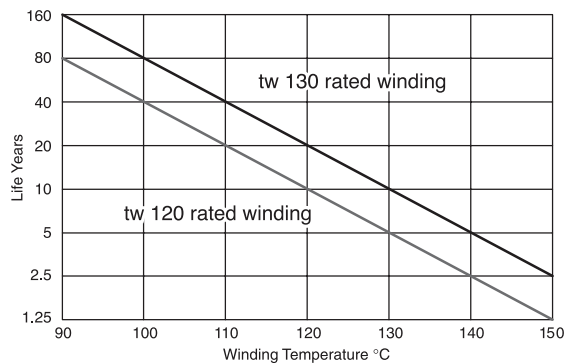
As the measured power consumption depends strongly on the method of measurement, differences up to 10K are possible in the results.

### Long service life

The choice of insulating materials and their operating temperatures determine the ballast life. CMP ballasts use class H insulation materials which are designed for temperatures up to 180°C, thus ensuring maximum service life.

The permitted maximum working temperature of the winding is designated "tw". The adherence to this temperature guarantees an average life of 10 years continuous usage. If the temperature in application is lower, then the life is correspondingly higher.

The designation  $\Delta t$  is the temperature rise in degrees Celsius operating under prescribed conditions at rated voltage and is a function of ballast power losses. The difference between the "tw" rating and  $\Delta t$  is an indication of the ambient temperature in which the ballast can operate. This is a very important consideration.



The graph shows the theoretical service life of a ballast against winding temperature. Every 10°C over the maximum winding temperature of 130 °C (tw130 ) halves ballast life. The winding temperature is the ambient temperature plus  $\Delta t$  or temperature rise which is a function of ballast power consumption ( watts loss ).

The high quality and reliability of insulated conductors is dependent not only on the production process, but also on the choice of raw materials. Many years of experience, both as a user and manufacturer of enamelled winding wire has given CMP the knowledge and expertise to select the best raw materials from internationally approved suppliers.

The copper is made from a high conductivity hot rolled copper rod and complies with the chemical composition limits and resistivity requirements of International Registered Alloy Designation 110.

Critical attention is paid to the enamel as the material utilised to insulate the conductor. Choice of enamel is a key factor and is linked both to the enamelling system as well as the electrical, mechanical and technical characteristics of the finished product.

The insulation enamels specified by CMP controls are supplied by internationally approved manufacturers specialising within this field. For all CMP ballasts insulation Class H+ ( 200°C ) is used.

#### **Minimum stray fields**

CMP ballasts are designed to keep stray fields at a minimum, thus enabling them to be used near sensitive equipment.

#### **Consistent high quality**

Certified to ISO 9001, the production process and equipment guarantee a consistent high quality standard. All finished goods are 100% end of line tested and only the highest quality raw materials are used. Consistent high quality is ensured by the use of fully automatic production.

#### **Special features of CMP ballasts:**

- very short magnetic paths
- transverse lamination design with no stray field junctions
- compact windings
- low power consumption
- short heat paths
- maximum winding temperature  $t_w = 130^{\circ}\text{C}$
- class H insulation
- fully automatic production with continuous tolerance test
- varnish impregnation
- 100 % final testing, including continuity, high voltage, winding short-circuit and operating values
- long service life

#### **National and international test marks**

CMP ballasts are approved by national and international test houses.

### Switch start circuit

The most widely used circuit. It is simple, economical and one of the most efficient ways of operating a fluorescent lamp. The starter can be of the glow switch type or electronic. By far the most common is the glow starter. When the starter contacts open, the ballast supplies the starting voltage.

#### Advantages:

- simple wiring
- low temperature operation ( to  $-10^{\circ}\text{C}$  )
- economical

#### Disadvantages:

- flicker on start-up
- short delay in striking
- more than 1 wear part ( lamp and starter )

### The operating sequence is as follows:

1. When power is switched on, mains voltage appears across the contacts in the starter bottle, striking an arc between them.  
  
2. The heat of the arc causes the bi-metal contact to bend and make contact with the other contact thereby extinguishing the arc and removing the heat source. The ballast and the lamp cathodes are now connected in series across the supply and the relatively heavy pre-heat current flows, heating the lamp cathodes.
3. The starter contact cools down and re-opens. The sudden interruption of the pre-heat current causes a voltage spike to develop which ignites the lamp. Lamp voltage of less than half supply voltage is now insufficient to re-strike the arc in the starter bottle and the lamp remains alight.

Switch start circuits provide reliable starting in ambient temperatures  $-10$  to  $+50^{\circ}\text{C}$ .

FS2 type starters are used in single and twin lamp circuits up to and including 20W.

FSU type starters are used in single lamp circuits to 80 W. Note that 85 and 125W lamps require very special starters.

Electronic starters are far more complex. They provide rapid start precision operation of the lamp.

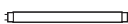
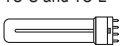
### Twin series circuit

A circuit used for most lamps up to 20W. Two fluorescent lamps are run in series on one ballast but with individual starters operating per lamp.

## Fluorescent lamp ballast guide

Fluorescent lamps have combined the technology and sophistication of fluorescent lighting with the compact convenience of incandescent light fittings.

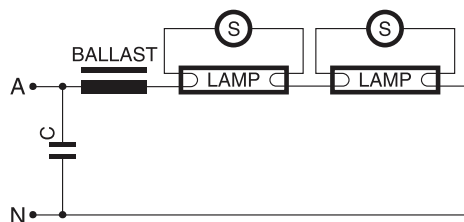
CMP offers a comprehensive range of standard EC energy control ballasts as well as LLEC low loss ballasts designed to operate compact fluorescent lamps from 5 through to 38W.

| Lamp                                                                                                        | Code   | Wattage  | Length   | Cap       | Nominal current | Standard ballast | Low loss ballast |
|-------------------------------------------------------------------------------------------------------------|--------|----------|----------|-----------|-----------------|------------------|------------------|
| T5-Lamp<br>16 mm<br>       | FD-4   | 4 W      | 150 mm   | G5        | 170 mA          | EC 4/6/8         | LLEC 4/6/8       |
|                                                                                                             | FD-6   | 6 W      | 225 mm   | G5        | 160 mA          | EC 4/6/8         | LLEC 4/6/8       |
|                                                                                                             | FD-6   | 2 x 6 W  | 225 mm   | G5        | 160 mA          | EC 13            | LLEC 13          |
|                                                                                                             | FD-8   | 8 W      | 300 mm   | G5        | 145 mA          | EC 4/6/8         | LLEC 4/6/8       |
|                                                                                                             | FD-8   | 2 x 8 W  | 300 mm   | G5        | 145 mA          | EC 13            | LLEC 13          |
|                                                                                                             | FD-13  | 13 W     | 525 mm   | G5        | 165 mA          | EC 13            | LLEC 13          |
| T8-Lamp<br>26 mm<br>       | FD-10  | 10 W     | 330 mm   | G13       | 230 mA          | EC 10            | LLEC 10          |
|                                                                                                             | FD-15  | 15 W     | 450 mm   | G13       | 310 mA          | EC 15            | LLEC 15          |
|                                                                                                             | FD-15  | 2 x 15 W | 450 mm   | G13       | 310 mA          | EC 30            | LLEC 30          |
|                                                                                                             | FD-18  | 18 W     | 600 mm   | G13       | 370 mA          | EC 18/20         | LLEC 18/20       |
|                                                                                                             | FD-18  | 2 x 18 W | 600 mm   | G13       | 370 mA          | EC 36/40         | LLEC 36/40       |
|                                                                                                             | FD-30  | 30 W     | 900 mm   | G13       | 365 mA          | EC 30            | LLEC 30          |
|                                                                                                             | FD-36  | 36 W     | 1,200 mm | G13       | 430 mA          | EC 36/40         | LLEC 36/40       |
|                                                                                                             | FD-58  | 58 W     | 1,500 mm | G13       | 670 mA          | EC 58/65         | LLEC 58/65       |
| T12-Lamp<br>38 mm<br>    | FD-20  | 20 W     | 600 mm   | G13       | 370 mA          | EC 18/20         | LLEC 18/20       |
|                                                                                                             | FD-20  | 2 x 20 W | 600 mm   | G13       | 370 mA          | EC 36/40         | LLEC 36/40       |
|                                                                                                             | FD-40  | 40 W     | 1,200 mm | G13       | 430 mA          | EC 36/40         | LLEC 36/40       |
|                                                                                                             | FD-65  | 65 W     | 1,500 mm | G13       | 670 mA          | EC 58/65         | LLEC 58/65       |
| T8-Circline<br>26 mm<br> | FC-22  | 22 W     | Ø 210 mm | G10q      | 400 mA          | EC 22            | LLEC 22          |
|                                                                                                             | FC-32  | 32 W     | Ø 305 mm | G10q      | 450 mA          | EC 32            | LLEC 32          |
|                                                                                                             | FC-40  | 40 W     | Ø 406 mm | G10q      | 420 mA          | EC 36/40         | LLEC 36/40       |
|                                                                                                             |        |          |          |           |                 |                  |                  |
| TC-S and TC-L<br>        | FSD-5  | 5 W      | TC-S     | 2G7 / G23 | 180 mA          | EC 9             | LLEC 9           |
|                                                                                                             | FSD-5  | 2 x 5 W  | TC-S     | 2G7 / G23 | 180 mA          | EC 13            | LLEC 13          |
|                                                                                                             | FSD-7  | 7 W      | TC-S     | 2G7 / G23 | 175 mA          | EC 9             | LLEC 9           |
|                                                                                                             | FSD-7  | 2 x 7 W  | TC-S     | 2G7 / G23 | 175 mA          | EC 13            | LLEC 13          |
|                                                                                                             | FSD-9  | 9 W      | TC-S     | 2G7 / G23 | 170 mA          | EC 9             | LLEC 9           |
|                                                                                                             | FSD-9  | 2 x 9 W  | TC-S     | 2G7 / G23 | 170 mA          | EC 13            | LLEC 13          |
|                                                                                                             | FSD-11 | 11 W     | TC-S     | 2G7 / G23 | 155 mA          | EC 9             | LLEC 9           |
|                                                                                                             | FSD-18 | 18 W     | TC-L     | 2G11      | 375 mA          | EC 18/20         | LLEC 18/20       |
|                                                                                                             | FSD-18 | 2 x 18 W | TC-L     | 2G11      | 375 mA          | EC 36/40         | LLEC 36/40       |
|                                                                                                             | FSD-24 | 24 W     | TC-L     | 2G11      | 345 mA          | EC 18/20         | LLEC 18/20       |
|                                                                                                             | FSD-36 | 36 W     | TC-L     | 2G11      | 435 mA          | EC 36/40         | LLEC 36/40       |
| TC-D<br>                 | FSQ-10 | 10 W     | TC-D     | G24q-1    | 190 mA          | EC 13            | LLEC 13          |
|                                                                                                             | FSQ-13 | 13 W     | TC-D     | G24q-1    | 175 mA          | EC 13            | LLEC 13          |
|                                                                                                             | FSQ-18 | 18 W     | TC-D     | G24q-1    | 220 mA          | EC 18H           | LLEC 18H         |
|                                                                                                             | FSQ-26 | 26 W     | TC-D     | G24q-1    | 325 mA          | EC 18/20         | LLEC 18/20       |
| TC-T<br>                 | FSM-10 | 10 W     | TC-T     | GX24q-1   | 190 mA          | EC 13            | LLEC 13          |
|                                                                                                             | FSM-13 | 13 W     | TC-T     | GX24q-1   | 175 mA          | EC 13            | LLEC 13          |
|                                                                                                             | FSM-18 | 18 W     | TC-T     | GX24q-1   | 225 mA          | EC 18H           | LLEC 18H         |
|                                                                                                             | FSM-26 | 26 W     | TC-T     | GX24q-1   | 325 mA          | EC 18/20         | LLEC 18/20       |
| TC-DD<br>2D-lamp<br>     | FSS-10 | 10 W     | TC-DD    | GR10q     | 180 mA          | EC 13            | LLEC 13          |
|                                                                                                             | FSS-16 | 16 W     | TC-DD    | GR10q     | 195 mA          | EC 16            | LLEC 16          |
|                                                                                                             | FSS-21 | 21 W     | TC-DD    | GR10q     | 260 mA          | EC 21            | LLEC 21          |
|                                                                                                             | FSS-28 | 28 W     | TC-DD    | GR10q     | 320 mA          | EC 18/20         | LLEC 18/20       |
|                                                                                                             | FSS-38 | 38 W     | TC-DD    | GR10q     | 430 mA          | EC 36/40         | LLEC 36/40       |
| TC-F flat<br>            | FSS-18 | 18 W     | TC-F     | 2G10      | 375 mA          | EC 18/20         | LLEC 18/20       |
|                                                                                                             | FSS-18 | 2 x 18 W | TC-F     | 2G10      | 375 mA          | EC 36/40         | LLEC 36/40       |
|                                                                                                             | FSS-24 | 24 W     | TC-F     | 2G10      | 345 mA          | EC 18/20         | LLEC 18/20       |
|                                                                                                             | FSS-36 | 36 W     | TC-F     | 2G10      | 435 mA          | EC 36/40         | LLEC 36/40       |

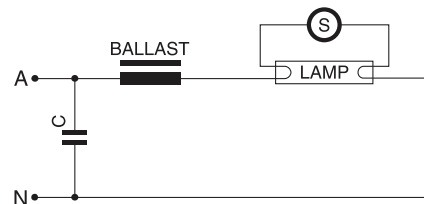


## Technical tips for fluorescent lamp circuits

| Symptom                                                              | Possible fault                                                                      | Test and remedy                                                                                                                                                                                       |
|----------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tube does not attempt to strike –<br>no end glow from tube           | Fuse blown                                                                          | Check supply voltage – replace broken fuse                                                                                                                                                            |
|                                                                      | Supply fault                                                                        | Check supply volts and circuit fuse                                                                                                                                                                   |
|                                                                      | Faulty starter                                                                      | Test starter switch in sound fitting                                                                                                                                                                  |
|                                                                      | Faulty tube                                                                         | Test tube in sound fitting. NOTE: If one or both cathodes are broken, check for faulty circuit (short circuit to earth or wrong control gear) before inserting new tube.                              |
|                                                                      | Open circuit                                                                        | Test for open-circuit on ballast etc, or short to earth between ballast and tube                                                                                                                      |
| Tube fails to strike –<br>bright glow from one end of tube           | Crossed leads in twin tube fitting                                                  | Check that the correct lampholders are connected to each tube – leads connected to a given tube should have the same colour                                                                           |
|                                                                      | Short-circuit on lampholder lead                                                    | Test for short-circuit across lampholder lead or for short-circuit to earth on starter switch or wiring                                                                                               |
| Tube does not attempt to strike –<br>both ends of tube glow brightly | Short-circuit on starter switch<br>or associated wiring                             | Test starter switch in sound fitting. If satisfactory, test switch socket and wiring for short-circuit.                                                                                               |
| Tube flashes on and off                                              | Faulty tube (end of life)                                                           | Check tube in sound fitting. At end of life, the lamp fails to maintain discharge. Symptoms are reduced light output, increased flicker and reddish glow from cathodes.                               |
|                                                                      | Low voltage or incorrect ballast rating                                             | Test supply voltage at fitting-if low, check external wiring for excessive voltage drop (seholders, etc.) If "sustained" voltage at the fitting is persistently low, use lower voltage rated ballast. |
|                                                                      | Faulty starter                                                                      | Test starter switch in sound fitting                                                                                                                                                                  |
|                                                                      | Low temperature                                                                     | Screen open type fittings                                                                                                                                                                             |
|                                                                      | Crossed leads in twin tube fitting                                                  | Check that correct lampholders are connected to each tube, i.e leads connected to a given tube should have the same colour.                                                                           |
| Lamp takes a long time to light                                      | Some period is needed to start<br>the lamp after switching on                       | Measure the period. 2 to 6 seconds is normal                                                                                                                                                          |
|                                                                      | Supply voltage is low due to:<br>a) Overload on line.<br>b) Lower voltage supplied. | Check the line voltage and conditions                                                                                                                                                                 |
|                                                                      | The lamp quality is poor                                                            | Test with a known good lamp                                                                                                                                                                           |
| The lamp repeats on-off operation                                    | Supply voltage is low                                                               | Check supply voltage with multimeter                                                                                                                                                                  |
|                                                                      | Incorrect wiring occurs in the apparatus                                            | Check the wiring condition                                                                                                                                                                            |
|                                                                      | The lamp or the glow starter is<br>damaged because of end of life                   | Test with a known good lamp                                                                                                                                                                           |
|                                                                      | Poor contact between<br>lamp pins in lampholders                                    | Check the lamp contact condition                                                                                                                                                                      |
| Excessive blackening at the end<br>(or both ends) of a lamp is found | The supply voltage doesn't<br>match the ballast rating                              | Check the supply voltage with a multimeter                                                                                                                                                            |
|                                                                      | Incorrect wiring in fitting or between<br>the supply and fitting                    | Check the wire connecting condition                                                                                                                                                                   |
|                                                                      | Too many switching operations of the<br>lamp have been performed                    | The lamp or the ballast has failed. Change the lamp or the ballast with replacement and observe for a time.                                                                                           |



Twin series circuit



Switch start circuit

## LLEC low loss ballasts



figure 1

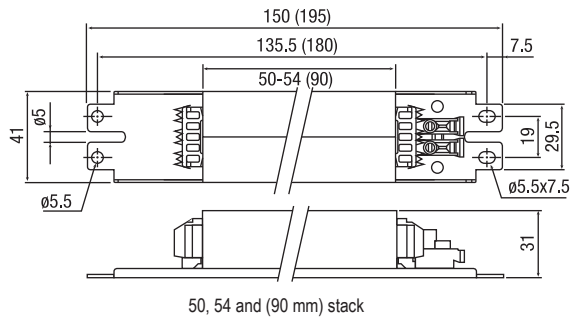
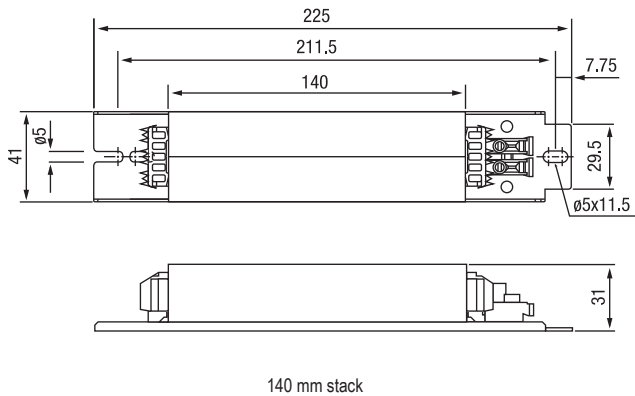


figure 2



- low power consumption
- slim cross-section and compact
- low loss core laminations
- low magnetic stray field
- long service life
- vacuum impregnation
- non-audible noise level
- nomex class "H" gap for fixed calibration
- resistant to moisture and corrosion
- 10 A push-in terminals (screw terminals on request)
- maximum winding temperature tw 130 °C Low temperature rise
- other supply voltages than listed are available i.e. 120 V, 277 V etc.

**100 % final testing**

- continuity
- winding short circuit
- core to coil high voltage test
- operating values

## 220 V 50 Hz – LLEC low loss ballasts (EEI=B1)

| Lamp                             |         |         |        | Ballast   |                | Electrical |             |              |                    |             |              |                    |           | Thermal          | Physical |        |        |             |        |
|----------------------------------|---------|---------|--------|-----------|----------------|------------|-------------|--------------|--------------------|-------------|--------------|--------------------|-----------|------------------|----------|--------|--------|-------------|--------|
| wattage                          | voltage | current | length | type      | article number | loss hot   | input power | lamp current | lamp start current | circuit P F | line current | line start current | capacitor | normal/ abnormal | stack    | figure | length | mtg centres | weight |
| W                                | V       | mA      | mm     |           |                | W          | W           | mA           | mA                 | cosφ        | mA@0.9PF     | mA@0.9PF           | μF0.9PF   | Δt               | mm       |        | mm     | mm          | kg     |
| <b>Linear and circular lamps</b> |         |         |        |           |                |            |             |              |                    |             |              |                    |           |                  |          |        |        |             |        |
| 4                                | 29      | 170     | 150    | LLEC4/6/8 |                | 3.3        | 7.8         | 165          | 170                | 0.21        | 39           | 43                 | 3.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 6                                | 42      | 160     | 225    | LLEC4/6/8 |                | 3.1        | 9.1         | 155          | 170                | 0.27        | 46           | 53                 | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x6                              | 42      | 160     | 225    | LLEC13    |                | 3.0        | 15.0        | 160          | 200                | 0.43        | 76           | 99                 | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 8                                | 56      | 145     | 300    | LLEC4/6/8 |                | 2.9        | 10.0        | 145          | 170                | 0.31        | 51           | 62                 | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x8                              | 56      | 145     | 300    | LLEC13    |                | 2.7        | 16.9        | 145          | 200                | 0.53        | 85           | 124                | 1.5       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 10                               | 49      | 230     | 330    | LLEC10*   |                | 4.5        | 14.5        | 230          | 275                | 0.29        | 73           | 92                 | 3.0       | 30/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 13                               | 95      | 165     | 525    | LLEC13    |                | 3.1        | 16.1        | 165          | 200                | 0.44        | 81           | 103                | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 15                               | 55      | 310     | 450    | LLEC15    |                | EEI=B1     | 20.0        | 310          | 360                | 0.29        | 101          | 123                | 4.0       | 30/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 57      | 370     | 600    | LLEC18/20 |                | EEI=B1     | 23.5        | 370          | 415                | 0.29        | 119          | 140                | 5.0       | 25/40            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 2x18                             | 57      | 370     | 600    | LLEC36/40 |                | 4.7        | 40.7        | 370          | 495                | 0.50        | 206          | 289                | 3.5       | 25/50            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 20                               | 57      | 370     | 600    | LLEC18/20 |                | 5.5        | 24.8        | 370          | 415                | 0.30        | 125          | 148                | 5.0       | 25/40            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 2x20                             | 57      | 370     | 600    | LLEC36/40 |                | 4.7        | 43.3        | 370          | 495                | 0.53        | 219          | 307                | 3.5       | 25/50            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 22                               | 62      | 400     | Ø210   | LLEC22    |                | 6.5        | 28.5        | 400          | 440                | 0.32        | 144          | 166                | 5.0       | 35/50            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 30                               | 96      | 365     | 900    | LLEC30    |                | EEI=B1     | 35.9        | 365          | 440                | 0.45        | 181          | 230                | 4.0       | 35/50            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 32                               | 81      | 450     | Ø305   | LLEC32    |                | 7.0        | 39.0        | 430          | 520                | 0.41        | 197          | 250                | 5.0       | 40/70            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 32                               | 135     | 265     | 1,200  | LLEC32H*  |                | 3.0        | 33.5        | 265          | 435                | 0.57        | 169          | 292                | 3.0       | 15/30            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 36                               | 103     | 430     | 1,200  | LLEC36/40 |                | EEI=B1     | 41.5        | 415          | 625                | 0.45        | 210          | 331                | 4.0       | 30/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 40                               | 103     | 430     | 1,200  | LLEC36/40 |                | 5.5        | 45.0        | 415          | 625                | 0.49        | 227          | 359                | 4.0       | 30/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 58                               | 110     | 670     | 1,500  | LLEC58/65 |                | EEI=B1     | 66.0        | 660          | 1,130              | 0.45        | 333          | 599                | 7.0       | 35/70            | 140      | 2      | 225.0  | 211.5       | 1.40   |
| 65                               | 110     | 670     | 1,500  | LLEC58/65 |                | 8.0        | 72.0        | 660          | 1,130              | 0.50        | 364          | 654                | 6.0       | 35/70            | 140      | 2      | 225.0  | 211.5       | 1.40   |
| <b>Compact lamps</b>             |         |         |        |           |                |            |             |              |                    |             |              |                    |           |                  |          |        |        |             |        |
| 5                                | 35      | 180     | TC-S   | LLEC9     |                | EEI=B1     | 8.8         | 180          | 180                | 0.22        | 44           | 47                 | 3.0       | 30/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x5                              | 35      | 180     | TC-S   | LLEC13    |                | 3.3        | 14.1        | 175          | 200                | 0.37        | 71           | 85                 | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 7                                | 47      | 175     | TC-S   | LLEC9     |                | EEI=B1     | 10.4        | 175          | 180                | 0.27        | 53           | 57                 | 3.0       | 30/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x7                              | 47      | 175     | TC-S   | LLEC13    |                | 3.1        | 17.3        | 165          | 200                | 0.48        | 87           | 111                | 1.5       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 9                                | 60      | 170     | TC-S   | LLEC9     |                | EEI=B1     | 11.8        | 165          | 180                | 0.33        | 60           | 68                 | 2.0       | 30/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x9                              | 60      | 170     | TC-S   | LLEC13    |                | 2.9        | 20.7        | 155          | 200                | 0.61        | 105          | 142                | 1.5       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 10                               | 64      | 190     | TC-D   | LLEC13    |                | EEI=B1     | 13.5        | 185          | 200                | 0.33        | 68           | 77                 | 3.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 10                               | 72      | 180     | TC-DD  | LLEC13    |                | EEI=B1     | 13.8        | 175          | 200                | 0.36        | 70           | 84                 | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 11                               | 91      | 155     | TC-S   | LLEC9     |                | EEI=B1     | 14.7        | 155          | 180                | 0.43        | 74           | 91                 | 2.0       | 30/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 13                               | 91      | 175     | TC-D   | LLEC13    |                | EEI=B1     | 16.2        | 170          | 200                | 0.43        | 82           | 101                | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 13                               | 91      | 175     | TC-T   | LLEC13    |                | EEI=B1     | 16.2        | 170          | 200                | 0.43        | 82           | 101                | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 16                               | 103     | 195     | TC-DD  | LLEC16    |                | EEI=B1     | 19.3        | 195          | 200                | 0.45        | 97           | 105                | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 100     | 220     | TC-D   | LLEC18H   |                | EEI=B1     | 22.1        | 220          | 290                | 0.46        | 112          | 154                | 3.0       | 40/50            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 58      | 375     | TC-F   | LLEC18/20 |                | EEI=B1     | 23.5        | 370          | 415                | 0.29        | 119          | 140                | 5.0       | 25/40            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 18                               | 58      | 375     | TC-L   | LLEC18/20 |                | EEI=B1     | 23.5        | 370          | 415                | 0.29        | 119          | 140                | 5.0       | 25/40            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 18                               | 100     | 225     | TC-T   | LLEC18H   |                | EEI=B1     | 22.1        | 220          | 290                | 0.46        | 112          | 154                | 3.0       | 40/50            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                             | 58      | 375     | TC-L   | LLEC36/40 |                | 4.7        | 40.7        | 370          | 495                | 0.50        | 206          | 289                | 3.5       | 25/50            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 24                               | 87      | 345     | TC-F   | LLEC18/20 |                | EEI=B1     | 28.9        | 345          | 415                | 0.38        | 146          | 184                | 4.0       | 25/40            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 24                               | 87      | 345     | TC-L   | LLEC18/20 |                | EEI=B1     | 28.9        | 345          | 415                | 0.38        | 146          | 184                | 4.0       | 25/40            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 26                               | 105     | 325     | TC-D   | LLEC18/20 |                | EEI=B1     | 30.2        | 315          | 415                | 0.44        | 153          | 211                | 3.5       | 25/40            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 26                               | 105     | 325     | TC-T   | LLEC18/20 |                | EEI=B1     | 30.7        | 315          | 415                | 0.44        | 155          | 215                | 3.5       | 25/40            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 28                               | 108     | 320     | TC-DD  | LLEC18/20 |                | EEI=B1     | 32.6        | 315          | 410                | 0.47        | 165          | 225                | 3.0       | 25/50            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 36                               | 106     | 435     | TC-F   | LLEC36/40 |                | EEI=B1     | 41.5        | 415          | 625                | 0.45        | 210          | 331                | 4.0       | 30/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 36                               | 106     | 435     | TC-L   | LLEC36/40 |                | EEI=B1     | 41.5        | 415          | 625                | 0.45        | 210          | 331                | 4.0       | 30/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 38                               | 110     | 430     | TC-DD  | LLEC36/40 |                | EEI=B1     | 44.0        | 415          | 625                | 0.48        | 222          | 351                | 4.0       | 30/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |

## Notes

Other wattages available on request.

\* Lamps not included in IEC 60081 or IEC 60901.

Refer to Energy Classification System table for ballasts from CELMA and/or MEPS.

## 220 V 60 Hz – LLEC low loss ballasts

| Lamp                             |         |         |        | Ballast   |                | Electrical |             |              |                    |             |              |                    |           | Thermal          | Physical |        |        |             |        |
|----------------------------------|---------|---------|--------|-----------|----------------|------------|-------------|--------------|--------------------|-------------|--------------|--------------------|-----------|------------------|----------|--------|--------|-------------|--------|
| wattage                          | voltage | current | length | type      | article number | loss hot   | input power | lamp current | lamp start current | circuit P F | line current | line start current | capacitor | normal/ abnormal | stack    | figure | length | mtg centres | weight |
| W                                | V       | mA      | mm     |           |                | W          | W           | mA           | mA                 | cosφ        | mA@0.9PF     | mA@0.9PF           | μF0.9PF   | Δt               | mm       |        | mm     | mm          | kg     |
| <b>Linear and circular lamps</b> |         |         |        |           |                |            |             |              |                    |             |              |                    |           |                  |          |        |        |             |        |
| 4                                | 29      | 170     | 150    | LLEC4/6/8 |                | 3.3        | 7.8         | 165          | 170                | 0.21        | 39           | 43                 | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 6                                | 42      | 160     | 225    | LLEC4/6/8 |                | 3.1        | 9.1         | 155          | 170                | 0.27        | 46           | 53                 | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x6                              | 42      | 160     | 225    | LLEC13    |                | 3.0        | 15.0        | 160          | 200                | 0.43        | 76           | 99                 | 1.5       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 8                                | 56      | 145     | 300    | LLEC4/6/8 |                | 2.9        | 10.0        | 145          | 170                | 0.31        | 51           | 62                 | 1.5       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x8                              | 56      | 145     | 300    | LLEC13    |                | 2.7        | 16.9        | 145          | 200                | 0.53        | 85           | 124                | 1.5       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 10                               | 49      | 230     | 330    | LLEC10*   |                | 4.5        | 14.5        | 230          | 275                | 0.29        | 73           | 92                 | 3.0       | 30/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 13                               | 95      | 165     | 525    | LLEC13    |                | 3.1        | 16.1        | 165          | 200                | 0.44        | 81           | 103                | 1.5       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 15                               | 55      | 310     | 450    | LLEC15    |                | 5.0        | 20.0        | 310          | 360                | 0.29        | 101          | 123                | 3.0       | 30/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 57      | 370     | 600    | LLEC18/20 |                | 6.0        | 24.0        | 360          | 400                | 0.30        | 121          | 141                | 3.5       | 40/60            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                             | 57      | 370     | 600    | LLEC36/40 |                | 4.7        | 40.7        | 370          | 495                | 0.50        | 206          | 289                | 3.0       | 25/50            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 20                               | 57      | 370     | 600    | LLEC18/20 |                | 6.0        | 25.3        | 360          | 400                | 0.32        | 128          | 149                | 3.5       | 40/60            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x20                             | 57      | 370     | 600    | LLEC36/40 |                | 4.7        | 43.3        | 370          | 495                | 0.53        | 219          | 307                | 3.0       | 25/50            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 22                               | 62      | 400     | Ø210   | LLEC22    |                | 6.5        | 28.5        | 400          | 440                | 0.32        | 144          | 166                | 4.0       | 35/50            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 30                               | 96      | 365     | 900    | LLEC30    |                | 5.9        | 35.9        | 365          | 440                | 0.45        | 181          | 230                | 3.0       | 35/50            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 32                               | 81      | 450     | Ø305   | LLEC32    |                | 7.0        | 39.0        | 430          | 520                | 0.41        | 197          | 250                | 4.0       | 40/70            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 32                               | 135     | 265     | 1,200  | LLEC32H*  |                | 3.0        | 33.5        | 265          | 435                | 0.57        | 169          | 292                | 2.0       | 15/30            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 36                               | 103     | 430     | 1,200  | LLEC36/40 |                | 5.5        | 41.5        | 415          | 625                | 0.45        | 210          | 331                | 3.5       | 30/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 40                               | 103     | 430     | 1,200  | LLEC36/40 |                | 5.5        | 45.0        | 415          | 625                | 0.49        | 227          | 359                | 3.5       | 30/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 58                               | 110     | 670     | 1,500  | LLEC58/65 |                | 8.0        | 66.0        | 660          | 1,130              | 0.45        | 333          | 599                | 6.0       | 35/70            | 140      | 2      | 225.0  | 211.5       | 1.40   |
| 65                               | 110     | 670     | 1,500  | LLEC58/65 |                | 8.0        | 72.0        | 660          | 1,130              | 0.50        | 364          | 654                | 5.0       | 35/70            | 140      | 2      | 225.0  | 211.5       | 1.40   |
| <b>Compact lamps</b>             |         |         |        |           |                |            |             |              |                    |             |              |                    |           |                  |          |        |        |             |        |
| 5                                | 35      | 180     | TC-S   | LLEC9     | 89003647       | 3.4        | 8.8         | 180          | 180                | 0.22        | 44           | 47                 | 2.0       | 30/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x5                              | 35      | 180     | TC-S   | LLEC13    |                | 3.3        | 14.1        | 175          | 200                | 0.37        | 71           | 85                 | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 7                                | 47      | 175     | TC-S   | LLEC9     | 89003647       | 3.3        | 10.4        | 175          | 180                | 0.27        | 53           | 57                 | 2.0       | 30/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x7                              | 47      | 175     | TC-S   | LLEC13    |                | 3.1        | 17.3        | 165          | 200                | 0.48        | 87           | 111                | 1.5       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 9                                | 60      | 170     | TC-S   | LLEC9     | 89003647       | 3.1        | 11.8        | 165          | 180                | 0.33        | 60           | 68                 | 2.0       | 30/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x9                              | 60      | 170     | TC-S   | LLEC13    |                | 2.9        | 20.7        | 155          | 200                | 0.61        | 105          | 142                | 1.5       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 10                               | 64      | 190     | TC-D   | LLEC13    |                | 3.5        | 13.5        | 185          | 200                | 0.33        | 68           | 77                 | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 10                               | 72      | 180     | TC-DD  | LLEC13    |                | 3.3        | 13.8        | 175          | 200                | 0.36        | 70           | 84                 | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 11                               | 91      | 155     | TC-S   | LLEC9     | 89003647       | 2.9        | 14.7        | 155          | 180                | 0.43        | 74           | 91                 | 1.5       | 30/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 13                               | 91      | 175     | TC-D   | LLEC13    |                | 3.2        | 16.2        | 170          | 200                | 0.43        | 82           | 101                | 1.5       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 13                               | 91      | 175     | TC-T   | LLEC13    |                | 3.2        | 16.2        | 170          | 200                | 0.43        | 82           | 101                | 1.5       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 16                               | 103     | 195     | TC-DD  | LLEC16    |                | 3.3        | 19.3        | 195          | 200                | 0.45        | 97           | 105                | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 100     | 220     | TC-D   | LLEC18H   |                | 4.1        | 22.1        | 220          | 290                | 0.46        | 112          | 154                | 2.0       | 40/50            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 58      | 375     | TC-F   | LLEC18/20 |                | 6.0        | 24.0        | 360          | 400                | 0.30        | 121          | 141                | 3.5       | 40/60            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 58      | 375     | TC-L   | LLEC18/20 |                | 6.0        | 24.0        | 360          | 400                | 0.30        | 121          | 141                | 3.5       | 40/60            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 100     | 225     | TC-T   | LLEC18H   |                | 4.1        | 22.1        | 220          | 290                | 0.46        | 112          | 154                | 2.0       | 40/50            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                             | 58      | 375     | TC-L   | LLEC36/40 |                | 4.7        | 40.7        | 370          | 495                | 0.50        | 206          | 289                | 3.0       | 25/50            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 24                               | 87      | 345     | TC-F   | LLEC18/20 |                | 5.5        | 29.5        | 345          | 400                | 0.39        | 149          | 182                | 3.0       | 40/60            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                               | 87      | 345     | TC-L   | LLEC18/20 |                | 5.5        | 29.5        | 345          | 400                | 0.39        | 149          | 182                | 3.0       | 40/60            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                               | 105     | 325     | TC-D   | LLEC18/20 |                | 4.6        | 30.6        | 315          | 400                | 0.44        | 155          | 206                | 3.0       | 40/60            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                               | 105     | 325     | TC-T   | LLEC18/20 |                | 4.6        | 31.1        | 315          | 400                | 0.45        | 157          | 209                | 3.0       | 40/60            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 28                               | 108     | 320     | TC-DD  | LLEC18/20 |                | 4.6        | 33.0        | 315          | 410                | 0.48        | 167          | 228                | 3.0       | 40/60            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 106     | 435     | TC-F   | LLEC36/40 |                | 5.5        | 41.5        | 415          | 625                | 0.45        | 210          | 331                | 3.5       | 30/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 36                               | 106     | 435     | TC-L   | LLEC36/40 |                | 5.5        | 41.5        | 415          | 625                | 0.45        | 210          | 331                | 3.5       | 30/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 38                               | 110     | 430     | TC-DD  | LLEC36/40 |                | 5.5        | 44.0        | 415          | 625                | 0.48        | 222          | 351                | 3.5       | 30/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |

## Notes

Other wattages available on request.

\* Lamps not included in IEC 60081 or IEC 60901.

## 230 V 50 Hz – LLEC low loss ballasts (EEI=B1)

| Lamp                      |         |         |        | Ballast   |                | Electrical |             |              |                    |             |              |                    |           | Thermal          | Physical |        |        |             |        |
|---------------------------|---------|---------|--------|-----------|----------------|------------|-------------|--------------|--------------------|-------------|--------------|--------------------|-----------|------------------|----------|--------|--------|-------------|--------|
| wattage                   | voltage | current | length | type      | article number | loss hot   | input power | lamp current | lamp start current | circuit P F | line current | line start current | capacitor | normal/ abnormal | stack    | figure | length | mtg centres | weight |
| W                         | V       | mA      | mm     |           |                | W          | W           | mA           | mA                 | cosφ        | mA@0.9PF     | mA@0.9PF           | μF0.9PF   | Δt               | mm       |        | mm     | mm          | kg     |
| Linear and circular lamps |         |         |        |           |                |            |             |              |                    |             |              |                    |           |                  |          |        |        |             |        |
| 4                         | 29      | 170     | 150    | LLEC4/6/8 |                | 3.4        | 7.9         | 165          | 170                | 0.21        | 38           | 41                 | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 6                         | 42      | 160     | 225    | LLEC4/6/8 |                | 3.2        | 9.2         | 155          | 170                | 0.26        | 44           | 51                 | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x                        | 42      | 160     | 225    | LLEC13    |                | 3.1        | 15.1        | 160          | 205                | 0.41        | 73           | 98                 | 2.0       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 8                         | 56      | 145     | 300    | LLEC4/6/8 |                | 3.0        | 10.1        | 145          | 170                | 0.30        | 49           | 60                 | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x8                       | 56      | 145     | 300    | LLEC13    |                | 2.8        | 17.0        | 145          | 205                | 0.51        | 82           | 122                | 1.5       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 10                        | 49      | 230     | 330    | LLEC10*   |                | 4.8        | 14.8        | 230          | 280                | 0.28        | 71           | 91                 | 3.0       | 30/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 13                        | 95      | 165     | 525    | LLEC13    |                | 3.2        | 16.2        | 165          | 205                | 0.43        | 78           | 102                | 2.0       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 15                        | 55      | 310     | 450    | LLEC15    |                | EEI=B1     | 20.3        | 310          | 370                | 0.28        | 98           | 123                | 3.5       | 30/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                        | 57      | 370     | 600    | LLEC18/20 |                | EEI=B1     | 24.0        | 370          | 420                | 0.28        | 116          | 138                | 5.0       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 2x18                      | 57      | 370     | 600    | LLEC36/40 | 89000530       | 4.9        | 40.9        | 370          | 505                | 0.48        | 198          | 283                | 3.5       | 25/50            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 20                        | 57      | 370     | 600    | LLEC18/20 |                | 6.0        | 25.3        | 370          | 420                | 0.30        | 122          | 146                | 5.0       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 2x20                      | 57      | 370     | 600    | LLEC36/40 | 89000530       | 4.9        | 43.5        | 370          | 505                | 0.51        | 210          | 301                | 3.5       | 25/50            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 22                        | 62      | 400     | Ø210   | LLEC22    |                | 6.5        | 28.5        | 400          | 445                | 0.31        | 138          | 161                | 5.0       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 30                        | 96      | 365     | 900    | LLEC30    | 89000519       | EEI=B1     | 35.9        | 365          | 445                | 0.43        | 174          | 222                | 3.5       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 32                        | 81      | 450     | Ø305   | LLEC32    |                | 7.3        | 39.3        | 430          | 530                | 0.40        | 190          | 246                | 5.0       | 40/70            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 32                        | 135     | 265     | 1,200  | LLEC32H*  |                | 3.1        | 33.6        | 265          | 440                | 0.55        | 162          | 283                | 3.0       | 15/30            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 36                        | 103     | 430     | 1,200  | LLEC36/40 | 89000530       | EEI=B1     | 42.0        | 415          | 635                | 0.44        | 203          | 326                | 4.0       | 35/75            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 40                        | 103     | 430     | 1,200  | LLEC36/40 | 89000530       | 6.0        | 45.5        | 415          | 635                | 0.48        | 220          | 353                | 4.0       | 35/75            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 58                        | 110     | 670     | 1,500  | LLEC58/65 | 89002475       | EEI=B1     | 66.9        | 660          | 1,150              | 0.44        | 323          | 591                | 7.0       | 30/70            | 140      | 2      | 225.0  | 211.5       | 1.40   |
| 65                        | 110     | 670     | 1,500  | LLEC58/65 | 89002475       | 8.9        | 72.9        | 660          | 1,150              | 0.48        | 352          | 644                | 6.0       | 30/70            | 140      | 2      | 225.0  | 211.5       | 1.40   |
| Compact lamps             |         |         |        |           |                |            |             |              |                    |             |              |                    |           |                  |          |        |        |             |        |
| 5                         | 35      | 180     | TC-S   | LLEC9     |                | EEI=B1     | 8.9         | 180          | 180                | 0.21        | 43           | 45                 | 3.0       | 30/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x5                       | 35      | 180     | TC-S   | LLEC13    |                | 3.4        | 14.2        | 175          | 205                | 0.35        | 69           | 84                 | 2.0       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 7                         | 47      | 175     | TC-S   | LLEC9     |                | EEI=B1     | 10.5        | 175          | 180                | 0.26        | 51           | 55                 | 2.0       | 30/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x7                       | 47      | 175     | TC-S   | LLEC13    |                | 3.2        | 17.4        | 165          | 205                | 0.46        | 84           | 110                | 1.5       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 9                         | 60      | 170     | TC-S   | LLEC9     |                | EEI=B1     | 11.9        | 165          | 180                | 0.31        | 58           | 66                 | 2.0       | 30/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x9                       | 60      | 170     | TC-S   | LLEC13    |                | 3.0        | 20.8        | 155          | 205                | 0.58        | 101          | 140                | 1.5       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 10                        | 64      | 190     | TC-D   | LLEC13    |                | EEI=B1     | 13.6        | 185          | 205                | 0.32        | 66           | 76                 | 2.0       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 10                        | 72      | 180     | TC-DD  | LLEC13    |                | EEI=B1     | 13.9        | 175          | 205                | 0.35        | 67           | 83                 | 2.0       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 11                        | 91      | 155     | TC-S   | LLEC9     |                | EEI=B1     | 14.8        | 155          | 180                | 0.42        | 72           | 87                 | 1.5       | 30/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 13                        | 91      | 175     | TC-D   | LLEC13    |                | EEI=B1     | 16.3        | 170          | 205                | 0.42        | 79           | 100                | 2.0       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 13                        | 91      | 175     | TC-T   | LLEC13    |                | EEI=B1     | 16.3        | 170          | 205                | 0.42        | 79           | 100                | 2.0       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 16                        | 103     | 195     | TC-DD  | LLEC16    |                | EEI=B1     | 19.4        | 195          | 205                | 0.43        | 94           | 103                | 2.0       | 30/50            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                        | 100     | 220     | TC-D   | LLEC18H   |                | EEI=B1     | 22.3        | 220          | 295                | 0.44        | 108          | 152                | 3.0       | 25/55            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                        | 58      | 375     | TC-F   | LLEC18/20 |                | EEI=B1     | 24.0        | 370          | 420                | 0.28        | 116          | 138                | 5.0       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 18                        | 58      | 375     | TC-L   | LLEC18/20 |                | EEI=B1     | 24.0        | 370          | 420                | 0.28        | 116          | 138                | 5.0       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 18                        | 100     | 225     | TC-T   | LLEC18H   |                | EEI=B1     | 22.3        | 220          | 295                | 0.44        | 108          | 152                | 3.0       | 25/55            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                      | 58      | 375     | TC-L   | LLEC36/40 | 89000530       | 4.9        | 40.9        | 370          | 505                | 0.48        | 198          | 283                | 3.5       | 25/50            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 24                        | 87      | 345     | TC-F   | LLEC18/20 |                | EEI=B1     | 29.4        | 345          | 420                | 0.37        | 142          | 181                | 4.0       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 24                        | 87      | 345     | TC-L   | LLEC18/20 |                | EEI=B1     | 29.4        | 345          | 420                | 0.37        | 142          | 181                | 4.0       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 26                        | 105     | 325     | TC-D   | LLEC18/20 |                | EEI=B1     | 30.6        | 315          | 420                | 0.42        | 148          | 207                | 3.5       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 26                        | 105     | 325     | TC-T   | LLEC18/20 |                | EEI=B1     | 31.1        | 315          | 420                | 0.43        | 150          | 210                | 3.0       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 28                        | 108     | 320     | TC-DD  | LLEC18/20 |                | EEI=B1     | 33.0        | 315          | 415                | 0.46        | 159          | 221                | 3.0       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 36                        | 106     | 435     | TC-F   | LLEC36/40 | 89000530       | EEI=B1     | 42.0        | 415          | 635                | 0.44        | 203          | 326                | 4.0       | 35/75            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 36                        | 106     | 435     | TC-L   | LLEC36/40 | 89000530       | EEI=B1     | 42.0        | 415          | 635                | 0.44        | 203          | 326                | 4.0       | 35/75            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 38                        | 110     | 430     | TC-DD  | LLEC36/40 | 89000530       | EEI=B1     | 44.5        | 415          | 635                | 0.47        | 215          | 345                | 4.0       | 35/75            | 90       | 1      | 195.0  | 180.0       | 1.00   |

## Notes

Other wattages available on request.

\* Lamps not included in IEC 60081 or IEC 60901.

Refer to Energy Classification System table for ballasts from CELMA and/or MEPS.



## 240 V 50 Hz – LLEC low loss ballasts (EEI=B1)

| Lamp                             |         |         |        | Ballast      |                | Electrical |             |              |                    |             |              |                    |           | Thermal          | Physical |        |        |             |        |
|----------------------------------|---------|---------|--------|--------------|----------------|------------|-------------|--------------|--------------------|-------------|--------------|--------------------|-----------|------------------|----------|--------|--------|-------------|--------|
| wattage                          | voltage | current | length | type         | article number | loss hot   | input power | lamp current | lamp start current | circuit P F | line current | line start current | capacitor | normal/ abnormal | stack    | figure | length | mtg centres | weight |
| W                                | V       | mA      | mm     |              |                | W          | W           | mA           | mA                 | cosφ        | mA@0.9PF     | mA@0.9PF           | μF0.9PF   | Δt               | mm       |        | mm     | mm          | kg     |
| <b>Linear and circular lamps</b> |         |         |        |              |                |            |             |              |                    |             |              |                    |           |                  |          |        |        |             |        |
| 4                                | 29      | 170     | 150    | LLEC4/6/8    |                | 3.5        | 8.0         | 165          | 170                | 0.20        | 37           | 40                 | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 6                                | 42      | 160     | 225    | LLEC4/6/8    |                | 3.3        | 9.3         | 155          | 170                | 0.25        | 43           | 50                 | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x6                              | 42      | 160     | 225    | LLEC13       |                | 3.2        | 15.2        | 160          | 210                | 0.40        | 70           | 97                 | 1.5       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 8                                | 56      | 145     | 300    | LLEC4/6/8    |                | 3.1        | 10.2        | 145          | 170                | 0.29        | 47           | 58                 | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x8                              | 56      | 145     | 300    | LLEC13       |                | 2.9        | 17.1        | 145          | 210                | 0.49        | 79           | 120                | 1.5       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 10                               | 49      | 230     | 330    | LLEC10*      | 89000385       | 5.0        | 15.0        | 230          | 285                | 0.27        | 69           | 90                 | 3.0       | 30/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 13                               | 95      | 165     | 525    | LLEC13       |                | 3.3        | 16.3        | 165          | 210                | 0.41        | 75           | 101                | 2.0       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 15                               | 55      | 310     | 450    | LLEC15       | 89000493       | EEI=B1     | 20.5        | 310          | 370                | 0.28        | 95           | 119                | 3.5       | 30/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 15                               | 57      | 300     | 550    | LLEC15 ES8*  |                | 5.5        | 20.5        | 300          | 350                | 0.28        | 95           | 116                | 3.5       | 30/40            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 18                               | 57      | 370     | 600    | LLEC18/20    | 89000494       | EEI=B1     | 24.0        | 370          | 425                | 0.27        | 111          | 134                | 5.0       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 2x18                             | 57      | 370     | 600    | LLEC36/40    | 89000524       | 5.0        | 41.0        | 370          | 515                | 0.46        | 190          | 277                | 3.5       | 25/50            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 2x18                             | 57      | 370     | 600    | LLEC36/40-20 |                | 5.5        | 41.5        | 370          | 515                | 0.47        | 192          | 281                | 3.5       | 30/50            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 20                               | 57      | 370     | 600    | LLEC18/20    | 89000494       | 6.0        | 25.3        | 370          | 425                | 0.28        | 117          | 141                | 4.0       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 2x20                             | 57      | 370     | 600    | LLEC36/40    | 89000524       | 5.0        | 43.6        | 370          | 515                | 0.49        | 202          | 295                | 3.5       | 25/50            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 22                               | 62      | 400     | Ø210   | LLEC22       |                | 6.5        | 28.5        | 400          | 450                | 0.30        | 132          | 156                | 5.0       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 23                               |         | 290     | 970    | LLEC18/20    | 89000494       | 4.6        | 23.9        | 290          | 425                | 0.34        | 111          | 170                | 3.0       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 30                               | 96      | 365     | 900    | LLEC30       | 89000518       | EEI=B1     | 35.9        | 365          | 450                | 0.41        | 166          | 215                | 3.5       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 32                               | 81      | 450     | Ø305   | LLEC32       |                | 7.5        | 39.5        | 430          | 540                | 0.38        | 183          | 241                | 5.0       | 40/70            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 32                               | 135     | 265     | 1,200  | LLEC32H*     |                | 3.2        | 33.7        | 265          | 445                | 0.53        | 156          | 275                | 3.0       | 15/30            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 33                               | 103     | 380     | 1,150  | LLEC33 ES8*  |                | 5.5        | 38.5        | 380          | 520                | 0.42        | 178          | 256                | 3.5       | 30/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 36                               | 103     | 430     | 1,200  | LLEC36/40    | 89000524       | EEI=B1     | 42.0        | 415          | 645                | 0.42        | 194          | 317                | 4.0       | 35/75            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 36                               | 103     | 430     | 1,200  | LLEC36/40-20 |                | EEI=B1     | 42.6        | 415          | 645                | 0.43        | 197          | 322                | 4.0       | 40/75            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 40                               | 103     | 430     | 1,200  | LLEC36/40    | 89000524       | 6.0        | 45.5        | 415          | 645                | 0.46        | 211          | 344                | 4.0       | 35/75            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 58                               | 110     | 670     | 1,500  | LLEC58/65    | 89002631       | EEI=B1     | 67.0        | 660          | 1,170              | 0.42        | 310          | 577                | 7.0       | 35/70            | 140      | 2      | 225.0  | 211.5       | 1.40   |
| 65                               | 110     | 670     | 1,500  | LLEC58/65    | 89002631       | 9.0        | 73.0        | 660          | 1,170              | 0.46        | 338          | 629                | 6.0       | 35/70            | 140      | 2      | 225.0  | 211.5       | 1.40   |
| <b>Compact lamps</b>             |         |         |        |              |                |            |             |              |                    |             |              |                    |           |                  |          |        |        |             |        |
| 5                                | 35      | 180     | TC-S   | LLEC9        | 89000400       | EEI=B1     | 9.0         | 180          | 180                | 0.21        | 42           | 44                 | 3.0       | 30/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 5                                | 35      | 180     | TC-S   | EC 9 B103K   | 89003614       | EEI=B1     | 10.5        | 180          | 190                | 0.24        | 49           | 54                 | 2.0       | 50/70            | 27       | -      | 84.5   | 76.0        | 0.33   |
| 2x5                              | 35      | 180     | TC-S   | LLEC13       |                | 3.5        | 14.3        | 175          | 210                | 0.34        | 66           | 83                 | 2.0       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 7                                | 47      | 175     | TC-S   | LLEC9        | 89000400       | EEI=B1     | 10.6        | 175          | 180                | 0.25        | 49           | 53                 | 2.0       | 30/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 7                                | 47      | 175     | TC-S   | EC 9 B103K   | 89003614       | EEI=B1     | 12.1        | 175          | 190                | 0.29        | 56           | 64                 | 2.0       | 50/70            | 27       | -      | 84.5   | 76.0        | 0.33   |
| 2x7                              | 47      | 175     | TC-S   | LLEC13       |                | 3.3        | 17.5        | 165          | 210                | 0.44        | 81           | 108                | 1.5       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 9                                | 60      | 170     | TC-S   | LLEC9        | 89000400       | EEI=B1     | 12.0        | 165          | 180                | 0.30        | 56           | 64                 | 2.0       | 30/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 9                                | 60      | 170     | TC-S   | EC 9 B103K   | 89003614       | EEI=B1     | 13.4        | 165          | 190                | 0.34        | 62           | 75                 | 2.0       | 50/70            | 27       | -      | 84.5   | 76.0        | 0.33   |
| 2x9                              | 60      | 170     | TC-S   | LLEC13       |                | 3.1        | 20.9        | 155          | 210                | 0.56        | 97           | 138                | 1.5       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 10                               | 64      | 190     | TC-D   | LLEC13       |                | EEI=B1     | 13.7        | 185          | 210                | 0.31        | 63           | 76                 | 2.0       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 10                               | 72      | 180     | TC-DD  | LLEC13       |                | EEI=B1     | 14.0        | 175          | 210                | 0.33        | 65           | 82                 | 2.0       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 11                               | 91      | 155     | TC-S   | LLEC9        | 89000400       | EEI=B1     | 14.9        | 155          | 180                | 0.40        | 69           | 84                 | 1.5       | 30/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 11                               | 91      | 155     | TC-S   | EC 9 B103K   | 89003614       | EEI=B1     | 16.2        | 155          | 190                | 0.44        | 75           | 97                 | 1.5       | 50/70            | 27       | -      | 84.5   | 76.0        | 0.33   |
| 13                               | 91      | 175     | TC-D   | LLEC13       |                | EEI=B1     | 16.4        | 170          | 210                | 0.40        | 76           | 98                 | 2.0       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 13                               | 91      | 175     | TC-T   | LLEC13       |                | EEI=B1     | 16.4        | 170          | 210                | 0.40        | 76           | 98                 | 2.0       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 16                               | 103     | 195     | TC-DD  | LLEC16       |                | EEI=B1     | 19.5        | 195          | 210                | 0.42        | 90           | 102                | 2.0       | 30/50            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 100     | 220     | TC-D   | LLEC18H      |                | EEI=B1     | 22.4        | 220          | 300                | 0.42        | 104          | 148                | 2.0       | 30/55            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 58      | 375     | TC-F   | LLEC18/20    | 89000494       | EEI=B1     | 24.0        | 370          | 425                | 0.27        | 111          | 134                | 5.0       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 18                               | 58      | 375     | TC-L   | LLEC18/20    | 89000494       | EEI=B1     | 24.0        | 370          | 425                | 0.27        | 111          | 134                | 5.0       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 18                               | 100     | 225     | TC-T   | LLEC18H      |                | EEI=B1     | 22.4        | 220          | 300                | 0.42        | 104          | 148                | 2.0       | 30/55            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                             | 58      | 375     | TC-L   | LLEC36/40    | 89000524       | 5.0        | 41.0        | 370          | 515                | 0.46        | 190          | 277                | 3.5       | 25/50            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 2x18                             | 58      | 375     | TC-L   | LLEC36/40-20 |                | 5.5        | 41.5        | 370          | 515                | 0.47        | 192          | 281                | 3.5       | 30/50            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 24                               | 87      | 345     | TC-F   | LLEC18/20    | 89000494       | EEI=B1     | 29.4        | 345          | 425                | 0.35        | 136          | 176                | 3.5       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 24                               | 87      | 345     | TC-L   | LLEC18/20    | 89000494       | EEI=B1     | 29.4        | 345          | 425                | 0.35        | 136          | 176                | 3.5       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 26                               | 105     | 325     | TC-D   | LLEC18/20    | 89000494       | EEI=B1     | 30.6        | 315          | 425                | 0.40        | 142          | 201                | 3.0       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 26                               | 105     | 325     | TC-T   | LLEC18/20    | 89000494       | EEI=B1     | 31.1        | 315          | 425                | 0.41        | 144          | 204                | 3.0       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 28                               | 108     | 320     | TC-DD  | LLEC18/20    | 89000494       | EEI=B1     | 33.0        | 315          | 420                | 0.44        | 153          | 214                | 3.0       | 35/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 36                               | 106     | 435     | TC-F   | LLEC36/40    | 89000524       | EEI=B1     | 42.0        | 415          | 645                | 0.42        | 194          | 317                | 4.0       | 35/75            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 36                               | 106     | 435     | TC-F   | LLEC36/40-20 |                | EEI=B1     | 42.6        | 415          | 645                | 0.43        | 197          | 322                | 4.0       | 40/75            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 36                               | 106     | 435     | TC-L   | LLEC36/40    | 89000524       | EEI=B1     | 42.0        | 415          | 645                | 0.42        | 194          | 317                | 4.0       | 35/75            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 36                               | 106     | 435     | TC-L   | LLEC36/40-20 |                | EEI=B1     | 42.6        | 415          | 645                | 0.43        | 197          | 322                | 4.0       | 40/75            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 38                               | 110     | 430     | TC-DD  | LLEC36/40    | 89000524       | EEI=B1     | 44.5        | 415          | 645                | 0.45        | 206          | 336                | 4.0       | 35/75            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 38                               | 110     | 430     | TC-DD  | LLEC36/40-20 |                | EEI=B1     | 45.1        | 415          | 645                | 0.45        | 209          | 341                | 4.0       | 40/75            | 90       | 1      | 195.0  | 180.0       | 1.00   |

## Notes

Other wattages available on request.

\* Lamps not included in IEC 60081 or IEC 60901.

Refer to Energy Classification System table for ballasts from CELMA and/or MEPS.

## 250 V 50 Hz – LLEC low loss ballasts (EEI=B1)

| Lamp                             |         |         |        | Ballast   |                | Electrical |             |              |                    |             |              |                    |           | Thermal          | Physical |        |        |             |        |
|----------------------------------|---------|---------|--------|-----------|----------------|------------|-------------|--------------|--------------------|-------------|--------------|--------------------|-----------|------------------|----------|--------|--------|-------------|--------|
| wattage                          | voltage | current | length | type      | article number | loss hot   | input power | lamp current | lamp start current | circuit P F | line current | line start current | capacitor | normal/ abnormal | stack    | figure | length | mtg centres | weight |
| W                                | V       | mA      | mm     |           |                | W          | W           | mA           | mA                 | cosφ        | mA@0.9PF     | mA@0.9PF           | μF0.9PF   | Δt               | mm       |        | mm     | mm          | kg     |
| <b>Linear and circular lamps</b> |         |         |        |           |                |            |             |              |                    |             |              |                    |           |                  |          |        |        |             |        |
| 4                                | 29      | 170     | 150    | LLEC4/6/8 |                | 3.6        | 8.1         | 165          | 175                | 0.20        | 36           | 40                 | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 6                                | 42      | 160     | 225    | LLEC4/6/8 |                | 3.4        | 9.4         | 155          | 175                | 0.24        | 42           | 49                 | 2.0       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x6                              | 42      | 160     | 225    | LLEC13    |                | 3.3        | 15.3        | 160          | 215                | 0.38        | 68           | 96                 | 1.5       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 8                                | 56      | 145     | 300    | LLEC4/6/8 |                | 3.2        | 10.3        | 145          | 175                | 0.28        | 46           | 58                 | 1.5       | 25/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x8                              | 56      | 145     | 300    | LLEC13    |                | 3.0        | 17.2        | 145          | 215                | 0.47        | 76           | 119                | 1.5       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 10                               | 49      | 230     | 330    | LLEC10*   |                | 5.0        | 15.0        | 230          | 290                | 0.26        | 67           | 88                 | 3.0       | 30/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 13                               | 95      | 165     | 525    | LLEC13    |                | 3.4        | 16.4        | 165          | 215                | 0.40        | 73           | 100                | 1.5       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 15                               | 55      | 310     | 450    | LLEC15    |                | EEI=B1     | 20.7        | 310          | 380                | 0.27        | 92           | 118                | 3.5       | 30/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 57      | 370     | 600    | LLEC18/20 |                | EEI=B1     | 24.5        | 370          | 435                | 0.26        | 109          | 134                | 4.0       | 40/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 2x18                             | 57      | 370     | 600    | LLEC36/40 | 89000529       | 5.1        | 41.1        | 370          | 520                | 0.44        | 183          | 270                | 3.5       | 30/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 20                               | 57      | 370     | 600    | LLEC18/20 |                | 6.5        | 25.8        | 370          | 435                | 0.28        | 115          | 142                | 4.0       | 40/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 2x20                             | 57      | 370     | 600    | LLEC36/40 | 89000529       | 5.1        | 43.7        | 370          | 520                | 0.47        | 194          | 287                | 3.5       | 30/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 22                               | 62      | 400     | Ø210   | LLEC22    |                | 6.8        | 28.8        | 400          | 455                | 0.29        | 128          | 153                | 5.0       | 40/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 30                               | 96      | 365     | 900    | LLEC30    |                | EEI=B1     | 36.2        | 365          | 455                | 0.40        | 161          | 211                | 3.5       | 40/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 32                               | 81      | 450     | Ø305   | LLEC32    |                | 7.8        | 39.8        | 430          | 545                | 0.37        | 177          | 235                | 5.0       | 45/75            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 32                               | 135     | 265     | 1,200  | LLEC32H*  |                | 3.3        | 33.8        | 265          | 450                | 0.51        | 150          | 268                | 3.0       | 15/30            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 36                               | 103     | 430     | 1,200  | LLEC36/40 | 89000529       | EEI=B1     | 42.5        | 415          | 655                | 0.41        | 189          | 313                | 4.0       | 40/80            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 40                               | 103     | 430     | 1,200  | LLEC36/40 | 89000529       | 6.5        | 46.0        | 415          | 655                | 0.44        | 204          | 339                | 4.0       | 40/80            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 58                               | 110     | 670     | 1,500  | LLEC58/65 |                | EEI=B1     | 67.4        | 660          | 1,180              | 0.41        | 300          | 562                | 6.0       | 40/75            | 140      | 2      | 225.0  | 211.5       | 1.40   |
| 65                               | 110     | 670     | 1,500  | LLEC58/65 |                | 9.4        | 73.4        | 660          | 1,180              | 0.44        | 326          | 612                | 6.0       | 40/75            | 140      | 2      | 225.0  | 211.5       | 1.40   |
| <b>Compact lamps</b>             |         |         |        |           |                |            |             |              |                    |             |              |                    |           |                  |          |        |        |             |        |
| 5                                | 35      | 180     | TC-S   | LLEC9     |                | EEI=B1     | 9.1         | 180          | 185                | 0.20        | 40           | 44                 | 2.0       | 30/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x5                              | 35      | 180     | TC-S   | LLEC13    |                | 3.6        | 14.4        | 175          | 215                | 0.33        | 64           | 83                 | 2.0       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 7                                | 47      | 175     | TC-S   | LLEC9     |                | EEI=B1     | 10.7        | 175          | 185                | 0.24        | 48           | 53                 | 2.0       | 30/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x7                              | 47      | 175     | TC-S   | LLEC13    |                | 3.4        | 17.6        | 165          | 215                | 0.43        | 78           | 107                | 1.5       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 9                                | 60      | 170     | TC-S   | LLEC9     |                | EEI=B1     | 12.1        | 165          | 185                | 0.29        | 54           | 63                 | 2.0       | 30/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x9                              | 60      | 170     | TC-S   | LLEC13    |                | 3.2        | 21.0        | 155          | 215                | 0.54        | 93           | 136                | 1.5       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 10                               | 64      | 190     | TC-D   | LLEC13    |                | EEI=B1     | 13.8        | 185          | 215                | 0.30        | 61           | 75                 | 2.0       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 10                               | 72      | 180     | TC-DD  | LLEC13    |                | EEI=B1     | 14.1        | 175          | 215                | 0.32        | 63           | 81                 | 2.0       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 11                               | 91      | 155     | TC-S   | LLEC9     |                | EEI=B1     | 15.0        | 155          | 185                | 0.39        | 67           | 83                 | 1.5       | 30/35            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 13                               | 91      | 175     | TC-D   | LLEC13    |                | EEI=B1     | 16.5        | 170          | 215                | 0.39        | 73           | 97                 | 2.0       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 13                               | 91      | 175     | TC-T   | LLEC13    |                | EEI=B1     | 16.5        | 170          | 215                | 0.39        | 73           | 97                 | 2.0       | 25/40            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 16                               | 103     | 195     | TC-DD  | LLEC16    |                | EEI=B1     | 19.6        | 195          | 215                | 0.40        | 87           | 101                | 2.0       | 30/50            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 100     | 220     | TC-D   | LLEC18H   |                | EEI=B1     | 22.5        | 220          | 305                | 0.41        | 100          | 146                | 2.0       | 30/55            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 58      | 375     | TC-F   | LLEC18/20 |                | EEI=B1     | 24.5        | 370          | 435                | 0.26        | 109          | 134                | 4.0       | 40/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 18                               | 58      | 375     | TC-L   | LLEC18/20 |                | EEI=B1     | 24.5        | 370          | 435                | 0.26        | 109          | 134                | 4.0       | 40/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 18                               | 100     | 225     | TC-T   | LLEC18H   |                | EEI=B1     | 22.5        | 220          | 305                | 0.41        | 100          | 146                | 2.0       | 30/55            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                             | 58      | 375     | TC-L   | LLEC36/40 | 89000529       | 5.1        | 41.1        | 370          | 520                | 0.44        | 183          | 270                | 3.5       | 30/55            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 24                               | 87      | 345     | TC-F   | LLEC18/20 |                | EEI=B1     | 29.8        | 345          | 435                | 0.35        | 132          | 175                | 3.5       | 40/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 24                               | 87      | 345     | TC-L   | LLEC18/20 |                | EEI=B1     | 29.8        | 345          | 435                | 0.35        | 132          | 175                | 3.5       | 40/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 26                               | 105     | 325     | TC-D   | LLEC18/20 |                | EEI=B1     | 31.0        | 315          | 435                | 0.39        | 138          | 200                | 3.0       | 40/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 26                               | 105     | 325     | TC-T   | LLEC18/20 |                | EEI=B1     | 31.5        | 315          | 435                | 0.40        | 140          | 203                | 3.0       | 40/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 28                               | 108     | 320     | TC-DD  | LLEC18/20 |                | EEI=B1     | 33.4        | 315          | 425                | 0.42        | 148          | 210                | 3.0       | 40/60            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 36                               | 106     | 435     | TC-F   | LLEC36/40 | 89000529       | EEI=B1     | 42.5        | 415          | 655                | 0.41        | 189          | 313                | 4.0       | 40/80            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 36                               | 106     | 435     | TC-L   | LLEC36/40 | 89000529       | EEI=B1     | 42.5        | 415          | 655                | 0.41        | 189          | 313                | 4.0       | 40/80            | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 38                               | 110     | 430     | TC-DD  | LLEC36/40 | 89000529       | EEI=B1     | 45.0        | 415          | 655                | 0.43        | 200          | 331                | 4.0       | 40/80            | 90       | 1      | 195.0  | 180.0       | 1.00   |

## Notes

Other wattages available on request.

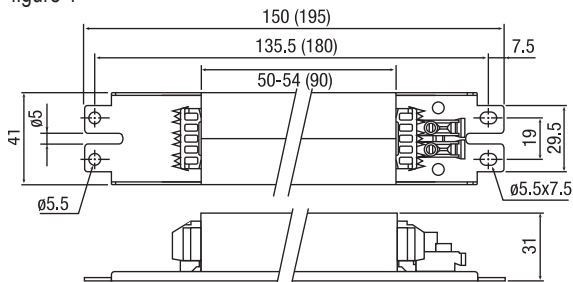
\* Lamps not included in IEC 60081 or IEC 60901.

Refer to Energy Classification System table for ballasts from CELMA and/or MEPS.

## B2 energy control ballasts



figure 1



50, 54 and (90 mm) stack

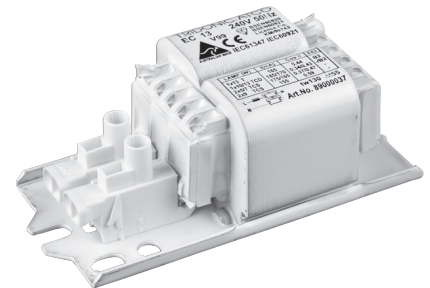
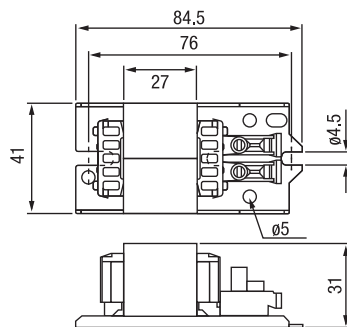


figure 2



27 mm stack



- ballasts to EEI = B2 energy classification under MEPS and CELMA
- low power consumption
- slim cross-section and compact
- low loss core laminations
- low magnetic stray field
- long service life
- vacuum impregnation
- non-audible noise level
- nomex class "H" gap for fixed calibration
- resistant to moisture and corrosion
- 10 A push-in terminals (screw terminals on request)
- maximum winding temperature  $t_w$  130 °C Low temperature rise

**100 % final testing**

- continuity
- winding short circuit
- core to coil high voltage test
- operating values

## 220 V 50 Hz – EC low loss ballasts (EEI=B2)

| Lamp                             |         |         |        | Ballast |                | Electrical |             |              |                    |             |              |                    |           | Thermal          | Physical |        |        |             |        |
|----------------------------------|---------|---------|--------|---------|----------------|------------|-------------|--------------|--------------------|-------------|--------------|--------------------|-----------|------------------|----------|--------|--------|-------------|--------|
| wattage                          | voltage | current | length | type    | article number | loss hot   | input power | lamp current | lamp start current | circuit P F | line current | line start current | capacitor | normal/ abnormal | stack    | figure | length | mtg centres | weight |
| W                                | V       | mA      | mm     |         |                | W          | W           | mA           | mA                 | cosφ        | mA@0.9PF     | mA@0.9PF           | μF0.9PF   | Δt               | mm       |        | mm     | mm          | kg     |
| <b>Linear and circular lamps</b> |         |         |        |         |                |            |             |              |                    |             |              |                    |           |                  |          |        |        |             |        |
| 2x6                              | 42      | 160     | 225    | EC13    | 89000039       | 4.2        | 16.2        | 160          | 200                | 0.46        | 82           | 107                | 1.5       | 55/100           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x8                              | 56      | 145     | 300    | EC13    | 89000039       | 3.8        | 18.0        | 145          | 200                | 0.56        | 91           | 132                | 1.5       | 55/100           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 95      | 165     | 525    | EC13    | 89000039       | EEI=B2     | 17.3        | 165          | 200                | 0.48        | 87           | 111                | 1.5       | 55/100           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                               | 57      | 370     | 600    | EC18/20 | 89003428       | EEI=B2     | 25.9        | 370          | 435                | 0.32        | 131          | 161                | 5.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                             | 57      | 370     | 600    | EC36/40 |                | 6.5        | 42.5        | 370          | 560                | 0.52        | 215          | 341                | 3.5       | 45/130           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 20                               | 57      | 370     | 600    | EC18/20 | 89003428       | 7.9        | 27.2        | 370          | 435                | 0.33        | 137          | 170                | 5.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x20                             | 57      | 370     | 600    | EC36/40 |                | 6.5        | 45.1        | 370          | 560                | 0.55        | 228          | 362                | 3.0       | 45/130           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 36                               | 103     | 430     | 1200   | EC36/40 |                | EEI=B2     | 43.8        | 415          | 635                | 0.48        | 221          | 355                | 4.0       | 50/150           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 40                               | 103     | 430     | 1200   | EC36/40 |                | 7.8        | 47.3        | 415          | 635                | 0.52        | 239          | 384                | 4.0       | 50/150           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| <b>Compact lamps</b>             |         |         |        |         |                |            |             |              |                    |             |              |                    |           |                  |          |        |        |             |        |
| 5                                | 35      | 180     | TC-S   | EC9     | 89000131       | 5.7        | 11.1        | 180          | 190                | 0.28        | 56           | 62                 | 3.0       | 55/75            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x5                              | 35      | 180     | TC-S   | EC13    | 89000039       | 4.6        | 15.4        | 175          | 200                | 0.40        | 78           | 93                 | 2.0       | 55/100           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 7                                | 47      | 175     | TC-S   | EC9     | 89000131       | EEI=B2     | 12.6        | 175          | 190                | 0.33        | 64           | 73                 | 2.0       | 55/75            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x7                              | 47      | 175     | TC-S   | EC13    | 89000039       | 4.3        | 18.5        | 165          | 200                | 0.51        | 93           | 119                | 1.5       | 55/100           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 9                                | 60      | 170     | TC-S   | EC9     | 89000131       | EEI=B2     | 13.9        | 165          | 190                | 0.38        | 70           | 85                 | 2.0       | 55/75            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x9                              | 60      | 170     | TC-S   | EC13    | 89000039       | 4          | 21.8        | 155          | 200                | 0.64        | 110          | 149                | 1.5       | 55/100           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 64      | 190     | TC-D   | EC13    | 89000039       | 4.8        | 14.8        | 185          | 200                | 0.36        | 75           | 85                 | 2.0       | 55/100           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 72      | 180     | TC-DD  | EC13    | 89000039       | 4.6        | 15.1        | 175          | 200                | 0.39        | 76           | 91                 | 2.0       | 55/100           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 11                               | 91      | 155     | TC-S   | EC9     | 89000131       | EEI=B2     | 16.7        | 155          | 190                | 0.49        | 84           | 108                | 1.5       | 55/75            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 91      | 175     | TC-D   | EC13    | 89000039       | EEI=B2     | 17.4        | 170          | 200                | 0.47        | 88           | 109                | 2.0       | 55/100           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 91      | 175     | TC-T   | EC13    | 89000039       | EEI=B2     | 17.4        | 170          | 200                | 0.47        | 88           | 109                | 2.0       | 55/100           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 16                               | 103     | 195     | TC-DD  | EC16    |                | EEI=B2     | 21.4        | 195          | 250                | 0.50        | 108          | 145                | 2.0       | 60/115           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                               | 100     | 220     | TC-D   | EC18H   | 89000096       | EEI=B2     | 23.8        | 220          | 315                | 0.49        | 120          | 181                | 2.0       | 50/120           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                               | 58      | 375     | TC-F   | EC18/20 | 89003428       | EEI=B2     | 25.9        | 370          | 435                | 0.32        | 131          | 161                | 5.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 58      | 375     | TC-L   | EC18/20 | 89003428       | EEI=B2     | 25.9        | 370          | 435                | 0.32        | 131          | 161                | 5.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 100     | 225     | TC-T   | EC18H   | 89000096       | EEI=B2     | 23.8        | 220          | 315                | 0.49        | 120          | 181                | 2.0       | 50/120           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x18                             | 58      | 375     | TC-L   | EC36/40 |                | 6.5        | 42.5        | 370          | 560                | 0.52        | 215          | 341                | 3.5       | 45/130           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 21                               | 101     | 270     | TC-DD  | EC21    |                | EEI=B2     | 26.6        | 270          | 350                | 0.45        | 134          | 183                | 3.0       | 40/80            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                               | 87      | 345     | TC-F   | EC18/20 | 89003428       | EEI=B2     | 31.1        | 345          | 435                | 0.41        | 157          | 208                | 4.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                               | 87      | 345     | TC-L   | EC18/20 | 89003428       | EEI=B2     | 31.1        | 345          | 435                | 0.41        | 157          | 208                | 4.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                               | 105     | 325     | TC-D   | EC18/20 | 89003428       | EEI=B2     | 32.1        | 315          | 435                | 0.46        | 162          | 235                | 3.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                               | 105     | 325     | TC-T   | EC18/20 | 89003428       | EEI=B2     | 32.6        | 315          | 435                | 0.47        | 164          | 238                | 3.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 28                               | 108     | 320     | TC-DD  | EC18/20 | 89003428       | EEI=B2     | 34.5        | 315          | 410                | 0.50        | 174          | 238                | 3.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 106     | 435     | TC-F   | EC36/40 |                | EEI=B2     | 43.8        | 415          | 635                | 0.48        | 221          | 355                | 4.0       | 50/150           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 36                               | 106     | 435     | TC-L   | EC36/40 |                | EEI=B2     | 43.8        | 415          | 635                | 0.48        | 221          | 355                | 4.0       | 50/150           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 38                               | 110     | 430     | TC-DD  | EC36/40 |                | EEI=B2     | 46.3        | 415          | 635                | 0.51        | 234          | 376                | 4.0       | 50/150           | 54       | 1      | 150.0  | 135.5       | 0.60   |

## Notes

Other wattages available on request.

Refer to Energy Classification System table for ballasts from CELMA and/or MEPS.

Some ballast and lamp combination may not operate within the EEI=B2 rating.

## 230 V 50 Hz – EC low loss ballasts (EEI=B2)

| Lamp                      |         |         |        | Ballast |                | Electrical |             |              |                    |             |              |                    |           | Thermal          | Physical |        |        |             |        |
|---------------------------|---------|---------|--------|---------|----------------|------------|-------------|--------------|--------------------|-------------|--------------|--------------------|-----------|------------------|----------|--------|--------|-------------|--------|
| wattage                   | voltage | current | length | type    | article number | loss hot   | input power | lamp current | lamp start current | circuit P F | line current | line start current | capacitor | normal/ abnormal | stack    | figure | length | mtg centres | weight |
| W                         | V       | mA      | mm     |         |                | W          | W           | mA           | mA                 | cosφ        | mA@0.9PF     | mA@0.9PF           | μF0.9PF   | Δt               | mm       |        | mm     | mm          | kg     |
| Linear and circular lamps |         |         |        |         |                |            |             |              |                    |             |              |                    |           |                  |          |        |        |             |        |
| 4                         | 29      | 170     | 150    | EC4/6/8 |                | 5.5        | 10.0        | 165          | 170                | 0.26        | 48           | 52                 | 2.0       | 60/95            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 6                         | 42      | 160     | 225    | EC4/6/8 |                | EEI=B2     | 11.2        | 155          | 170                | 0.31        | 54           | 62                 | 2.0       | 60/95            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x6                       | 42      | 160     | 225    | EC13    | 89000041       | 3.9        | 15.9        | 155          | 210                | 0.45        | 77           | 109                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 8                         | 56      | 145     | 300    | EC4/6/8 |                | EEI=B2     | 11.9        | 145          | 170                | 0.36        | 58           | 71                 | 1.5       | 60/95            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x8                       | 56      | 145     | 300    | EC13    | 89000041       | 3.5        | 17.7        | 140          | 210                | 0.55        | 86           | 135                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                        | 95      | 165     | 525    | EC13    | 89000041       | EEI=B2     | 17.0        | 160          | 210                | 0.46        | 82           | 113                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 15                        | 55      | 310     | 450    | EC15    |                | EEI=B2     | 23.2        | 310          | 360                | 0.33        | 112          | 137                | 3.5       | 50/80            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                        | 57      | 370     | 600    | EC18/20 | 89003333       | EEI=B2     | 26.4        | 370          | 430                | 0.31        | 128          | 156                | 5.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                      | 57      | 370     | 600    | EC36/40 | 89002851       | 6.5        | 42.5        | 370          | 560                | 0.50        | 205          | 326                | 3.5       | 50/130           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 20                        | 57      | 370     | 600    | EC18/20 | 89003333       | 8.4        | 27.7        | 370          | 430                | 0.33        | 134          | 163                | 4.0       | 55/8             | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x20                      | 57      | 370     | 600    | EC36/40 | 89002851       | 6.5        | 45.1        | 370          | 560                | 0.53        | 218          | 346                | 3.0       | 50/130           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 22                        | 62      | 400     | Ø210   | EC22    |                | EEI=B2     | 31.5        | 400          | 480                | 0.34        | 152          | 192                | 5.0       | 50/95            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 30                        | 96      | 365     | 900    | EC30    | 89003480       | EEI=B2     | 39.0        | 360          | 480                | 0.47        | 188          | 264                | 3.5       | 50/95            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 32                        | 81      | 450     | Ø305   | EC32    |                | EEI=B2     | 41.5        | 430          | 520                | 0.42        | 200          | 255                | 5.0       | 55/125           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                        | 103     | 430     | 1200   | EC36/40 | 89002851       | EEI=B2     | 44.3        | 415          | 630                | 0.46        | 214          | 341                | 4.0       | 50/150           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 40                        | 103     | 430     | 1200   | EC36/40 | 89002851       | 8.3        | 47.8        | 415          | 630                | 0.50        | 231          | 368                | 4.0       | 50/150           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 58                        | 110     | 670     | 1500   | EC58/65 | 89003334       | EEI=B2     | 68.4        | 660          | 960                | 0.45        | 330          | 505                | 7.0       | 45/130           | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 65                        | 110     | 670     | 1500   | EC58/65 | 89003334       | 10.4       | 74.4        | 660          | 960                | 0.49        | 359          | 549                | 6.0       | 45/130           | 90       | 1      | 195.0  | 180.0       | 1.00   |
| Compact lamps             |         |         |        |         |                |            |             |              |                    |             |              |                    |           |                  |          |        |        |             |        |
| 5                         | 35      | 180     | TC-S   | EC9     | 89000133       | 5.1        | 10.5        | 175          | 190                | 0.26        | 51           | 58                 | 2.0       | 55/75            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x5                       | 35      | 180     | TC-S   | EC13    | 89000041       | 4.4        | 15.2        | 175          | 210                | 0.38        | 73           | 92                 | 2.0       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 7                         | 47      | 175     | TC-S   | EC9     | 89000133       | EEI=B2     | 12.1        | 170          | 190                | 0.31        | 58           | 69                 | 2.0       | 55/75            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x7                       | 47      | 175     | TC-S   | EC13    | 89000041       | 4.1        | 18.3        | 165          | 210                | 0.48        | 89           | 118                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 9                         | 60      | 170     | TC-S   | EC9     | 89000133       | EEI=B2     | 13.6        | 165          | 190                | 0.36        | 65           | 79                 | 2.0       | 55/75            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x9                       | 60      | 170     | TC-S   | EC13    | 89000041       | 3.9        | 21.7        | 155          | 210                | 0.61        | 105          | 149                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                        | 64      | 190     | TC-D   | EC13    | 89000041       | 4.6        | 14.6        | 185          | 210                | 0.34        | 71           | 84                 | 2.0       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                        | 72      | 180     | TC-DD  | EC13    | 89000041       | 4.4        | 14.9        | 175          | 210                | 0.37        | 72           | 91                 | 2.0       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 11                        | 91      | 155     | TC-S   | EC9     | 89000133       | EEI=B2     | 16.2        | 150          | 190                | 0.47        | 78           | 104                | 1.5       | 55/75            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                        | 91      | 175     | TC-D   | EC13    | 89000041       | EEI=B2     | 17.3        | 170          | 210                | 0.44        | 83           | 108                | 2.0       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                        | 91      | 175     | TC-T   | EC13    | 89000041       | EEI=B2     | 17.3        | 170          | 210                | 0.44        | 83           | 108                | 2.0       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 16                        | 103     | 195     | TC-DD  | EC16    |                | EEI=B2     | 21.5        | 195          | 250                | 0.48        | 104          | 140                | 2.0       | 60/115           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                        | 100     | 220     | TC-D   | EC18H   | 89000100       | EEI=B2     | 24.2        | 220          | 300                | 0.48        | 117          | 167                | 2.0       | 55/120           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                        | 58      | 375     | TC-F   | EC18/20 | 89003333       | EEI=B2     | 26.4        | 370          | 430                | 0.31        | 128          | 156                | 5.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                        | 58      | 375     | TC-L   | EC18/20 | 89003333       | EEI=B2     | 26.4        | 370          | 430                | 0.31        | 128          | 156                | 5.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                        | 100     | 225     | TC-T   | EC18H   | 89000100       | EEI=B2     | 24.2        | 220          | 300                | 0.48        | 117          | 167                | 2.0       | 55/120           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x18                      | 58      | 375     | TC-L   | EC36/40 | 89002851       | 6.5        | 42.5        | 370          | 560                | 0.50        | 205          | 326                | 3.5       | 50/130           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 21                        | 101     | 270     | TC-DD  | EC21    |                | EEI=B2     | 26.8        | 270          | 340                | 0.43        | 129          | 171                | 3.0       | 40/80            | 50       | 1      | 150.0  | 135.5       | 0.60   |
| 24                        | 87      | 345     | TC-F   | EC18/20 | 89003333       | EEI=B2     | 31.5        | 345          | 430                | 0.40        | 152          | 199                | 3.5       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                        | 87      | 345     | TC-L   | EC18/20 | 89003333       | EEI=B2     | 31.5        | 345          | 430                | 0.40        | 152          | 199                | 3.5       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                        | 105     | 325     | TC-D   | EC18/20 | 89003333       | EEI=B2     | 32.4        | 315          | 430                | 0.45        | 157          | 225                | 3.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                        | 105     | 325     | TC-T   | EC18/20 | 89003333       | EEI=B2     | 32.9        | 315          | 430                | 0.45        | 158          | 228                | 3.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 28                        | 108     | 320     | TC-DD  | EC18/20 | 89003333       | EEI=B2     | 34.8        | 315          | 410                | 0.48        | 168          | 230                | 3.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                        | 106     | 435     | TC-F   | EC36/40 | 89002851       | EEI=B2     | 44.3        | 415          | 630                | 0.46        | 214          | 341                | 4.0       | 50/150           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 36                        | 106     | 435     | TC-L   | EC36/40 | 89002851       | EEI=B2     | 44.3        | 415          | 630                | 0.46        | 214          | 341                | 4.0       | 50/150           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 38                        | 110     | 430     | TC-DD  | EC36/40 | 89002851       | EEI=B2     | 46.8        | 415          | 630                | 0.49        | 226          | 360                | 4.0       | 50/150           | 54       | 1      | 150.0  | 135.5       | 0.60   |

## Notes

Other wattages available on request.

Refer to Energy Classification System table for ballasts from CELMA and/or MEPS.

Some ballast and lamp combination may not operate within the EEI=B2 rating.

## 240 V 50 Hz – EC low loss ballasts (EEI=B2)

| Lamp                             |         |         |        | Ballast |                | Electrical |             |              |                    |             |              |                    |           | Thermal          | Physical |        |        |             |        |
|----------------------------------|---------|---------|--------|---------|----------------|------------|-------------|--------------|--------------------|-------------|--------------|--------------------|-----------|------------------|----------|--------|--------|-------------|--------|
| wattage                          | voltage | current | length | type    | article number | loss hot   | input power | lamp current | lamp start current | circuit P F | line current | line start current | capacitor | normal/ abnormal | stack    | figure | length | mtg centres | weight |
| W                                | V       | mA      | mm     |         |                | W          | W           | mA           | mA                 | cosφ        | mA@0.9PF     | mA@0.9PF           | μF0.9PF   | Δt               | mm       |        | mm     | mm          | kg     |
| <b>Linear and circular lamps</b> |         |         |        |         |                |            |             |              |                    |             |              |                    |           |                  |          |        |        |             |        |
| 4                                | 29      | 170     | 150    | EC4/6/8 | 89000114       | 5.5        | 10.0        | 165          | 170                | 0.25        | 46           | 50                 | 2.0       | 60/95            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 6                                | 42      | 160     | 225    | EC4/6/8 | 89000114       | EEI=B2     | 11.2        | 155          | 170                | 0.30        | 52           | 60                 | 2.0       | 60/95            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x6                              | 42      | 160     | 225    | EC13    | 89000037       | 4.4        | 16.4        | 160          | 215                | 0.43        | 76           | 107                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 8                                | 56      | 145     | 300    | EC4/6/8 | 89000114       | EEI=B2     | 11.9        | 145          | 170                | 0.34        | 55           | 68                 | 1.5       | 60/95            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x8                              | 56      | 145     | 300    | EC13    | 89000037       | 4.0        | 18.2        | 145          | 215                | 0.52        | 84           | 131                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 95      | 165     | 525    | EC13    | 89000037       | EEI=B2     | 17.5        | 165          | 215                | 0.44        | 81           | 111                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 15                               | 55      | 310     | 450    | EC15    | 89002928       | EEI=B2     | 23.7        | 310          | 360                | 0.32        | 110          | 134                | 3.5       | 55/80            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 57      | 370     | 600    | EC18/20 | 89002929       | EEI=B2     | 26.9        | 370          | 425                | 0.30        | 125          | 150                | 4.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                             | 57      | 370     | 600    | EC36/40 | 89002931       | 6.5        | 42.5        | 370          | 560                | 0.48        | 197          | 313                | 3.5       | 45/130           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 20                               | 57      | 370     | 600    | EC18/20 | 89002929       | 8.9        | 28.2        | 370          | 425                | 0.32        | 131          | 157                | 4.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x20                             | 57      | 370     | 600    | EC36/40 | 89002931       | 6.5        | 45.1        | 370          | 560                | 0.51        | 209          | 332                | 3.0       | 45/130           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 22                               | 62      | 400     | Ø210   | EC22    |                | EEI=B2     | 31.5        | 400          | 475                | 0.33        | 146          | 182                | 5.0       | 55/100           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 30                               | 96      | 365     | 900    | EC30    | 89002930       | EEI=B2     | 39.5        | 360          | 475                | 0.46        | 183          | 253                | 3.5       | 55/100           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 32                               | 81      | 450     | Ø305   | EC32    |                | EEI=B2     | 41.5        | 430          | 520                | 0.40        | 192          | 244                | 5.0       | 55/125           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 103     | 430     | 1,200  | EC36/40 | 89002931       | EEI=B2     | 44.8        | 415          | 625                | 0.45        | 207          | 328                | 4.0       | 55/150           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 40                               | 103     | 430     | 1,200  | EC36/40 | 89002931       | 8.8        | 48.3        | 415          | 625                | 0.48        | 224          | 354                | 3.5       | 55/150           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 58                               | 110     | 670     | 1,500  | EC58/65 | 89002932       | EEI=B2     | 68.4        | 660          | 940                | 0.43        | 317          | 474                | 7.0       | 50/135           | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 65                               | 110     | 670     | 1,500  | EC58/65 | 89002932       | 10.4       | 74.4        | 660          | 940                | 0.47        | 344          | 515                | 6.0       | 50/135           | 90       | 1      | 195.0  | 180.0       | 1.00   |
| <b>Compact lamps</b>             |         |         |        |         |                |            |             |              |                    |             |              |                    |           |                  |          |        |        |             |        |
| 5                                | 35      | 180     | TC-S   | EC9     | 89000128       | 5.7        | 11.1        | 180          | 187                | 0.26        | 51           | 56                 | 2.0       | 60/75            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x5                              | 35      | 180     | TC-S   | EC13    | 89000037       | 4.8        | 15.6        | 175          | 215                | 0.37        | 72           | 93                 | 2.0       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 7                                | 47      | 175     | TC-S   | EC9     | 89000128       | EEI=B2     | 12.6        | 175          | 187                | 0.30        | 58           | 65                 | 2.0       | 60/75            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x7                              | 47      | 175     | TC-S   | EC13    | 89000037       | 4.5        | 18.7        | 165          | 215                | 0.47        | 87           | 118                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 9                                | 60      | 170     | TC-S   | EC9     | 89000128       | EEI=B2     | 13.9        | 165          | 187                | 0.35        | 64           | 77                 | 2.0       | 60/75            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x9                              | 60      | 170     | TC-S   | EC13    | 89000037       | 4.2        | 22.0        | 155          | 215                | 0.59        | 102          | 149                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 64      | 190     | TC-D   | EC13    | 89000037       | 5.0        | 15.0        | 185          | 215                | 0.34        | 70           | 85                 | 2.0       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 72      | 180     | TC-DD  | EC13    | 89000037       | 4.8        | 15.3        | 175          | 215                | 0.36        | 71           | 91                 | 2.0       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 11                               | 91      | 155     | TC-S   | EC9     | 89000128       | EEI=B2     | 16.7        | 155          | 187                | 0.45        | 77           | 98                 | 1.5       | 60/75            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 91      | 175     | TC-D   | EC13    | 89000037       | EEI=B2     | 17.6        | 170          | 215                | 0.43        | 82           | 108                | 2.0       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 91      | 175     | TC-T   | EC13    | 89000037       | EEI=B2     | 17.6        | 170          | 215                | 0.43        | 82           | 108                | 2.0       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 16                               | 103     | 195     | TC-DD  | EC16    | 89000076       | EEI=B2     | 21.5        | 195          | 250                | 0.46        | 100          | 134                | 2.0       | 60/115           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                               | 100     | 220     | TC-D   | EC18H   | 89000095       | EEI=B2     | 24.5        | 220          | 280                | 0.46        | 113          | 152                | 2.0       | 65/120           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                               | 58      | 375     | TC-F   | EC18/20 | 89002929       | EEI=B2     | 26.9        | 370          | 425                | 0.30        | 125          | 150                | 4.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 58      | 375     | TC-L   | EC18/20 | 89002929       | EEI=B2     | 26.9        | 370          | 425                | 0.30        | 125          | 150                | 4.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 100     | 225     | TC-T   | EC18H   | 89000095       | EEI=B2     | 24.5        | 220          | 280                | 0.46        | 113          | 152                | 2.0       | 65/120           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x18                             | 58      | 375     | TC-L   | EC36/40 | 89002931       | 6.5        | 42.5        | 370          | 560                | 0.48        | 197          | 313                | 3.5       | 45/130           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 21                               | 101     | 270     | TC-DD  | EC21    | 89000259       | EEI=B2     | 26.8        | 270          | 340                | 0.41        | 124          | 164                | 3.0       | 40/80            | 50       | 1      | 150.0  | 135.5       | 0.60   |
| 24                               | 87      | 345     | TC-F   | EC18/20 | 89002929       | EEI=B2     | 32.0        | 345          | 425                | 0.39        | 148          | 191                | 3.5       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                               | 87      | 345     | TC-L   | EC18/20 | 89002929       | EEI=B2     | 32.0        | 345          | 425                | 0.39        | 148          | 191                | 3.5       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                               | 105     | 325     | TC-D   | EC18/20 | 89002929       | EEI=B2     | 32.8        | 315          | 425                | 0.43        | 152          | 215                | 3.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                               | 105     | 325     | TC-T   | EC18/20 | 89002929       | EEI=B2     | 33.3        | 315          | 425                | 0.44        | 154          | 219                | 3.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 28                               | 108     | 320     | TC-DD  | EC18/20 | 89002929       | EEI=B2     | 35.2        | 315          | 410                | 0.47        | 163          | 223                | 3.0       | 55/85            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 106     | 435     | TC-F   | EC36/40 | 89002931       | EEI=B2     | 44.8        | 415          | 625                | 0.45        | 207          | 328                | 4.0       | 55/150           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 36                               | 106     | 435     | TC-L   | EC36/40 | 89002931       | EEI=B2     | 44.8        | 415          | 625                | 0.45        | 207          | 328                | 4.0       | 55/150           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 38                               | 110     | 430     | TC-DD  | EC36/40 | 89002931       | EEI=B2     | 47.3        | 415          | 625                | 0.47        | 219          | 346                | 4.0       | 55/150           | 54       | 1      | 150.0  | 135.5       | 0.60   |

## Notes

Other wattages available on request.

Refer to Energy Classification System table for ballasts from CELMA and/or MEPS.

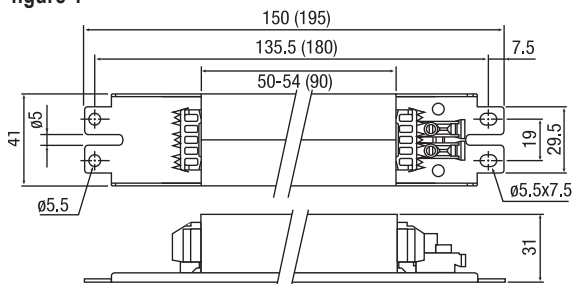
Some ballast and lamp combination may not operate within the EEI=B2 rating.



## EC energy control ballasts



figure 1



50, 54 and (90 mm) stack

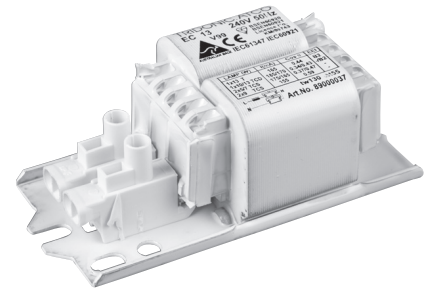
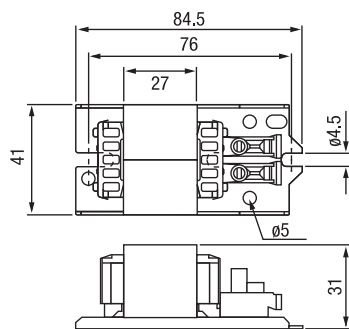


figure 2



27 mm stack



- slim cross-section and compact
- low magnetic stray field
- vacuum impregnation
- long service life
- non-audible noise level
- nomex class "H" gap for fixed calibration
- resistant to moisture and condensation
- 10 A push-in terminals (Screw terminals on request)
- low power consumption
- maximum winding temperature  $t_w$  130 °C
- other supply voltages than listed are available i.e. 120 V, 277 V etc.

**100 % final testing**

- continuity
- winding short circuit
- core to coil high voltage test
- operating values

## 220 V 50 Hz – EC energy control ballasts

| Lamp                             |         |         |        | Ballast |                | Electrical |             |              |                    |             |              |                    |           | Thermal         | Physical |        |        |             |        |
|----------------------------------|---------|---------|--------|---------|----------------|------------|-------------|--------------|--------------------|-------------|--------------|--------------------|-----------|-----------------|----------|--------|--------|-------------|--------|
| wattage                          | voltage | current | length | type    | article number | loss hot   | input power | lamp current | lamp start current | circuit P F | line current | line start current | capacitor | normal/abnormal | stack    | figure | length | mtg centres | weight |
| W                                | V       | mA      | mm     |         |                | W          | W           | mA           | mA                 | cosφ        | mA@0.9PF     | mA@0.9PF           | μF 0.9PF  | Δt              | mm       |        | mm     | mm          | kg     |
| <b>Linear and circular lamps</b> |         |         |        |         |                |            |             |              |                    |             |              |                    |           |                 |          |        |        |             |        |
| 4                                | 29      | 170     | 150    | EC4/6/8 |                | 5.5        | 10.0        | 165          | 170                | 0.28        | 51           | 55                 | 2.0       | 60/95           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 6                                | 42      | 160     | 225    | EC4/6/8 |                | 5.2        | 11.2        | 155          | 170                | 0.33        | 56           | 65                 | 2.0       | 60/95           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x6                              | 42      | 160     | 225    | EC13    | 89000039       | 4.2        | 16.2        | 160          | 200                | 0.46        | 82           | 107                | 1.5       | 55/100          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 8                                | 56      | 145     | 300    | EC4/6/8 |                | 4.8        | 11.9        | 145          | 170                | 0.37        | 60           | 74                 | 2.0       | 60/95           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x8                              | 56      | 145     | 300    | EC13    | 89000039       | 3.8        | 18.0        | 145          | 200                | 0.56        | 91           | 132                | 1.5       | 55/100          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 49      | 230     | 330    | EC10*   | 89000185       | 6.2        | 16.2        | 225          | 240                | 0.33        | 82           | 92                 | 3.0       | 40/105          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 13                               | 95      | 165     | 525    | EC13    | 89000039       | 4.3        | 17.3        | 165          | 200                | 0.48        | 87           | 111                | 1.5       | 55/100          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 15                               | 55      | 310     | 450    | EC15    |                | 8.5        | 23.5        | 310          | 360                | 0.34        | 119          | 145                | 3.5       | 50/85           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 57      | 370     | 600    | EC18/20 | 89000208       | 9.0        | 27.0        | 370          | 440                | 0.33        | 136          | 170                | 5.0       | 50/90           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                             | 57      | 370     | 600    | EC36/40 | 89000325       | 6.7        | 42.7        | 370          | 620                | 0.52        | 216          | 379                | 3.5       | 50/130          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 20                               | 57      | 370     | 600    | EC18/20 | 89000208       | 9.0        | 28.3        | 370          | 440                | 0.35        | 143          | 178                | 5.0       | 50/90           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x20                             | 57      | 370     | 600    | EC36/40 | 89000325       | 6.7        | 45.3        | 370          | 620                | 0.56        | 229          | 403                | 3.0       | 50/130          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 22                               | 62      | 400     | Ø210   | EC22    |                | 10.5       | 32.5        | 400          | 450                | 0.37        | 164          | 194                | 5.0       | 65/115          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 30                               | 96      | 365     | 900    | EC30    |                | 9.5        | 39.5        | 360          | 450                | 0.50        | 199          | 262                | 3.5       | 55/115          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 30                               | 55      | 610     | Ø224   | EC30L   |                | 12.0       | 42.0        | 600          | 670                | 0.32        | 212          | 249                | 7.0       | 50/100          | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 32                               | 81      | 450     | Ø305   | EC32    |                | 10.5       | 42.5        | 440          | 580                | 0.44        | 215          | 297                | 5.0       | 55/130          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 32                               | 135     | 265     | 1,200  | EC32H*  |                | 4.5        | 35.0        | 265          | 475                | 0.60        | 177          | 333                | 2.0       | 35/55           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 103     | 430     | 1,200  | EC36/40 | 89000325       | 8.5        | 44.5        | 415          | 636                | 0.49        | 225          | 362                | 4.0       | 55/140          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 40                               | 103     | 430     | 1,200  | EC36/40 | 89000325       | 8.5        | 48.0        | 415          | 636                | 0.53        | 242          | 390                | 4.0       | 55/140          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 58                               | 110     | 670     | 1,500  | EC58/65 | 89000454       | 12.0       | 70.0        | 660          | 980                | 0.48        | 354          | 551                | 7.0       | 45/135          | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 65                               | 110     | 670     | 1,500  | EC58/65 | 89000454       | 12.0       | 76.0        | 660          | 980                | 0.52        | 384          | 598                | 6.0       | 45/135          | 90       | 1      | 195.0  | 180.0       | 1.00   |
| <b>Compact lamps</b>             |         |         |        |         |                |            |             |              |                    |             |              |                    |           |                 |          |        |        |             |        |
| 5                                | 35      | 180     | TC-S   | EC9     | 89000131       | 5.7        | 11.1        | 180          | 190                | 0.28        | 56           | 62                 | 3.0       | 55/75           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x5                              | 35      | 180     | TC-S   | EC13    | 89000039       | 4.6        | 15.4        | 175          | 200                | 0.40        | 78           | 93                 | 2.0       | 55/100          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 7                                | 47      | 175     | TC-S   | EC9     | 89000131       | 5.5        | 12.6        | 175          | 190                | 0.33        | 64           | 73                 | 2.0       | 55/75           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x7                              | 47      | 175     | TC-S   | EC13    | 89000039       | 4.3        | 18.5        | 165          | 200                | 0.51        | 93           | 119                | 1.5       | 55/100          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 9                                | 60      | 170     | TC-S   | EC9     | 89000131       | 5.2        | 13.9        | 165          | 190                | 0.38        | 70           | 85                 | 2.0       | 55/75           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x9                              | 60      | 170     | TC-S   | EC13    | 89000039       | 4.0        | 21.8        | 155          | 200                | 0.64        | 110          | 149                | 1.5       | 55/100          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 64      | 190     | TC-D   | EC13    | 89000039       | 4.8        | 14.8        | 185          | 200                | 0.36        | 75           | 85                 | 2.0       | 55/100          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 72      | 180     | TC-DD  | EC13    | 89000039       | 4.6        | 15.1        | 175          | 200                | 0.39        | 76           | 91                 | 2.0       | 55/100          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 11                               | 91      | 155     | TC-S   | EC9     | 89000131       | 4.9        | 16.7        | 155          | 190                | 0.49        | 84           | 108                | 1.5       | 55/75           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 91      | 175     | TC-D   | EC13    | 89000039       | 4.4        | 17.4        | 170          | 200                | 0.47        | 88           | 109                | 2.0       | 55/100          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 59      | 285     | TC-S   | EC13L   |                | 7.6        | 20.6        | 285          | 320                | 0.33        | 104          | 123                | 3.5       | 40/85           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 13                               | 91      | 175     | TC-T   | EC13    | 89000039       | 4.4        | 17.4        | 170          | 200                | 0.47        | 88           | 109                | 2.0       | 55/100          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                               | 58      | 375     | TC-F   | EC18/20 | 89000208       | 9.0        | 27.0        | 370          | 440                | 0.33        | 136          | 170                | 5.0       | 50/90           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 58      | 375     | TC-L   | EC18/20 | 89000208       | 9.0        | 27.0        | 370          | 440                | 0.33        | 136          | 170                | 5.0       | 50/90           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                             | 58      | 375     | TC-L   | EC36/40 | 89000325       | 6.7        | 42.7        | 370          | 620                | 0.52        | 216          | 379                | 3.5       | 50/130          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                               | 87      | 345     | TC-F   | EC18/20 | 89000208       | 8.0        | 32.0        | 345          | 440                | 0.42        | 162          | 217                | 3.5       | 50/90           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                               | 87      | 345     | TC-L   | EC18/20 | 89000208       | 8.0        | 32.0        | 345          | 440                | 0.42        | 162          | 217                | 3.5       | 50/90           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                               | 105     | 325     | TC-D   | EC18/20 | 89000208       | 6.9        | 32.9        | 315          | 440                | 0.47        | 166          | 244                | 3.0       | 50/90           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                               | 105     | 325     | TC-T   | EC18/20 | 89000208       | 6.9        | 33.4        | 315          | 440                | 0.48        | 169          | 247                | 3.0       | 50/90           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 28                               | 108     | 320     | TC-DD  | EC18/20 | 89000208       | 6.9        | 35.3        | 315          | 410                | 0.51        | 178          | 244                | 3.0       | 50/90           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 106     | 435     | TC-F   | EC36/40 | 89000325       | 8.5        | 44.5        | 415          | 636                | 0.49        | 225          | 362                | 4.0       | 55/140          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 106     | 435     | TC-L   | EC36/40 | 89000325       | 8.5        | 44.5        | 415          | 636                | 0.49        | 225          | 362                | 4.0       | 55/140          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 38                               | 110     | 430     | TC-DD  | EC36/40 | 89000325       | 8.5        | 47.0        | 415          | 636                | 0.51        | 237          | 382                | 4.0       | 55/140          | 50       | 1      | 150.0  | 135.5       | 0.55   |

## Notes

Other wattages available on request.

\* Lamps not included in IEC 60081 or IEC 60901.

## 220 V 60 Hz – EC energy control ballasts

| Lamp                             |         |         |        | Ballast |                | Electrical |             |              |                    |            |              |                    |           | Thermal         | Physical |        |        |             |        |
|----------------------------------|---------|---------|--------|---------|----------------|------------|-------------|--------------|--------------------|------------|--------------|--------------------|-----------|-----------------|----------|--------|--------|-------------|--------|
| wattage                          | voltage | current | length | type    | article number | loss hot   | input power | lamp current | lamp start current | circuit PF | line current | line start current | capacitor | normal/abnormal | stack    | figure | length | mtg centres | weight |
| W                                | V       | mA      | mm     |         |                | W          | W           | mA           | mA                 | cosφ       | mA@0.9PF     | mA@0.9PF           | μF0.9PF   | Δt              | mm       |        | mm     | mm          | kg     |
| <b>Linear and circular lamps</b> |         |         |        |         |                |            |             |              |                    |            |              |                    |           |                 |          |        |        |             |        |
| 4                                | 29      | 170     | 150    | EC4/6/8 | 89000120       | 5.0        | 9.5         | 165          | 170                | 0.26       | 48           | 52                 | 2.0       | 45/90           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 6                                | 42      | 160     | 225    | EC4/6/8 | 89000120       | 4.7        | 10.7        | 155          | 170                | 0.31       | 54           | 62                 | 1.5       | 45/90           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x6                              | 42      | 160     | 225    | EC13    | 89000040       | 4.2        | 16.2        | 160          | 206                | 0.46       | 82           | 110                | 1.5       | 50/100          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 8                                | 56      | 145     | 300    | EC4/6/8 | 89000120       | 4.4        | 11.5        | 145          | 170                | 0.36       | 58           | 71                 | 1.5       | 45/90           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x8                              | 56      | 145     | 300    | EC13    | 89000040       | 3.8        | 18.0        | 145          | 206                | 0.56       | 91           | 135                | 1.5       | 50/100          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 49      | 230     | 330    | EC10*   |                | 7.0        | 17.0        | 225          | 250                | 0.34       | 86           | 100                | 3.0       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 95      | 165     | 525    | EC13    | 89000040       | 4.3        | 17.3        | 165          | 206                | 0.48       | 87           | 115                | 1.5       | 50/100          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 15                               | 55      | 310     | 450    | EC15    | 89000199       | 8.5        | 23.5        | 310          | 360                | 0.34       | 119          | 145                | 3.0       | 55/85           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 57      | 370     | 600    | EC18/20 | 89000206       | 9.0        | 27.0        | 370          | 440                | 0.33       | 136          | 170                | 3.5       | 50/90           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                             | 57      | 370     | 600    | EC36/40 | 89000330       | 6.5        | 42.5        | 370          | 620                | 0.52       | 215          | 378                | 3.0       | 50/130          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 20                               | 57      | 370     | 600    | EC18/20 | 89000206       | 9.0        | 28.3        | 370          | 440                | 0.35       | 143          | 178                | 3.5       | 50/90           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x20                             | 57      | 370     | 600    | EC36/40 | 89000330       | 6.5        | 45.1        | 370          | 620                | 0.55       | 228          | 401                | 3.0       | 50/130          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 22                               | 62      | 400     | Ø210   | EC22    |                | 9.8        | 31.8        | 400          | 450                | 0.36       | 161          | 190                | 4.0       | 50/115          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 30                               | 96      | 365     | 900    | EC30    |                | 8.8        | 38.8        | 360          | 450                | 0.49       | 196          | 257                | 3.0       | 50/115          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 30                               | 55      | 610     | Ø224   | EC30L   |                | 11.0       | 41.0        | 600          | 670                | 0.31       | 207          | 243                | 6.0       | 50/100          | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 32                               | 81      | 450     | Ø305   | EC32    | 89000311       | 10.2       | 42.2        | 440          | 580                | 0.44       | 213          | 295                | 4.0       | 55/130          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 32                               | 135     | 265     | 1,200  | EC32H*  |                | 4.2        | 34.7        | 265          | 485                | 0.60       | 175          | 337                | 2.0       | 35/55           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 103     | 430     | 1,200  | EC36/40 | 89000330       | 8.5        | 44.5        | 415          | 640                | 0.49       | 225          | 364                | 3.5       | 50/140          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 40                               | 103     | 430     | 1,200  | EC36/40 | 89000330       | 8.5        | 48.0        | 415          | 640                | 0.53       | 242          | 393                | 3.0       | 50/140          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 58                               | 110     | 670     | 1,500  | EC58/65 | 89000449       | 10.9       | 68.9        | 660          | 980                | 0.47       | 348          | 543                | 6.0       | 40/130          | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 65                               | 110     | 670     | 1,500  | EC58/65 | 89000449       | 10.9       | 74.9        | 660          | 980                | 0.52       | 378          | 590                | 5.0       | 40/130          | 90       | 1      | 195.0  | 180.0       | 1.00   |
| <b>Compact lamps</b>             |         |         |        |         |                |            |             |              |                    |            |              |                    |           |                 |          |        |        |             |        |
| 5                                | 35      | 180     | TC-S   | EC9     | 89000137       | 5.1        | 10.5        | 180          | 190                | 0.27       | 53           | 59                 | 2.0       | 55/75           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x5                              | 35      | 180     | TC-S   | EC13    | 89000040       | 4.6        | 15.4        | 175          | 206                | 0.40       | 78           | 96                 | 1.5       | 50/100          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 7                                | 47      | 175     | TC-S   | EC9     | 89000137       | 5.0        | 12.1        | 175          | 190                | 0.31       | 61           | 70                 | 2.0       | 55/75           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x7                              | 47      | 175     | TC-S   | EC13    | 89000040       | 4.3        | 18.5        | 165          | 206                | 0.51       | 93           | 122                | 1.5       | 50/100          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 9                                | 60      | 170     | TC-S   | EC9     | 89000137       | 4.7        | 13.4        | 165          | 190                | 0.37       | 68           | 82                 | 1.5       | 55/75           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x9                              | 60      | 170     | TC-S   | EC13    | 89000040       | 4.0        | 21.8        | 155          | 206                | 0.64       | 110          | 154                | 1.5       | 50/100          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 64      | 190     | TC-D   | EC13    | 89000040       | 4.8        | 14.8        | 185          | 206                | 0.36       | 75           | 88                 | 2.0       | 50/100          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 72      | 180     | TC-DD  | EC13    | 89000040       | 4.6        | 15.1        | 175          | 206                | 0.39       | 76           | 94                 | 1.5       | 50/100          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 11                               | 91      | 155     | TC-S   | EC9     | 89000137       | 4.4        | 16.2        | 155          | 190                | 0.48       | 82           | 105                | 1.5       | 55/75           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 91      | 175     | TC-D   | EC13    | 89000040       | 4.4        | 17.4        | 170          | 206                | 0.47       | 88           | 112                | 1.5       | 50/100          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 59      | 285     | TC-S   | EC13L   |                | 7.1        | 20.1        | 285          | 315                | 0.32       | 102          | 118                | 3.0       | 35/65           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 13                               | 91      | 175     | TC-T   | EC13    | 89000040       | 4.4        | 17.4        | 170          | 206                | 0.47       | 88           | 112                | 1.5       | 50/100          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 16                               | 103     | 195     | TC-DD  | EC16    |                | 5.4        | 21.4        | 195          | 255                | 0.50       | 108          | 148                | 1.5       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                               | 100     | 220     | TC-D   | EC18H   | 89000097       | 5.3        | 23.3        | 220          | 315                | 0.48       | 118          | 177                | 2.0       | 50/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                               | 58      | 375     | TC-F   | EC18/20 | 89000206       | 9.0        | 27.0        | 370          | 440                | 0.33       | 136          | 170                | 3.5       | 50/90           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 58      | 375     | TC-L   | EC18/20 | 89000206       | 9.0        | 27.0        | 370          | 440                | 0.33       | 136          | 170                | 3.5       | 50/90           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 100     | 225     | TC-T   | EC18H   | 89000097       | 5.3        | 23.3        | 220          | 315                | 0.48       | 118          | 177                | 2.0       | 50/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x18                             | 58      | 375     | TC-L   | EC36/40 | 89000330       | 6.5        | 42.5        | 370          | 620                | 0.52       | 215          | 378                | 3.0       | 50/130          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 21                               | 101     | 270     | TC-DD  | EC21    |                | 5.6        | 25.6        | 270          | 350                | 0.43       | 129          | 176                | 3.0       | 40/80           | 50       | 1      | 150.0  | 135.5       | 0.60   |
| 24                               | 87      | 345     | TC-F   | EC18/20 | 89000206       | 8.0        | 32.0        | 345          | 440                | 0.42       | 162          | 217                | 3.0       | 50/90           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                               | 87      | 345     | TC-L   | EC18/20 | 89000206       | 8.0        | 32.0        | 345          | 440                | 0.42       | 162          | 217                | 3.0       | 50/90           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                               | 105     | 325     | TC-D   | EC18/20 | 89000206       | 6.9        | 32.9        | 315          | 440                | 0.47       | 166          | 244                | 3.0       | 50/90           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                               | 105     | 325     | TC-T   | EC18/20 | 89000206       | 6.9        | 33.4        | 315          | 440                | 0.48       | 169          | 247                | 3.0       | 50/90           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 28                               | 108     | 320     | TC-DD  | EC18/20 | 89000206       | 6.9        | 35.3        | 315          | 420                | 0.51       | 178          | 250                | 3.0       | 50/90           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 106     | 435     | TC-F   | EC36/40 | 89000330       | 8.5        | 44.5        | 415          | 640                | 0.49       | 225          | 364                | 3.5       | 50/140          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 106     | 435     | TC-L   | EC36/40 | 89000330       | 8.5        | 44.5        | 415          | 640                | 0.49       | 225          | 364                | 3.5       | 50/140          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 38                               | 110     | 430     | TC-DD  | EC36/40 | 89000330       | 8.5        | 47.0        | 415          | 640                | 0.51       | 237          | 384                | 3.0       | 50/140          | 50       | 1      | 150.0  | 135.5       | 0.55   |

## Notes

Other wattages available on request.

\* Lamps not included in IEC 60081 or IEC 60901.

## 220 V 60 Hz – EC energy control ballasts for Taiwan

| Lamp                             |         |         |        | Ballast  |                | Electrical |             |              |                    |            |              |                    |           | Thermal         | Physical |        |        |             |        |
|----------------------------------|---------|---------|--------|----------|----------------|------------|-------------|--------------|--------------------|------------|--------------|--------------------|-----------|-----------------|----------|--------|--------|-------------|--------|
| wattage                          | voltage | current | length | type     | article number | loss hot   | input power | lamp current | lamp start current | circuit PF | line current | line start current | capacitor | normal/abnormal | stack    | figure | length | mtg centres | weight |
| W                                | V       | mA      | mm     |          |                | W          | W           | mA           | mA                 | cosφ       | mA@0.9PF     | mA@0.9PF           | μF0.9PF   | Δt              | mm       |        | mm     | mm          | kg     |
| <b>Linear and circular lamps</b> |         |         |        |          |                |            |             |              |                    |            |              |                    |           |                 |          |        |        |             |        |
| 10                               | 49      | 230     | 330    | EC10*    |                | 6.6        | 16.0        | 225          | 250                | 0.32       | 81           | 94                 | 3.0       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 20                               | 59      | 350     | 580    | EC18/20* |                | 6.0        | 24.0        | 350          | 410                | 0.31       | 121          | 149                | 3.5       | 40/100          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 30                               | 96      | 365     | 900    | EC30     |                | 7.0        | 37.0        | 360          | 490                | 0.47       | 187          | 267                | 3.0       | 50/115          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 30                               | 55      | 590     | Ø233   | EC30L*   | 89000446       | 9.3        | 40.0        | 590          | 670                | 0.31       | 202          | 241                | 6.0       | 45/90           | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 32                               | 81      | 450     | Ø305   | EC32     |                | 7.2        | 39.2        | 450          | 590                | 0.40       | 198          | 273                | 4.0       | 40/150          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 40                               | 113     | 415     | 1,198  | EC36/40* |                | 6.6        | 43.0        | 415          | 590                | 0.47       | 217          | 324                | 3.5       | 40/150          | 50       | 1      | 150.0  | 135.5       | 0.55   |

## Notes

Other wattages available on request.

\* Lamps not included in IEC 60081 or IEC 60901.

## 230 V 50 Hz – EC energy control ballasts

| Lamp                      |         |         |        | Ballast         |                | Electrical |             |              |                    |             |              |                    |           | Thermal          | Physical |        |        |             |        |
|---------------------------|---------|---------|--------|-----------------|----------------|------------|-------------|--------------|--------------------|-------------|--------------|--------------------|-----------|------------------|----------|--------|--------|-------------|--------|
| wattage                   | voltage | current | length | type            | article number | loss hot   | input power | lamp current | lamp start current | circuit P F | line current | line start current | capacitor | normal/ abnormal | stack    | figure | length | mtg centres | weight |
| W                         | V       | mA      | mm     |                 |                | W          | W           | mA           | mA                 | cosφ        | mA@0.9PF     | mA@0.9PF           | μF0.9PF   | Δt               | mm       |        | mm     | mm          | kg     |
| Linear and circular lamps |         |         |        |                 |                |            |             |              |                    |             |              |                    |           |                  |          |        |        |             |        |
| 4                         | 29      | 170     | 150    | EC4/6/8         |                | 5.5        | 10.0        | 165          | 170                | 0.26        | 48           | 52                 | 2.0       | 60/95            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 6                         | 42      | 160     | 225    | EC4/6/8         |                | EEl=B2     | 11.2        | 155          | 170                | 0.31        | 54           | 62                 | 2.0       | 60/95            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x6                       | 42      | 160     | 225    | EC13            | 89000041       | 3.9        | 15.9        | 155          | 210                | 0.45        | 77           | 109                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 8                         | 56      | 145     | 300    | EC4/6/8         |                | EEl=B2     | 11.9        | 145          | 170                | 0.36        | 58           | 71                 | 1.5       | 60/95            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x8                       | 56      | 145     | 300    | EC13            | 89000041       | 3.5        | 17.7        | 140          | 210                | 0.55        | 86           | 135                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                        | 49      | 230     | 330    | EC10*           |                | 6.8        | 16.8        | 225          | 245                | 0.32        | 81           | 93                 | 3.0       | 40/105           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 13                        | 95      | 165     | 525    | EC13            | 89000041       | EEl=B2     | 17.0        | 160          | 210                | 0.46        | 82           | 113                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 15                        | 55      | 310     | 450    | EC15            |                | 8.8        | 23.8        | 310          | 360                | 0.33        | 115          | 140                | 3.5       | 55/90            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                        | 57      | 370     | 600    | EC18/20         |                | 10.0       | 28.0        | 370          | 430                | 0.33        | 135          | 165                | 4.0       | 60/95            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                      | 57      | 370     | 600    | EC36/40         | 89000334       | 7.2        | 43.2        | 370          | 580                | 0.51        | 209          | 344                | 3.5       | 50/130           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 20                        | 57      | 370     | 600    | EC18/20         |                | 10.0       | 29.3        | 370          | 430                | 0.34        | 142          | 173                | 4.0       | 60/95            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x20                      | 57      | 370     | 600    | EC36/40         | 89000334       | 7.2        | 45.8        | 370          | 580                | 0.54        | 221          | 364                | 3.0       | 50/130           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 22                        | 62      | 400     | Ø210   | EC22            |                | 11.0       | 33.0        | 400          | 450                | 0.36        | 159          | 188                | 5.0       | 65/105           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 30                        | 96      | 365     | 900    | EC30            |                | 9.9        | 39.9        | 360          | 450                | 0.48        | 193          | 253                | 3.5       | 65/105           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 30                        | 55      | 610     | Ø224   | EC30L           |                | 14.5       | 44.5        | 600          | 660                | 0.32        | 215          | 248                | 7.0       | 55/100           | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 32                        | 81      | 450     | Ø305   | EC32            |                | 11.0       | 43.0        | 440          | 550                | 0.42        | 208          | 273                | 5.0       | 65/130           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 32                        | 135     | 265     | 1,200  | EC32H*          |                | 5.3        | 35.8        | 265          | 455                | 0.59        | 173          | 312                | 2.0       | 40/60            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                        | 103     | 430     | 1,200  | EC36/40         | 89000334       | 10.0       | 46.0        | 415          | 630                | 0.48        | 222          | 354                | 4.0       | 55/160           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                        | 103     | 430     | 1,200  | EC36/40(54mm)** |                | 10.0       | 46.0        | 415          | 610                | 0.48        | 222          | 343                | 4.0       | 55/140           | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 40                        | 103     | 430     | 1,200  | EC36/40         | 89000334       | 10.0       | 49.5        | 415          | 630                | 0.52        | 239          | 381                | 3.5       | 55/160           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 58                        | 110     | 670     | 1,500  | EC58/65         |                | 13.0       | 71.0        | 660          | 960                | 0.47        | 343          | 524                | 6.0       | 50/140           | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 65                        | 110     | 670     | 1,500  | EC58/65         |                | 13.0       | 77.0        | 660          | 960                | 0.51        | 372          | 568                | 6.0       | 50/140           | 90       | 1      | 195.0  | 180.0       | 1.00   |
| Compact lamps             |         |         |        |                 |                |            |             |              |                    |             |              |                    |           |                  |          |        |        |             |        |
| 5                         | 35      | 180     | TC-S   | EC9             | 89000133       | 5.1        | 10.5        | 175          | 190                | 0.26        | 51           | 58                 | 2.0       | 55/75            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x5                       | 35      | 180     | TC-S   | EC13            | 89000041       | 4.4        | 15.2        | 175          | 210                | 0.38        | 73           | 92                 | 2.0       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 7                         | 47      | 175     | TC-S   | EC9             | 89000133       | EEl=B2     | 12.1        | 170          | 190                | 0.31        | 58           | 69                 | 2.0       | 55/75            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x7                       | 47      | 175     | TC-S   | EC13            | 89000041       | 4.1        | 18.3        | 165          | 210                | 0.48        | 89           | 118                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 9                         | 60      | 170     | TC-S   | EC9             | 89000133       | EEl=B2     | 13.6        | 165          | 190                | 0.36        | 65           | 79                 | 2.0       | 55/75            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x9                       | 60      | 170     | TC-S   | EC13            | 89000041       | 3.9        | 21.7        | 155          | 210                | 0.61        | 105          | 149                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                        | 64      | 190     | TC-D   | EC13            | 89000041       | 4.6        | 14.6        | 185          | 210                | 0.34        | 71           | 84                 | 2.0       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                        | 72      | 180     | TC-DD  | EC13            | 89000041       | 4.4        | 14.9        | 175          | 210                | 0.37        | 72           | 91                 | 2.0       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 11                        | 91      | 155     | TC-S   | EC9             | 89000133       | EEl=B2     | 16.2        | 150          | 190                | 0.47        | 78           | 104                | 1.5       | 55/75            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                        | 91      | 175     | TC-D   | EC13            | 89000041       | EEl=B2     | 17.3        | 170          | 210                | 0.44        | 83           | 108                | 2.0       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                        | 91      | 175     | TC-T   | EC13            | 89000041       | EEl=B2     | 17.3        | 170          | 210                | 0.44        | 83           | 108                | 2.0       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                        | 58      | 375     | TC-F   | EC18/20         |                | 10.0       | 28.0        | 370          | 430                | 0.33        | 135          | 165                | 4.0       | 60/95            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                        | 58      | 375     | TC-L   | EC18/20         |                | 10.0       | 28.0        | 370          | 430                | 0.33        | 135          | 165                | 4.0       | 60/95            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                      | 58      | 375     | TC-L   | EC36/40         | 89000334       | 7.2        | 43.2        | 370          | 580                | 0.51        | 209          | 344                | 3.5       | 50/130           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                        | 87      | 345     | TC-F   | EC18/20         |                | 8.9        | 32.9        | 345          | 430                | 0.42        | 159          | 208                | 3.5       | 60/95            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                        | 87      | 345     | TC-L   | EC18/20         |                | 8.9        | 32.9        | 345          | 430                | 0.42        | 159          | 208                | 3.5       | 60/95            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                        | 105     | 325     | TC-D   | EC18/20         |                | 7.7        | 33.7        | 315          | 430                | 0.46        | 163          | 233                | 3.0       | 60/95            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                        | 105     | 325     | TC-T   | EC18/20         |                | 7.7        | 34.2        | 315          | 430                | 0.47        | 165          | 237                | 3.0       | 60/95            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 28                        | 108     | 320     | TC-DD  | EC18/20         |                | 7.7        | 36.1        | 315          | 410                | 0.50        | 174          | 238                | 3.0       | 60/95            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                        | 106     | 435     | TC-F   | EC36/40         | 89000334       | 10.0       | 46.0        | 415          | 630                | 0.48        | 222          | 354                | 4.0       | 55/160           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                        | 106     | 435     | TC-L   | EC36/40         | 89000334       | 10.0       | 46.0        | 415          | 630                | 0.48        | 222          | 354                | 4.0       | 55/160           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 38                        | 110     | 430     | TC-DD  | EC36/40         | 89000334       | 10.0       | 48.5        | 415          | 630                | 0.51        | 234          | 373                | 3.5       | 55/160           | 50       | 1      | 150.0  | 135.5       | 0.55   |

## Notes

Other wattages available on request.

\* Lamps not included in IEC 60081 or IEC 60901.

\*\* Ballasts suitable for use in Class F luminaires.

Refer to Energy Classification System table for ballasts from CELMA and/or MEPS.

## 240 V 50 Hz – EC energy control ballasts

| Lamp                             |         |         |        | Ballast         |                | Electrical |             |              |                    |            |              |                    |           | Thermal         | Physical |        |        |             |        |
|----------------------------------|---------|---------|--------|-----------------|----------------|------------|-------------|--------------|--------------------|------------|--------------|--------------------|-----------|-----------------|----------|--------|--------|-------------|--------|
| wattage                          | voltage | current | length | type            | article number | loss hot   | input power | lamp current | lamp start current | circuit PF | line current | line start current | capacitor | normal/abnormal | stack    | figure | length | mtg centres | weight |
| W                                | V       | mA      | mm     |                 |                | W          | W           | mA           | mA                 | cosφ       | mA@0.9PF     | mA@0.9PF           | μF0.9PF   | Δt              | mm       |        | mm     | mm          | kg     |
| <b>Linear and circular lamps</b> |         |         |        |                 |                |            |             |              |                    |            |              |                    |           |                 |          |        |        |             |        |
| 4                                | 29      | 170     | 150    | EC4/6/8         | 89000114       | 5.5        | 10.0        | 165          | 170                | 0.25       | 46           | 50                 | 2.0       | 60/95           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 6                                | 42      | 160     | 225    | EC4/6/8         | 89000114       | EEl=B2     | 11.2        | 155          | 170                | 0.30       | 52           | 60                 | 2.0       | 60/95           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x6                              | 42      | 160     | 225    | EC13            | 89000037       | 4.4        | 16.4        | 160          | 215                | 0.43       | 76           | 107                | 1.5       | 55/105          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 8                                | 56      | 145     | 300    | EC4/6/8         | 89000114       | EEl=B2     | 11.9        | 145          | 170                | 0.34       | 55           | 68                 | 1.5       | 60/95           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x8                              | 56      | 145     | 300    | EC13            | 89000037       | 4.0        | 18.2        | 145          | 215                | 0.52       | 84           | 131                | 1.5       | 55/105          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 49      | 230     | 330    | EC10*           | 89000184       | 7.0        | 17.0        | 225          | 245                | 0.31       | 79           | 90                 | 3.0       | 40/105          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 13                               | 95      | 165     | 525    | EC13            | 89000037       | EEl=B2     | 17.5        | 165          | 215                | 0.44       | 81           | 111                | 1.5       | 55/105          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 15                               | 55      | 310     | 450    | EC15            |                | 9.0        | 24.0        | 310          | 360                | 0.32       | 111          | 135                | 3.5       | 60/90           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 15                               | 57      | 300     | 550    | EC15 ES8*       |                | 9.0        | 24.0        | 300          | 340                | 0.33       | 111          | 132                | 3.5       | 50/85           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 57      | 370     | 600    | EC18/20         | 89000200       | 10.3       | 28.3        | 370          | 425                | 0.32       | 131          | 158                | 4.0       | 60/95           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                             | 57      | 370     | 600    | EC36/40         | 89000319       | 7.5        | 43.5        | 370          | 560                | 0.49       | 201          | 320                | 3.5       | 50/130          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 20                               | 57      | 370     | 600    | EC18/20         | 89000200       | 10.3       | 29.6        | 370          | 425                | 0.33       | 137          | 165                | 4.0       | 60/95           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x20                             | 57      | 370     | 600    | EC36/40         | 89000319       | 7.5        | 46.1        | 370          | 560                | 0.52       | 213          | 339                | 3.0       | 50/130          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 22                               | 62      | 400     | Ø210   | EC22            | 89000263       | 11.5       | 33.5        | 400          | 450                | 0.35       | 155          | 183                | 5.0       | 65/135          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 23                               |         | 290     | 970    | EC18/20         | 89000200       | 7.9        | 27.2        | 290          | 425                | 0.39       | 126          | 194                | 3.0       | 60/95           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 30                               | 96      | 365     | 900    | EC30            |                | 10.5       | 40.5        | 365          | 450                | 0.46       | 187          | 243                | 3.5       | 65/135          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 30                               | 55      | 610     | Ø224   | EC30L           |                | 15.0       | 45.0        | 600          | 660                | 0.31       | 208          | 241                | 7.0       | 55/100          | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 32                               | 81      | 450     | Ø305   | EC32            | 89000307       | 11.0       | 43.0        | 430          | 520                | 0.42       | 199          | 253                | 4.0       | 60/130          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 32                               | 135     | 265     | 1,200  | EC32H*          |                | 5.9        | 36.4        | 265          | 445                | 0.57       | 169          | 297                | 2.0       | 40/60           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 33                               | 103     | 380     | 1,150  | EC33 ES8*       |                | 9.5        | 42.5        | 380          | 500                | 0.47       | 197          | 272                | 3.5       | 50/130          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 103     | 430     | 1,200  | EC36/40         | 89000319       | 10.0       | 46.0        | 415          | 625                | 0.46       | 213          | 337                | 4.0       | 60/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 103     | 430     | 1,200  | EC36/40(54mm)** |                | 10.0       | 46.0        | 415          | 605                | 0.46       | 213          | 326                | 4.0       | 60/145          | 54       | 1      | 150.0  | 135.5       | 0.60   |
| 40                               | 103     | 430     | 1,200  | EC36/40         | 89000319       | 10.0       | 49.5        | 415          | 625                | 0.50       | 229          | 362                | 3.5       | 60/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 58                               | 110     | 670     | 1,500  | EC58/65         |                | 13.0       | 71.0        | 660          | 940                | 0.45       | 329          | 492                | 6.0       | 60/145          | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 65                               | 110     | 670     | 1,500  | EC58/65         |                | 13.0       | 77.0        | 660          | 940                | 0.49       | 356          | 533                | 6.0       | 60/145          | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 75                               | 120     | 670     | 1,800  | EC75            |                | 12.5       | 87.5        | 660          | 950                | 0.55       | 405          | 612                | 5.0       | 55/150          | 90       | 1      | 195.0  | 180.0       | 1.00   |
| <b>Compact lamps</b>             |         |         |        |                 |                |            |             |              |                    |            |              |                    |           |                 |          |        |        |             |        |
| 5                                | 35      | 180     | TC-S   | EC9             | 89000128       | 5.7        | 11.1        | 180          | 187                | 0.26       | 51           | 56                 | 2.0       | 60/75           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x5                              | 35      | 180     | TC-S   | EC13            | 89000037       | 4.8        | 15.6        | 175          | 215                | 0.37       | 72           | 93                 | 2.0       | 55/105          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 7                                | 47      | 175     | TC-S   | EC9             | 89000128       | EEl=B2     | 12.6        | 175          | 187                | 0.30       | 58           | 65                 | 2.0       | 60/75           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x7                              | 47      | 175     | TC-S   | EC13            | 89000037       | 4.5        | 18.7        | 165          | 215                | 0.47       | 87           | 118                | 1.5       | 55/105          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 9                                | 60      | 170     | TC-S   | EC9             | 89000128       | EEl=B2     | 13.9        | 165          | 187                | 0.35       | 64           | 77                 | 2.0       | 60/75           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x9                              | 60      | 170     | TC-S   | EC13            | 89000037       | 4.2        | 22.0        | 155          | 215                | 0.59       | 102          | 149                | 1.5       | 55/105          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 64      | 190     | TC-D   | EC13            | 89000037       | 5.0        | 15.0        | 185          | 215                | 0.34       | 70           | 85                 | 2.0       | 55/105          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 72      | 180     | TC-DD  | EC13            | 89000037       | 4.8        | 15.3        | 175          | 215                | 0.36       | 71           | 91                 | 2.0       | 55/105          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 11                               | 91      | 155     | TC-S   | EC9             | 89000128       | EEl=B2     | 16.7        | 155          | 187                | 0.45       | 77           | 98                 | 1.5       | 60/75           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 91      | 175     | TC-D   | EC13            | 89000037       | EEl=B2     | 17.6        | 170          | 215                | 0.43       | 82           | 108                | 2.0       | 55/105          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 91      | 175     | TC-T   | EC13            | 89000037       | EEl=B2     | 17.6        | 170          | 215                | 0.43       | 82           | 108                | 2.0       | 55/105          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                               | 58      | 375     | TC-F   | EC18/20         | 89000200       | 10.3       | 28.3        | 370          | 425                | 0.32       | 131          | 158                | 4.0       | 60/95           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 58      | 375     | TC-L   | EC18/20         | 89000200       | 10.3       | 28.3        | 370          | 425                | 0.32       | 131          | 158                | 4.0       | 60/95           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                             | 58      | 375     | TC-L   | EC36/40         | 89000319       | 7.5        | 43.5        | 370          | 560                | 0.49       | 201          | 320                | 3.5       | 50/130          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                               | 87      | 345     | TC-F   | EC18/20         | 89000200       | 9.2        | 33.2        | 345          | 425                | 0.40       | 154          | 199                | 3.5       | 60/95           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                               | 87      | 345     | TC-L   | EC18/20         | 89000200       | 9.2        | 33.2        | 345          | 425                | 0.40       | 154          | 199                | 3.5       | 60/95           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                               | 105     | 325     | TC-D   | EC18/20         | 89000200       | 7.9        | 33.9        | 315          | 425                | 0.45       | 157          | 222                | 3.0       | 60/95           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                               | 105     | 325     | TC-T   | EC18/20         | 89000200       | 7.9        | 34.4        | 315          | 425                | 0.45       | 159          | 226                | 3.0       | 60/95           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 28                               | 108     | 320     | TC-DD  | EC18/20         | 89000200       | 7.9        | 36.3        | 315          | 410                | 0.48       | 168          | 230                | 3.0       | 60/95           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 106     | 435     | TC-F   | EC36/40         | 89000319       | 10.0       | 46.0        | 415          | 625                | 0.46       | 213          | 337                | 4.0       | 60/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 106     | 435     | TC-L   | EC36/40         | 89000319       | 10.0       | 46.0        | 415          | 625                | 0.46       | 213          | 337                | 4.0       | 60/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 38                               | 110     | 430     | TC-DD  | EC36/40         | 89000319       | 10.0       | 48.5        | 415          | 625                | 0.49       | 225          | 355                | 3.5       | 60/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |

## Notes

Other wattages available on request.

\* Lamps not included in IEC 60081 or IEC 60901.

\*\* Ballasts suitable for use in Class F luminaires.

Refer to Energy Classification System table for ballasts from CELMA and/or MEPS.



## 250 V 50 Hz – EC energy control ballasts

| Lamp                      |         |         |        | Ballast |                | Electrical |             |              |                    |             |              |                    |           | Thermal          | Physical |        |        |             |        |
|---------------------------|---------|---------|--------|---------|----------------|------------|-------------|--------------|--------------------|-------------|--------------|--------------------|-----------|------------------|----------|--------|--------|-------------|--------|
| wattage                   | voltage | current | length | type    | article number | loss hot   | input power | lamp current | lamp start current | circuit P F | line current | line start current | capacitor | normal/ abnormal | stack    | figure | length | mtg centres | weight |
| W                         | V       | mA      | mm     |         |                | W          | W           | mA           | mA                 | cosφ        | mA@0.9PF     | mA@0.9PF           | μF0.9PF   | Δt               | mm       |        | mm     | mm          | kg     |
| Linear and circular lamps |         |         |        |         |                |            |             |              |                    |             |              |                    |           |                  |          |        |        |             |        |
| 4                         | 29      | 170     | 150    | EC4/6/8 |                | 6.0        | 10.5        | 165          | 170                | 0.25        | 47           | 50                 | 2.0       | 60/95            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 6                         | 42      | 160     | 225    | EC4/6/8 |                | EEl=B2     | 11.6        | 155          | 170                | 0.30        | 52           | 60                 | 2.0       | 60/95            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x6                       | 42      | 160     | 225    | EC13    |                | 4.8        | 16.8        | 160          | 215                | 0.42        | 75           | 106                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 8                         | 56      | 145     | 300    | EC4/6/8 |                | EEl=B2     | 12.4        | 145          | 170                | 0.34        | 55           | 68                 | 1.5       | 60/95            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x8                       | 56      | 145     | 300    | EC13    |                | 4.4        | 18.6        | 145          | 215                | 0.51        | 83           | 129                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                        | 49      | 230     | 330    | EC10*   |                | 7.2        | 17.2        | 225          | 245                | 0.31        | 76           | 87                 | 3.0       | 40/105           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 13                        | 95      | 165     | 525    | EC13    |                | EEl=B2     | 18.0        | 165          | 215                | 0.44        | 80           | 109                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 15                        | 55      | 310     | 450    | EC15    |                | 9.2        | 24.2        | 310          | 360                | 0.31        | 108          | 131                | 3.5       | 60/90            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                        | 57      | 370     | 600    | EC18/20 |                | 10.6       | 28.6        | 370          | 425                | 0.31        | 127          | 153                | 4.0       | 60/95            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                      | 57      | 370     | 600    | EC36/40 |                | 7.8        | 43.8        | 370          | 560                | 0.47        | 195          | 309                | 3.5       | 50/130           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 20                        | 57      | 370     | 600    | EC18/20 |                | 10.6       | 29.9        | 370          | 425                | 0.32        | 133          | 160                | 4.0       | 60/95            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x20                      | 57      | 370     | 600    | EC36/40 |                | 7.8        | 46.4        | 370          | 560                | 0.50        | 206          | 328                | 3.0       | 50/130           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 22                        | 62      | 400     | Ø210   | EC22    |                | 12.0       | 34.0        | 400          | 450                | 0.34        | 151          | 179                | 4.0       | 65/135           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 30                        | 96      | 365     | 900    | EC30    |                | 11.0       | 41.0        | 365          | 450                | 0.45        | 182          | 236                | 3.5       | 65/135           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 30                        | 55      | 610     | Ø224   | EC30L   |                | 15.5       | 45.5        | 600          | 660                | 0.30        | 202          | 234                | 7.0       | 55/100           | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 32                        | 81      | 450     | Ø305   | EC32    | 89000310       | 11.0       | 43.0        | 430          | 520                | 0.40        | 191          | 243                | 4.0       | 65/130           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 32                        | 135     | 265     | 1,200  | EC32H*  |                | 6.0        | 36.5        | 265          | 445                | 0.55        | 162          | 286                | 2.0       | 40/60            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                        | 103     | 430     | 1,200  | EC36/40 |                | 10.0       | 46.0        | 415          | 625                | 0.44        | 204          | 323                | 4.0       | 60/160           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 40                        | 103     | 430     | 1,200  | EC36/40 |                | 10.0       | 49.5        | 415          | 625                | 0.48        | 220          | 348                | 3.5       | 60/160           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 58                        | 110     | 670     | 1,500  | EC58/65 |                | 13.0       | 71.0        | 660          | 940                | 0.43        | 316          | 472                | 6.0       | 60/145           | 90       | 1      | 195.0  | 180.0       | 1.00   |
| 65                        | 110     | 670     | 1,500  | EC58/65 |                | 13.0       | 77.0        | 660          | 940                | 0.47        | 342          | 512                | 6.0       | 60/145           | 90       | 1      | 195.0  | 180.0       | 1.00   |
| Compact lamps             |         |         |        |         |                |            |             |              |                    |             |              |                    |           |                  |          |        |        |             |        |
| 5                         | 35      | 180     | TC-S   | EC9     |                | 6.2        | 11.6        | 180          | 187                | 0.26        | 51           | 56                 | 2.0       | 60/75            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x5                       | 35      | 180     | TC-S   | EC13    |                | 5.3        | 16.1        | 175          | 215                | 0.37        | 72           | 92                 | 2.0       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 7                         | 47      | 175     | TC-S   | EC9     |                | EEl=B2     | 13.1        | 175          | 187                | 0.30        | 58           | 65                 | 2.0       | 60/75            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x7                       | 47      | 175     | TC-S   | EC13    |                | 5.0        | 19.2        | 165          | 215                | 0.47        | 85           | 117                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 9                         | 60      | 170     | TC-S   | EC9     |                | EEl=B2     | 14.4        | 165          | 187                | 0.35        | 64           | 76                 | 2.0       | 60/75            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x9                       | 60      | 170     | TC-S   | EC13    |                | 4.7        | 22.5        | 155          | 215                | 0.58        | 100          | 146                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                        | 64      | 190     | TC-D   | EC13    |                | 5.6        | 15.6        | 185          | 215                | 0.34        | 69           | 85                 | 2.0       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                        | 72      | 180     | TC-DD  | EC13    |                | 5.3        | 15.8        | 175          | 215                | 0.36        | 70           | 91                 | 2.0       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 11                        | 91      | 155     | TC-S   | EC9     |                | EEl=B2     | 17.1        | 155          | 187                | 0.44        | 76           | 96                 | 1.5       | 60/75            | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                        | 91      | 175     | TC-D   | EC13    |                | EEl=B2     | 18.2        | 170          | 215                | 0.43        | 81           | 107                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                        | 91      | 175     | TC-T   | EC13    |                | EEl=B2     | 18.2        | 170          | 215                | 0.43        | 81           | 107                | 1.5       | 55/105           | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                        | 58      | 375     | TC-F   | EC18/20 |                | 10.6       | 28.6        | 370          | 425                | 0.31        | 127          | 153                | 4.0       | 60/95            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                        | 58      | 375     | TC-L   | EC18/20 |                | 10.6       | 28.6        | 370          | 425                | 0.31        | 127          | 153                | 4.0       | 60/95            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                      | 58      | 375     | TC-L   | EC36/40 |                | 7.8        | 43.8        | 370          | 560                | 0.47        | 195          | 309                | 3.5       | 50/130           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                        | 87      | 345     | TC-F   | EC18/20 |                | 9.5        | 33.5        | 345          | 425                | 0.39        | 149          | 192                | 3.5       | 60/95            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                        | 87      | 345     | TC-L   | EC18/20 |                | 9.5        | 33.5        | 345          | 425                | 0.39        | 149          | 192                | 3.5       | 60/95            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                        | 105     | 325     | TC-D   | EC18/20 |                | 8.1        | 34.1        | 315          | 425                | 0.43        | 152          | 215                | 3.0       | 60/95            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                        | 105     | 325     | TC-T   | EC18/20 |                | 8.1        | 34.6        | 315          | 425                | 0.44        | 154          | 218                | 3.0       | 60/95            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 28                        | 108     | 320     | TC-DD  | EC18/20 |                | 8.1        | 36.5        | 315          | 410                | 0.46        | 162          | 222                | 3.0       | 60/95            | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                        | 106     | 435     | TC-F   | EC36/40 |                | 10.0       | 46.0        | 415          | 625                | 0.44        | 204          | 323                | 4.0       | 60/160           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                        | 106     | 435     | TC-L   | EC36/40 |                | 10.0       | 46.0        | 415          | 625                | 0.44        | 204          | 323                | 4.0       | 60/160           | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 38                        | 110     | 430     | TC-DD  | EC36/40 |                | 10.0       | 48.5        | 415          | 625                | 0.47        | 216          | 341                | 3.5       | 60/160           | 50       | 1      | 150.0  | 135.5       | 0.55   |

## Notes

Other wattages available on request.

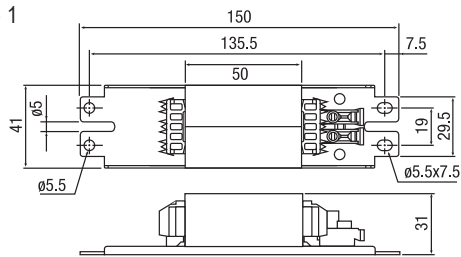
\* Lamps not included in IEC 60081 or IEC 60901.

Refer to Energy Classification System table for ballasts from CELMA and/or MEPS.

## EC optimized ballasts



figure 1



50 mm stack

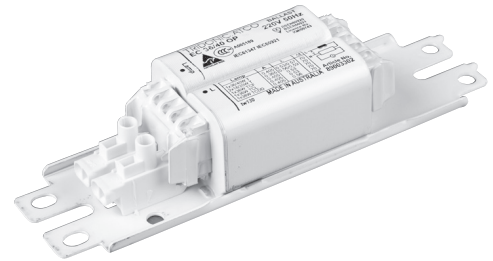
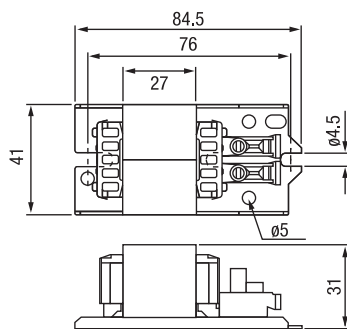


figure 2



27 mm stack

- slim cross-section and compact
- low magnetic stray field
- long service life
- vacuum impregnation
- non-audible noise level
- nomex class "H" gap for fixed calibration
- resistant to moisture and condensation
- 10 A push-in terminals (screw terminals on request)
- maximum winding temperature  $t_w$  130 °C

**100 % final testing**

- continuity
- winding short circuit
- core to coil high voltage test
- operating values

## 220 V 50 Hz – EC optimised ballasts

| Lamp                             |         |         |        | Ballast |                | Electrical |             |              |                    |            |              |                    |           | Thermal         | Physical |        |        |             |        |
|----------------------------------|---------|---------|--------|---------|----------------|------------|-------------|--------------|--------------------|------------|--------------|--------------------|-----------|-----------------|----------|--------|--------|-------------|--------|
| wattage                          | voltage | current | length | type    | article number | loss hot   | input power | lamp current | lamp start current | circuit PF | line current | line start current | capacitor | normal/abnormal | stack    | figure | length | mtg centres | weight |
| W                                | V       | mA      | mm     |         |                | W          | W           | mA           | mA                 | cosφ       | mA@0.9PF     | mA@0.9PF           | μF0.9PF   | Δt              | mm       |        | mm     | mm          | kg     |
| <b>Linear and circular lamps</b> |         |         |        |         |                |            |             |              |                    |            |              |                    |           |                 |          |        |        |             |        |
| 2x6                              | 42      | 160     | 225    | EC13    |                | 4.8        | 16.8        | 160          | 220                | 0.48       | 85           | 123                | 1.5       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x8                              | 56      | 145     | 300    | EC13    |                | 4.4        | 18.6        | 145          | 220                | 0.58       | 94           | 150                | 1.5       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 95      | 165     | 525    | EC13    |                | 5.0        | 18.0        | 165          | 220                | 0.50       | 91           | 127                | 1.5       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                               | 57      | 370     | 600    | EC18/20 | 89003329       | 11.3       | 29.3        | 370          | 440                | 0.36       | 148          | 185                | 5.0       | 65/100          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                             | 57      | 370     | 600    | EC36/40 | 89003302       | 8.9        | 44.9        | 365          | 640                | 0.56       | 227          | 418                | 3.0       | 70/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 20                               | 57      | 370     | 600    | EC18/20 | 89003329       | 11.3       | 30.6        | 370          | 440                | 0.38       | 155          | 193                | 4.0       | 65/100          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x20                             | 57      | 370     | 600    | EC36/40 | 89003302       | 8.9        | 47.5        | 365          | 640                | 0.59       | 240          | 442                | 3.0       | 70/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 103     | 430     | 1,200  | EC36/40 | 89003302       | 11.0       | 47.0        | 405          | 640                | 0.53       | 237          | 394                | 3.5       | 70/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 40                               | 103     | 430     | 1,200  | EC36/40 | 89003302       | 11.0       | 50.5        | 405          | 640                | 0.57       | 255          | 423                | 3.5       | 70/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| <b>Compact lamps</b>             |         |         |        |         |                |            |             |              |                    |            |              |                    |           |                 |          |        |        |             |        |
| 5                                | 35      | 180     | TC-S   | EC9     |                | 6.2        | 11.6        | 180          | 192                | 0.29       | 58           | 65                 | 3.0       | 55/80           | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 2x5                              | 35      | 180     | TC-S   | EC13    |                | 5.3        | 16.1        | 175          | 220                | 0.42       | 81           | 107                | 2.0       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 7                                | 47      | 175     | TC-S   | EC9     |                | 6.0        | 13.1        | 175          | 192                | 0.34       | 66           | 76                 | 2.0       | 55/80           | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 2x7                              | 47      | 175     | TC-S   | EC13    |                | 5.0        | 19.2        | 165          | 220                | 0.53       | 97           | 136                | 1.5       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 9                                | 60      | 170     | TC-S   | EC9     |                | 5.7        | 14.4        | 165          | 192                | 0.40       | 73           | 89                 | 2.0       | 55/80           | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 2x9                              | 60      | 170     | TC-S   | EC13    |                | 4.7        | 22.5        | 155          | 220                | 0.66       | 114          | 169                | 1.5       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 64      | 190     | TC-D   | EC13    |                | 5.6        | 15.6        | 185          | 220                | 0.38       | 79           | 98                 | 2.0       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 72      | 180     | TC-DD  | EC13    |                | 5.3        | 15.8        | 175          | 220                | 0.41       | 80           | 105                | 2.0       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 11                               | 91      | 155     | TC-S   | EC9     |                | 5.3        | 17.1        | 155          | 192                | 0.50       | 86           | 112                | 1.5       | 55/80           | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 13                               | 91      | 175     | TC-D   | EC13    |                | 5.2        | 18.2        | 170          | 220                | 0.49       | 92           | 125                | 2.0       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 91      | 175     | TC-T   | EC13    |                | 5.2        | 18.2        | 170          | 220                | 0.49       | 92           | 125                | 2.0       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                               | 100     | 220     | TC-D   | EC18H   |                | 6.8        | 24.8        | 220          | 285                | 0.51       | 125          | 170                | 2.0       | 65/125          | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 18                               | 58      | 375     | TC-F   | EC18/20 | 89003329       | 11.3       | 29.3        | 370          | 440                | 0.36       | 148          | 185                | 5.0       | 65/100          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 58      | 375     | TC-L   | EC18/20 | 89003329       | 11.3       | 29.3        | 370          | 440                | 0.36       | 148          | 185                | 5.0       | 65/100          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 100     | 225     | TC-T   | EC18H   |                | 6.8        | 24.8        | 220          | 285                | 0.51       | 125          | 170                | 2.0       | 65/125          | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 2x18                             | 58      | 375     | TC-L   | EC36/40 | 89003302       | 8.9        | 44.9        | 365          | 640                | 0.56       | 227          | 418                | 3.0       | 70/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                               | 87      | 345     | TC-F   | EC18/20 | 89003329       | 10.1       | 34.1        | 345          | 440                | 0.45       | 172          | 231                | 3.5       | 65/100          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                               | 87      | 345     | TC-L   | EC18/20 | 89003329       | 10.1       | 34.1        | 345          | 440                | 0.45       | 172          | 231                | 3.5       | 65/100          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                               | 105     | 325     | TC-D   | EC18/20 | 89003329       | 8.7        | 34.7        | 315          | 440                | 0.50       | 175          | 257                | 3.0       | 65/100          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                               | 105     | 325     | TC-T   | EC18/20 | 89003329       | 8.7        | 35.2        | 315          | 440                | 0.51       | 178          | 260                | 3.0       | 65/100          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 28                               | 108     | 320     | TC-DD  | EC18/20 | 89003329       | 8.7        | 37.1        | 315          | 440                | 0.53       | 187          | 275                | 3.0       | 65/100          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 106     | 435     | TC-F   | EC36/40 | 89003302       | 11.0       | 47.0        | 405          | 640                | 0.53       | 237          | 394                | 3.5       | 70/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 106     | 435     | TC-L   | EC36/40 | 89003302       | 11.0       | 47.0        | 405          | 640                | 0.53       | 237          | 394                | 3.5       | 70/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 38                               | 110     | 430     | TC-DD  | EC36/40 | 89003302       | 11.0       | 49.5        | 405          | 640                | 0.56       | 250          | 415                | 3.5       | 70/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |

## Notes

Other wattages available on request.

## 220 V 60 Hz – EC optimised ballasts

| Lamp                             |         |         |        | Ballast |                | Electrical |             |              |                    |            |              |                    |           | Thermal         | Physical |        |        |             |        |
|----------------------------------|---------|---------|--------|---------|----------------|------------|-------------|--------------|--------------------|------------|--------------|--------------------|-----------|-----------------|----------|--------|--------|-------------|--------|
| wattage                          | voltage | current | length | type    | article number | loss hot   | input power | lamp current | lamp start current | circuit PF | line current | line start current | capacitor | normal/abnormal | stack    | figure | length | mtg centres | weight |
| W                                | V       | mA      | mm     |         |                | W          | W           | mA           | mA                 | cosφ       | mA@0.9PF     | mA@0.9PF           | μF0.9PF   | Δt              | mm       |        | mm     | mm          | kg     |
| <b>Linear and circular lamps</b> |         |         |        |         |                |            |             |              |                    |            |              |                    |           |                 |          |        |        |             |        |
| 2x6                              | 42      | 160     | 225    | EC13    |                | 4.8        | 16.8        | 160          | 220                | 0.48       | 85           | 123                | 1.5       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x8                              | 56      | 145     | 300    | EC13    |                | 4.4        | 18.6        | 145          | 220                | 0.58       | 94           | 150                | 1.5       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 95      | 165     | 525    | EC13    |                | 5.0        | 18.0        | 165          | 220                | 0.50       | 91           | 127                | 1.5       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                               | 57      | 370     | 600    | EC18/20 |                | 11.3       | 29.3        | 370          | 440                | 0.36       | 148          | 185                | 3.5       | 65/100          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                             | 57      | 370     | 600    | EC36/40 |                | 8.9        | 44.9        | 365          | 640                | 0.56       | 227          | 418                | 3.0       | 65/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 20                               | 57      | 370     | 600    | EC18/20 |                | 11.3       | 30.6        | 370          | 440                | 0.38       | 155          | 193                | 3.5       | 65/100          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x20                             | 57      | 370     | 600    | EC36/40 |                | 8.9        | 47.5        | 365          | 640                | 0.59       | 240          | 442                | 3.0       | 65/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 103     | 430     | 1,200  | EC36/40 |                | 11.0       | 47.0        | 405          | 640                | 0.53       | 237          | 394                | 3.0       | 65/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 40                               | 103     | 430     | 1,200  | EC36/40 |                | 11.0       | 50.5        | 405          | 640                | 0.57       | 255          | 423                | 3.0       | 65/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| <b>Compact lamps</b>             |         |         |        |         |                |            |             |              |                    |            |              |                    |           |                 |          |        |        |             |        |
| 5                                | 35      | 180     | TC-S   | EC9     |                | 6.2        | 11.6        | 180          | 192                | 0.29       | 58           | 65                 | 2.0       | 55/80           | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 2x5                              | 35      | 180     | TC-S   | EC13    |                | 5.3        | 16.1        | 175          | 220                | 0.42       | 81           | 107                | 1.5       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 7                                | 47      | 175     | TC-S   | EC9     |                | 6.0        | 13.1        | 175          | 192                | 0.34       | 66           | 76                 | 2.0       | 55/80           | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 2x7                              | 47      | 175     | TC-S   | EC13    |                | 5.0        | 19.2        | 165          | 220                | 0.53       | 97           | 136                | 1.5       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 9                                | 60      | 170     | TC-S   | EC9     |                | 5.7        | 14.4        | 165          | 192                | 0.40       | 73           | 89                 | 1.5       | 55/80           | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 2x9                              | 60      | 170     | TC-S   | EC13    |                | 4.7        | 22.5        | 155          | 220                | 0.66       | 114          | 169                | 1.5       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 64      | 190     | TC-D   | EC13    |                | 5.6        | 15.6        | 185          | 220                | 0.38       | 79           | 98                 | 2.0       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 72      | 180     | TC-DD  | EC13    |                | 5.3        | 15.8        | 175          | 220                | 0.41       | 80           | 105                | 1.5       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 11                               | 91      | 155     | TC-S   | EC9     |                | 5.3        | 17.1        | 155          | 192                | 0.50       | 86           | 112                | 1.5       | 55/80           | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 13                               | 91      | 175     | TC-D   | EC13    |                | 5.2        | 18.2        | 170          | 220                | 0.49       | 92           | 125                | 1.5       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 91      | 175     | TC-T   | EC13    |                | 5.2        | 18.2        | 170          | 220                | 0.49       | 92           | 125                | 1.5       | 55/110          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                               | 100     | 220     | TC-D   | EC18H   |                | 6.8        | 24.8        | 220          | 285                | 0.51       | 125          | 170                | 2.0       | 65/125          | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 18                               | 58      | 375     | TC-F   | EC18/20 |                | 11.3       | 29.3        | 370          | 440                | 0.36       | 148          | 185                | 3.5       | 65/100          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 58      | 375     | TC-L   | EC18/20 |                | 11.3       | 29.3        | 370          | 440                | 0.36       | 148          | 185                | 3.5       | 65/100          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 100     | 225     | TC-T   | EC18H   |                | 6.8        | 24.8        | 220          | 285                | 0.51       | 125          | 170                | 2.0       | 65/125          | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 2x18                             | 58      | 375     | TC-L   | EC36/40 |                | 8.9        | 44.9        | 365          | 640                | 0.56       | 227          | 418                | 3.0       | 65/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                               | 87      | 345     | TC-F   | EC18/20 |                | 10.1       | 34.1        | 345          | 440                | 0.45       | 172          | 231                | 3.0       | 65/100          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                               | 87      | 345     | TC-L   | EC18/20 |                | 10.1       | 34.1        | 345          | 440                | 0.45       | 172          | 231                | 3.0       | 65/100          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                               | 105     | 325     | TC-D   | EC18/20 |                | 8.7        | 34.7        | 315          | 440                | 0.50       | 175          | 257                | 3.0       | 65/100          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                               | 105     | 325     | TC-T   | EC18/20 |                | 8.7        | 35.2        | 315          | 440                | 0.51       | 178          | 260                | 3.0       | 65/100          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 28                               | 108     | 320     | TC-DD  | EC18/20 |                | 8.7        | 37.1        | 315          | 440                | 0.53       | 187          | 275                | 3.0       | 65/100          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 106     | 435     | TC-F   | EC36/40 |                | 11.0       | 47.0        | 405          | 640                | 0.53       | 237          | 394                | 3.0       | 65/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 106     | 435     | TC-L   | EC36/40 |                | 11.0       | 47.0        | 405          | 640                | 0.53       | 237          | 394                | 3.0       | 65/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 38                               | 110     | 430     | TC-DD  | EC36/40 |                | 11.0       | 49.5        | 405          | 640                | 0.56       | 250          | 415                | 3.0       | 65/160          | 50       | 1      | 150.0  | 135.5       | 0.55   |

## Notes

Other wattages available on request.

## 230 V 50 Hz – EC optimised ballasts

| Lamp                             |         |         |        | Ballast |                | Electrical |             |              |                    |             |              |                    |           | Thermal         | Physical |        |        |             |        |
|----------------------------------|---------|---------|--------|---------|----------------|------------|-------------|--------------|--------------------|-------------|--------------|--------------------|-----------|-----------------|----------|--------|--------|-------------|--------|
| wattage                          | voltage | current | length | type    | article number | loss hot   | input power | lamp current | lamp start current | circuit P F | line current | line start current | capacitor | normal/abnormal | stack    | figure | length | mtg centres | weight |
| W                                | V       | mA      | mm     |         |                | W          | W           | mA           | mA                 | cosφ        | mA@0.9PF     | mA@0.9PF           | µF0.9PF   | Δt              | mm       |        | mm     | mm          | kg     |
| <b>Linear and circular lamps</b> |         |         |        |         |                |            |             |              |                    |             |              |                    |           |                 |          |        |        |             |        |
| 2x6                              | 42      | 160     | 225    | EC13    |                | 4.8        | 16.8        | 160          | 215                | 0.46        | 81           | 115                | 1.5       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x8                              | 56      | 145     | 300    | EC13    |                | 4.4        | 18.6        | 145          | 215                | 0.56        | 90           | 140                | 1.5       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 95      | 165     | 525    | EC13    |                | 5.0        | 18.0        | 165          | 215                | 0.47        | 87           | 119                | 1.5       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                               | 57      | 370     | 600    | EC18/20 |                | 12.0       | 30.0        | 370          | 430                | 0.35        | 145          | 177                | 4.0       | 70/105          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                             | 57      | 370     | 600    | EC36/40 | 89002896       | 9.7        | 45.7        | 365          | 630                | 0.54        | 221          | 400                | 3.0       | 70/170          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 20                               | 57      | 370     | 600    | EC18/20 |                | 12.0       | 31.3        | 370          | 430                | 0.37        | 151          | 185                | 4.0       | 70/105          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x20                             | 57      | 370     | 600    | EC36/40 | 89002896       | 9.7        | 48.3        | 365          | 630                | 0.58        | 233          | 423                | 3.0       | 70/170          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 103     | 430     | 1,200  | EC36/40 | 89002896       | 12.0       | 48.0        | 405          | 630                | 0.52        | 232          | 379                | 3.5       | 70/170          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 40                               | 103     | 430     | 1,200  | EC36/40 | 89002896       | 12.0       | 51.5        | 405          | 630                | 0.55        | 249          | 406                | 3.5       | 70/170          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| <b>Compact lamps</b>             |         |         |        |         |                |            |             |              |                    |             |              |                    |           |                 |          |        |        |             |        |
| 5                                | 35      | 180     | TC-S   | EC9     |                | 6.2        | 11.6        | 180          | 187                | 0.28        | 56           | 61                 | 3.0       | 60/85           | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 2x5                              | 35      | 180     | TC-S   | EC13    |                | 5.3        | 16.1        | 175          | 215                | 0.40        | 78           | 100                | 2.0       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 7                                | 47      | 175     | TC-S   | EC9     |                | 6.0        | 13.1        | 175          | 187                | 0.33        | 63           | 71                 | 2.0       | 60/85           | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 2x7                              | 47      | 175     | TC-S   | EC13    |                | 5.0        | 19.2        | 165          | 215                | 0.51        | 93           | 127                | 1.5       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 9                                | 60      | 170     | TC-S   | EC9     |                | 5.7        | 14.4        | 165          | 187                | 0.38        | 69           | 83                 | 2.0       | 60/85           | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 2x9                              | 60      | 170     | TC-S   | EC13    |                | 4.7        | 22.5        | 155          | 215                | 0.63        | 109          | 158                | 1.5       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 64      | 190     | TC-D   | EC13    |                | 5.6        | 15.6        | 185          | 215                | 0.37        | 75           | 92                 | 2.0       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 72      | 180     | TC-DD  | EC13    |                | 5.3        | 15.8        | 175          | 215                | 0.39        | 76           | 98                 | 2.0       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 11                               | 91      | 155     | TC-S   | EC9     |                | 5.3        | 17.1        | 155          | 187                | 0.48        | 83           | 105                | 1.5       | 60/85           | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 13                               | 91      | 175     | TC-D   | EC13    |                | 5.2        | 18.2        | 170          | 215                | 0.46        | 88           | 116                | 2.0       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 91      | 175     | TC-T   | EC13    |                | 5.2        | 18.2        | 170          | 215                | 0.46        | 88           | 116                | 2.0       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                               | 100     | 220     | TC-D   | EC18H   |                | 7.2        | 25.2        | 220          | 280                | 0.50        | 122          | 163                | 2.0       | 70/130          | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 18                               | 58      | 375     | TC-F   | EC18/20 |                | 12.0       | 30.0        | 370          | 430                | 0.35        | 145          | 177                | 4.0       | 70/105          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 58      | 375     | TC-L   | EC18/20 |                | 12.0       | 30.0        | 370          | 430                | 0.35        | 145          | 177                | 4.0       | 70/105          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 100     | 225     | TC-T   | EC18H   |                | 7.2        | 25.2        | 220          | 280                | 0.50        | 122          | 163                | 2.0       | 70/130          | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 2x18                             | 58      | 375     | TC-L   | EC36/40 | 89002896       | 9.7        | 45.7        | 365          | 630                | 0.54        | 221          | 400                | 3.0       | 70/170          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                               | 87      | 345     | TC-F   | EC18/20 |                | 10.7       | 34.7        | 345          | 430                | 0.44        | 168          | 220                | 3.5       | 70/105          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                               | 87      | 345     | TC-L   | EC18/20 |                | 10.7       | 34.7        | 345          | 430                | 0.44        | 168          | 220                | 3.5       | 70/105          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                               | 105     | 325     | TC-D   | EC18/20 |                | 9.2        | 35.2        | 315          | 430                | 0.49        | 170          | 244                | 3.0       | 70/105          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                               | 105     | 325     | TC-T   | EC18/20 |                | 9.2        | 35.7        | 315          | 430                | 0.49        | 172          | 247                | 3.0       | 70/105          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 28                               | 108     | 320     | TC-DD  | EC18/20 |                | 9.2        | 37.6        | 315          | 430                | 0.52        | 182          | 260                | 3.0       | 70/105          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 106     | 435     | TC-F   | EC36/40 | 89002896       | 12.0       | 48.0        | 405          | 630                | 0.52        | 232          | 379                | 3.5       | 70/170          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 106     | 435     | TC-L   | EC36/40 | 89002896       | 12.0       | 48.0        | 405          | 630                | 0.52        | 232          | 379                | 3.5       | 70/170          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 38                               | 110     | 430     | TC-DD  | EC36/40 | 89002896       | 12.0       | 50.5        | 405          | 630                | 0.54        | 244          | 398                | 3.5       | 70/170          | 50       | 1      | 150.0  | 135.5       | 0.55   |

## Notes

Other wattages available on request.

## 240 V 50 Hz – EC optimised ballasts

| Lamp                             |         |         |        | Ballast |                | Electrical |             |              |                    |            |              |                    |           | Thermal         | Physical |        |        |             |        |
|----------------------------------|---------|---------|--------|---------|----------------|------------|-------------|--------------|--------------------|------------|--------------|--------------------|-----------|-----------------|----------|--------|--------|-------------|--------|
| wattage                          | voltage | current | length | type    | article number | loss hot   | input power | lamp current | lamp start current | circuit PF | line current | line start current | capacitor | normal/abnormal | stack    | figure | length | mtg centres | weight |
| W                                | V       | mA      | mm     |         |                | W          | W           | mA           | mA                 | cosφ       | mA@0.9PF     | mA@0.9PF           | μF0.9PF   | Δt              | mm       |        | mm     | mm          | kg     |
| <b>Linear and circular lamps</b> |         |         |        |         |                |            |             |              |                    |            |              |                    |           |                 |          |        |        |             |        |
| 2x6                              | 42      | 160     | 225    | EC13    |                | 5.3        | 17.3        | 160          | 215                | 0.45       | 80           | 113                | 1.5       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 2x8                              | 56      | 145     | 300    | EC13    |                | 4.8        | 19.0        | 145          | 215                | 0.55       | 88           | 137                | 1.5       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 95      | 165     | 525    | EC13    |                | 5.5        | 18.5        | 165          | 215                | 0.47       | 86           | 117                | 1.5       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                               | 57      | 370     | 600    | EC18/20 | 89002968       | 12.8       | 30.8        | 370          | 425                | 0.35       | 143          | 172                | 4.0       | 70/105          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x18                             | 57      | 370     | 600    | EC36/40 | 89003304       | 10.2       | 46.2        | 365          | 625                | 0.53       | 214          | 385                | 3.0       | 70/170          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 20                               | 57      | 370     | 600    | EC18/20 | 89002968       | 12.8       | 32.1        | 370          | 425                | 0.36       | 149          | 179                | 4.0       | 70/105          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 2x20                             | 57      | 370     | 600    | EC36/40 | 89003304       | 10.2       | 48.8        | 365          | 625                | 0.56       | 226          | 406                | 3.0       | 70/170          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 103     | 430     | 1,200  | EC36/40 | 89003304       | 12.5       | 48.5        | 405          | 625                | 0.50       | 225          | 364                | 3.5       | 70/170          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 40                               | 103     | 430     | 1,200  | EC36/40 | 89003304       | 12.5       | 52.0        | 405          | 625                | 0.53       | 241          | 390                | 3.5       | 70/170          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| <b>Compact lamps</b>             |         |         |        |         |                |            |             |              |                    |            |              |                    |           |                 |          |        |        |             |        |
| 5                                | 35      | 180     | TC-S   | EC9     |                | 6.7        | 12.1        | 180          | 187                | 0.28       | 56           | 61                 | 2.0       | 60/85           | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 2x5                              | 35      | 180     | TC-S   | EC13    |                | 5.8        | 16.6        | 175          | 215                | 0.40       | 77           | 99                 | 2.0       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 7                                | 47      | 175     | TC-S   | EC9     |                | 6.5        | 13.6        | 175          | 187                | 0.32       | 63           | 71                 | 2.0       | 60/85           | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 2x7                              | 47      | 175     | TC-S   | EC13    |                | 5.5        | 19.7        | 165          | 215                | 0.50       | 91           | 125                | 1.5       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 9                                | 60      | 170     | TC-S   | EC9     |                | 6.1        | 14.8        | 165          | 187                | 0.37       | 69           | 82                 | 2.0       | 60/85           | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 2x9                              | 60      | 170     | TC-S   | EC13    |                | 5.2        | 23.0        | 155          | 215                | 0.62       | 106          | 155                | 1.5       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 64      | 190     | TC-D   | EC13    |                | 6.2        | 16.2        | 185          | 215                | 0.36       | 75           | 91                 | 2.0       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 10                               | 72      | 180     | TC-DD  | EC13    |                | 5.8        | 16.3        | 175          | 215                | 0.39       | 76           | 98                 | 2.0       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 11                               | 91      | 155     | TC-S   | EC9     |                | 5.8        | 17.6        | 155          | 187                | 0.47       | 81           | 103                | 1.5       | 60/85           | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 13                               | 91      | 175     | TC-D   | EC13    |                | 5.7        | 18.7        | 170          | 215                | 0.46       | 86           | 115                | 1.5       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 13                               | 91      | 175     | TC-T   | EC13    |                | 5.7        | 18.7        | 170          | 215                | 0.46       | 86           | 115                | 1.5       | 60/115          | 27       | 2      | 84.5   | 76.0        | 0.33   |
| 18                               | 100     | 220     | TC-D   | EC18H   |                | 7.5        | 25.5        | 220          | 280                | 0.48       | 118          | 158                | 2.0       | 70/130          | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 18                               | 58      | 375     | TC-F   | EC18/20 | 89002968       | 12.8       | 30.8        | 370          | 425                | 0.35       | 143          | 172                | 4.0       | 70/105          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 58      | 375     | TC-L   | EC18/20 | 89002968       | 12.8       | 30.8        | 370          | 425                | 0.35       | 143          | 172                | 4.0       | 70/105          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 18                               | 100     | 225     | TC-T   | EC18H   |                | 7.5        | 25.5        | 220          | 280                | 0.48       | 118          | 158                | 2.0       | 70/130          | 27       | 1      | 84.5   | 76.0        | 0.33   |
| 2x18                             | 58      | 375     | TC-L   | EC36/40 | 89003304       | 10.2       | 46.2        | 365          | 625                | 0.53       | 214          | 385                | 3.0       | 70/170          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                               | 87      | 345     | TC-F   | EC18/20 | 89002968       | 11.4       | 35.4        | 345          | 425                | 0.43       | 164          | 212                | 3.5       | 70/105          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 24                               | 87      | 345     | TC-L   | EC18/20 | 89002968       | 11.4       | 35.4        | 345          | 425                | 0.43       | 164          | 212                | 3.5       | 70/105          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                               | 105     | 325     | TC-D   | EC18/20 | 89002968       | 9.8        | 35.8        | 315          | 425                | 0.47       | 166          | 235                | 3.0       | 70/105          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 26                               | 105     | 325     | TC-T   | EC18/20 | 89002968       | 9.8        | 36.3        | 315          | 425                | 0.48       | 168          | 238                | 3.0       | 70/105          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 28                               | 108     | 320     | TC-DD  | EC18/20 | 89002968       | 9.8        | 38.2        | 315          | 425                | 0.51       | 177          | 251                | 3.0       | 70/105          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 106     | 435     | TC-F   | EC36/40 | 89003304       | 12.5       | 48.5        | 405          | 625                | 0.50       | 225          | 364                | 3.5       | 70/170          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 36                               | 106     | 435     | TC-L   | EC36/40 | 89003304       | 12.5       | 48.5        | 405          | 625                | 0.50       | 225          | 364                | 3.5       | 70/170          | 50       | 1      | 150.0  | 135.5       | 0.55   |
| 38                               | 110     | 430     | TC-DD  | EC36/40 | 89003304       | 12.5       | 51.0        | 405          | 625                | 0.52       | 236          | 383                | 3.5       | 70/170          | 50       | 1      | 150.0  | 135.5       | 0.55   |

## Notes

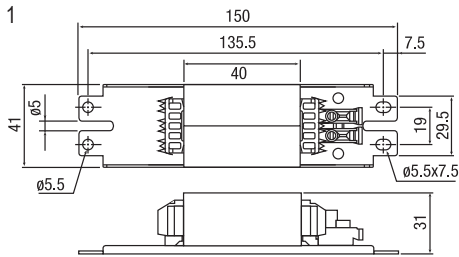
Other wattages available on request.



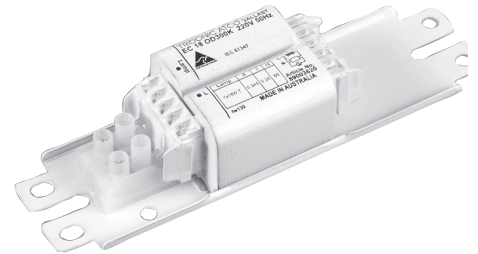
## EC lean ballasts



figure 1



40 mm stack



- slim cross-section and compact
- low magnetic stray field
- long service life
- vacuum impregnation
- non-audible noise level
- nomex class "H" gap for fixed calibration
- resistant to moisture and condensation
- 10 A push-in terminals (screw terminals on request)
- maximum winding temperature  $t_w$  130 °C

**100 % final testing**

- continuity
- winding short circuit
- core to coil high voltage test
- operating values

## 220 V 50 Hz, 220 V 60 Hz and 230 V 50 Hz – EC lean ballasts

| Lamp    |         |         |        | Ballast |                | Electrical |             |              |                    |             |              |                    |           | Thermal          | Physical |        |        |             |        |
|---------|---------|---------|--------|---------|----------------|------------|-------------|--------------|--------------------|-------------|--------------|--------------------|-----------|------------------|----------|--------|--------|-------------|--------|
| wattage | voltage | current | length | type    | article number | loss hot   | input power | lamp current | lamp start current | circuit P F | line current | line start current | capacitor | normal/ abnormal | stack    | figure | length | mtg centres | weight |
| W       | V       | mA      | mm     |         |                | W          | W           | mA           | mA                 | cosφ        | mA@0.9PF     | mA@0.9PF           | μF@0.9PF  | Δt               | mm       |        | mm     | mm          | kg     |

## 220 V 50 Hz

## Linear lamps

|    |     |     |       |                |          |     |      |     |     |      |     |     |     |        |    |   |       |       |      |
|----|-----|-----|-------|----------------|----------|-----|------|-----|-----|------|-----|-----|-----|--------|----|---|-------|-------|------|
| 18 | 57  | 370 | 600   | EC 18 OD100K   | 89003600 | 9.1 | 26.7 | 345 | 435 | 0.36 | 130 | 170 | 4.0 | 55/90  | 40 | 1 | 150.0 | 135.5 | 0.45 |
| 18 | 57  | 370 | 600   | EC 18 OD300K * | 89003620 | 9.1 | 26.7 | 345 | 435 | 0.36 | 130 | 170 | 4.0 | 55/90  | 40 | 1 | 150.0 | 135.5 | 0.45 |
| 36 | 103 | 430 | 1,200 | EC 36 OD100K   | 89003587 | 8   | 40.1 | 370 | 830 | 0.49 | 200 | 467 | 3.5 | 45/200 | 40 | 1 | 150.0 | 135.5 | 0.45 |
| 36 | 103 | 430 | 1,200 | EC 36 OD300K * | 89003606 | 8   | 40.1 | 370 | 830 | 0.49 | 200 | 467 | 3.5 | 45/200 | 40 | 1 | 150.0 | 135.5 | 0.45 |

## 220 V 60 Hz

## Linear lamps

|    |     |     |       |                |          |     |      |     |     |      |     |     |     |        |    |   |       |       |      |
|----|-----|-----|-------|----------------|----------|-----|------|-----|-----|------|-----|-----|-----|--------|----|---|-------|-------|------|
| 18 | 57  | 370 | 600   | EC 18 OD103K   | 89003601 | 8.8 | 26.6 | 350 | 435 | 0.35 | 190 | 145 | 3.5 | 55/90  | 40 | 1 | 150.0 | 135.5 | 0.45 |
| 18 | 57  | 370 | 600   | EC 18 OD303K * | 89003621 | 8.8 | 26.6 | 350 | 435 | 0.35 | 190 | 145 | 3.5 | 55/90  | 40 | 1 | 150.0 | 135.5 | 0.45 |
| 36 | 103 | 430 | 1,200 | EC 36 OD103K   | 89003602 | 8   | 41.8 | 385 | 665 | 0.49 | 210 | 375 | 3.0 | 50/180 | 40 | 1 | 150.0 | 135.5 | 0.45 |
| 36 | 103 | 430 | 1,200 | EC 36 OD303K * | 89003623 | 8   | 41.8 | 385 | 665 | 0.49 | 210 | 375 | 3.0 | 50/180 | 40 | 1 | 150.0 | 135.5 | 0.45 |

## 230 V 50 Hz

## Linear lamps

|    |     |     |       |                |          |     |      |     |     |      |     |     |     |        |    |   |       |       |      |
|----|-----|-----|-------|----------------|----------|-----|------|-----|-----|------|-----|-----|-----|--------|----|---|-------|-------|------|
| 18 | 57  | 370 | 600   | EC 18 OD101K   | 89003603 | 9.6 | 27.3 | 350 | 465 | 0.34 | 125 | 175 | 4.0 | 60/110 | 40 | 1 | 150.0 | 135.5 | 0.45 |
| 18 | 57  | 370 | 600   | EC 18 OD301K * | 89003622 | 9.6 | 27.3 | 350 | 465 | 0.34 | 125 | 175 | 4.0 | 60/110 | 40 | 1 | 150.0 | 135.5 | 0.45 |
| 36 | 103 | 430 | 1,200 | EC 36 OD101K   | 89003604 | 8.8 | 39.6 | 360 | 650 | 0.49 | 185 | 355 | 3.5 | 55/200 | 40 | 1 | 150.0 | 135.5 | 0.45 |
| 36 | 103 | 430 | 1,200 | EC 36 OD301K * | 89003624 | 8.8 | 39.6 | 360 | 650 | 0.49 | 185 | 355 | 3.5 | 55/200 | 40 | 1 | 150.0 | 135.5 | 0.45 |

## Notes

Other wattages available on request.

\* With screw terminals

|                                                             |             |
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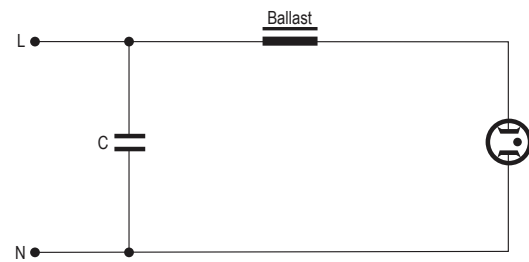


## High-pressure mercury vapour (HM) lamps

The high-pressure mercury vapour (HM) lamps are used in a wide variety of applications.

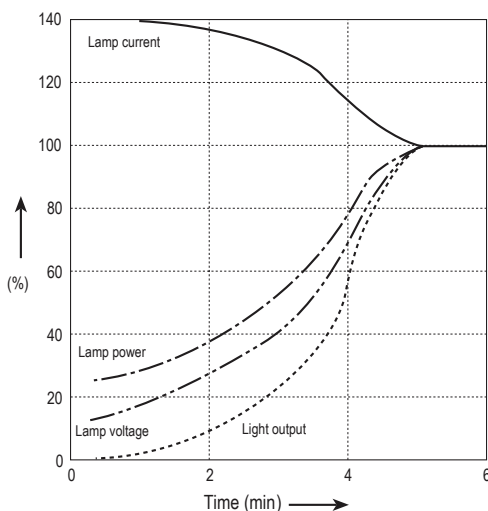
Ambient temperature has little, if any, effect on the performance of these lamps as the temperature in the discharge tube is usually over 500°C. Most high - pressure mercury vapour lamps will strike and operate from -30°C on standard control equipment. Once struck, the upper ambient temperature limit is determined by the maximum allowable lamp cap and bulb temperatures.

High-pressure mercury vapour lamps require a cooling period of approximately 5-10 minutes before they will reignite. These lamps are not affected by short-term mains voltage variations. However, prolonged operation at other than normal wattage should be avoided if full lamp life is expected. Stroboscopic effects should be minimised by operating adjacent lamps on different phases or using lead / lag control equipment. Flicker factors for good quality lamps should be 3 % or less.



Single-voltage circuit for mercury vapour lamps

No ignitor is required for starting high-pressure mercury lamps. In order to achieve the performance values, 3 basic types of ballasts are offered and tapped versions which can be adjusted to various supply voltages are also available. With the aid of power tapplings on the ballasts, e.g. OMB 125/80, and a power switch, high-pressure mercury vapour lamps can be step-dimmed to 50% of the standard output.



Unlike fluorescent lamps, mercury vapour lamps require several minutes to develop full light output as shown by these starting curves for a 400 W mercury vapour lamp

## Metal halide (HI) lamps

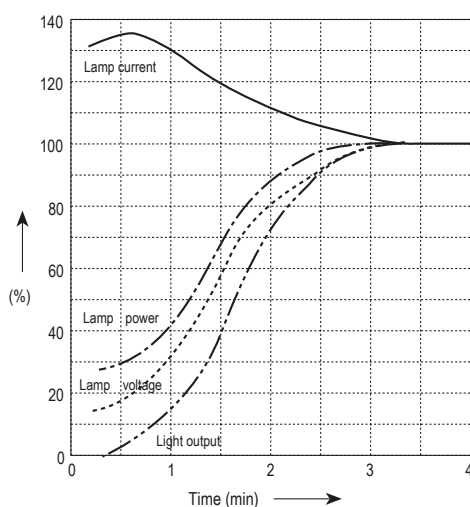
Metal halide (HI) lamps are similar in their construction to mercury vapour lamps. They are popular for their excellent colour rendering which is achieved by the inclusion of rare earth elements in the discharge tube.

Metal halide lamps are temperature sensitive and operate optimal at 100°C to 180°C ambient temperature and luminaires should be designed to provide suitable conditions. Ballasts must operate lamps from the correct supply voltage and their impedance should not vary more than  $\pm 3\%$  from the specified value. The supply voltage should not deviate for extended periods of more than 3% of the nominal rated voltage of the ballast and the supply frequency should not deviate by more than  $\pm 3\%$ .

Metal halide lamps require higher voltages for starting than the usual supply voltages. Various circuits are used to achieve the required starting conditions. They are leakage reactance ballasts, constant wattage auto-transformer control equipment or series reactor type ballasts with ignitor. The latter is the most economical solution.

Most metal halide lamps will require an ignitor to start the discharge in the arc. The ignition voltage is generally 4.0 - 5.0 kV peak for a cold start with the lamps requiring a cooling period of between 10-15 minutes before they will re-ignite. Certain lamps are capable of hot re-ignition in which cases voltages of up to 35kV peak are required. Some of the higher wattage 2,000 and 3,500 W lamps can require hot instant re-strike voltages of up to 60 kV peak.

Note: Not all makes and / or types of metal halide lamps can be operated on ignitor circuits – consult the lamp manufacturer or CMP for information or lamp control gear compatibility.



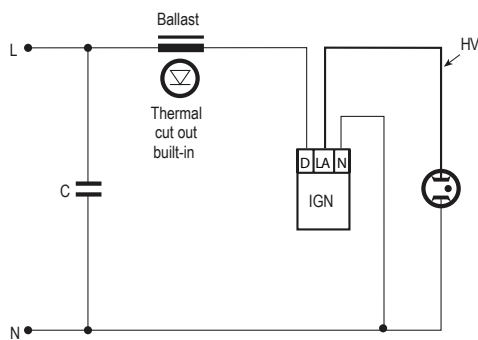
Similar to the mercury vapour lamps, metal halide lamps also require several minutes to develop full light output as is illustrated by the starting curves for a 400 W metal halide lamp

### Control gear protection for compact metal halide lamps

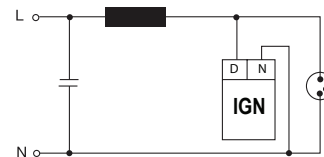
The concentrated optics of short-arc metal halide lamps are ideal for compact luminaire designs, particularly in ratings of 20, 35, 70 and 150W. However, as some of these particular type of metal halide lamps age, they may become polarised. The polarisation superimposes a d.c. component on the a.c. lamp current. The combination of the a.c. and d.c. components results in a higher than normal current to flow ( up to three times the nominal current ) causing overheating of the control equipment.

Because of this characteristic, the IEC International Standards have published data on short-arc metal halide lamps which states: "Because of the possible risk of abnormal operating conditions that may occur at the end of lamp life which can lead to ballast overloading, suitable protected circuits shall be used for operation of this lamp."

Circuit protection can be provided in a number of ways. However, the most common is a self-resetting thermal cut-out against the ballast winding. This switches the circuit off when the temperature of the ballast increases beyond the maximum permissible winding temperature. Once the device cools down, the lamp will re-ignite and the circuit will continue to cycle. Bearing in mind that the polarisation tends to occur at the end of lamp life, replacement of the lamp at the end of rated life will ensure that the control equipment is not abnormally stressed, even though the circuit may be protected.



Single-voltage circuit with superimposed-pulse ignitor for short-arc metal halide lamps



Parallel pulse circuit for metal halide lamps up to 1 kV ignition voltage

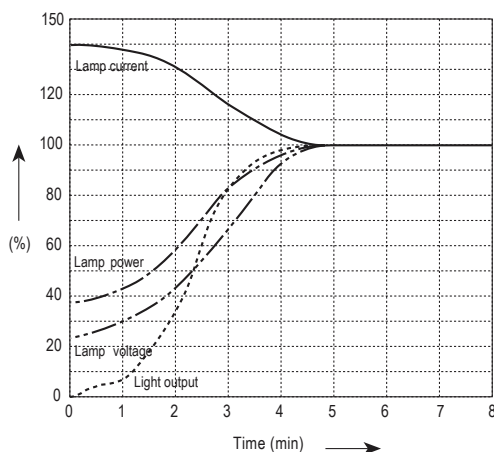


## High pressure sodium (HS) lamps

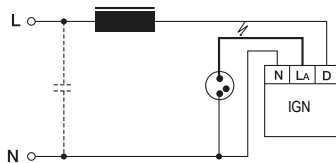
High pressure sodium (HS) lamps can operate satisfactorily from  $-30^{\circ}\text{C}$  to  $100^{\circ}\text{C}$  on series reactor ballast circuits, but precautions against increase arc tube voltage, due to thermal back radiation when mounted in luminaires should be considered. Only a typical 10 volt increase in lamp voltage is tolerable.

Standard lamps will re-ignite after 60 to 90 seconds with an ignition voltage of 2.5 - 5.0 kV peak for cold start depending on the lamp specifications. High pressure sodium lamps can only be re-ignited hot if they are of linear double ended construction because hot re-strike requires 18 to 25kV peak starting pulses.

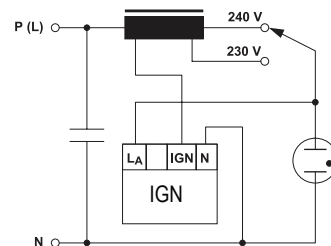
High pressure sodium lamps are most commonly used in a series reactor ballast and ignitor circuit. The lamp power and discharge tube temperature are highly dependent upon the lamp voltage. It is therefore important that the mains voltage does not exceed 105% of the nominal rated voltage of the ballast for extended periods. The ballast should exhibit a closely controlled current/ voltage characteristic to prevent the lamp from exceeding the maximum power limit as it ages and the lamp voltage rises.



Run-up to full light output takes approximately 4 minutes from a cold start as is illustrated by the starting curves of a 400W high pressure sodium lamp



Single-voltage circuit with superimposed-pulse ignitor for sodium vapour lamps and metal halide lamps

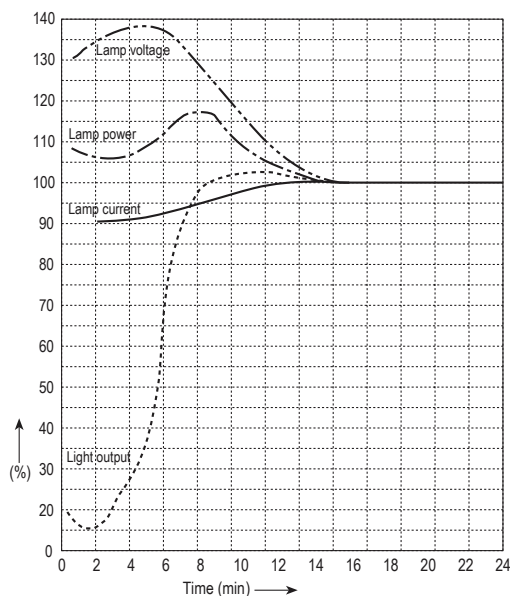


Multi-voltage circuit with pulse ignitors for sodium vapour lamps and metal halide lamps

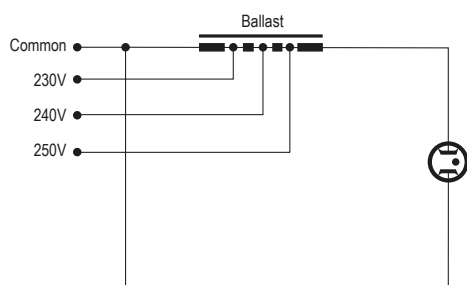
## Low pressure sodium ( LPS ) lamps

Low pressure sodium ( LPS ) lamps are the most efficient of the common HID lamps. However, their main drawback is the monochromatic light output at 590 nm ( yellow ). Low pressure sodium lamps require voltages from 390 to 670 V ( ballast open-

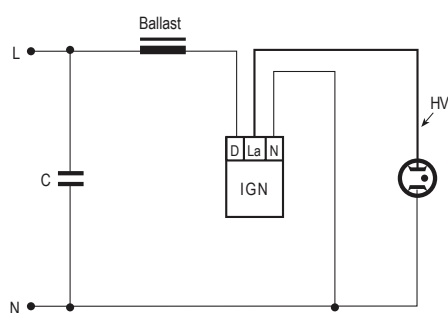
circuit voltage ) for ignition and are therefore operated on leakage reactance ballasts or on series reactor ballasts with an ignitor. The latter system is only suitable for lamp ratings up to 100W on 240 V supply.



Typical starting curves for a 90W low pressure sodium lamp.  
These lamps re-strike immediately after a mains interruption.



Leakage reactor ballast circuit for LPS lamps



Superimposed-pulse ignitor circuit for LPS lamps

## Magnetic ballasts for HID lamps

Ballasts are required to operate high-intensity discharge lamps. Magnetic ballasts work on the self-inductance principle and limit lamp current and lamp wattage with a high level of efficiency. The impedance of the ballast is set to match the particular type of lamp, which ensures that the correct lamp performance is achieved.

In some cases, a ballast can be used for more than one lamp. Supply voltage and supply frequency influence ballast requirements and so the operating devices should be matched to the current supply voltage. It is possible to expand the scope of application by using ballasts with several voltage tapplings.

### Optimum performance

Optimum performance is achieved by careful control of the main parameters. The tight tolerances used in manufacture ensure that the correct lamp current, the correct wattage and the expected luminous flux are achieved.

### Minimum consumption

An inefficient ballast means high losses and has a dramatic effect on the overall efficiency.

### Technical specific data

The hot losses specified in the technical data is an indicative figure, measured at 25 °C and at nominal lamp current according to IEC 61347-1. Furthermore, the circuit power is calculated by adding the nominal lamp power and the ballast losses.

### Minimum stray field

CMP ballasts are designed to keep the stray field to a minimum. This considerably reduces the noise generated near to magnetically sensitive parts as well as magnetic influences on sensitive parts.

### National and international test marks

CMP ballasts are approved by national and international test houses. Standard ballasts for the European market are all ENEC-approved without exception.

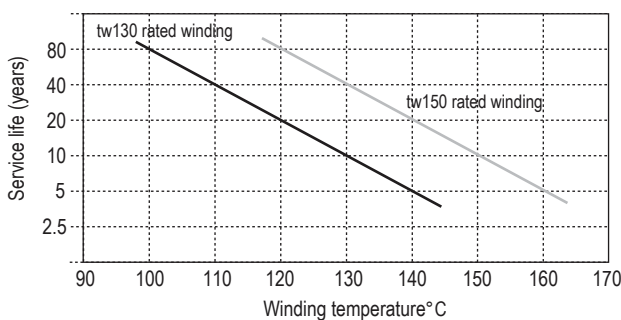
### Consistent high quality

Our Quality Assurance system, based on AS/NZS ISO 9001, guarantees consistent high quality. CMP's Quality Assurance department monitors all incoming materials, performs continuous production tests and 100% of our finished products are comprehensively tested.

### Maintenance-free long service life

CMP HID ballast windings are designed and constructed using Class H insulation materials, the tw130 (or in some OG models, tw150 ) rated winding ensuring maximum service life. In normal operation, in a 40 °C ambient temperature, probable service life of more than 50 years could be expected.

The graph shows the theoretical service life of a CMP HID ballast. Even when arduously operated at the maximum recommended temperature, more than 10 years service life can be expected. Every 10 °C over maximum winding temperature of 130°C (or 150°C ) halves ballast life. The winding temperature is the ambient temperature plus  $\Delta t$ , the temperature rise, which is a function of ballast power consumption.



The manufacturing technique used by CMP is to vacuum impregnate the ballast with an unsaturated polyester resin. Typical characteristics are thermal class "H" ( 180 °C IEC 60085 ). Vacuum impregnation improves quality and longevity because the resin is drawn into the heart of the core and coil. This maximises heat transfer and also ensures silent operation.

Based on the concept of thermal conduction, vacuum impregnation eliminates air pockets within the ballast winding, maximising heat transfer. The surface temperature of a vacuum impregnated ballast may be higher than one which is simply dipped in resin. However, the winding temperature of a vacuum impregnated ballast will be correspondingly lower because of the insulation system's optimised ability to transfer the heat from the coil to the core, resulting in a longer service life in comparison. Reducing the ballast winding temperature by 10°C will effectively double its service life.

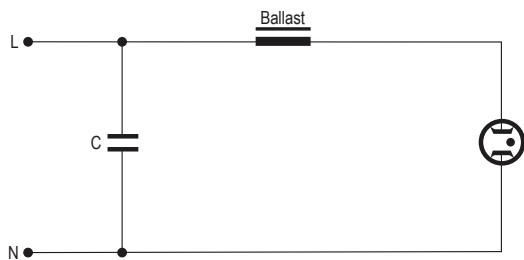
The high quality and reliability of insulated conductors is dependent not only on the production process, but also on the choice of raw materials. Many years of experience, both as a user and manufacturer of enamelled winding wire, has given CMP the knowledge and expertise to select the best raw materials from internationally approved suppliers.

The copper is made from a high conductivity hot rolled copper rod and complies with the chemical composition limits and resistivity requirements of International Registered Alloy Designation 110.

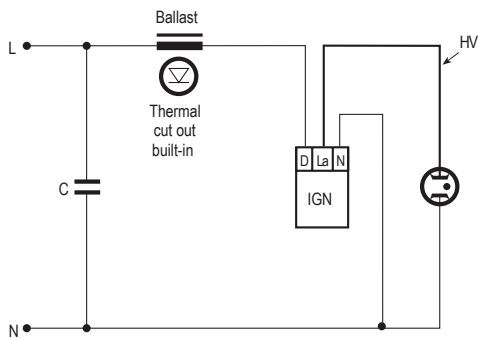
Critical attention is paid to the enamel as the material utilised to insulate the conductor. Choice of enamel is a key factor and is linked both to the enamelling system as well as the electrical, mechanical and technical characteristics of the finished product. The insulation enamels specified by CMP Controls are supplied by internationally approved manufacturers specialising within this field. Class H+ ( 200 °C ) insulation is used in all CMP ballasts.

## Technical tips for HID reactor / ignitor circuits

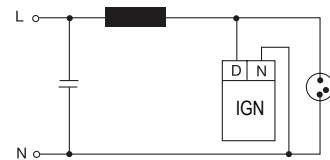
| Symptom                              | Possible fault     | Test and remedy                                                                                                     |
|--------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------|
| Lamp intact but will not light       | Failed lamp        | Replace lamp                                                                                                        |
|                                      | Supply fault       | Check supply volts and circuit fuse                                                                                 |
|                                      | Wiring fault       | Check for loose connections and correct connections to ignitor                                                      |
|                                      |                    | Check that insulation of cable between ballast or ignitor and lamp is sound                                         |
|                                      |                    | Look for signs of breakdown due to ignitor high voltage pulses                                                      |
|                                      | Ignitor fault      | Check with ignitor tester or remove ignitor and try another                                                         |
| Low light output                     | Ballast fault      | Disconnect ignitor. Check for mains volts at ballast output terminal                                                |
|                                      |                    | Try substitute ballast                                                                                              |
|                                      | Low lamp power     | Check supply voltage is correct                                                                                     |
|                                      | Failing lamp       | Check correct compatible ballast is in use                                                                          |
| Light output unstable or fluctuating | Wiring             | Try another lamp                                                                                                    |
|                                      | Unsuitable fitting | Check circuit is correctly wired, that all connections are tight and lamp is making contact in holder               |
|                                      |                    | Check that fitting is recommended for the lamp, eg. high pressure sodium lamp voltage may rise and cause extinction |
|                                      | Failing lamp       | Replace lamp                                                                                                        |



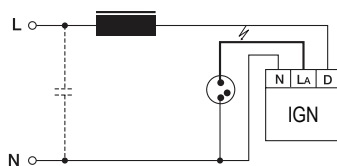
Single-voltage circuit for mercury vapour lamps



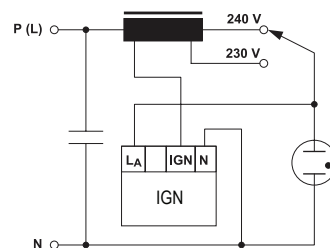
Single-voltage circuit with superimposed-pulse ignitor for short-arc metal halide lamps



Parallel pulse circuit for metal halide lamps up to 1 kV ignition voltage



Single-voltage circuit with superimposed-pulse ignitor for sodium vapour lamps and metal halide lamps



Multi-voltage circuit with pulse ignitors for sodium vapour lamps and metal halide lamps

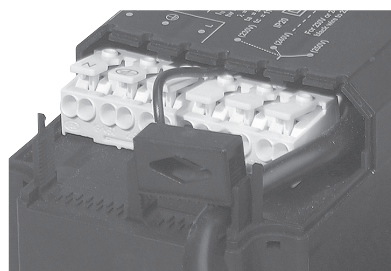
## Remote assemblies for high-intensity discharge lamps

The OM PAK assemblies from CMP combine choke, ignitor, p.f. correction capacitor and terminals in a compact casing. These independent units in safety class 2 are very easy to install. No tools are needed at all, so they save an enormous amount of time on site.

All the assemblies for operating metal halide lamps or sodium lamps are generally temperature-protected and are suitable for mounting on normally flammable material ( fire category F ).

The robust design also means that the units can be used at high ambient temperatures (  $t_a$  ). The compact casing design results in exceptionally quiet operation.

The assemblies are available with or without prewired lamp cables. Screw terminals make it easy to connect to the mains. Quick fastening of the terminal covers and tool-less cable clamps add-up to efficient installation.



The ignitors used are an essential quality feature of the OM PAK series from CMP. There is a choice of two superimposed-pulse ignitors – the successful standard ZRM ES/C ignitor or the ZRM/CT ignitor with digital timer and pulse-pause operation.

With these different versions, CMP presents a rounded application-oriented range of OM PAK assemblies that ensure that high-intensity discharge lamps are operated in accordance with manufacturers' specifications.



## 50 W High-pressure mercury vapour lamps

| Lamps        |             |             |                     |                     | Ignitors | Magnetic ballasts | Remote gear boxes |
|--------------|-------------|-------------|---------------------|---------------------|----------|-------------------|-------------------|
| manufacturer | description | lamp holder | nominal voltage (V) | nominal current (A) |          |                   |                   |
| GE           | H 50 ...    | E27         | 95                  | 0.60                | –        | EMV50; OMB 50     | –                 |
| Iwasaki      | HF50 PD     | E27         | 95                  | 0.61                | –        | EMV50; OMB 50     | –                 |
| Osram        | HQL 50      | E27         | 95                  | 0.62                | –        | EMV50; OMB 50     | –                 |
| Philips      | HPL-N50 W   | E27         | 95                  | 0.61                | –        | EMV50; OMB 50     | –                 |
| Radium       | HRL50       | E27         | 95                  | 0.62                | –        | EMV50; OMB 50     | –                 |
| Sylvania     | HSL-BW50    | E27         | 95                  | 0.61                | –        | EMV50; OMB 50     | –                 |

## 80 W High-pressure mercury vapour lamps

| Lamps        |             |             |                     |                     | Ignitors | Magnetic ballasts | Remote gear boxes |
|--------------|-------------|-------------|---------------------|---------------------|----------|-------------------|-------------------|
| manufacturer | description | lamp holder | nominal voltage (V) | nominal current (A) |          |                   |                   |
| GENDX        | H 80 ...    | E27, B22    | 115                 | 0.80                | –        | EMV80; OMB 80     | –                 |
| Iwasaki      | HF 80 PD    | E27         | 115                 | 0.80                | –        | EMV80; OMB 80     | –                 |
| Osram        | HQL 80      | E27         | 115                 | 0.80                | –        | EMV80; OMB 80     | –                 |
| Philips      | HPL-N 80 W  | E27         | 115                 | 0.80                | –        | EMV80; OMB 80     | –                 |
| Radium       | HRL 80      | E27         | 115                 | 0.80                | –        | EMV80; OMB 80     | –                 |
| Sylvania     | HSL-BW 80   | E27         | 115                 | 0.80                | –        | EMV80; OMB 80     | –                 |

## 125 W High-pressure mercury vapour lamps

| Lamps        |             |             |                     |                     | Ignitors | Magnetic ballasts | Remote gear boxes |
|--------------|-------------|-------------|---------------------|---------------------|----------|-------------------|-------------------|
| manufacturer | description | lamp holder | nominal voltage (V) | nominal current (A) |          |                   |                   |
| GE           | H 125 ...   | E27, B22    | 125                 | 1.15                | –        | EMV125; OMB 125   | –                 |
| Iwasaki      | HF125 PD    | E27, E40    | 125                 | 1.15                | –        | EMV125; OMB 125   | –                 |
| Osram        | HQL 125     | E27         | 125                 | 1.15                | –        | EMV125; OMB 125   | –                 |
| Philips      | HPL-N125 W  | E27, E40    | 125                 | 1.15                | –        | EMV125; OMB 125   | –                 |
| Radium       | HRL 125     | E27         | 125                 | 1.15                | –        | EMV125; OMB 125   | –                 |
| Sylvania     | HSL-BW125   | E40         | 125                 | 1.15                | –        | EMV125; OMB 125   | –                 |

## 175 W High-pressure mercury vapour lamps

| Lamps        |              |             |                     |                     | Ignitors | Magnetic ballasts | Remote gear boxes |
|--------------|--------------|-------------|---------------------|---------------------|----------|-------------------|-------------------|
| manufacturer | description  | lamp holder | nominal voltage (V) | nominal current (A) |          |                   |                   |
| Sylvania     | H39KC-175/DX | E39         | 130                 | 1.50                | –        | OMB 175           | –                 |



## 250 W High-pressure mercury vapour lamps

| Lamps        |             |             |                     |                     | Ignitors | Magnetic ballasts | Remote gear boxes |
|--------------|-------------|-------------|---------------------|---------------------|----------|-------------------|-------------------|
| manufacturer | description | lamp holder | nominal voltage (V) | nominal current (A) |          |                   |                   |
| GE           | H 250 ...   | E40         | 130                 | 2.15                | –        | OMB250; OGB250    | –                 |
| Iwasaki      | HF250 PD    | E40         | 130                 | 2.13                | –        | OMB250; OGB250    | –                 |
| Osram        | HQL250      | E40         | 130                 | 2.15                | –        | OMB250; OGB250    | –                 |
| Philips      | HPL-N250 W  | E40         | 135                 | 2.10                | –        | OMB250; OGB250    | –                 |
| Radium       | HRL250      | E40         | 130                 | 2.15                | –        | OMB250; OGB250    | –                 |
| Sylvania     | HSL-BW250   | E40         | 130                 | 2.15                | –        | OMB250; OGB250    | –                 |

## 400 W High-pressure mercury vapour lamps

| Lamps        |             |             |                     |                     | Ignitors | Magnetic ballasts | Remote gear boxes |
|--------------|-------------|-------------|---------------------|---------------------|----------|-------------------|-------------------|
| manufacturer | description | lamp holder | nominal voltage (V) | nominal current (A) |          |                   |                   |
| GE           | H 400 ...   | E40         | 135                 | 3.25                | –        | OGB400            | –                 |
| Iwasaki      | HF 400 PD   | E40         | 135                 | 3.25                | –        | OGB400            | –                 |
| Osram        | HQL 400     | E40         | 135                 | 3.25                | –        | OGB400            | –                 |
| Philips      | HPL-N 400 W | E40         | 140                 | 3.25                | –        | OGB400            | –                 |
| Radium       | HRL 400     | E40         | 135                 | 3.25                | –        | OGB400            | –                 |
| Sylvania     | HSL-BW 400  | E40         | 135                 | 3.25                | –        | OGB400            | –                 |

## 700 W High-pressure mercury vapour lamps

| Lamps        |             |             |                     |                     | Ignitors | Magnetic ballasts | Remote gear boxes |
|--------------|-------------|-------------|---------------------|---------------------|----------|-------------------|-------------------|
| manufacturer | description | lamp holder | nominal voltage (V) | nominal current (A) |          |                   |                   |
| GE           | H 700 ...   | E40         | 140                 | 5.50                | –        | OGB700            | –                 |
| Iwasaki      | HF 700 PD   | E40         | 140                 | 5.40                | –        | OGB700            | –                 |
| Osram        | HQL 700     | E40         | 140                 | 5.40                | –        | OGB700            | –                 |
| Philips      | HPL 700 W   | E40         | 145                 | 5.40                | –        | OGB700            | –                 |

## 1,000 W High-pressure mercury vapour lamps

| Lamps        |               |             |                     |                     | Ignitors | Magnetic ballasts | Remote gear boxes |
|--------------|---------------|-------------|---------------------|---------------------|----------|-------------------|-------------------|
| manufacturer | description   | lamp holder | nominal voltage (V) | nominal current (A) |          |                   |                   |
| GE           | H 1000 ...    | E40         | 145                 | 7.50                | –        | OGB1000           | –                 |
| Iwasaki      | HF 1000 PD    | E40         | 145                 | 7.50                | –        | OGB1000           | –                 |
| Osram        | HQL 1000      | E40         | 145                 | 7.50                | –        | OGB1000           | –                 |
| Philips      | HPL-N 1000 W  | E40         | 145                 | 7.50                | –        | OGB1000           | –                 |
| Radium       | HRL 1000      | E40         | 145                 | 7.50                | –        | OGB1000           | –                 |
|              | HRLV 1000     | E40         | 145                 | 7.50                | –        | OGB1000           | –                 |
| Sylvania     | H34GW1000 /DX | E39         | 135                 | 8.00                | –        | OGB1000           | –                 |
|              | H36GW1000 /DX | E39         | 265                 | 4.00                | –        | OGB1000H          | –                 |
|              | HSL-BW 1000   | E40         | 145                 | 7.50                | –        | OGB1000           | –                 |

## 20 W Metal halide lamps

| Lamps        |                     |             |                     |                     | Ignitors | Magnetic ballasts | Remote gear boxes |
|--------------|---------------------|-------------|---------------------|---------------------|----------|-------------------|-------------------|
| manufacturer | description         | lamp holder | nominal voltage (V) | nominal current (A) |          |                   |                   |
| GE           | CMH 20 ...          | G8.5        | 90                  | 0.23                | –        | –                 | –                 |
|              | CMH 20 MR16         | GX10        | 90                  | 0.21                | –        | –                 | –                 |
|              | CMH 20 Super Mini   | GU6.5       | 90                  | 0.21                | –        | –                 | –                 |
| Osram        | HCI-TC 20           | G8.5        | 100                 | 0.23                | –        | –                 | –                 |
| Philips      | CDM-R111 20 W       | GX8.5       | 101                 | 0.22                | –        | –                 | –                 |
|              | CDM-TM 20 W         | PGJ5        | 100                 | 0.22                | –        | –                 | –                 |
| Radium       | RCC-PAR20 20 W...   | E27         | 100                 | 0.23                | –        | –                 | –                 |
|              | RCC-TC 20 ...       | G8.5        | 100                 | 0.23                | –        | –                 | –                 |
| Sylvania     | Britespot ES50 20 W | GX10        | 100                 | 0.22                | –        | –                 | –                 |
|              | CMI-TC 20 W/SB      | G8.5        | 100                 | 0.20                | –        | –                 | –                 |

## 35 W Metal halide lamps

| Lamps        |                      |             |                     |                     | Ignitors                    | Magnetic ballasts | Remote gear boxes |
|--------------|----------------------|-------------|---------------------|---------------------|-----------------------------|-------------------|-------------------|
| manufacturer | description          | lamp holder | nominal voltage (V) | nominal current (A) |                             |                   |                   |
| BLV          | C-HIT35              | G12         | 95                  | 0.50                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT | OMS 35TH          | OM PAK35 M        |
| GE           | CMH35 /PAR           | E27         | 90                  | 0.50                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT | OMS 35TH          | OM PAK35 M        |
|              | CMH35/T              | G12, RX7s   | 90                  | 0.50                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT | OMS 35TH          | OM PAK35 M        |
|              | CMH35/TC             | G8.5        | 90                  | 0.50                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT | OMS 35TH          | OM PAK35 M        |
| Osram        | HCI-T35...           | G12         | 90                  | 0.53                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT | OMS 35TH          | OM PAK35 M        |
|              | HCI-TC35 W/WDL       | G8.5        | 90                  | 0.53                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT | OMS 35TH          | OM PAK35 M        |
| Philips      | CDM-R35 W            | E27         | 88                  | 0.53                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT | OMS 35TH          | OM PAK35 M        |
|              | CDM-R111 35 W        | GX8.5       | 88                  | 0.53                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT | OMS 35TH          | OM PAK35 M        |
|              | CDM-T 35 W           | G12         | 88                  | 0.53                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT | OMS 35TH          | OM PAK35 M        |
|              | CDM-TC35 W           | G8.5        | 88                  | 0.53                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT | OMS 35TH          | OM PAK35 M        |
| Radium       | RCC-PAR3035 W...     | E27         | 90                  | 0.53                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT | OMS 35TH          | OM PAK35 M        |
|              | RCC-T35              | G12         | 90                  | 0.53                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT | OMS 35TH          | OM PAK35 M        |
|              | RCC-TC35 ...         | G8.5        | 90                  | 0.53                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT | OMS 35TH          | OM PAK35 M        |
| Sylvania     | Britespot ES111 35 W | GX10        | 100                 | 0.53                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT | OMS 35TH          | OM PAK35 M        |
|              | Britespot ES50 35 W  | GX10        | 95                  | 0.53                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT | OMS 35TH          | OM PAK35 M        |
|              | Britespot ESD5035 W  | GX10        | 95                  | 0.53                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT | OMS 35TH          | OM PAK35 M        |
|              | CMI-PAR20 35 W/SB    | E27         | 90                  | 0.53                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT | OMS 35TH          | OM PAK35 M        |
|              | CMI-PAR30 35 W/SB    | E27         | 90                  | 0.53                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT | OMS 35TH          | OM PAK35 M        |
|              | CMI-T 35 W/SB        | G12         | 90                  | 0.50                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT | OMS 35TH          | OM PAK35 M        |
|              | CMI-TC35 W/SB        | G8.5        | 90                  | 0.50                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT | OMS 35TH          | OM PAK35 M        |
| Venture      | HIE35 /x/x           | E27         | 95                  | 0.53                | ZRM 6-ES/C 3.5KV            | EPS35; OMS 35     | –                 |
|              | MH 35 ...            | E26         | 85                  | 0.47                | ZRM 6-ES/C 3.5KV            | EPS35; OMS 35     | –                 |

## 50 W Metal halide lamps

| Lamps        |                  |             |                     |                     | Ignitors         | Magnetic ballasts | Remote gear boxes |
|--------------|------------------|-------------|---------------------|---------------------|------------------|-------------------|-------------------|
| manufacturer | description      | lamp holder | nominal voltage (V) | nominal current (A) |                  |                   |                   |
| GE           | MXR/MVR50        | E26/27      | 85                  | 0.68                | ZRM 6-ES/C 3.5KV | EMV50; OMB 50     | –                 |
| Venture      | MH 50 ... (M110) | E26         | 85                  | 0.68                | ZRM 6-ES/C 3.5KV | EMV50; OMB 50     | –                 |

## 70 W Metal halide lamps

| Lamps        |                         |             |                     |                     | Ignitors                                  | Magnetic ballasts    | Remote gear boxes |
|--------------|-------------------------|-------------|---------------------|---------------------|-------------------------------------------|----------------------|-------------------|
| manufacturer | description             | lamp holder | nominal voltage (V) | nominal current (A) |                                           |                      |                   |
| BLV          | C-HIT 70 DE             | RX7s        | 95                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | C-HIT 70 WW             | G12         | 95                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | HIE ... 70 ...          | E27         | 95                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | HIE-P 70                | E27         | 95                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | HIT 70 DE               | RX7s        | 95                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
| GE           | ARC 70...               | G12, RX7s   | 90                  | 0.98                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | CMH 70 PAR              | E27         | 90                  | 0.98                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | CMH 70 T...             | G12         | 90                  | 0.98                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | CMH 70 T Mini           | G8.5        | 90                  | 0.98                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | CMH 70 TD...            | RX7s        | 90                  | 0.98                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | MXR/MVR 70              | E26/27      | 85                  | 0.90                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS 70               | OM PAK70 M        |
| Iwasaki      | MT 70 Color Arc         | E27         | 90                  | 1.00                | ZRM 2-ES/C, ZRM 2-ES/CT                   | EPS 70ATH, OMS 70ATH | –                 |
|              | MT 70 Color Arc         | G12         | 90                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | MTD 70 Color Arc        | RX7s        | 90                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
| Osram        | HCI-E/P 70 W/WDL        | E27         | 90                  | 0.98                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | HCI-PAR30 70 W/WDL      | E27         | 90                  | 0.98                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | HCI-T 70...             | G12         | 90                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | HCI-TC 70 W/WDL         | G8.5        | 95                  | 0.95                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | HCI-TS 70...            | RX7s        | 95                  | 0.96                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | HQI-E 70 W/WDL          | E27         | 95                  | 0.95                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | HQI-T 70...             | G12         | 95                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | HQI-TS 70...            | RX7s        | 95                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
| Philips      | CDM-ET 70 W             | E27         | 90                  | 1.00                | ZRM 2-ES/C; ZRM 2-ES/CT                   | EPS 70ATH, OMS 70ATH | –                 |
|              | CDM-R 70 W              | E27         | 90                  | 0.97                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | CDM-R111 70 W           | Gx8.5       | 83                  | 0.98                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | CDM-T 70 W              | G12         | 88                  | 0.98                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | CDM-TC 70 W             | G8.5        | 83                  | 0.98                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | CDM-TD 70 W             | RX7s        | 92                  | 0.97                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | CDM-TT 70 W             | E27         | 90                  | 1.00                | ZRM 2-ES/C; ZRM 2-ES/CT                   | EPS 70ATH, OMS 70ATH | –                 |
|              | CDO-ET 70 W             | E27         | 87                  | 0.98                | ZRM 2-ES/C; ZRM 2-ES/CT                   | EPS 70ATH, OMS 70ATH | –                 |
|              | CDO-TT 70 W             | E27         | 90                  | 1.00                | ZRM 2-ES/C; ZRM 2-ES/CT                   | EPS 70ATH, OMS 70ATH | –                 |
|              | MHN-TD 70 W             | RX7s        | 90                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | MHW-TD 70 W             | RX7s        | 90                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | HRI-E 70 W...           | E27         | 90                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | HRI-T 70...             | G12         | 90                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
| Radium       | HRI-TS 70...            | RX7s        | 90                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | RCC-PAR3070 W...        | E27         | 90                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | RCC-T 70                | G12         | 90                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | RCC-TC 70 ...           | G8.5        | 90                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | RCC-TS 70               | RX7s        | 90                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              |                         |             |                     |                     |                                           |                      |                   |
| Sylvania     | Britespot DE 70 ...     | RX7s        | 95                  | 0.98                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | Britespot ESD111 70 ... | GX10        | 100                 | 0.98                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | CMI-MCP 70 W PAR38      | E26         | 88                  | 0.90                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS 70               | OM PAK70 M        |
|              | CMI-MP 70 W/SB          | E27         | 90                  | 0.98                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | CMI-PAR30 70 W/SB       | E27         | 90                  | 0.98                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | CMI-T 70 W/SB           | G12         | 100                 | 0.98                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | CMI-TT 70 W/SB          | E27         | 90                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | HSI-MP 70 W             | E27         | 95                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | HSI-T 70 W              | G12         | 95                  | 0.95                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | HSI-TD 70 W             | RX7s        | 90                  | 0.98                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | MP 70 W PAR38           | E26         | 85                  | 0.90                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS 70               | OM PAK70 M        |
|              |                         |             |                     |                     |                                           |                      |                   |
| Venture      | HIE 70/x/x              | E27         | 85                  | 0.90                | ZRM 6-ES/C 3.5KV                          | OMS 70               | –                 |
|              | MH 70 / ... (M98)       | E26         | 85                  | 0.91                | ZRM 6-ES/C 3.5KV                          | OMS 70               | –                 |
|              | MH-DE70 / ... (M85)     | RX7s        | 95                  | 0.95                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70ATH, OMS 70ATH | OM PAK70 M        |
|              | MS 70 / ... (M98)       | E26         | 85                  | 0.91                | ZRM 6-ES/C 3.5KV                          | OMS 70               | –                 |

## 100 W Metal halide lamps

| Lamps        |                          |             |                     |                     | Igniters                                  | Magnetic ballasts | Remote gear boxes |
|--------------|--------------------------|-------------|---------------------|---------------------|-------------------------------------------|-------------------|-------------------|
| manufacturer | description              | lamp holder | nominal voltage (V) | nominal current (A) |                                           |                   |                   |
| BLV          | HIE 100                  | E27         | 95                  | 1.20                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMH 100TH         | OM PAK100 M       |
|              | MHR 100                  | plug        | 95                  | 1.20                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMH 100TH         | OM PAK100 M       |
| GE           | CMH 100...               | E27         | 100                 | 1.15                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMH 100TH         | OM PAK100 M       |
|              | MXR 100                  | E27         | 95                  | 1.20                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMH 100TH         | OM PAK100 M       |
| Osram        | HQI-E 100 W/WDL...       | E27         | 95                  | 1.10                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMH 100TH         | OM PAK100 M       |
|              | HQI-EP 100 W/WDL         | E27         | 95                  | 1.10                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMH 100TH         | OM PAK100 M       |
| Philips      | CDO-ET 100 W             | E40         | 90                  | 1.20                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMH 100TH         | OM PAK100 M       |
|              | CDO-TT 100 W             | E40         | 95                  | 1.20                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMH 100TH         | OM PAK100 M       |
| Radium       | HRI-E 100 W...           | E27         | 90                  | 1.20                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMH 100TH         | OM PAK100 M       |
| Sylvania     | CMH-MCPPAR38 100 W/SB... | E26         | 100                 | 1.10                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMH 100TH         | OM PAK100 M       |
|              | CMH MP 100 W/SB...       | E27         | 100                 | 1.15                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMH 100TH         | OM PAK100 M       |
|              | HSI-MP 100 ...           | E27         | 100                 | 1.00                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMH 100TH         | OM PAK100 M       |
|              | MP PAR38 100 W...        | E26         | 100                 | 1.10                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMH 100TH         | OM PAK100 M       |
| Venture      | HIE 100/x/x              | E27         | 100                 | 1.10                | ZRM 6-ES/C 3.5KV                          | OMH 100TH         | –                 |
|              | HIE100 W/C/U/LU3K        | E27         | 100                 | 1.10                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMH 100TH         | OM PAK100 M       |
|              | MH 100 /... (M90)        | E26         | 100                 | 1.10                | ZRM 6-ES/C 3.5KV                          | OMH 100TH         | –                 |
|              | MH-DE 100 (M90)          | RX7s        | 100                 | 1.10                | ZRM 6-ES/C 3.5KV                          | OMH 100TH         | –                 |
|              | MH-DE 100 (M90)          | E26         | 100                 | 1.10                | ZRM 6-ES/C 3.5KV                          | OMH 100TH         | –                 |

## 150 W Metal halide lamps

| Lamps        |                          |                |                     |                     | Igniters                                  | Magnetic ballasts  | Remote gear boxes |
|--------------|--------------------------|----------------|---------------------|---------------------|-------------------------------------------|--------------------|-------------------|
| manufacturer | description              | lamp holder    | nominal voltage (V) | nominal current (A) |                                           |                    |                   |
| BLV          | C-HIT150 DE              | RX7s           | 95                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | C-HIT150 WW              | G12            | 95                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | HIE150                   | E27            | 95                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | HIT150                   | E40            | 95                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | HIT150 DE                | RX7s           | 95                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | MHR150                   | plug           | 95                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
| GE           | ARC150...                | G12; RX7s      | 105-110             | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | CMH150                   | E27, G12, RX7s | 95-105              | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | MBI 150 /T               | G12            | 95                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | MXR/MVR150               | E26/27         | 95                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
| Iwasaki      | MT 150 CEH-W/BU          | E27            | 95                  | 1.90                | ZRM 2-ES/C; ZRM 2-ES/CT                   | OMS150TH, OGS150TH | –                 |
|              | MT 150 ColorArc          | E27            | 95                  | 1.90                | ZRM 2-ES/C; ZRM 2-ES/CT                   | OMS150TH, OGS150TH | –                 |
|              | MT 150 ColorArc          | G12            | 95                  | 1.90                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | MTD 150 ColorArc         | RX7s           | 95                  | 1.90                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
| Osram        | HCI-E/P150 W/WDL         | E27            | 95                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | HCI-T150...              | G12            | 100                 | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | HCI-TS150...             | RX7s 24        | 100                 | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | HQI-E150...              | E27            | 95                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | HQI-R150...              | plugg          | 100                 | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | HQI-T150...              | G12            | 100                 | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | HQI-TS150...             | RX7s 24        | 95                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | HTI150 W (DisplayOptics) | GY9.5          | 90                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
| Philips      | CDM-ET150 W              | E40            | 100                 | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | CDM-SA/T150 W            | G12            | 96                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | CDM-T150 W               | G12            | 96                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | CDM-TD150 W              | RX7s           | 96                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | CDM-TT150 W              | E40            | 100                 | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | CDO-ET150 W              | E40            | 93                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | CDO-TT150 W              | E40            | 100                 | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | MHN-TD150 W              | RX7s           | 98                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
| Radium       | MHW-TD150 W              | RX7s           | 96                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | HRI-E150...              | E27            | 100                 | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | HRI-T150...              | G12            | 100                 | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | HRI-TS150...             | RX7s           | 100                 | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
| Sylvania     | RCC-T150...              | G12            | 100                 | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | RCC-TS150...             | RX7s           | 100                 | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | Britespot DE150...       | RX7s           | 95                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | CMH-MCPPAR38 150 W       | E26            | 100                 | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | CMH-MP 150 W             | E27            | 95                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | CMH-T 150 W/SB           | G12            | 100                 | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | CMH-TT150 W/SB           | E40            | 95                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | HSI-MP150 W              | E27            | 95                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
| Venture      | HSI-T150 W...            | G12            | 95                  | 1.82                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | HSI-TD150 W...           | RX7s           | 95                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | MP PAR38 150 W           | E26            | 95                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | HIE150/x/x               | E27, RX7s      | 95                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | HIT150 W/U/LU/T38/4K     | E27            | 95                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | MH 150 /... /LV          | E26            | 95                  | 1.80                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150TH, OGS150TH | OM PAK150 M       |
|              | MH 150 /... (M102)       | E26            | 95                  | 1.80                | ZRM 6-ES/C 3.5KV                          | OMS150TH, OGS150TH | –                 |

## 175 W Metal halide lamps

| Lamps        |                   |             |                     |                     | Ignitors                                  | Magnetic ballasts | Remote gear boxes |
|--------------|-------------------|-------------|---------------------|---------------------|-------------------------------------------|-------------------|-------------------|
| manufacturer | description       | lamp holder | nominal voltage (V) | nominal current (A) |                                           |                   |                   |
| GE           | MVR/MXR175 /E     | E26/E27     | 135                 | 1.40                | –                                         | CWMH175           | –                 |
|              |                   |             |                     |                     | ATIG-14                                   | OMB 175           | –                 |
| Iwasaki      | M 175 X/U         | E40         | 130                 | 1.50                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMB175            | –                 |
| Osram        | MI 175 /C/U       | E40         | 130                 | 1.50                | –                                         | CWMH175           | –                 |
|              |                   |             |                     |                     | ATIG-14                                   | OMB 175           | –                 |
| Sylvania     | M 175             | E27, E39    | 132                 | 1.50                | –                                         | CWMH175           | –                 |
|              | MP 175 ...BU      | EX39        | 132                 | 1.50                | –                                         | CWMH175           | –                 |
|              | MS 175 ...HOR     | E39POM      | 132                 | 1.50                | –                                         | CWMH175           | –                 |
|              | MS 175 ...PS      | E39         | 132                 | 1.50                | ZRM 6-ES/C 3.5kV                          | OMB 175           | –                 |
| Venture      | MH 175 /... (M57) | E39         | 130                 | 1.50                | –                                         | CWMH175           | –                 |
|              |                   |             |                     |                     | ATIG-14                                   | OMB 175           | –                 |
|              | MH 175 /MED       | E26         | 130                 | 1.50                | –                                         | CWMH175           | –                 |
|              |                   |             |                     |                     | ATIG-14                                   | OMB 175           | –                 |

## 200 W Metal halide lamps

| Lamps        |                  |             |                     |                     | Ignitors         | Magnetic ballasts | Remote gear boxes |
|--------------|------------------|-------------|---------------------|---------------------|------------------|-------------------|-------------------|
| manufacturer | description      | lamp holder | nominal voltage (V) | nominal current (A) |                  |                   |                   |
| Venture      | MP 200 /I/.../PS | E39         | 132                 | 1.60                | ZRM 6-ES/C 3.5kV | OMH 200           | –                 |
|              | MS 200 /.../PS   | E39         | 132                 | 1.60                | ZRM 6-ES/C 3.5kV | OMH 200           | –                 |

## 250 W Metal halide lamps

| Lamps        |                    |             |                     |                     | Ignitors                                                        | Magnetic ballasts | Remote gear boxes |
|--------------|--------------------|-------------|---------------------|---------------------|-----------------------------------------------------------------|-------------------|-------------------|
| manufacturer | description        | lamp holder | nominal voltage (V) | nominal current (A) |                                                                 |                   |                   |
| BLV          | HIT250...          | E40, Fc2    | 100                 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C                       | OGS250TH          | –                 |
| GE           | ARC250...          | E40, Fc2    | 110                 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
|              | CMH250 ...         | E40         | 100                 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
|              | MVR250             | E40         | 133                 | 2.10                | –                                                               | CWMH250           | –                 |
|              |                    |             |                     |                     | ATIG-14                                                         | OMB 250, OGB250   | –                 |
| Iwasaki      | MF 250 LSH         | E40         | 130                 | 2.13                | –                                                               | OMB 250, OGB250   | –                 |
|              | MF 250 X/U         | E40         | 130                 | 2.13                | –                                                               | CWMH250           | –                 |
|              |                    |             |                     |                     | ATIG-14                                                         | OMB 250, OGB250   | –                 |
|              | MT 250             | E40         | 130                 | 2.13                | –                                                               | OMB 250, OGB250   | –                 |
|              | MT 250 –BH         | E40         | 130                 | 2.13                | –                                                               | CWMH250           | –                 |
|              |                    |             |                     |                     | ATIG-14                                                         | OMB 250, OGB250   | –                 |
|              | MT 250 Colorarc    | E40         | 130                 | 2.13                | –                                                               | OMB 250, OGB250   | –                 |
|              | MT 250 LSH         | E40         | 130                 | 2.13                | –                                                               | OMB 250, OGB250   | –                 |
| Osram        | HCI-E250 W/...     | E40         | 95                  | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C                       | OGS250TH          | –                 |
|              | HQI-E250 /D        | E40         | 100                 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C                       | OGS250TH          | –                 |
|              | HQI-E250 W/N/SI    | E40         | 133                 | 2.15                | ATIG-14                                                         | OMB 250, OGB250   | –                 |
|              | HQI-R250 W/NDL     |             | 100                 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C                       | OGS250TH          | –                 |
|              | HQI-T250 /D        | E40         | 100                 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C                       | OGS250TH          | –                 |
|              | HQI-T250 W/N/SI    | E40         | 133                 | 2.15                | ATIG-14                                                         | OMB 250, OGB250   | –                 |
|              | HQI-TS250 W/...    | Fc2         | 100                 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C                       | OGS250TH          | –                 |
|              | CDM-T 250 W        | G12         | 93                  | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C                       | OGS250TH          | –                 |
| Philips      | CDM-TT250 W        | E40         | 100                 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
|              | HPIplus 250 W ++   | E40         | 128                 | 2.15                | ATIG-14                                                         | OMB 250, OGB250   | –                 |
|              | HPI-T250 W ++      | E40         | 128                 | 2.15                | ATIG-14                                                         | OMB 250, OGB250   | –                 |
|              | HPI-Tplus 250 W ++ | E40         | 128                 | 2.15                | ATIG-14                                                         | OMB 250, OGB250   | –                 |
|              | MH 250 W           | E40         | 133                 | 2.10                | ATIG-14                                                         | OMB 250, OGB250   | –                 |
|              | MHN-TD250 W        | Fc2         | 100                 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
|              | HRI-E250 W/D       | E40         | 100                 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C                       | OGS250TH          | –                 |
|              | HRI-E250 W/NSI     | E40         | 130                 | 2.10                | ATIG-14                                                         | OMB 250, OGB250   | –                 |
| Radium       | HRI-T250 W/D       | E40         | 100                 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C                       | OGS250TH          | –                 |
|              | HRI-TS250 ...      | Fc2         | 100                 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C                       | OGS250TH          | –                 |
|              | RCC-T250 W/D       | E40         | 100                 | 3.00                | ZRM 2.5-ES/CT, ZRM 4.5-ES/CT                                    | OGS250TH          | –                 |
|              | RCC-TS250 ...      | Fc2         | 100                 | 3.00                | ZRM 2.5-ES/CT, ZRM 4.5-ES/CT                                    | OGS250TH          | –                 |

+ ballast with ignitor tap required ++ can also be operated with HPSgear

## 250 W Metal halide lamps

| Lamps        |                    |             |                     |                     | Ignitors                                                        | Magnetic ballasts       | Remote gear boxes |
|--------------|--------------------|-------------|---------------------|---------------------|-----------------------------------------------------------------|-------------------------|-------------------|
| manufacturer | description        | lamp holder | nominal voltage (V) | nominal current (A) |                                                                 |                         |                   |
| Sylvania     | CMI-TT250 W/G22/SB | G22         | 95                  | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250                  | –                 |
|              | CMI-TT250 W/SB     | E40         | 105                 | 2.90                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250                  | –                 |
|              | HSI-HX250 ...      | E40         | 130                 | 2.10                | ATIG-14                                                         | OMB 250, OGB250         | –                 |
|              | HSI-SX250 /P...    | E40         | 100                 | 2.90                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250                  | –                 |
|              | HSI-T250 /6K...    | E40         | 98                  | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250                  | –                 |
|              | HSI-TD250 ...      | Fc2         | 100                 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250                  | –                 |
|              | HSI-THX250 ...     | E40         | 130                 | 2.10                | ATIG-14                                                         | OMB 250, OGB250         | –                 |
|              | HSI-TSX250 ...     | E40         | 100                 | 2.90                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250                  | –                 |
|              | M 250 ...U         | E39         | 133                 | 2.10                | –                                                               | CWMH250                 | –                 |
|              |                    |             |                     |                     | ATIG-14                                                         | OMB 250, OGB250         | –                 |
|              | MP 250 ...BU       | EX39        | 133                 | 2.10                | –                                                               | CWMH250                 | –                 |
|              | MP 250 ...PS       | EX39        | 133                 | 2.10                | ZRM 6-ES/C 3.5kV                                                | OMB 250, OGB250         | –                 |
|              | MS 250 ...HOR      | E39POM      | 133                 | 2.10                | –                                                               | CWMH250                 | –                 |
|              |                    |             |                     |                     | ZRM 6-ES/C 3.5kV                                                | OMB 250, OGB250         | –                 |
|              | MS 250 ...PS       | E39         | 133                 | 2.10                | ZRM 6-ES/C 3.5kV                                                | OMB 250, OGB250         | –                 |
| Venture      | HIE250 /LU/x       | E40         | 95                  | 3.10                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250                  | –                 |
|              | HIE250 /x/x/EURO/x | E40         | 133                 | 2.10                | ATIG-14                                                         | OMB 250, OFB250, OGB250 | –                 |
|              | MH 250 /... (M58)  | E39         | 133                 | 2.10                | –                                                               | CWMH250                 | –                 |
|              |                    |             |                     |                     | ATIG-14                                                         | OMB 250, OFB250, OGB250 | –                 |
|              | MH-DE250 (M80)     | Fc2         | 100                 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OFB250, OGS250          | –                 |
|              | MP 250 /N/.../PS   | E39         | 133                 | 2.10                | ZRM 6-ES/C 3.5kV                                                | OMB 250, OGB250         | –                 |
|              | MS 250 /... (M58)  | E39         | 133                 | 2.10                | –                                                               | CWMH250                 | –                 |
|              |                    |             |                     |                     | ATIG-14                                                         | OMB 250, OGB250         | –                 |
|              | MS 250 /.../PS     | E39         | 133                 | 2.10                | ZRM 6-ES/C 3.5kV                                                | OMB 250, OGB250         | –                 |

+ ballast with ignitor tap required

## 320 W Metal halide lamps

| Lamps        |                  |             |                     |                     | Ignitors         | Magnetic ballasts | Remote gear boxes |
|--------------|------------------|-------------|---------------------|---------------------|------------------|-------------------|-------------------|
| manufacturer | description      | lamp holder | nominal voltage (V) | nominal current (A) |                  |                   |                   |
| Sylvania     | MP 320/350 ...PS | EX39        | 132                 | 2.60                | ZRM 6-ES/C 3.5kV | OGH320            | –                 |
|              | MS 320 ...PS     | E39         | 135                 | 2.63                | ZRM 6-ES/C 3.5kV | OGH320            | –                 |
| Venture      | MP 320 /N/.../PS | E39         | 135                 | 2.63                | ZRM 6-ES/C 3.5kV | OGH320            | –                 |
|              | MS 320 /.../PS   | E39         | 135                 | 2.63                | ZRM 6-ES/C 3.5kV | OGH320            | –                 |

## 350 W Metal halide lamps

| Lamps        |                  |             |                     |                     | Ignitors         | Magnetic ballasts | Remote gear boxes |
|--------------|------------------|-------------|---------------------|---------------------|------------------|-------------------|-------------------|
| manufacturer | description      | lamp holder | nominal voltage (V) | nominal current (A) |                  |                   |                   |
| Sylvania     | MP 320/350 ...PS | EX39        | 135                 | 2.90                | ZRM 6-ES/C 3.5kV | OGH350            | –                 |
|              | MP 350/400 ...PS | EX39        | 135                 | 2.90                | ZRM 6-ES/C 3.5kV | OGH350            | –                 |
| Venture      | MP 350 /N/.../PS | E39         | 135                 | 2.80                | ZRM 6-ES/C 3.5kV | OGH350            | –                 |
|              | MS 350 /.../PS   | E39         | 135                 | 2.80                | ZRM 6-ES/C 3.5kV | OGH350            | –                 |

## 400 W Metal halide lamps

| Lamps        |                        |             |                     |                     | Ignitors                                                      | Magnetic ballasts | Remote gear boxes |
|--------------|------------------------|-------------|---------------------|---------------------|---------------------------------------------------------------|-------------------|-------------------|
| manufacturer | description            | lamp holder | nominal voltage (V) | nominal current (A) |                                                               |                   |                   |
| BLV          | HIT 400...             | E40         | 100                 | 4.60                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C                       | OGS400TH          | –                 |
| GE           | ARC 400/D              | E40         | 120                 | 4.35                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
|              | CMH 400 /...E          | E40         | 125                 | 4.20                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
|              | KRC400...              | E40         | 130                 | 3.50                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C                       | OGB400, OGH400    | –                 |
|              | MVR 400 /...E          | E40         | 135                 | 3.20                | –                                                             | CWMH 400          | –                 |
|              |                        |             |                     |                     | ATIG-14                                                       | OGB400            | –                 |
| Iwasaki      | MF 400 /BUH            | E40         | 135                 | 3.25                | ATIG-14                                                       | OGB400            | –                 |
|              | MF 400 LSH/U           | E40         | 135                 | 3.25                | –                                                             | OGB400            | –                 |
|              | MF 400 SX              | E40         | 135                 | 3.25                | ATIG-14                                                       | OGB400            | –                 |
|              | MF 400 X/U             | E40         | 135                 | 3.25                | ATIG-14                                                       | OGB400            | –                 |
|              | MT 400 /BH             | E40         | 135                 | 3.25                | ATIG-14                                                       | OGB400            | –                 |
|              | MT 400 LSH             | E40         | 135                 | 3.25                | –                                                             | OGB400            | –                 |
| Osram        | HQI-BT400 W/D HPSGear  | E40         | 120                 | 4.00                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C                       | OGS400TH          | –                 |
|              | HQI-E 400 W/N/SI       | E40         | 135                 | 3.25                | ATIG-14                                                       | OGB400            | –                 |
|              | HQI-E400 W/... HPSGear | E40         | 120                 | 4.00                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C                       | OGS400TH          | –                 |
|              | HQI-T 400 W/N/SI       | E40         | 135                 | 3.25                | ATIG-14                                                       | OGB400            | –                 |
|              | HQI-T400 W/N HPSGear   | E40         | 120                 | 4.00                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C                       | OGS400TH          | –                 |
|              | HQI-TS 400 W/...       | Fc2         | 120                 | 4.10                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C                       | OGS400TH          | –                 |
|              | MI 400 /.../U          | E40         | 135                 | 3.25                | ATIG-14                                                       | OGB400            | –                 |
| Philips      | CDM-TT 400 W           | E40         | 95                  | 4.60                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
|              | HPI 400 W              | E40         | 125                 | 3.40                | ATIG-14                                                       | OGB400, OGH400    | –                 |
|              | HPIplus 400 W ++       | E40         | 125                 | 3.40                | ATIG-14                                                       | OGB400, OGH400    | –                 |
|              | HPIplus 400 W BUS++    | E40         | 125                 | 3.40                | –                                                             | OGB400, OGH400    | –                 |
|              | HPI-T 400 W            | E40         | 125                 | 3.40                | ATIG-14                                                       | OGB400, OGH400    | –                 |
|              | HPI-Tplus 400 W ++     | E40         | 125                 | 3.40                | ATIG-14                                                       | OGB400, OGH400    | –                 |
|              | MH 400 W               | E40         | 135                 | 3.25                | ATIG-14                                                       | OGB400            | –                 |
| Radium       | HRI-BT 400 ...         | E40         | 100                 | 4.60                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C                       | OGS400TH          | –                 |
|              | HRI-E 400 ...          | E40         | 100                 | 4.60                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C                       | OGS400TH          | –                 |
|              | HRI-E 400 W/NSI        | E40         | 135                 | 3.25                | ATIG-14                                                       | OGB400            | –                 |
|              | HRI-TS 400 ...         | Fc2         | 100                 | 4.60                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C                       | OGS400TH          | –                 |
| Sylvania     | HSI-HX 400             | E40         | 130                 | 3.40                | ATIG-14                                                       | OGB400, OGH400    | –                 |
|              | HSI-HX 400 /CO/I       | E40         | 130                 | 3.40                | –                                                             | OGB400, OGH400    | –                 |
|              | HSI-SX 400 /P...       | E40         | 120                 | 4.40                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
|              |                        |             |                     |                     |                                                               |                   |                   |
|              | HSI-T400 /6K...        | E40         | 122                 | 4.40                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C                       | OGS400            | –                 |
|              | HSI-THX 400            | E40         | 130                 | 3.25                | ATIG-14                                                       | OGB400            | –                 |
|              | HSI-TSX 400 ...        | E40         | 105                 | 4.40                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
|              |                        |             |                     |                     |                                                               |                   |                   |
|              | M 400 ...              | E39         | 135                 | 3.25                | –                                                             | CWMH 400          | –                 |
|              |                        |             |                     |                     | ATIG-14                                                       | OGB400            | –                 |
|              | M 400 ...BT28          | E39         | 135                 | 3.25                | –                                                             | CWMH 400          | –                 |
|              |                        |             |                     |                     | ATIG-14                                                       | OGB400            | –                 |
|              | MP 350/400 ...PS       | EX39        | 135                 | 3.25                | ZRM 6-ES/C 3.5kV                                              | OGB400            | –                 |
|              | MP 400 ...             | EX39        | 135                 | 3.25                | –                                                             | CWMH 400          | –                 |
| Venture      |                        |             |                     |                     | ZRM 6-ES/C 3.5kV                                              | OGB400            | –                 |
|              |                        |             |                     |                     | –                                                             | CWMH 400          | –                 |
|              |                        |             |                     |                     | ZRM 6-ES/C 3.5kV                                              | OGB400            | –                 |
|              | HIE 400 / LU           | E40         | 120                 | 4.00                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
|              | HIE 400 /x/x           | E40         | 135                 | 3.20                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C                       | OGB400            | –                 |
|              | HIE 400 W/x/x/EURO/x   | E40         | 135                 | 3.25                | ATIG-14                                                       | OGB400            | –                 |
|              | MH 400 /... (M59)      | E39         | 135                 | 3.20                | ATIG-14                                                       | OGB400            | –                 |
|              | MP 400 N/.../PS        | E39         | 135                 | 3.20                | ZRM 6-ES/C 3.5kV                                              | OGB400            | –                 |
|              | MS 400 /.../PS         | E39         | 135                 | 3.20                | ZRM 6-ES/C 3.5kV                                              | OGB400            | –                 |
|              | MS 400 /... (M59)      | E39         | 135                 | 3.20                | ATIG-14                                                       | OGB400            | –                 |

+ ballast with ignitor tap required

++ can also be operated with HPSgear



## 450 W Metal halide lamps

| Lamps        |                  |             |                     |                     | Ignitors         | Magnetic ballasts | Remote gear boxes |
|--------------|------------------|-------------|---------------------|---------------------|------------------|-------------------|-------------------|
| manufacturer | description      | lamp holder | nominal voltage (V) | nominal current (A) |                  |                   |                   |
| Venture      | MP 450 /V/.../PS | E39         | 135                 | 3.70                | ZRM 6-ES/C 3.5kV | OGH450            | –                 |
|              | MS 450 /.../PS   | E39         | 135                 | 3.70                | ZRM 6-ES/C 3.5kV | OGH450            | –                 |

## 1,000 W Metal halide lamps

| Lamps        |                     |             |                     |                     | Ignitors                                        | Magnetic ballasts | Remote gear boxes |
|--------------|---------------------|-------------|---------------------|---------------------|-------------------------------------------------|-------------------|-------------------|
| manufacturer | description         | lamp holder | nominal voltage (V) | nominal current (A) |                                                 |                   |                   |
| BLV          | HIT 1000            | E40         | 120                 | 9.50                | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+ | OGH1000A          | –                 |
| GE           | MVR 1000            | E40         | 250                 | 4.30                | –                                               | CWMH 1000         | –                 |
|              | SPL 1000            | RX7sM       | 270                 | 4.20                | ZRM 12-ES/C 400                                 | OGH1000H          | –                 |
|              | SPL 1000            | E40         | 130                 | 9.50                | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+ | OGH1000A          | –                 |
| Iwasaki      | MF 1000 B SX        | E40         | 230                 | 4.70                | –                                               | CWMH 1000         | –                 |
|              | MF 1000 B X/U       | E40         | 263                 | 4.10                | –                                               | CWMH 1000         | –                 |
|              | MT 1000 ...         | E40         | 130                 | 8.25                | ZRM 12-ES/C, ZRM 12-ES/CT                       | OGH1000           | –                 |
|              | MT 1000 A-BH/67     | E40         | 145                 | 7.50                | ATIG-14                                         | OGH1000           | –                 |
|              | MT 1000 B           | E40         | 230                 | 4.70                | –                                               | CWMH 1000         | –                 |
|              | MT 1000 B-BH        | E40         | 230                 | 4.70                | ZRM 1200/400 A001                               | OGH1000H          | –                 |
| Osram        | HQI-E 1000 ...      | E40         | 130                 | 9.50                | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+ | OGH1000A          | –                 |
|              | HQI-T 1000 ...      | E40         | 130                 | 9.50                | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+ | OGH1000A          | –                 |
|              | HQI-TS 1000 W/D/S   | cable       | 120                 | 9.60                | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+ | OGH1000A          | –                 |
|              | HQI-TS 1000 W/NDL/S | cable       | 120                 | 9.60                | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+ | OGH1000A          | –                 |
| Philips      | HPI-T 1000 W        | E40         | 130                 | 8.25                | ATIG-14                                         | OGH1000           | –                 |
|              | MHN-LA 1000 W       | cable       | 125                 | 9.30                | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+ | OGH1000A          | –                 |
| Radium       | HRI-T 1000 ...      | E40         | 130                 | 9.50                | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+ | OGH1000A          | –                 |
|              | HRI-TS 1000 /D      | Fc2         | 130                 | 9.50                | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+ | OGH1000A          | –                 |
|              | HRI-TS 1000 W/D/S   | cable       | 130                 | 9.50                | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+ | OGH1000A          | –                 |
| Sylvania     | HSI-T1000 W/4K      | E40         | 130                 | 8.25                | ATIG-14                                         | OGH1000           | –                 |
|              | M 1000 ...          | E39         | 263                 | 4.10                | –                                               | CWMH 1000         | –                 |
|              | M 1000 ...BT37      | E39         | 263                 | 4.10                | –                                               | CWMH 1000         | –                 |
|              | MP 1000 ...         | EX39        | 263                 | 4.10                | –                                               | CWMH 1000         | –                 |
|              | MS 1000 ...         | E39         | 263                 | 4.10                | –                                               | CWMH 1000         | –                 |
| Venture      | MH 1000             | E39         | 263                 | 4.30                | –                                               | CWMH 1000         | –                 |

+ ballast with ignitor tap required

## 1,500 W Metal halide lamps

| Lamps        |               |             |                     |                     | Ignitors        | Magnetic ballasts | Remote gear boxes |
|--------------|---------------|-------------|---------------------|---------------------|-----------------|-------------------|-------------------|
| manufacturer | description   | lamp holder | nominal voltage (V) | nominal current (A) |                 |                   |                   |
| GE           | MVR1500       | E40         | 270                 | 6.00                | –               | CWMH1500          | –                 |
|              | SPL 1500 /L/H | RX7sM       | 250                 | 6.80                | ZRM 12-ES/C 400 | OGH1500           | –                 |
| Sylvania     | M 1500 ...    | E39         | 268                 | 6.20                | –               | CWMH1500          | –                 |
|              | M 1500 T7/DE  | RSC         | 500                 | 3.30                | –               | CWBL 1500         | –                 |
|              | M 1500 T8/DE  | CER/SP      | 265                 | 6.30                | –               | CWMH1500          | –                 |
| Venture      | MBILS1500     | RSC (RX7s)  | 250                 | 6.70                | ZRM 12-ES/C 400 | OGH1500           | –                 |
|              | MH 1500 /     | E39         | 268                 | 6.20                | –               | CWMH1500          | –                 |



## 1,800 W Metal halide lamps

| Lamps        |                    |               |                     |                     | Ignitors        | Magnetic ballasts | Remote gear boxes |
|--------------|--------------------|---------------|---------------------|---------------------|-----------------|-------------------|-------------------|
| manufacturer | description        | lamp holder   | nominal voltage (V) | nominal current (A) |                 |                   |                   |
| Philips      | MHN-SA1800 W/230V  | X830R, (P)SFC | 120                 | 17.30               | ZRM 20-ES/B     | MHD 1800          | –                 |
|              | MHN-SA 1800 W/400V | (P)SFC        | 205                 | 10.50               | ZRM 12-ES/C 400 | MHD 1800H         | –                 |

## 2,000 W Metal halide lamps

| Lamps        |                        |             |                     |                     | Ignitors                                     | Magnetic ballasts     | Remote gear boxes |
|--------------|------------------------|-------------|---------------------|---------------------|----------------------------------------------|-----------------------|-------------------|
| manufacturer | description            | lamp holder | nominal voltage (V) | nominal current (A) |                                              |                       |                   |
| GE           | SPL 2000 /L            | special     | 250                 | 10.30               | ZRM 12-ES/C 400                              | HQI 2000/D            | –                 |
|              | SPL 2000 /T            | E40         | 250                 | 10.30               | ZRM 1200/400 A001                            | HQI 2000/D            | –                 |
|              | SPL 2000 /T/HR         | E40         | 250                 | 10.30               | ZRM 12-ES/C 400                              | HQI 2000/D            | –                 |
|              | SPL 2000 /T/I          | E40         | 250                 | 10.30               | –                                            | HQI 2000/D            | –                 |
| Iwasaki      | MT 2000 B-BH-L         | E40         | 230                 | 9.20                | ZRM 1200/400 A001                            | HQI 2000              | –                 |
|              | MT 2000 B-BH-L/T       | E40         | 230                 | 9.20                | –                                            | HQI 2000              | –                 |
| Osram        | HQI-T 2000 /D          | E40         | 230                 | 10.30               | ZRM 12-ES/C 400                              | HQI 2000/D            | –                 |
|              | HQI-T 2000 /D/I        | E40         | 230                 | 10.30               | –                                            | HQI 2000/D            | –                 |
|              | HQI-T 2000 /N          | E40         | 245                 | 8.80                | –                                            | HQI 2000              | –                 |
|              | HQI-T2000 /N/230 V     | E40         | 120                 | 16.50               | ATIG-14                                      | HQI2000L, 2 x OGH1000 | –                 |
|              | HQI-T 2000 /N/E/SUPER  | E40         | 220                 | 8.80                | ZRM 12-ES/C 400,<br>ZRM 4000/400 powerPULSE+ | HQI 2000              | –                 |
|              | HQI-T 2000 /N/SN/SUPER | E40         | 220                 | 8.80                | ZRM 1200/400 A001                            | HQI 2000              | –                 |
|              | HQI-TS 2000 /D         | cable       | 205                 | 11.30/10.30         | ZRM 12-ES/C 400                              | HQI 2000/D            | –                 |
|              | HQI-TS 2000 /DS        | cable       | 205                 | 11.30/10.30         | ZRM 12-ES/C 400                              | HQI 2000/D            | –                 |
| Philips      | HPI-T 2000 W/220V      | E40         | 130                 | 16.50               | ZRM 20-ES/B                                  | HQI2000L, 2 x OGH1000 | –                 |
|              | HPI-T2000 W/380V       | E40         | 240                 | 8.80                | ZRM 12-ES/C 400,<br>ZRM 4000/400 powerPULSE+ | HQI 2000              | –                 |
|              | MHN-LA 2000 W/400V     | cable       | 225/235             | 10.30/9.60          | ZRM 12-ES/C 400                              | HQI 2000/D            | –                 |
|              | MHN-SA 2000 W/400V     | X830R       | 205                 | 11.30               | ZRM 12-ES/C 400                              | HQI 2000/D            | –                 |
|              | MHN-TD 2000 W          | cable       | 235                 | 9.60                | ZRM 12-ES/C 400                              | HQI 2000/D            | –                 |
|              | MHT-TD 2000 W          | cable       | 225                 | 10.30               | ZRM 12-ES/C 400                              | HQI 2000/D            | –                 |
| Radium       | HRI-T 2000 /D          | E40         | 230                 | 10.30               | ZRM 12-ES/C 400                              | HQI 2000/D            | –                 |
|              | HRI-T 2000 /D/I        | E40         | 230                 | 10.30               | –                                            | HQI 2000/D            | –                 |
|              | HRI-T2000 /N/230V      | E40         | 130                 | 16.50               | ATIG-14                                      | HQI2000L, 2 x OGH1000 | –                 |
|              | HRI-T 2000 /N/I        | E40         | 245                 | 8.80                | –                                            | HQI 2000              | –                 |
|              | HRI-T 2000 /NSC/400    | E40         | 245                 | 8.80                | ZRM 12-ES/C 400,<br>ZRM 4000/400 powerPULSE+ | HQI 2000              | –                 |
|              | HRI-TS 2000 /D         | E40         | 205                 | 10.30               | ZRM 12-ES/C 400                              | HQI 2000/D            | –                 |
|              | HRI-TS 2000 /DS        | cable       | 205                 | 11.30               | ZRM 12-ES/C 400                              | HQI 2000/D            | –                 |
|              | HRI-TS 2000 /NDL/S     | cable       | 205                 | 11.30               | ZRM 12-ES/C 400                              | HQI 2000/D            | –                 |
|              | HSI-T 2000 W/S         | E40         | 235                 | 9.00                | ZRM 1200/400 A001                            | HQI 2000              | –                 |
|              | HSI-T 2000 WS/I        | E40         | 235                 | 9.00                | –                                            | HQI 2000              | –                 |
| Sylvania     | HSI-TD 2000 W/D        | cable       | 205                 | 11.30               | ZRM 12-ES/C 400                              | HQI 2000/D            | –                 |
|              | M 2000 T8/DE           | RSC         | 250                 | 8.50                | ZRM 12-ES/C 400                              | CWBL 2000             | –                 |
|              | M 2000 T9/DE           | CER/SP      | 250                 | 8.50                | ZRM 12-ES/C 400                              | CWBL 2000             | –                 |
|              | M 2000 T10/DE          | CER/SP      | 220                 | 10.70               | ZRM 12-ES/C 400                              | HQI 2000/D            | –                 |
|              | MBILS 2000             | special     | 230                 | 10.30               | ZRM 12-ES/C 400                              | HQI 2000/D            | –                 |

+ ballast with ignitor tap required

## 3,500 W Metal halide lamps

| Lamps        |               |             |                     |                     | Ignitors        | Magnetic ballasts | Remote gear boxes |
|--------------|---------------|-------------|---------------------|---------------------|-----------------|-------------------|-------------------|
| manufacturer | description   | lamp holder | nominal voltage (V) | nominal current (A) |                 |                   |                   |
| Osram        | HQI-T3500 W/D | E40         | 220                 | 18.00               | ZRM 20-ES/B 400 | HQI3500           | –                 |
| Radium       | HRI-T3500 /D  | E40         | 220                 | 18.00               | ZRM 20-ES/B 400 | HQI3500           | –                 |
|              | HRI-TS3500 /D | E40         | 220                 | 18.00               | ZRM 20-ES/B 400 | HQI3500           | –                 |

## 35 W High pressure sodium vapour lamps

| Lamps        |             |             |                     |                     | Ignitors                | Magnetic ballasts | Remote gear boxes |
|--------------|-------------|-------------|---------------------|---------------------|-------------------------|-------------------|-------------------|
| manufacturer | description | lamp holder | nominal voltage (V) | nominal current (A) |                         |                   |                   |
| Philips      | SDW-T35 W   | PG12-1      | 96                  | 0.48                | Philips CSLS35          | EPS35, OMS 35     | –                 |
| Sylvania     | SHP-S35 ... | E27         | 90                  | 0.49                | ZRM 2-ES/C, ZRM 2-ES/CT | EPS35, OMS 35     | –                 |
|              | SHP-TS35 W  | E27         | 90                  | 0.49                | ZRM 2-ES/C, ZRM 2-ES/CT | EPS35, OMS 35     | –                 |

## 50 W High pressure sodium vapour lamps

| Lamps        |                   |             |                     |                     | Ignitors                | Magnetic ballasts | Remote gear boxes |
|--------------|-------------------|-------------|---------------------|---------------------|-------------------------|-------------------|-------------------|
| manufacturer | description       | lamp holder | nominal voltage (V) | nominal current (A) |                         |                   |                   |
| GE           | LU 50/90          | E27         | 85                  | 0.76                | ZRM 2-ES/C, ZRM 2-ES/CT | EPS50, OMS 50     | –                 |
|              | LU 50/90...I      | E27         | 85                  | 0.76                | –                       | EPS50, OMS 50     | –                 |
| Iwasaki      | NH 50 .../HV/...  | E27         | 85                  | 0.76                | ZRM 2-ES/C, ZRM 2-ES/CT | EPS50, OMS 50     | –                 |
|              | NH 50 F/HV/I      | E27         | 85                  | 0.76                | –                       | EPS50, OMS 50     | –                 |
|              | NHT50 /I          | E27         | 85                  | 0.76                | –                       | EPS50, OMS 50     | –                 |
|              | NAVE 50           | E27         | 85                  | 0.76                | ZRM 2-ES/C, ZRM 2-ES/CT | EPS50, OMS 50     | –                 |
| Osram        | NAVE 50 I         | E27         | 85                  | 0.76                | –                       | EPS50, OMS 50     | –                 |
|              | NAV T 50 SUPER 4Y | E27         | 90                  | 0.80                | ZRM 2-ES/C, ZRM 2-ES/CT | EPS50, OMS 50     | –                 |
|              | SDW-T50 W         | PG12-1      | 92                  | 0.76                | Philips CSLS50          | EPS50, OMS 50     | –                 |
| Philips      | SON50 W-E         | E27         | 90                  | 0.76                | ZRM 2-ES/C, ZRM 2-ES/CT | EPS50, OMS 50     | –                 |
|              | SON50 W-I         | E27         | 90                  | 0.76                | –                       | EPS50, OMS 50     | –                 |
|              | SON-T... 50 W     | E27         | 88                  | 0.75                | ZRM 2-ES/C, ZRM 2-ES/CT | EPS50, OMS 50     | –                 |
|              | RNP-E50 W         | E27         | 85                  | 0.76                | ZRM 2-ES/C, ZRM 2-ES/CT | EPS50, OMS 50     | –                 |
| Radium       | RNP-E50 W/I       | E27         | 85                  | 0.76                | –                       | EPS50, OMS 50     | –                 |
|              | SHP50 W... I      | E27         | 85                  | 0.76                | –                       | EPS50, OMS 50     | –                 |
| Sylvania     | SHP-S50 W...      | E27         | 85                  | 0.76                | ZRM 2-ES/C, ZRM 2-ES/CT | EPS50, OMS 50     | –                 |
|              | SHP-TS50 W        | E27         | 85                  | 0.76                | ZRM 2-ES/C; ZRM 2-ES/CT | EPS50, OMS 50     | –                 |

## 70 W High pressure sodium vapour lamps

| Lamps        |                     |             |                     |                     | Ignitors                                  | Magnetic ballasts | Remote gear boxes |
|--------------|---------------------|-------------|---------------------|---------------------|-------------------------------------------|-------------------|-------------------|
| manufacturer | description         | lamp holder | nominal voltage (V) | nominal current (A) |                                           |                   |                   |
| BLV          | NAH-E 70            | E27         | 90                  | 1.00                | ZRM 2-ES/C, ZRM 2-ES/CT                   | EPS 70A, OMS 70A  | –                 |
|              | NAH-TR 70           | RX7s        | 90                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70A, OMS 70A  | OM PAK70 M        |
| GE           | LU 70 /90...        | E27         | 85                  | 0.98                | ZRM 2-ES/C, ZRM 2-ES/CT                   | EPS 70A, OMS 70A  | –                 |
|              | LU 70 /90...I       | E27         | 85                  | 0.98                | –                                         | EPS 70A, OMS 70A  | –                 |
| Iwasaki      | NH 70 /HV/... 70 S  | E27         | 90                  | 0.98                | ZRM 2-ES/C, ZRM 2-ES/CT                   | EPS 70A, OMS 70A  | –                 |
|              | NH 70 F/HV/I        | E27         | 90                  | 0.98                | –                                         | EPS 70A, OMS 70A  | –                 |
|              | NHT 70              | E27         | 90                  | 0.98                | ZRM 2-ES/C, ZRM 2-ES/CT                   | EPS 70A, OMS 70A  | –                 |
|              | NHT 70 /I           | E27         | 90                  | 0.98                | –                                         | EPS 70A, OMS 70A  | –                 |
| Osram        | NAV E 70 ...        | E27         | 90                  | 0.98                | ZRM 2-ES/C, ZRM 2-ES/CT                   | EPS 70A, OMS 70A  | –                 |
|              | NAV E 70 I          | E27         | 90                  | 0.98                | –                                         | EPS 70A, OMS 70A  | –                 |
|              | NAV T 70 ...        | E27         | 90                  | 0.98                | ZRM 2-ES/C, ZRM 2-ES/CT                   | EPS 70A, OMS 70A  | –                 |
|              | NAV TS 70 SUPER 4Y  | RX7s        | 85                  | 0.98                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70A, OMS 70A  | OM PAK70 M        |
| Philips      | SON 70 W...         | E27         | 90                  | 0.98                | ZRM 2-ES/C, ZRM 2-ES/CT                   | EPS 70A, OMS 70A  | –                 |
|              | SON 70 W-E          | E27         | 90                  | 0.98                | ZRM 2-ES/C, ZRM 2-ES/CT                   | EPS 70A, OMS 70A  | –                 |
|              | SON 70 W-I          | E27         | 90                  | 0.98                | –                                         | EPS 70A, OMS 70A  | –                 |
|              | SON Hg free 70 W... | E27         | 90                  | 0.98                | ZRM 2-ES/C, ZRM 2-ES/CT                   | EPS 70A, OMS 70A  | –                 |
|              | SON-T 70 W...       | E27         | 90                  | 0.98                | ZRM 2-ES/C, ZRM 2-ES/CT                   | EPS 70A, OMS 70A  | –                 |
|              | SON Hg free 70 W... | E27         | 90                  | 0.98                | ZRM 2-ES/C, ZRM 2-ES/CT                   | EPS 70A, OMS 70A  | –                 |
|              | SON-T plus 70 W...  | E27         | 90                  | 1.00                | ZRM 2-ES/C, ZRM 2-ES/CT                   | EPS 70A, OMS 70A  | –                 |
| Radium       | RNP-E 70 W          | E27         | 90                  | 1.00                | ZRM 2-ES/C, ZRM 2-ES/CT                   | EPS 70A, OMS 70A  | –                 |
|              | RNP-E 70 W/I        | E27         | 90                  | 1.00                | –                                         | EPS 70A, OMS 70A  | –                 |
|              | RNP-T 70 W          | E27         | 90                  | 1.00                | ZRM 2-ES/C; ZRM 2-ES/CT                   | EPS 70A, OMS 70A  | –                 |
|              | RNP-TS 70 W         | RX7s        | 90                  | 1.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | EPS 70A, OMS 70A  | OM PAK70 M        |
| Sylvania     | SHP 70 W/CO-E       | E27         | 90                  | 0.98                | ZRM 2-ES/C, ZRM 2-ES/CT                   | EPS 70A, OMS 70A  | –                 |
|              | SHP 70 W...         | E27         | 90                  | 1.00                | ZRM 2-ES/C, ZRM 2-ES/CT                   | EPS 70A, OMS 70A  | –                 |
|              | SHP 70 W... I       | E27         | 90                  | 1.00                | –                                         | EPS 70A, OMS 70A  | –                 |
|              | SHP-S 70 W...       | E27         | 90                  | 1.00                | ZRM 2-ES/C; ZRM 2-ES/CT                   | EPS 70A, OMS 70A  | –                 |
|              | SHP-T 70 W...       | E27         | 90                  | 1.00                | ZRM 2-ES/C; ZRM 2-ES/CT                   | EPS 70A, OMS 70A  | –                 |
|              | SHP-TD 70 W...      | E27         | 90                  | 1.00                | ZRM 2-ES/C; ZRM 2-ES/CT                   | EPS 70A, OMS 70A  | –                 |
|              | SHP-TS 70 W...      | E27         | 90                  | 1.00                | ZRM 2-ES/C, ZRM 2-ES/CT                   | EPS 70A, OMS 70A  | –                 |

## 100 W High pressure sodium vapour lamps

| Lamps        |                    |             |                     |                     | Ignitors                                  | Magnetic ballasts | Remote gear boxes |
|--------------|--------------------|-------------|---------------------|---------------------|-------------------------------------------|-------------------|-------------------|
| manufacturer | description        | lamp holder | nominal voltage (V) | nominal current (A) |                                           |                   |                   |
| GE           | LU 100 ...         | E40         | 100                 | 1.20                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS 100           | OM PAK100 M       |
|              | TCF 100            | E40         | 100                 | 1.20                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS 100           | OM PAK100 M       |
| Iwasaki      | NH 100 F           | E40         | 100                 | 1.20                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS 100           | OM PAK100 M       |
|              | NH 100 F/HV/I      | E40         | 100                 | 1.20                | –                                         | OMS 100           | –                 |
|              | NHT 100            | E40         | 100                 | 1.20                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS 100           | OM PAK100 M       |
|              | NHT 100 /I         | E40         | 100                 | 1.20                | –                                         | OMS 100           | –                 |
| Osram        | NAV E 100 SUPER 4Y | E40         | 100                 | 1.20                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS 100           | OM PAK100 M       |
|              | NAV T 100 SUPER 4Y | E40         | 100                 | 1.20                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS 100           | OM PAK100 M       |
| Philips      | SDW-T 100 W        | PG12-1      | 98                  | 1.31                | Philips CSLS 100                          | OMS 100A          | –                 |
|              | SON plus 100 W     | E40         | 100                 | 1.20                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS 100           | OM PAK100 M       |
|              | SON ... 100 W      | E40         | 100                 | 1.20                | ZRM 2.5-ES/C; ZRM 2.5-ES/CT; ZRM 4.5-ES/C | OMS 100           | OM PAK100 M       |

## 150 W High pressure sodium vapour lamps

| Lamps        |                    |             |                     |                     | Ignitors                                  | Magnetic ballasts | Remote gear boxes |
|--------------|--------------------|-------------|---------------------|---------------------|-------------------------------------------|-------------------|-------------------|
| manufacturer | description        | lamp holder | nominal voltage (V) | nominal current (A) |                                           |                   |                   |
| BLV          | HST-DE150          | Fc2, RX7s   | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
|              | NAH-T150           | E40         | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
| GE           | LU 150 /100 (S56)  | E40         | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
|              | TCF 150            | E40         | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
| Iwasaki      | NH 150 /I          | E40         | 100                 | 1.80                | –                                         | OMS 150, OGS150   | –                 |
|              | NH 150 ...         | E40         | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
|              | NH 150 F/HV/I      | E40         | 100                 | 1.80                | –                                         | OMS 150, OGS150   | –                 |
|              | NHT 150 ...        | E40         | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
| Osram        | NAVE 150 ...       | E40         | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
|              | NAV T 150 ...      | E40         | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
|              | NAVTS 150 ...      | RX7s        | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
| Philips      | SONComfort 150 W   | E40         | 105                 | 1.82                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
|              | SONHg free 150 W   | E40         | 98                  | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
|              | SONplus 150 W      | E40         | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
|              | SON150 W           | E40         | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
|              | SON-E150 W         | E40         | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
|              | SON-TComfort 150 W | E40         | 105                 | 1.82                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
|              | SON-THg free 150 W | E40         | 98                  | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
|              | SON-Tplus 150 W    | E40         | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
|              | SON-T150 W         | E40         | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
| Radium       | RNP-E150 ...       | E40         | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
|              | RNT-T150 ...       | E40         | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
|              | RNT-TS150 ...      | RX7s        | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
| Sylvania     | LU 150 ... (100V)  | E39         | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS 150, OGS150   | OM PAK150 M       |
|              | SHP-S150 W...      | E40         | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
|              | SHP-T150 W...      | E40         | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
|              | SHP-TD150 W...     | E40         | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
| Venture      | SHP-TS150 W...     | E40         | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |
|              | LU 150 /100 (S56)  | Mogul       | 100                 | 1.80                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C | OMS150, OGS150    | OM PAK150 M       |

## 250 W High pressure sodium vapour lamps

| Lamps        |                     |                     |     |                     | Igniters                                                        | Magnetic ballasts | Remote gear boxes |
|--------------|---------------------|---------------------|-----|---------------------|-----------------------------------------------------------------|-------------------|-------------------|
| manufacturer | description         | nominal voltage (V) |     | nominal current (A) |                                                                 |                   |                   |
| BLV          | HST-DE250           | Fc2, RX7s           | 100 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
|              | NAH-T250            | E40                 | 100 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
| GE           | LU 250 .../40 (S50) | E40                 | 100 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
|              | LU 250 /TD          | RX7s                | 100 | 2.95                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
| Iwasaki      | NH250 ...           | E40                 | 100 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
|              | NH250 F/I           | E40                 | 100 | 3.00                | –                                                               | OGS250            | –                 |
|              | NHT250 /I           | E40                 | 100 | 3.00                | –                                                               | OGS250            | –                 |
|              | NHT250 ...          | E40                 | 100 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
| Osram        | NAVE 250 ...        | E40                 | 100 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
|              | NAV T 250 ...       | E40                 | 100 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
|              | NAVTS 250           | Fc2                 | 100 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
| Philips      | SON... 250 W        | E40                 | 100 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
|              | SON-T... 250 W      | E40                 | 100 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
| Radium       | RNP-E250 ...        | E40                 | 100 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
|              | RNP-T250            | E40                 | 100 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
| Sylvania     | LU 250 ... (S50)    | E39                 | 100 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
|              | SHP250 W...         | E40                 | 100 | 2.95                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
|              | SHP-S250 W...       | E40                 | 100 | 2.95                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
|              | SHP-T250 W...       | E40                 | 100 | 2.95                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
|              | SHP-TS250 W...      | E40                 | 100 | 2.95                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
| Venture      | LU 250 (S50)        | Mogul               | 100 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |
|              | LU 250 /T7/ (S50)   | RSC                 | 100 | 3.00                | ZRM 2.5-ES/C, ZRM 2.5-ES/CT, ZRM 4.5-ES/C, ZRM 4000 powerPULSE+ | OGS250            | –                 |

+ ballast with ignitor tap required

## 400 W High pressure sodium vapour lamps

| Lamps        |                    |             |                     |                     | Igniters                                                      | Magnetic ballasts | Remote gear boxes |
|--------------|--------------------|-------------|---------------------|---------------------|---------------------------------------------------------------|-------------------|-------------------|
| manufacturer | description        | lamp holder | nominal voltage (V) | nominal current (A) |                                                               |                   |                   |
| BLV          | HST-DE 400         | Fc2, RX7s   | 100                 | 4.60                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
|              | NAH-T 400          | E40         | 100                 | 4.60                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
| GE           | LU 400 .../TD      | RX7s        | 100                 | 4.40                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
|              | LU 400...          | E40         | 100                 | 4.60                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
| Iwasaki      | NH 400 ...         | E40         | 105                 | 4.45                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
|              | NH 400 F/I         | E40         | 105                 | 4.45                | –                                                             | OGS400            | –                 |
|              | NHT 400 /I         | E40         | 100                 | 4.60                | –                                                             | OGS400            | –                 |
|              | NHT 400 ...        | E40         | 100                 | 4.60                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
| Osram        | NAV E 400 ...      | E40         | 105                 | 4.40                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
|              | NAV T 400 ...      | E40         | 105                 | 4.40                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
|              | NAV TS 400 ...     | Fc2         | 105                 | 4.40                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
| Philips      | SON... 400 W       | E40         | 105                 | 4.45                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
|              | SON-T... 400 W     | E40         | 100                 | 4.60                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
|              | SON-T-AGRO         | E40         | 116                 | 4.13                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
| Radium       | RNP-E 400 W        | E40         | 100                 | 4.60                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
|              | RNP-T 400 W        | E40         | 100                 | 4.60                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
| Sylvania     | LU 400 ... (S51)   | E39         | 100                 | 4.70                | ZRM 6-ES/C, ZRM 6-ES/CT, ZRM 4000 powerPULSE+                 | OGS400            | –                 |
|              | SHP 400 W...       | E40         | 100                 | 4.50                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
|              | SHP-T 400 W...     | E40         | 100                 | 4.50                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
|              | SHP-TS400 W Grolux | E40         | 120                 | 4.00                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
|              | SHP-TS 400 W...    | E40         | 100                 | 4.50                | ZRM 4.5-ES/C, ZRM 4.5-ES/CT, ZRM 6-ES/C, ZRM 4000 powerPULSE+ | OGS400            | –                 |
| Venture      | LU 400 /T7/ (S51)  | RSC         | 100                 | 4.70                | ZRM 6-ES/C, ZRM 6-ES/CT, ZRM 4000 powerPULSE+                 | OGS400            | –                 |
|              | LU 400 ... (S51)   | Mogul       | 100                 | 4.70                | ZRM 6-ES/C, ZRM 6-ES/CT, ZRM 4000 powerPULSE+                 | OGS400            | –                 |

+ ballast with ignitor tap required

## 600 W High pressure sodium vapour lamps

| Lamps manufacturer | description        | lamp holder | nominal voltage (V) | nominal current (A) | Ignitons                                          | Magnetic ballasts | Remote gear boxes |
|--------------------|--------------------|-------------|---------------------|---------------------|---------------------------------------------------|-------------------|-------------------|
| BLV                | NAH-T 600          | E40         | 112                 | 6.20                | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+   | OGS 600           | —                 |
| GE                 | LU 600             | E40         | 115                 | 6.00                | ZRM 12-ES/C; ZRM 12-ES/CT<br>ZRM 4000 powerPULSE+ | OGS 600           | —                 |
| Osram              | NAV-T 600 SUPER 4Y | E40         | 112                 | 6.20                | ZRM 12-ES/C; ZRM 12-ES/CT<br>ZRM 4000 powerPULSE+ | OGS 600           | —                 |
| Philips            | SON-T plus 600 W   | E40         | 115                 | 5.80                | ZRM 12-ES/C; ZRM 12-ES/CT<br>ZRM 4000 powerPULSE+ | OGS 600           | —                 |
| Radium             | RNP-T 600 W        | E40         | 112                 | 6.20                | ZRM 12-ES/C; ZRM 12-ES/CT<br>ZRM 4000 powerPULSE+ | OGS 600           | —                 |
| Sylvania           | SHP-TS 600         | E40         | 110                 | 5.90                | ZRM 12-ES/C; ZRM 12-ES/CT<br>ZRM 4000 powerPULSE+ | OGS 600           | —                 |
|                    | SHP-TS 600 Grolux  | E40         | 125                 | 5.50                | ZRM 12-ES/C; ZRM 12-ES/CT<br>ZRM 4000 powerPULSE+ | OGS 600           | —                 |

+ ballast with ignitor tap required

## 1,000 W High pressure sodium vapour lamps

| Lamps manufacturer | description     | lamp holder | nominal voltage (V) | nominal current (A) | Ignitons                                        | Magnetic ballasts | Remote gear boxes |
|--------------------|-----------------|-------------|---------------------|---------------------|-------------------------------------------------|-------------------|-------------------|
| GE                 | LU 1000 (S52)   | E40         | 250                 | 4.70                | ATIG-10                                         | CWHS 1000         | —                 |
|                    | LU 1000 /110    | E40         | 110                 | 10.30               | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+ | OGS 1000          | —                 |
| Iwasaki            | NH 1000         | E40         | 110                 | 10.30               | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+ | OGS 1000          | —                 |
|                    | NHT 1000        | E40         | 100                 | 10.60               | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+ | OGS 1000          | —                 |
|                    | NHT 1000 B      | E40         | 250                 | 4.70                | ATIG-10                                         | CWHS 1000         | —                 |
|                    | NHT 1000 F/I    | E40         | 100                 | 10.60               | —                                               | OGS 1000          | —                 |
|                    | NHT 1000 I      | E40         | 100                 | 10.60               | —                                               | OGS 1000          | —                 |
| Osram              | NAV E 1000      | E40         | 115                 | 10.30               | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+ | OGS 1000          | —                 |
|                    | NAV T 1000      | E40         | 110                 | 10.60               | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+ | OGS 1000          | —                 |
| Philips            | SON 1000 W      | E40         | 110                 | 10.30               | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+ | OGS 1000          | —                 |
|                    | SON-T 1000 W    | E40         | 105                 | 10.60               | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+ | OGS 1000          | —                 |
| Radium             | RNP-E 1000 W    | E40         | 115                 | 10.30               | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+ | OGS 1000          | —                 |
|                    | RNP-T 1000 W    | E40         | 115                 | 10.30               | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+ | OGS 1000          | —                 |
| Sylvania           | LU 1000 (S52)   | E39         | 250                 | 4.7                 | ATIG-10                                         | CWHS 1000         | —                 |
|                    | SHP-T 1000 W... | E40         | 100                 | 10.60               | ZRM 12-ES/C, ZRM 12-ES/CT, ZRM 4000 powerPULSE+ | OGS 1000          | —                 |
| Venture            | LU 1000 (S52)   |             | 250                 | 4.70                | ATIG-10                                         | CWHS 1000         | —                 |

+ ballast with ignitor tap required

## EC type HID ballasts

- slim cross-section and compact
- very short magnetic paths
- low magnetic stray field
- vacuum impregnation and short heat paths
- long service life
- non-audible noise level
- nomex fixed air-gap ensuring permanent calibration
- resistant to moisture and corrosion
- 24A double screw terminal
- low power consumption
- winding insulation class H materials
- tw130 winding temperature rating

### 100% final testing

- continuity
- winding short circuit
- core to coil high voltage test
- operating values

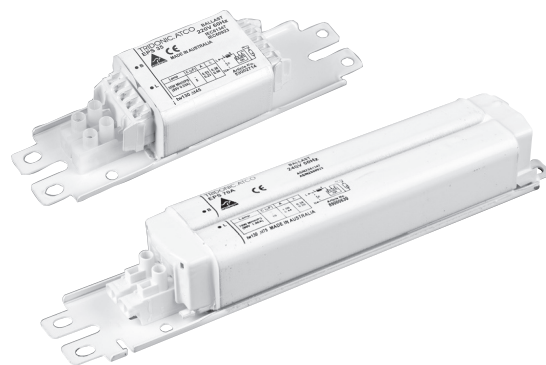


figure 1

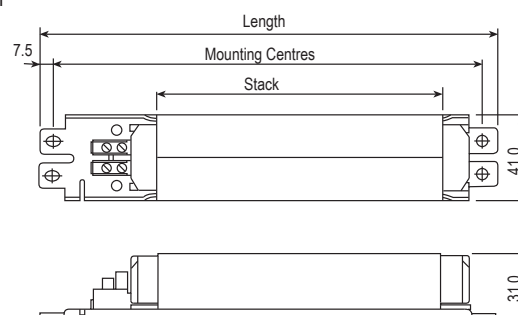
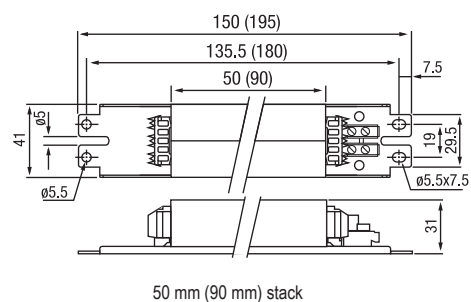


figure 2



## 220 V 50 Hz and 220 V 60 Hz – EC ballasts

| Lamp                                |         |         | Ballast                  |                | Electrical |             |              |                    |            |              |                    |           | Thermal | Physical |        |             |        |
|-------------------------------------|---------|---------|--------------------------|----------------|------------|-------------|--------------|--------------------|------------|--------------|--------------------|-----------|---------|----------|--------|-------------|--------|
| wattage                             | voltage | current | type                     | article number | loss hot   | input power | lamp current | lamp start current | circuit PF | line current | line start current | capacitor |         | stack    | length | mtg centres | weight |
| W                                   | V       | A       |                          |                | W          | W           | A            | A                  | cosφ       | A@0.9PF      | A@0.9PF            | μF@0.9PF  | Δt      | mm       | mm     | mm          | kg     |
| <b>220 V 50 Hz</b>                  |         |         |                          |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |
| <b>High-pressure mercury vapour</b> |         |         |                          |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |
| 50                                  | 95      | 0.61    | EMV50                    |                | 13.0       | 63.0        | 0.610        | 0.810              | 0.47       | 0.318        | 0.444              | 6         | 65      | 90       | 195.0  | 180.0       | 1.00   |
| 80                                  | 115     | 0.80    | EMV80-03                 |                | 14.0       | 94.0        | 0.800        | 1.310              | 0.53       | 0.475        | 0.816              | 7         | 60      | 90       | 195.0  | 180.0       | 1.00   |
| 125                                 | 125     | 1.15    | EMV125-02                |                | 21.0       | 146.0       | 1.150        | 1.710              | 0.58       | 0.737        | 1.150              | 9         | 70      | 140      | 225.0  | 210.0       | 1.40   |
| <b>Metal-halide</b>                 |         |         |                          |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |
| 35                                  | 85      | 0.53    | EPS35                    |                | 11.4       | 46.4        | 0.530        | 0.665              | 0.40       | 0.234        | 0.309              | 6         | 55      | 90       | 195.0  | 180.0       | 1.00   |
| 50                                  | 95      | 0.61    | EMV50                    |                | 13.0       | 63.0        | 0.610        | 0.810              | 0.47       | 0.318        | 0.444              | 6         | 65      | 90       | 195.0  | 180.0       | 1.00   |
| 70                                  | 90      | 1.00    | EPS70A-04                |                | 22.5       | 92.5        | 1.000        | 1.280              | 0.42       | 0.467        | 0.628              | 11        | 80      | 130      | 225.0  | 210.0       | 1.30   |
| 70                                  | 90      | 1.00    | EPS70A (TH) <sup>1</sup> |                | 22.5       | 92.5        | 1.000        | 1.280              | 0.42       | 0.467        | 0.628              | 11        | 80      | 130      | 225.0  | 210.0       | 1.30   |
| <b>High-pressure sodium</b>         |         |         |                          |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |
| 35                                  | 85      | 0.53    | EPS35                    |                | 11.4       | 46.4        | 0.530        | 0.665              | 0.40       | 0.234        | 0.309              | 6         | 55      | 90       | 195.0  | 180.0       | 1.00   |
| 50                                  | 85      | 0.76    | EPS50-01                 |                | 15.5       | 65.5        | 0.760        | 0.947              | 0.39       | 0.331        | 0.433              | 8         | 60      | 105      | 195.0  | 180.0       | 1.10   |
| 70                                  | 90      | 1.00    | EPS70A-04                |                | 22.5       | 92.5        | 1.000        | 1.280              | 0.42       | 0.467        | 0.628              | 11        | 80      | 130      | 225.0  | 210.0       | 1.30   |
| 70                                  | 90      | 1.00    | EPS70A (TH) <sup>1</sup> |                | 22.5       | 92.5        | 1.000        | 1.280              | 0.42       | 0.467        | 0.628              | 11        | 80      | 130      | 225.0  | 210.0       | 1.30   |
| <b>220 V 60 Hz</b>                  |         |         |                          |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |
| <b>High-pressure mercury vapour</b> |         |         |                          |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |
| 50                                  | 95      | 0.61    | EMV50-02                 |                | 11.0       | 61.0        | 0.610        | 0.810              | 0.45       | 0.308        | 0.430              | 5         | 65      | 90       | 195.0  | 180.0       | 1.00   |
| 80                                  | 115     | 0.80    | EMV80-04                 |                | 13.0       | 93.0        | 0.800        | 1.310              | 0.53       | 0.470        | 0.808              | 6         | 60      | 90       | 195.0  | 180.0       | 1.00   |
| 125                                 | 125     | 1.15    | EMV125-03                |                | 18.0       | 143.0       | 1.150        | 1.730              | 0.57       | 0.722        | 1.14               | 8         | 70      | 120      | 205.0  | 190.0       | 1.25   |
| <b>Metal-halide</b>                 |         |         |                          |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |
| 35                                  | 85      | 0.53    | EPS35                    | 89002714       | 10.1       | 45.1        | 0.530        | 0.665              | 0.39       | 0.228        | 0.300              | 5         | 55      | 50       | 150.0  | 135.5       | 0.55   |
| 50                                  | 95      | 0.61    | EMV50-02                 |                | 11.0       | 61.0        | 0.610        | 0.810              | 0.45       | 0.308        | 0.430              | 5         | 65      | 90       | 195.0  | 180.0       | 1.00   |
| 70                                  | 90      | 1.00    | EPS70A-03                |                | 19.0       | 89.0        | 1.000        | 1.270              | 0.40       | 0.449        | 0.599              | 9         | 75      | 105      | 195.0  | 180.0       | 1.10   |
| 70                                  | 90      | 1.00    | EPS70A (TH) <sup>1</sup> |                | 19.0       | 89.0        | 1.000        | 1.270              | 0.40       | 0.449        | 0.599              | 9         | 75      | 105      | 195.0  | 180.0       | 1.10   |
| <b>High-pressure sodium</b>         |         |         |                          |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |
| 35                                  | 85      | 0.53    | EPS35                    | 89002714       | 10.1       | 45.1        | 0.530        | 0.665              | 0.39       | 0.228        | 0.300              | 5         | 55      | 50       | 150.0  | 135.5       | 0.55   |
| 50                                  | 85      | 0.76    | EPS50                    |                | 13.7       | 63.7        | 0.760        | 0.947              | 0.38       | 0.322        | 0.421              | 7         | 65      | 90       | 195.0  | 180.0       | 1.00   |
| 70                                  | 90      | 1.00    | EPS70A-03                |                | 19.0       | 89.0        | 1.000        | 1.270              | 0.40       | 0.449        | 0.599              | 9         | 75      | 105      | 195.0  | 180.0       | 1.10   |
| 70                                  | 90      | 1.00    | EPS70A (TH) <sup>1</sup> |                | 19.0       | 89.0        | 1.000        | 1.270              | 0.40       | 0.449        | 0.599              | 9         | 75      | 105      | 195.0  | 180.0       | 1.10   |

## notes

1. Ballasts have built-in thermal cutout devices specifically for short-arc metal-halide lamps.

Ballasts for other wattage ratings available on request.



## 230 V 50 Hz and 240 V 50 Hz – EC ballasts

| Lamp                         |         |         | Ballast                        |                | Electrical |             |              |                    |            |              |                    |           | Thermal | Physical |        |             |        |  |
|------------------------------|---------|---------|--------------------------------|----------------|------------|-------------|--------------|--------------------|------------|--------------|--------------------|-----------|---------|----------|--------|-------------|--------|--|
| wattage                      | voltage | current | type                           | article number | loss hot   | input power | lamp current | lamp start current | circuit PF | line current | line start current | capacitor |         | stack    | length | mtg centres | weight |  |
| W                            | V       | A       |                                |                | W          | W           | A            | A                  | cosφ       | A@0.9PF      | A@0.9PF            | μF0.9PF   | Δt      | mm       | mm     | mm          | kg     |  |
| 230 V 50 Hz                  |         |         |                                |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |  |
| High-pressure mercury vapour |         |         |                                |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |  |
| 50                           | 95      | 0.61    | EMV50-03                       |                | 13.5       | 63.5        | 0.610        | 0.800              | 0.45       | 0.307        | 0.422              | 6         | 65      | 90       | 195.0  | 180.0       | 1.00   |  |
| 80                           | 115     | 0.80    | EMV80-05                       |                | 16.5       | 96.5        | 0.800        | 1.200              | 0.52       | 0.466        | 0.734              | 7         | 60      | 120      | 205.0  | 190.0       | 1.25   |  |
| 125                          | 125     | 1.15    | EMV125                         |                | 21.0       | 146.0       | 1.150        | 1.660              | 0.55       | 0.705        | 1.070              | 9         | 70      | 160      | 245.0  | 230.0       | 1.55   |  |
| Metal-halide                 |         |         |                                |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |  |
| 35                           | 85      | 0.53    | EPS35                          |                | 11.8       | 46.8        | 0.530        | 0.653              | 0.38       | 0.226        | 0.292              | 6         | 55      | 90       | 195.0  | 180.0       | 1.00   |  |
| 50                           | 95      | 0.61    | EMV50-03                       |                | 13.5       | 63.5        | 0.610        | 0.800              | 0.45       | 0.307        | 0.422              | 6         | 65      | 90       | 195.0  | 180.0       | 1.00   |  |
| 70                           | 90      | 1.00    | EPS70A-05                      |                | 23.5       | 93.5        | 1.000        | 1.240              | 0.41       | 0.452        | 0.588              | 10        | 75      | 140      | 225.0  | 210.0       | 1.40   |  |
| 70                           | 90      | 1.00    | EPS70A (TH) <sup>1</sup>       |                | 23.5       | 93.5        | 1.000        | 1.240              | 0.41       | 0.452        | 0.588              | 10        | 75      | 140      | 225.0  | 210.0       | 1.40   |  |
| High-pressure sodium         |         |         |                                |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |  |
| 35                           | 85      | 0.53    | EPS35                          |                | 11.8       | 46.8        | 0.530        | 0.653              | 0.38       | 0.226        | 0.292              | 6         | 55      | 90       | 195.0  | 180.0       | 1.00   |  |
| 50                           | 85      | 0.76    | EPS50                          |                | 17.0       | 67.0        | 0.760        | 0.930              | 0.38       | 0.324        | 0.416              | 8         | 65      | 120      | 205.0  | 190.0       | 1.25   |  |
| 70                           | 90      | 1.00    | EPS70A-05                      |                | 23.5       | 93.5        | 1.000        | 1.240              | 0.41       | 0.452        | 0.588              | 10        | 75      | 140      | 225.0  | 210.0       | 1.40   |  |
| 70                           | 90      | 1.00    | EPS70A (TH) <sup>1</sup>       |                | 23.5       | 93.5        | 1.000        | 1.240              | 0.41       | 0.452        | 0.588              | 10        | 75      | 140      | 225.0  | 210.0       | 1.40   |  |
| 240 V 50 Hz                  |         |         |                                |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |  |
| High-pressure mercury vapour |         |         |                                |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |  |
| 50                           | 95      | 0.61    | EMV50                          |                | 14.0       | 64.0        | 0.610        | 0.791              | 0.44       | 0.296        | 0.403              | 6         | 65      | 90       | 195.0  | 180.0       | 1.00   |  |
| 75                           | 130     | 0.64    | EMV75                          |                | 12.5       | 87.5        | 0.640        | 0.972              | 0.57       | 0.405        | 0.646              | 5         | 50      | 90       | 195.0  | 180.0       | 1.00   |  |
| 80                           | 115     | 0.80    | EMV80-00                       |                | 17.0       | 97.0        | 0.800        | 1.110              | 0.51       | 0.449        | 0.654              | 7         | 60      | 120      | 205.0  | 190.0       | 1.25   |  |
| 125                          | 125     | 1.15    | EMV125                         | 89000605       | 24.0       | 149.0       | 1.150        | 1.610              | 0.54       | 0.690        | 1.010              | 9         | 70      | 160      | 245.0  | 230.0       | 1.55   |  |
| 175                          | 130     | 1.50    | EMV175.5 <sup>3</sup>          |                | 29.0       | 204.0       | 1.500        | 2.500              | 0.57       | 0.944        | 1.650              | 11        | 60      | 90       | 195.0  | 180.0       | 1.00   |  |
| Metal-halide                 |         |         |                                |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |  |
| 35                           | 85      | 0.53    | EPS35                          |                | 12.2       | 47.2        | 0.530        | 0.642              | 0.37       | 0.219        | 0.278              | 6         | 55      | 90       | 195.0  | 180.0       | 1.00   |  |
| 50                           | 95      | 0.61    | EMV50                          |                | 14.0       | 64.0        | 0.610        | 0.791              | 0.44       | 0.296        | 0.403              | 6         | 65      | 90       | 195.0  | 180.0       | 1.00   |  |
| 70                           | 90      | 1.00    | EPS70A                         | 89000630       | 24.5       | 94.5        | 1.000        | 1.220              | 0.39       | 0.438        | 0.560              | 10        | 75      | 140      | 225.0  | 210.0       | 1.40   |  |
| 70                           | 90      | 1.00    | EPS70A-01(TH) <sup>1</sup>     |                | 24.5       | 94.5        | 1.000        | 1.220              | 0.39       | 0.438        | 0.560              | 10        | 75      | 140      | 225.0  | 210.0       | 1.40   |  |
| 150                          | 100     | 1.80    | EPS150.5 <sup>3</sup>          |                | 38.5       | 188.5       | 1.800        | 2.120              | 0.44       | 0.873        | 1.080              | 18        | 75      | 140      | 225.0  | 210.0       | 1.40   |  |
| 150                          | 100     | 1.80    | EPS150.5-01(TH) <sup>1 3</sup> |                | 38.5       | 188.5       | 1.800        | 2.120              | 0.44       | 0.873        | 1.080              | 18        | 75      | 140      | 225.0  | 210.0       | 1.40   |  |
| 175                          | 130     | 1.50    | EMV175.5 <sup>3</sup>          |                | 29.0       | 204.0       | 1.500        | 2.500              | 0.57       | 0.944        | 1.650              | 11        | 60      | 90       | 195.0  | 180.0       | 1.00   |  |
| High-pressure sodium         |         |         |                                |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |  |
| 35                           | 85      | 0.53    | EPS35                          |                | 12.2       | 47.2        | 0.530        | 0.642              | 0.37       | 0.219        | 0.278              | 6         | 55      | 90       | 195.0  | 180.0       | 1.00   |  |
| 50                           | 85      | 0.76    | EPS50                          |                | 17.5       | 67.5        | 0.760        | 0.915              | 0.37       | 0.313        | 0.395              | 8         | 65      | 120      | 205.0  | 190.0       | 1.25   |  |
| 70                           | 90      | 1.00    | EPS70A                         | 89000630       | 24.5       | 94.5        | 1.000        | 1.220              | 0.39       | 0.438        | 0.560              | 10        | 75      | 140      | 225.0  | 210.0       | 1.40   |  |
| 70                           | 90      | 1.00    | EPS70A-01(TH) <sup>1</sup>     |                | 24.5       | 94.5        | 1.000        | 1.220              | 0.39       | 0.438        | 0.560              | 10        | 75      | 140      | 225.0  | 210.0       | 1.40   |  |
| 150                          | 100     | 1.80    | EPS150.5 <sup>3</sup>          |                | 38.5       | 188.5       | 1.800        | 2.120              | 0.44       | 0.873        | 1.080              | 18        | 75      | 140      | 225.0  | 210.0       | 1.40   |  |
| 150                          | 100     | 1.80    | EPS150.5-01(TH) <sup>1 3</sup> |                | 38.5       | 188.5       | 1.800        | 2.120              | 0.44       | 0.873        | 1.080              | 18        | 75      | 140      | 225.0  | 210.0       | 1.40   |  |
| Low-pressure sodium          |         |         |                                |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |  |
| 18                           | 57      | 0.35    | ECLS18 <sup>2</sup>            |                | 10.5       | 28.5        | 0.350        | 0.390              | 0.90       | 0.145        | 0.170              | 5         | 60      | 50       | 150.0  | 135.0       | 0.55   |  |
| 18                           | 57      | 0.35    | ECLS18-01 <sup>2</sup>         | 89000003       | 10.5       | 28.5        | 0.350        | 0.390              | 0.90       | 0.145        | 0.170              | 5         | 60      | 50       | 110.0  | 101.5       | 0.55   |  |

## notes

1. Ballasts have built-in thermal cutout devices specifically for short-arc metal-halide lamps.
2. Capacitor - dual function - power factor correction and starting aid.
3. Split ballast, two required.

Ballasts for other wattage ratings available on request.

## OM type ballasts

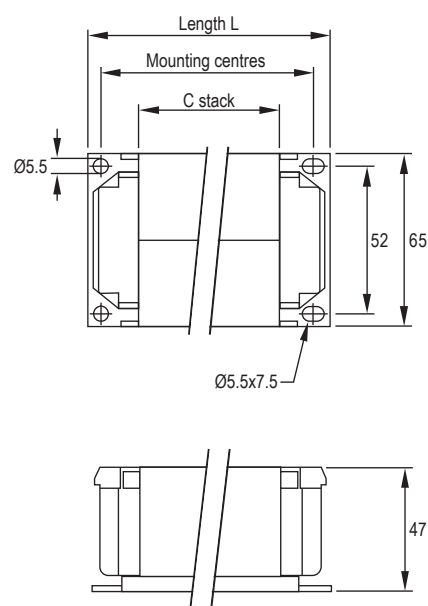
- Compact size
- Vacuum impregnation and short heat paths
- Long service life
- Very low noise level
- Glass-fibre filled nylon coil end covers
- Winding insulation Class H materials
- Nomex fixed air gap ensuring permanent calibration
- Integral terminals
- tw130 winding temperature rating
- Resistant to moisture and corrosion

### 100% final testing

- continuity
- winding short circuit
- insulation
- impedance



figure 1



## 220 V 50 Hz – OM ballasts

| Lamp                                |         |         | Ballast                     |                | Electrical |             |              |                    |            |              |                    |           | Thermal | Physical |        |             |        |
|-------------------------------------|---------|---------|-----------------------------|----------------|------------|-------------|--------------|--------------------|------------|--------------|--------------------|-----------|---------|----------|--------|-------------|--------|
| wattage                             | voltage | current | type                        | article number | loss hot   | input power | lamp current | lamp start current | circuit PF | line current | line start current | capacitor |         | stack    | length | mtg centres | weight |
| W                                   | V       | A       |                             |                | W          | W           | A            | A                  | cosφ       | A@0.9PF      | A@0.9PF            | μF0.9PF   | Δt      | mm       | mm     | mm          | kg     |
| <b>High-pressure mercury vapour</b> |         |         |                             |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |
| 40                                  | 90      | 0.53    | OMB40-01                    |                | 8.0        | 48.0        | 0.53         | 0.66               | 0.41       | 0.24         | 0.32               | 6         | 65      | 30       | 65     | 51          | 0.8    |
| 50                                  | 95      | 0.61    | OMB50-04                    |                | 8.5        | 58.5        | 0.61         | 0.80               | 0.44       | 0.30         | 0.41               | 7         | 60      | 30       | 65     | 51          | 0.8    |
| 80                                  | 115     | 0.80    | OMB80-06                    | 89001036       | 9.0        | 89.0        | 0.80         | 1.10               | 0.51       | 0.45         | 0.65               | 8         | 65      | 35       | 70     | 56          | 1.0    |
| 80                                  | 115     | 0.80    | OMB80-11                    |                | 13.0       | 93.0        | 0.80         | 1.15               | 0.53       | 0.47         | 0.71               | 7         | 70      | 30       | 70     | 56          | 0.9    |
| 100                                 | 130     | 0.85    | OMB100-01                   |                | 8.5        | 108.5       | 0.85         | 1.35               | 0.58       | 0.55         | 0.91               | 7         | 45      | 55       | 90     | 76          | 1.3    |
| 100                                 | 130     | 0.85    | OMB100-03                   |                | 11.5       | 111.5       | 0.85         | 1.50               | 0.60       | 0.56         | 1.04               | 7         | 65      | 40       | 90     | 76          | 1.2    |
| 100                                 | 115     | 1.00    | OMB100A-06                  |                | 11.5       | 111.5       | 1.00         | 1.36               | 0.51       | 0.56         | 0.80               | 9         | 65      | 55       | 90     | 76          | 1.3    |
| 125                                 | 125     | 1.15    | OMB125-06                   | 89000981       | 11.5       | 136.5       | 1.15         | 1.66               | 0.54       | 0.69         | 1.04               | 10        | 55      | 55       | 90     | 76          | 1.3    |
| 125                                 | 125     | 1.15    | OMB125-10                   |                | 14.5       | 139.5       | 1.15         | 1.91               | 0.55       | 0.70         | 1.23               | 10        | 70      | 40       | 90     | 76          | 1.2    |
| 175                                 | 130     | 1.50    | OMB175-01                   |                | 14.5       | 189.5       | 1.50         | 2.48               | 0.57       | 0.96         | 1.66               | 12        | 65      | 75       | 110    | 96          | 1.7    |
| 175                                 | 130     | 1.50    | OMB175-09                   |                | 17.5       | 192.5       | 1.50         | 2.56               | 0.58       | 0.97         | 1.74               | 12        | 70      | 55       | 110    | 96          | 1.6    |
| 250                                 | 130     | 2.13    | OMB250-02                   |                | 19.5       | 269.5       | 2.13         | 3.25               | 0.58       | 1.36         | 2.18               | 18        | 65      | 105      | 140    | 126         | 2.4    |
| 250                                 | 130     | 2.13    | OMB250-04                   |                | 21.0       | 271.0       | 2.13         | 3.50               | 0.58       | 1.37         | 2.36               | 18        | 70      | 85       | 140    | 126         | 2.1    |
| 250                                 | 130     | 2.13    | OMB250-06                   |                | 22.0       | 272.0       | 2.13         | 3.60               | 0.58       | 1.37         | 2.44               | 18        | 75      | 75       | 140    | 126         | 1.8    |
| 400                                 | 135     | 3.25    | OMB400-01                   |                | 31.0       | 431.0       | 3.25         | 5.64               | 0.60       | 2.18         | 3.97               | 25        | 75      | 120      | 180    | 166         | 2.9    |
| <b>Metal-halide</b>                 |         |         |                             |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |
| 35                                  | 85      | 0.53    | OMS35-01                    | 89001137       | 8.0        | 43.0        | 0.53         | 0.65               | 0.37       | 0.22         | 0.28               | 6         | 55      | 30       | 65     | 51          | 0.8    |
| 35                                  | 85      | 0.53    | OMS35-03 (TH) <sup>1</sup>  |                | 8.0        | 43.0        | 0.53         | 0.65               | 0.37       | 0.22         | 0.28               | 6         | 55      | 30       | 65     | 51          | 0.8    |
| 50                                  | 95      | 0.61    | OMB50-04                    |                | 8.5        | 58.5        | 0.61         | 0.80               | 0.44       | 0.30         | 0.41               | 7         | 60      | 30       | 65     | 51          | 0.8    |
| 70                                  | 90      | 1.00    | OMS70A-04                   |                | 13.0       | 83.0        | 1.00         | 1.16               | 0.38       | 0.42         | 0.51               | 11        | 60      | 55       | 90     | 76          | 1.3    |
| 70                                  | 90      | 1.00    | OMS70A-08 (TH) <sup>1</sup> |                | 13.0       | 83.0        | 1.00         | 1.16               | 0.38       | 0.42         | 0.51               | 11        | 60      | 55       | 90     | 76          | 1.3    |
| 70                                  | 90      | 1.00    | OMS70A-16                   | 89001172       | 15.0       | 85.0        | 1.00         | 1.29               | 0.39       | 0.43         | 0.58               | 11        | 65      | 40       | 90     | 76          | 1.2    |
| 70                                  | 90      | 1.00    | OMS70A-20 (TH) <sup>1</sup> |                | 15.0       | 85.0        | 1.00         | 1.29               | 0.39       | 0.43         | 0.58               | 11        | 65      | 40       | 90     | 76          | 1.2    |
| 100                                 | 100     | 1.10    | OMH100-03 (TH) <sup>1</sup> | 89001058       | 13.0       | 113.0       | 1.10         | 1.45               | 0.47       | 0.57         | 0.79               | 11        | 65      | 65       | 100    | 86          | 1.5    |
| 100                                 | 100     | 1.10    | OMH100-06                   |                | 16.0       | 116.0       | 1.10         | 1.50               | 0.48       | 0.59         | 0.84               | 11        | 70      | 55       | 100    | 86          | 1.4    |
| 150                                 | 100     | 1.80    | OMS150-26 <sup>2</sup>      | 89001109       | 18.5       | 168.5       | 1.80         | 2.30               | 0.43       | 0.85         | 1.14               | 20        | 55      | 105      | 155    | 141         | 2.5    |
| 150                                 | 100     | 1.80    | OMS150-08                   | 89001100       | 20.0       | 170.0       | 1.80         | 2.32               | 0.43       | 0.86         | 1.16               | 20        | 65      | 85       | 140    | 126         | 2.1    |
| 150                                 | 100     | 1.80    | OMS150-10 (TH) <sup>1</sup> | 89001102       | 20.0       | 170.0       | 1.80         | 2.32               | 0.43       | 0.86         | 1.16               | 20        | 65      | 85       | 140    | 126         | 2.1    |
| 150                                 | 100     | 1.80    | OMS150-27                   | 89001110       | 22.0       | 172.0       | 1.80         | 2.35               | 0.43       | 0.87         | 1.19               | 18        | 70      | 75       | 140    | 126         | 1.8    |
| 175                                 | 130     | 1.50    | OMB175-01                   |                | 14.5       | 189.5       | 1.50         | 2.48               | 0.57       | 0.96         | 1.66               | 12        | 65      | 75       | 110    | 96          | 1.7    |
| 175                                 | 130     | 1.50    | OMB175-09                   |                | 17.5       | 192.5       | 1.50         | 2.56               | 0.58       | 0.97         | 1.74               | 12        | 70      | 55       | 110    | 96          | 1.6    |
| 250                                 | 130     | 2.13    | OMB250-02                   |                | 19.5       | 269.5       | 2.13         | 3.25               | 0.58       | 1.36         | 2.18               | 18        | 65      | 105      | 140    | 126         | 2.4    |
| 250                                 | 130     | 2.13    | OMB250-04                   |                | 21.0       | 271.0       | 2.13         | 3.50               | 0.58       | 1.37         | 2.36               | 18        | 70      | 85       | 140    | 126         | 2.1    |
| 250                                 | 130     | 2.13    | OMB250-06                   |                | 22.0       | 272.0       | 2.13         | 3.60               | 0.58       | 1.37         | 2.44               | 18        | 75      | 75       | 140    | 126         | 1.8    |
| 250                                 | 100     | 3.00    | OMS250-01                   | 89001132       | 35.0       | 285.0       | 2.95         | 3.67               | 0.44       | 1.44         | 1.88               | 30        | 75      | 120      | 180    | 166         | 2.9    |
| 400                                 | 135     | 3.25    | OMB400-01                   |                | 31.0       | 431.0       | 3.25         | 5.64               | 0.60       | 2.18         | 3.97               | 25        | 75      | 120      | 180    | 166         | 2.9    |
| <b>High-pressure sodium</b>         |         |         |                             |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |
| 35                                  | 85      | 0.53    | OMS35-01                    | 89001137       | 8.0        | 43.0        | 0.53         | 0.65               | 0.37       | 0.22         | 0.28               | 6         | 55      | 30       | 65     | 51          | 0.8    |
| 35                                  | 85      | 0.53    | OMS35-03 (TH) <sup>1</sup>  |                | 8.0        | 43.0        | 0.53         | 0.65               | 0.37       | 0.22         | 0.28               | 6         | 55      | 30       | 65     | 51          | 0.8    |
| 50                                  | 85      | 0.76    | OMS50-02                    |                | 10.5       | 60.5        | 0.76         | 0.90               | 0.36       | 0.31         | 0.38               | 9         | 65      | 40       | 75     | 61          | 1.1    |
| 70                                  | 90      | 0.95    | OMS70-03                    |                | 11.5       | 81.5        | 0.94         | 1.16               | 0.39       | 0.41         | 0.53               | 10        | 60      | 55       | 90     | 76          | 1.4    |
| 70                                  | 90      | 1.00    | OMS70A-04                   |                | 13.0       | 83.0        | 1.00         | 1.16               | 0.38       | 0.42         | 0.51               | 11        | 60      | 55       | 90     | 76          | 1.3    |
| 70                                  | 90      | 1.00    | OMS70A-08 (TH) <sup>1</sup> |                | 13.0       | 83.0        | 1.00         | 1.16               | 0.38       | 0.42         | 0.51               | 11        | 60      | 55       | 90     | 76          | 1.3    |
| 70                                  | 90      | 1.00    | OMS70A-16                   | 89001172       | 15.0       | 85.0        | 1.00         | 1.29               | 0.39       | 0.43         | 0.58               | 11        | 65      | 40       | 90     | 76          | 1.2    |
| 70                                  | 90      | 1.00    | OMS70A-20 (TH) <sup>1</sup> |                | 15.0       | 85.0        | 1.00         | 1.29               | 0.39       | 0.43         | 0.58               | 11        | 65      | 40       | 90     | 76          | 1.2    |
| 100                                 | 100     | 1.20    | OMS100-01                   | 89001078       | 13.5       | 113.5       | 1.20         | 1.50               | 0.43       | 0.57         | 0.75               | 13        | 70      | 65       | 100    | 86          | 1.5    |
| 150                                 | 100     | 1.80    | OMS150-26 <sup>2</sup>      | 89001109       | 18.5       | 168.5       | 1.80         | 2.30               | 0.43       | 0.85         | 1.14               | 20        | 55      | 105      | 155    | 141         | 2.5    |
| 150                                 | 100     | 1.80    | OMS150-08                   | 89001100       | 20.0       | 170.0       | 1.80         | 2.32               | 0.43       | 0.86         | 1.16               | 20        | 65      | 85       | 140    | 126         | 2.1    |
| 150                                 | 100     | 1.80    | OMS150-10 (TH) <sup>1</sup> | 89001102       | 20.0       | 170.0       | 1.80         | 2.32               | 0.43       | 0.86         | 1.16               | 20        | 65      | 85       | 140    | 126         | 2.1    |
| 150                                 | 100     | 1.80    | OMS150-27                   | 89001110       | 22.0       | 172.0       | 1.80         | 2.35               | 0.43       | 0.87         | 1.19               | 18        | 70      | 75       | 140    | 126         | 1.8    |
| 150                                 | 100     | 1.80    | OMS150/100                  |                | 20.0       | 170         | 1.80         | 2.30               | 0.43       | 0.86         | 1.15               | 20        | 55      | 105      | 155    | 141         | 2.5    |
| 250                                 | 100     | 3.00    | OMS250-01                   | 89001132       | 35.0       | 285.0       | 2.95         | 3.67               | 0.44       | 1.44         | 1.88               | 30.0      | 75      | 120      | 180    | 166         | 2.9    |

## notes

1. Ballasts have built-in thermal cutout devices specifically for short-arc metal-halide lamps.

2. With multiple voltage tapings

Ballasts for other wattage ratings available on request.

## 220 V 60 Hz – OM ballasts

| Lamp                         |         |         | Ballast                     |                | Electrical |             |              |                    |            |              |                    |           | Thermal | Physical |        |             |        |
|------------------------------|---------|---------|-----------------------------|----------------|------------|-------------|--------------|--------------------|------------|--------------|--------------------|-----------|---------|----------|--------|-------------|--------|
| wattage                      | voltage | current | type                        | article number | loss hot   | input power | lamp current | lamp start current | circuit PF | line current | line start current | capacitor |         | stack    | length | mtg centres | weight |
| W                            | V       | A       |                             |                | W          | W           | A            | A                  | cosφ       | A@0.9PF      | A@0.9PF            | μF0.9PF   | Δt      | mm       | mm     | mm          | kg     |
| High-pressure mercury vapour |         |         |                             |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |
| 40                           | 90      | 0.53    | OMB40-02                    |                | 8.0        | 48.0        | 0.53         | 0.65               | 0.41       | 0.24         | 0.31               | 5         | 65      | 30       | 65     | 51          | 0.8    |
| 50                           | 95      | 0.61    | OMB50-05                    |                | 8.0        | 58.0        | 0.61         | 0.84               | 0.43       | 0.29         | 0.42               | 6         | 60      | 30       | 65     | 51          | 0.8    |
| 80                           | 115     | 0.80    | OMB80-07                    |                | 8.5        | 88.5        | 0.80         | 1.30               | 0.50       | 0.45         | 0.76               | 6         | 65      | 30       | 65     | 51          | 0.8    |
| 100                          | 130     | 0.85    | OMB100-02                   |                | 9.0        | 109.0       | 0.85         | 1.50               | 0.58       | 0.55         | 1.02               | 6         | 65      | 40       | 75     | 61          | 1.1    |
| 100                          | 115     | 1.00    | OMB100A-05                  |                | 10.0       | 110.0       | 1.00         | 1.60               | 0.50       | 0.56         | 0.93               | 8         | 65      | 40       | 75     | 61          | 1.1    |
| 125                          | 125     | 1.15    | OMB125-08                   |                | 10.0       | 135.0       | 1.15         | 1.80               | 0.53       | 0.68         | 1.12               | 9         | 65      | 55       | 90     | 76          | 1.3    |
| 125                          | 125     | 1.15    | OMB125-16                   |                | 13.0       | 138.0       | 1.15         | 1.90               | 0.55       | 0.70         | 1.21               | 8         | 70      | 35       | 90     | 76          | 1.1    |
| 175                          | 130     | 1.50    | OMB175-03                   | 89000993       | 13.5       | 188.5       | 1.50         | 2.35               | 0.57       | 0.95         | 1.57               | 10        | 65      | 75       | 110    | 96          | 1.7    |
| 250                          | 130     | 2.13    | OMB250-09                   |                | 16.5       | 266.5       | 2.13         | 3.15               | 0.57       | 1.35         | 2.09               | 15        | 60      | 105      | 140    | 126         | 2.4    |
| 250                          | 130     | 2.13    | OMB250-05                   |                | 18.0       | 268.0       | 2.13         | 3.20               | 0.57       | 1.35         | 2.14               | 15        | 65      | 85       | 140    | 126         | 2.1    |
| 250                          | 130     | 2.13    | OMB250-10                   | 89001014       | 19.5       | 269.5       | 2.13         | 3.25               | 0.58       | 1.36         | 2.18               | 15        | 70      | 75       | 140    | 126         | 1.8    |
| 400                          | 135     | 3.25    | OMB400-02                   |                | 26.0       | 426.0       | 3.25         | 5.00               | 0.60       | 2.15         | 3.48               | 25        | 65      | 120      | 180    | 166         | 2.9    |
| 400                          | 135     | 3.25    | OMB400-03                   |                | 27.5       | 427.5       | 3.25         | 5.30               | 0.60       | 2.16         | 3.70               | 25        | 70      | 105      | 180    | 166         | 2.5    |
| Metal-halide                 |         |         |                             |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |
| 35                           | 85      | 0.53    | OMS35-08                    | 89002543       | 8.0        | 43.0        | 0.53         | 0.65               | 0.37       | 0.22         | 0.28               | 5         | 55      | 30       | 65     | 51          | 0.8    |
| 35                           | 85      | 0.53    | OMS35-05 (TH) <sup>1</sup>  | 89001141       | 8.0        | 43.0        | 0.53         | 0.65               | 0.37       | 0.22         | 0.28               | 5         | 55      | 30       | 65     | 51          | 0.8    |
| 50                           | 95      | 0.61    | OMB50-05                    |                | 8.0        | 58.0        | 0.61         | 0.84               | 0.43       | 0.29         | 0.42               | 6         | 60      | 30       | 65     | 51          | 0.8    |
| 70                           | 90      | 1.00    | OMS70A-01                   |                | 11.5       | 81.5        | 1.00         | 1.30               | 0.37       | 0.41         | 0.56               | 9         | 60      | 40       | 75     | 61          | 1.1    |
| 70                           | 90      | 1.00    | OMS70A-09 (TH) <sup>1</sup> | 89001167       | 11.5       | 81.5        | 1.00         | 1.30               | 0.37       | 0.41         | 0.56               | 9         | 60      | 40       | 75     | 61          | 1.1    |
| 70                           | 90      | 1.00    | OMS70A-32                   |                | 13.0       | 83.0        | 1.00         | 1.45               | 0.38       | 0.42         | 0.64               | 9         | 70      | 35       | 75     | 61          | 1.1    |
| 100                          | 100     | 1.10    | OMH100-04                   |                | 14.0       | 114.0       | 1.10         | 1.46               | 0.47       | 0.58         | 0.80               | 9         | 70      | 45       | 90     | 76          | 1.3    |
| 100                          | 100     | 1.10    | OMH100-12 (TH) <sup>1</sup> | 89001065       | 14.0       | 114.0       | 1.10         | 1.46               | 0.47       | 0.58         | 0.80               | 9         | 70      | 45       | 90     | 76          | 1.3    |
| 150                          | 100     | 1.80    | OMS150-02                   |                | 18.5       | 168.5       | 1.80         | 2.26               | 0.43       | 0.85         | 1.12               | 16        | 65      | 75       | 120    | 106         | 1.8    |
| 150                          | 100     | 1.80    | OMS150-09 (TH) <sup>1</sup> | 89001101       | 18.5       | 168.5       | 1.80         | 2.26               | 0.43       | 0.85         | 1.12               | 16        | 65      | 75       | 120    | 106         | 1.8    |
| 150                          | 100     | 1.80    | OMS150-32                   |                | 20.5       | 170.5       | 1.80         | 2.26               | 0.43       | 0.86         | 1.14               | 16        | 70      | 65       | 120    | 106         | 1.6    |
| 175                          | 130     | 1.50    | OMB175-03                   | 89000993       | 13.5       | 188.5       | 1.50         | 2.35               | 0.57       | 0.95         | 1.57               | 10        | 65      | 75       | 110    | 96          | 1.7    |
| 250                          | 130     | 2.13    | OMB250-09                   |                | 16.5       | 266.5       | 2.13         | 3.15               | 0.57       | 1.35         | 2.09               | 15        | 60      | 105      | 140    | 126         | 2.4    |
| 250                          | 130     | 2.13    | OMB250-05                   |                | 18.0       | 268.0       | 2.13         | 3.20               | 0.57       | 1.35         | 2.14               | 15        | 65      | 85       | 140    | 126         | 2.1    |
| 250                          | 130     | 2.13    | OMB250-10                   | 89001014       | 19.5       | 269.5       | 2.13         | 3.25               | 0.58       | 1.36         | 2.18               | 15        | 70      | 75       | 140    | 126         | 1.8    |
| 250                          | 100     | 3.00    | OMS250-02                   |                | 31.0       | 281.0       | 2.95         | 3.70               | 0.43       | 1.42         | 1.87               | 25        | 80      | 105      | 180    | 166         | 2.5    |
| 250                          | 100     | 3.00    | OMS250                      |                | 31.0       | 281.0       | 2.95         | 3.70               | 0.43       | 1.42         | 1.87               | 25        | 80      | 105      | 155    | 141         | 2.4    |
| 400                          | 135     | 3.25    | OMB400-02                   |                | 26.0       | 426.0       | 3.25         | 5.00               | 0.60       | 2.15         | 3.48               | 25        | 65      | 120      | 180    | 166         | 2.9    |
| 400                          | 135     | 3.25    | OMB400-03                   |                | 27.5       | 427.5       | 3.25         | 5.30               | 0.60       | 2.16         | 3.70               | 25        | 70      | 105      | 180    | 166         | 2.5    |
| High-pressure sodium         |         |         |                             |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |
| 35                           | 85      | 0.53    | OMS35-08                    | 89002543       | 8.0        | 43.0        | 0.53         | 0.65               | 0.37       | 0.22         | 0.28               | 5         | 55      | 30       | 65     | 51          | 0.8    |
| 35                           | 85      | 0.53    | OMS35-05 (TH) <sup>1</sup>  | 89001141       | 8.0        | 43.0        | 0.53         | 0.65               | 0.37       | 0.22         | 0.28               | 5         | 55      | 30       | 65     | 51          | 0.8    |
| 50                           | 85      | 0.76    | OMS50-04                    |                | 10.0       | 60.0        | 0.76         | 0.92               | 0.36       | 0.30         | 0.39               | 7         | 60      | 35       | 70     | 56          | 1.0    |
| 70                           | 90      | 0.95    | OMS70-04                    |                | 10.5       | 80.5        | 0.94         | 1.16               | 0.39       | 0.41         | 0.53               | 9         | 60      | 40       | 75     | 61          | 1.1    |
| 70                           | 90      | 1.00    | OMS70A-01                   |                | 11.5       | 81.5        | 1.00         | 1.30               | 0.37       | 0.41         | 0.56               | 9         | 60      | 40       | 75     | 61          | 1.1    |
| 70                           | 90      | 1.00    | OMS70A-09 (TH) <sup>1</sup> | 89001167       | 11.5       | 81.5        | 1.00         | 1.30               | 0.37       | 0.41         | 0.56               | 9         | 60      | 40       | 75     | 61          | 1.1    |
| 70                           | 90      | 1.00    | OMS70A-32                   |                | 13.0       | 83.0        | 1.00         | 1.45               | 0.38       | 0.42         | 0.64               | 9         | 70      | 35       | 75     | 61          | 1.1    |
| 70                           | 90      | 1.00    | OMS70A/50 <sup>2</sup>      |                | 12.3       | 82.3        | 1.00         | 1.30               | 0.37       | 0.42         | 0.57               | 9         | 65      | 40       | 75     | 61          | 1.1    |
| 100                          | 100     | 1.20    | OMS100-05                   |                | 12.5       | 112.5       | 1.20         | 1.50               | 0.43       | 0.57         | 0.75               | 11        | 60      | 55       | 90     | 76          | 1.3    |
| 150                          | 100     | 1.80    | OMS150-02                   |                | 18.5       | 168.5       | 1.80         | 2.26               | 0.43       | 0.85         | 1.12               | 16        | 65      | 75       | 120    | 106         | 1.8    |
| 150                          | 100     | 1.80    | OMS150-09 (TH) <sup>1</sup> | 89001101       | 18.5       | 168.5       | 1.80         | 2.26               | 0.43       | 0.85         | 1.12               | 16        | 65      | 75       | 120    | 106         | 1.8    |
| 150                          | 100     | 1.80    | OMS150-32                   |                | 20.5       | 170.5       | 1.80         | 2.26               | 0.43       | 0.86         | 1.14               | 16        | 70      | 65       | 120    | 106         | 1.6    |
| 250                          | 100     | 3.00    | OMS250-02                   |                | 31.0       | 281.0       | 2.95         | 3.70               | 0.43       | 1.42         | 1.87               | 25        | 80      | 105      | 180    | 166         | 2.5    |
| 250                          | 100     | 3.00    | OMS250                      |                | 31.0       | 281.0       | 2.95         | 3.70               | 0.43       | 1.42         | 1.87               | 25        | 80      | 105      | 155    | 141         | 2.4    |

## notes

1. Ballasts have built-in thermal cutout devices specifically for short-arc metal-halide lamps.
2. With power tapplings  
Ballasts for other wattage ratings available on request.

## 230 V 50 Hz – OM ballasts

| Lamp                                |         |         | Ballast                     |                | Electrical |             |              |                    |            |              |                    |           | Thermal | Physical |        |             |        |
|-------------------------------------|---------|---------|-----------------------------|----------------|------------|-------------|--------------|--------------------|------------|--------------|--------------------|-----------|---------|----------|--------|-------------|--------|
| wattage                             | voltage | current | type                        | article number | loss hot   | input power | lamp current | lamp start current | circuit PF | line current | line start current | capacitor |         | stack    | length | mtg centres | weight |
| W                                   | V       | A       |                             |                | W          | W           | A            | A                  | cosφ       | A@0.9PF      | A@0.9PF            | μF0.9PF   | Δt      | mm       | mm     | mm          | kg     |
| <b>High-pressure mercury vapour</b> |         |         |                             |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |
| 50                                  | 95      | 0.61    | OMB50-01                    |                | 9.0        | 59.0        | 0.61         | 0.78               | 0.42       | 0.29         | 0.38               | 6         | 65      | 30       | 65     | 51          | 0.8    |
| 80                                  | 115     | 0.80    | OMB80-05                    |                | 9.5        | 89.5        | 0.80         | 1.20               | 0.49       | 0.43         | 0.68               | 8         | 65      | 40       | 75     | 61          | 1.1    |
| 80                                  | 115     | 0.80    | OMB80-08                    |                | 13.0       | 93.0        | 0.80         | 1.25               | 0.51       | 0.45         | 0.74               | 7         | 70      | 30       | 75     | 61          | 0.9    |
| 125                                 | 125     | 1.15    | OMB125-03                   |                | 12.0       | 137.0       | 1.15         | 1.66               | 0.52       | 0.66         | 1.00               | 10        | 60      | 55       | 90     | 76          | 1.4    |
| 125                                 | 125     | 1.15    | OMB125-09                   |                | 14.5       | 139.5       | 1.15         | 1.92               | 0.53       | 0.67         | 1.18               | 10        | 65      | 45       | 90     | 76          | 1.3    |
| 175                                 | 130     | 1.50    | OMB175-02                   |                | 15.0       | 190.0       | 1.50         | 2.34               | 0.55       | 0.92         | 1.50               | 12        | 65      | 85       | 120    | 106         | 2.0    |
| 250                                 | 130     | 2.13    | OMB250-15                   |                | 19.5       | 269.5       | 2.13         | 3.15               | 0.55       | 1.30         | 2.02               | 18        | 65      | 105      | 140    | 126         | 2.4    |
| 250                                 | 130     | 2.13    | OMB250-07                   |                | 23.0       | 273.0       | 2.13         | 3.60               | 0.56       | 1.32         | 2.34               | 18        | 70      | 85       | 140    | 126         | 2.1    |
| <b>Metal-halide</b>                 |         |         |                             |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |
| 35                                  | 85      | 0.53    | OMS35-02 (TH) <sup>1</sup>  |                | 9.0        | 44.0        | 0.53         | 0.64               | 0.36       | 0.21         | 0.27               | 6         | 60      | 30       | 65     | 51          | 0.8    |
| 50                                  | 95      | 0.61    | OMB50-01                    |                | 9.0        | 59.0        | 0.61         | 0.78               | 0.42       | 0.29         | 0.38               | 6         | 65      | 30       | 65     | 51          | 0.8    |
| 70                                  | 90      | 1.00    | OMS70A-15                   |                | 13.5       | 83.5        | 1.00         | 1.11               | 0.36       | 0.40         | 0.47               | 11        | 65      | 65       | 100    | 86          | 1.5    |
| 70                                  | 90      | 1.00    | OMS70A-11 (TH) <sup>1</sup> |                | 13.5       | 83.5        | 1.00         | 1.11               | 0.36       | 0.40         | 0.47               | 11        | 65      | 65       | 100    | 86          | 1.5    |
| 70                                  | 90      | 1.00    | OMS70A-23                   | 89001179       | 15.5       | 85.5        | 1.00         | 1.25               | 0.37       | 0.41         | 0.54               | 11        | 65      | 45       | 100    | 86          | 1.3    |
| 100                                 | 100     | 1.10    | OMH100                      |                | 13.5       | 113.5       | 1.10         | 1.43               | 0.45       | 0.55         | 0.75               | 11        | 65      | 65       | 100    | 86          | 1.5    |
| 100                                 | 100     | 1.10    | OMH100-02 (TH) <sup>1</sup> |                | 13.5       | 113.5       | 1.10         | 1.43               | 0.45       | 0.55         | 0.75               | 11        | 65      | 65       | 100    | 86          | 1.5    |
| 150                                 | 100     | 1.80    | OMS150-15                   |                | 19.0       | 169.0       | 1.80         | 2.34               | 0.41       | 0.82         | 1.11               | 18        | 50      | 105      | 155    | 141         | 2.5    |
| 150                                 | 100     | 1.80    | OMS150-05 (TH) <sup>1</sup> |                | 21.0       | 171.0       | 1.80         | 2.34               | 0.41       | 0.83         | 1.13               | 18        | 60      | 105      | 155    | 141         | 2.5    |
| 150                                 | 100     | 1.80    | OMS150-28                   |                | 21.5       | 171.5       | 1.80         | 2.39               | 0.41       | 0.83         | 1.16               | 18        | 65      | 85       | 155    | 141         | 2.1    |
| 175                                 | 130     | 1.50    | OMB175-02                   |                | 15.0       | 190.0       | 1.50         | 2.34               | 0.55       | 0.92         | 1.50               | 12        | 65      | 85       | 120    | 106         | 2.0    |
| 250                                 | 130     | 2.13    | OMB250-15                   |                | 19.5       | 269.5       | 2.13         | 3.15               | 0.55       | 1.30         | 2.02               | 18        | 65      | 105      | 140    | 126         | 2.4    |
| 250                                 | 130     | 2.13    | OMB250-07                   |                | 23.0       | 273.0       | 2.13         | 3.60               | 0.56       | 1.32         | 2.34               | 18        | 70      | 85       | 140    | 126         | 2.1    |
| <b>High-pressure sodium</b>         |         |         |                             |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |
| 35                                  | 85      | 0.53    | OMS35-02 (TH) <sup>1</sup>  |                | 9.0        | 44.0        | 0.53         | 0.64               | 0.36       | 0.21         | 0.27               | 6         | 60      | 30       | 65     | 51          | 0.8    |
| 50                                  | 85      | 0.76    | OMS50-15                    |                | 10.5       | 60.5        | 0.76         | 0.84               | 0.35       | 0.29         | 0.34               | 9         | 65      | 55       | 90     | 76          | 1.3    |
| 70                                  | 90      | 0.95    | OMS70-02                    |                | 12.0       | 82.0        | 0.94         | 1.14               | 0.38       | 0.40         | 0.50               | 10        | 70      | 55       | 90     | 76          | 1.4    |
| 70                                  | 90      | 1.00    | OMS70A-15                   |                | 13.5       | 83.5        | 1.00         | 1.11               | 0.36       | 0.40         | 0.47               | 11        | 65      | 65       | 100    | 86          | 1.5    |
| 70                                  | 90      | 1.00    | OMS70A-11 (TH) <sup>1</sup> |                | 13.5       | 83.5        | 1.00         | 1.11               | 0.36       | 0.40         | 0.47               | 11        | 65      | 65       | 100    | 86          | 1.5    |
| 70                                  | 90      | 1.00    | OMS70A-23                   | 89001179       | 15.5       | 85.5        | 1.00         | 1.25               | 0.37       | 0.41         | 0.54               | 11        | 65      | 45       | 100    | 86          | 1.3    |
| 100                                 | 100     | 1.20    | OMS100-04                   |                | 14.0       | 114.0       | 1.20         | 1.52               | 0.41       | 0.55         | 0.73               | 12        | 65      | 75       | 110    | 96          | 1.7    |
| 150                                 | 100     | 1.80    | OMS150-15                   |                | 19.0       | 169.0       | 1.80         | 2.34               | 0.41       | 0.82         | 1.11               | 18        | 50      | 105      | 155    | 141         | 2.5    |
| 150                                 | 100     | 1.80    | OMS150-05 (TH) <sup>1</sup> |                | 21.0       | 171.0       | 1.80         | 2.34               | 0.41       | 0.83         | 1.13               | 18        | 60      | 105      | 155    | 141         | 2.5    |
| 150                                 | 100     | 1.80    | OMS150-28                   |                | 21.5       | 171.5       | 1.80         | 2.39               | 0.41       | 0.83         | 1.16               | 18        | 65      | 85       | 155    | 141         | 2.1    |

## notes

- Ballasts have built-in thermal cutout devices specifically for short-arc metal-halide lamps.  
Ballasts for other wattage ratings available on request.

## 240 V 50 Hz – OM ballasts

| Lamp                         |         |         | Ballast                     |                | Electrical |             |              |                    |            |              |                    |           | Thermal | Physical |        |             |        |  |
|------------------------------|---------|---------|-----------------------------|----------------|------------|-------------|--------------|--------------------|------------|--------------|--------------------|-----------|---------|----------|--------|-------------|--------|--|
| wattage                      | voltage | current | type                        | article number | loss hot   | input power | lamp current | lamp start current | circuit PF | line current | line start current | capacitor |         | stack    | length | mtg centres | weight |  |
| W                            | V       | A       |                             |                | W          | W           | A            | A                  | cosφ       | A@0.9PF      | A@0.9PF            | μF0.9PF   | Δt      | mm       | mm     | mm          | kg     |  |
| High-pressure mercury vapour |         |         |                             |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |  |
| 40                           | 90      | 0.53    | OMB40                       |                | 8          | 48.0        | 0.53         | 0.65               | 0.38       | 0.22         | 0.29               | 6         | 65      | 30       | 65     | 51          | 0.8    |  |
| 50                           | 95      | 0.61    | OMB50                       | 89001024       | 9          | 59.0        | 0.61         | 0.76               | 0.40       | 0.27         | 0.36               | 6         | 65      | 30       | 65     | 51          | 0.8    |  |
| 75                           | 130     | 0.64    | OMB75                       |                | 9.5        | 84.5        | 0.64         | 0.92               | 0.55       | 0.39         | 0.59               | 5         | 65      | 35       | 70     | 56          | 1.0    |  |
| 80                           | 115     | 0.80    | OMB80                       | 89001030       | 9.5        | 89.5        | 0.80         | 1.11               | 0.47       | 0.41         | 0.60               | 7         | 65      | 40       | 75     | 61          | 1.1    |  |
| 80                           | 115     | 0.80    | OMB80-00                    |                | 13.5       | 93.5        | 0.80         | 1.33               | 0.49       | 0.43         | 0.76               | 7         | 70      | 30       | 75     | 61          | 0.9    |  |
| 100                          | 130     | 0.85    | OMB100                      |                | 10.0       | 110.0       | 0.85         | 1.21               | 0.54       | 0.51         | 0.76               | 7         | 60      | 55       | 90     | 76          | 1.3    |  |
| 100                          | 130     | 0.85    | OMB100-00                   |                | 13.0       | 113.0       | 0.85         | 1.22               | 0.55       | 0.52         | 0.79               | 7         | 65      | 45       | 90     | 76          | 1.3    |  |
| 100                          | 115     | 1.00    | OMB100A                     |                | 12.0       | 112.0       | 1.00         | 1.36               | 0.47       | 0.52         | 0.74               | 9         | 65      | 55       | 90     | 76          | 1.3    |  |
| 100                          | 115     | 1.00    | OMB100A-00                  |                | 15.0       | 115.0       | 1.00         | 1.40               | 0.48       | 0.53         | 0.78               | 9         | 70      | 45       | 90     | 76          | 1.3    |  |
| 125                          | 125     | 1.15    | OMB125                      | 89000974       | 12.0       | 137.0       | 1.15         | 1.66               | 0.50       | 0.63         | 0.96               | 10        | 60      | 65       | 100    | 86          | 1.5    |  |
| 125                          | 125     | 1.15    | OMB125-00                   | 89000976       | 15.5       | 140.5       | 1.15         | 1.90               | 0.51       | 0.65         | 1.13               | 10        | 65      | 45       | 100    | 86          | 1.3    |  |
| 175                          | 130     | 1.50    | OMB175                      | 89000990       | 16.0       | 191.0       | 1.50         | 2.29               | 0.53       | 0.88         | 1.42               | 12        | 65      | 85       | 120    | 106         | 2.0    |  |
| 175                          | 130     | 1.50    | OMB175-00                   |                | 20.0       | 195.0       | 1.50         | 2.12               | 0.54       | 0.90         | 1.34               | 12        | 75      | 65       | 120    | 106         | 1.6    |  |
| 250                          | 130     | 2.13    | OMB250                      | 89001000       | 19.5       | 269.5       | 2.13         | 3.15               | 0.53       | 1.25         | 1.94               | 18        | 65      | 120      | 155    | 141         | 2.8    |  |
| 250                          | 130     | 2.13    | OMB250-00                   | 89001004       | 24.5       | 274.5       | 2.13         | 3.60               | 0.54       | 1.27         | 2.26               | 18        | 70      | 85       | 155    | 141         | 2.1    |  |
| Metal-halide                 |         |         |                             |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |  |
| 35                           | 85      | 0.53    | OMS35                       | 89001136       | 9.0        | 44.0        | 0.53         | 0.60               | 0.35       | 0.20         | 0.24               | 6         | 55      | 40       | 75     | 61          | 1.1    |  |
| 35                           | 85      | 0.53    | OMS35-04 (TH) <sup>1</sup>  | 89001140       | 9.0        | 44.0        | 0.53         | 0.60               | 0.35       | 0.20         | 0.24               | 6         | 55      | 40       | 75     | 61          | 1.1    |  |
| 35                           | 85      | 0.53    | OMS35-00                    |                | 10.0       | 45.0        | 0.53         | 0.61               | 0.35       | 0.21         | 0.25               | 6         | 60      | 30       | 75     | 61          | 0.9    |  |
| 35                           | 85      | 0.53    | OMS35 (TH) <sup>1</sup>     |                | 10.0       | 45.0        | 0.53         | 0.61               | 0.35       | 0.21         | 0.25               | 6         | 60      | 30       | 75     | 61          | 0.9    |  |
| 50                           | 95      | 0.61    | OMB50                       | 89001024       | 9.0        | 59.0        | 0.61         | 0.76               | 0.40       | 0.27         | 0.36               | 6         | 65      | 30       | 65     | 51          | 0.8    |  |
| 70                           | 90      | 1.00    | OMSL70A-01 <sup>6</sup>     | 89001195       | 8.2        | 78.2        | 1.00         | 1.12               | 0.33       | 0.36         | 0.43               | 11        | 30      | 85       | 120    | 106         | 2.0    |  |
| 70                           | 90      | 1.00    | OMS70A                      | 89001157       | 14.0       | 84.0        | 1.00         | 1.16               | 0.35       | 0.39         | 0.47               | 11        | 65      | 65       | 100    | 86          | 1.5    |  |
| 70                           | 90      | 1.00    | OMS70A-02 (TH) <sup>1</sup> | 89001160       | 14.0       | 84.0        | 1.00         | 1.16               | 0.35       | 0.39         | 0.47               | 11        | 65      | 65       | 100    | 86          | 1.5    |  |
| 70                           | 90      | 1.00    | OMS70A-00                   | 89001158       | 16.0       | 86.0        | 1.00         | 1.22               | 0.36       | 0.40         | 0.51               | 11        | 70      | 45       | 100    | 86          | 1.3    |  |
| 70                           | 90      | 1.00    | OMS70A-21 (TH) <sup>1</sup> | 89001177       | 16.0       | 86.0        | 1.00         | 1.22               | 0.36       | 0.40         | 0.51               | 11        | 70      | 45       | 100    | 86          | 1.3    |  |
| 100                          | 100     | 1.10    | OMH100                      | 89001055       | 14.0       | 114.0       | 1.10         | 1.40               | 0.43       | 0.53         | 0.71               | 11        | 70      | 65       | 100    | 86          | 1.5    |  |
| 100                          | 100     | 1.10    | OMH100-01 (TH) <sup>1</sup> | 89001056       | 14.0       | 114.0       | 1.10         | 1.40               | 0.43       | 0.53         | 0.71               | 11        | 70      | 65       | 100    | 86          | 1.5    |  |
| 150                          | 100     | 1.80    | OMS150                      | 89001093       | 20.0       | 170.0       | 1.80         | 2.30               | 0.39       | 0.79         | 1.06               | 18        | 55      | 105      | 155    | 141         | 2.4    |  |
| 150                          | 100     | 1.80    | OMS150-26 <sup>6</sup>      | 89001109       | 20         | 170         | 1.80         | 2.30               | 0.39       | 0.79         | 1.06               | 18        | 55      | 105      | 155    | 141         | 2.5    |  |
| 150                          | 100     | 1.80    | OMS150-04 (TH) <sup>1</sup> | 89001096       | 22.0       | 172.0       | 1.80         | 2.30               | 0.40       | 0.80         | 1.07               | 18        | 60      | 105      | 155    | 141         | 2.4    |  |
| 150                          | 100     | 1.80    | OMS150-00                   | 89001094       | 22.5       | 172.5       | 1.80         | 2.35               | 0.40       | 0.80         | 1.09               | 18        | 65      | 85       | 155    | 141         | 2.1    |  |
| 150                          | 100     | 1.80    | OMS150-17 (TH) <sup>1</sup> | 89001105       | 22.5       | 172.5       | 1.80         | 2.35               | 0.40       | 0.80         | 1.09               | 18        | 65      | 85       | 120    | 106         | 2.0    |  |
| 150                          | 100     | 1.80    | OMS150-22 (TH) <sup>1</sup> |                | 22.5       | 172.5       | 1.80         | 2.35               | 0.40       | 0.80         | 1.09               | 18        | 65      | 85       | 155    | 141         | 2.1    |  |
| 175                          | 130     | 1.50    | OMB175                      | 89000990       | 16.0       | 191.0       | 1.50         | 2.29               | 0.53       | 0.88         | 1.42               | 12        | 65      | 85       | 120    | 106         | 2.0    |  |
| 175                          | 130     | 1.50    | OMB175-00                   |                | 20.0       | 195.0       | 1.50         | 2.12               | 0.54       | 0.90         | 1.34               | 12        | 75      | 65       | 120    | 106         | 1.6    |  |
| 250                          | 130     | 2.13    | OMB250                      | 89001000       | 19.5       | 269.5       | 2.13         | 3.15               | 0.53       | 1.25         | 1.94               | 18        | 65      | 120      | 155    | 141         | 2.8    |  |
| 250                          | 130     | 2.13    | OMB250-00                   | 89001004       | 24.5       | 274.5       | 2.13         | 3.60               | 0.54       | 1.27         | 2.26               | 18        | 70      | 85       | 155    | 141         | 2.1    |  |
| 250                          | 100     | 3.00    | OMS250.5 <sup>5</sup>       |                | 36.0       | 286.0       | 3.00         | 3.60               | 0.40       | 1.32         | 1.67               | 30        | 65      | 85       | 120    | 106         | 2.1    |  |

## notes

1. Ballasts have built-in thermal cutout devices specifically for short-arc metal-halide lamps.
2. Capacitor – dual function – power factor correction and starting aid.
3. Use with ZRM36-LP/B.
4. Use with suitable ignitor.
5. Split ballast, two required.
6. With multiple voltage tapings  
Ballasts for other wattage ratings available on request.

## 240 V 50 Hz – OM ballasts

| Lamp                        |         |         | Ballast                      |                | Electrical |               |                |                      |                 |                      |                            |                    | Thermal | Physical |           |                |           |
|-----------------------------|---------|---------|------------------------------|----------------|------------|---------------|----------------|----------------------|-----------------|----------------------|----------------------------|--------------------|---------|----------|-----------|----------------|-----------|
| wattage                     | voltage | current | type                         | article number | loss hot W | input power W | lamp current A | lamp start current A | circuit PF cosφ | line current A@0.9PF | line start current A@0.9PF | capacitor μF@0.9PF | Δt      | stack mm | length mm | mtg centres mm | weight kg |
| W                           | V       | A       |                              |                |            |               |                |                      |                 |                      |                            |                    |         |          |           |                |           |
| <b>High-pressure sodium</b> |         |         |                              |                |            |               |                |                      |                 |                      |                            |                    |         |          |           |                |           |
| 35                          | 85      | 0.53    | OMS35                        | 89001136       | 9.0        | 44.0          | 0.53           | 0.60                 | 0.35            | 0.20                 | 0.24                       | 6                  | 55      | 40       | 75        | 61             | 1.1       |
| 35                          | 85      | 0.53    | OMS35-04 (TH) <sup>1</sup>   | 89001140       | 9.0        | 44.0          | 0.53           | 0.60                 | 0.35            | 0.20                 | 0.24                       | 6                  | 55      | 40       | 75        | 61             | 1.1       |
| 35                          | 85      | 0.53    | OMS35-00                     |                | 10.0       | 45.0          | 0.53           | 0.61                 | 0.35            | 0.21                 | 0.25                       | 6                  | 60      | 30       | 75        | 61             | 0.9       |
| 35                          | 85      | 0.53    | OMS35 (TH) <sup>1</sup>      |                | 10.0       | 45.0          | 0.53           | 0.61                 | 0.35            | 0.21                 | 0.25                       | 6                  | 60      | 30       | 75        | 61             | 0.9       |
| 50                          | 85      | 0.76    | OMS50                        | 89001144       | 11.5       | 61.5          | 0.76           | 0.87                 | 0.34            | 0.28                 | 0.34                       | 8                  | 65      | 55       | 90        | 76             | 1.4       |
| 50                          | 85      | 0.76    | OMS50-00                     |                | 14.0       | 64.0          | 0.76           | 0.90                 | 0.35            | 0.30                 | 0.37                       | 8                  | 75      | 35       | 90        | 76             | 1.1       |
| 70                          | 90      | 0.95    | OMS70                        | 89001151       | 12.5       | 82.5          | 0.94           | 1.14                 | 0.37            | 0.38                 | 0.49                       | 10                 | 70      | 55       | 90        | 76             | 1.4       |
| 70                          | 90      | 1.00    | OMSL70A-01 <sup>6</sup>      | 89001195       | 8.2        | 78.2          | 1.00           | 1.12                 | 0.33            | 0.36                 | 0.43                       | 11                 | 30      | 85       | 120       | 106            | 2.0       |
| 70                          | 90      | 1.00    | OMS70A                       | 89001157       | 14.0       | 84.0          | 1.00           | 1.16                 | 0.35            | 0.39                 | 0.47                       | 11                 | 65      | 65       | 100       | 86             | 1.5       |
| 70                          | 90      | 1.00    | OMS70A-02 (TH) <sup>1</sup>  | 89001160       | 14.0       | 84.0          | 1.00           | 1.16                 | 0.35            | 0.39                 | 0.47                       | 11                 | 65      | 65       | 100       | 86             | 1.5       |
| 70                          | 90      | 1.00    | OMS70A-00                    | 89001158       | 16.0       | 86.0          | 1.00           | 1.22                 | 0.36            | 0.40                 | 0.51                       | 11                 | 70      | 45       | 100       | 86             | 1.3       |
| 70                          | 90      | 1.00    | OMS70A-21 (TH) <sup>1</sup>  | 89001177       | 16.0       | 86.0          | 1.00           | 1.22                 | 0.36            | 0.40                 | 0.51                       | 11                 | 70      | 45       | 100       | 86             | 1.3       |
| 100                         | 100     | 1.20    | OMS100                       | 89001077       | 14.5       | 114.5         | 1.20           | 1.50                 | 0.40            | 0.53                 | 0.70                       | 12                 | 65      | 75       | 110       | 96             | 1.7       |
| 100                         | 100     | 1.20    | OMS100-00                    |                | 18.0       | 118.0         | 1.20           | 1.45                 | 0.41            | 0.55                 | 0.69                       | 12                 | 75      | 55       | 110       | 96             | 1.5       |
| 150                         | 100     | 1.80    | OMS150                       | 89001093       | 20.0       | 170.0         | 1.80           | 2.30                 | 0.39            | 0.79                 | 1.06                       | 18                 | 55      | 105      | 155       | 141            | 2.4       |
| 150                         | 100     | 1.80    | OMS150-26 <sup>6</sup>       | 89001109       | 20         | 170           | 1.80           | 2.30                 | 0.39            | 0.79                 | 1.06                       | 18                 | 55      | 105      | 155       | 141            | 2.5       |
| 150                         | 100     | 1.80    | OMS150-04 (TH) <sup>1</sup>  | 89001096       | 22.0       | 172.0         | 1.80           | 2.30                 | 0.40            | 0.80                 | 1.07                       | 18                 | 60      | 105      | 155       | 141            | 2.4       |
| 150                         | 100     | 1.80    | OMS150-00                    | 89001094       | 22.5       | 172.5         | 1.80           | 2.35                 | 0.40            | 0.80                 | 1.09                       | 18                 | 65      | 85       | 155       | 141            | 2.1       |
| 150                         | 100     | 1.80    | OMS150-17 (TH) <sup>1</sup>  | 89001105       | 22.5       | 172.5         | 1.80           | 2.35                 | 0.40            | 0.80                 | 1.09                       | 18                 | 65      | 85       | 120       | 106            | 2.0       |
| 150                         | 100     | 1.80    | OMS150-22 (TH) <sup>1</sup>  |                | 22.5       | 172.5         | 1.80           | 2.35                 | 0.40            | 0.80                 | 1.09                       | 18                 | 65      | 85       | 155       | 141            | 2.1       |
| 150                         | 100     | 1.80    | OMS150/100 (TH) <sup>7</sup> | 89003580       | 22.5       | 172.5         | 1.80           | 2.30                 | 0.40            | 0.80                 | 1.07                       | 18                 | 55      | 105      | 155       | 141            | 2.5       |
| 250                         | 100     | 3.00    | OMS250.5 <sup>5</sup>        |                | 36.0       | 286.0         | 3.00           | 3.60                 | 0.40            | 1.32                 | 1.67                       | 30                 | 65      | 85       | 120       | 106            | 2.1       |
| <b>Low-pressure sodium</b>  |         |         |                              |                |            |               |                |                      |                 |                      |                            |                    |         |          |           |                |           |
| 18                          | 57      | 0.35    | OMLS18 <sup>2</sup>          |                | 7.5        | 25.5          | 0.35           | 0.36                 | 0.30            | 0.12                 | 0.13                       | 4                  | 55      | 30       | 65        | 51             | 0.8       |
| 26                          | 84      | 0.35    | OMLS26 <sup>3</sup>          |                | 6.5        | 32.5          | 0.35           | 0.40                 | 0.39            | 0.15                 | 0.18                       | 3.5                | 50      | 30       | 65        | 51             | 0.8       |
| 35                          | 70      | 0.60    | OMLS35/55 <sup>3</sup>       |                | 10.0       | 45.0          | 0.60           | 0.64                 | 0.31            | 0.21                 | 0.23                       | 7                  | 55      | 40       | 75        | 61             | 1.1       |
| 55                          | 109     | 0.59    | OMLS35/55 <sup>3</sup>       |                | 10.0       | 65.0          | 0.59           | 0.64                 | 0.46            | 0.30                 | 0.34                       | 6                  | 55      | 40       | 75        | 61             | 1.1       |
| 90                          | 112     | 0.94    | OMLS90 <sup>4</sup>          |                | 12.5       | 102.5         | 0.94           | 0.99                 | 0.45            | 0.47                 | 0.52                       | 9                  | 60      | 65       | 100       | 86             | 1.5       |

## notes

1. Ballasts have built-in thermal cutout devices specifically for short-arc metal-halide lamps.
2. Capacitor – dual function – power factor correction and starting aid.
3. Use with ZRM36-LP/B.
4. Use with suitable ignitor.
5. Split ballast, two required.
6. With multiple voltage tapplings
7. With power tapplings

Ballasts for other wattage ratings available on request.

## 250 V 50 Hz – OM ballasts

| Lamp                                |         |         | Ballast                   |                | Electrical |             |              |                    |            |              |                    |           | Thermal | Physical |        |             |        |
|-------------------------------------|---------|---------|---------------------------|----------------|------------|-------------|--------------|--------------------|------------|--------------|--------------------|-----------|---------|----------|--------|-------------|--------|
| wattage                             | voltage | current | type                      | article number | loss hot   | input power | lamp current | lamp start current | circuit PF | line current | line start current | capacitor |         | stack    | length | mtg centres | weight |
| W                                   | V       | A       |                           |                | W          | W           | A            | A                  | cosφ       | A@0.9PF      | A@0.9PF            | μF0.9PF   | Δt      | mm       | mm     | mm          | kg     |
| <b>High-pressure mercury vapour</b> |         |         |                           |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |
| 40                                  | 90      | 0.53    | OMB40                     |                | 10.7       | 50.7        | 0.53         | 0.64               | 0.38       | 0.23         | 0.29               | 5         | 65      | 30       | 65     | 51          | 0.8    |
| 50                                  | 95      | 0.61    | OMB50-02                  | 89001025       | 11.7       | 61.7        | 0.61         | 0.75               | 0.40       | 0.27         | 0.35               | 6         | 65      | 30       | 65     | 51          | 0.8    |
| 75                                  | 130     | 0.64    | OMB75                     |                | 10.2       | 85.2        | 0.64         | 0.88               | 0.53       | 0.38         | 0.55               | 5         | 65      | 35       | 70     | 56          | 1.0    |
| 80                                  | 115     | 0.80    | OMB80-03                  | 89001033       | 12.4       | 92.4        | 0.80         | 1.05               | 0.46       | 0.41         | 0.57               | 7         | 65      | 40       | 75     | 61          | 1.1    |
| 100                                 | 130     | 0.85    | OMB100                    |                | 11.9       | 111.9       | 0.85         | 1.17               | 0.53       | 0.50         | 0.72               | 7         | 60      | 55       | 90     | 76          | 1.3    |
| 100                                 | 115     | 1.00    | OMB100A                   |                | 14.1       | 114.1       | 1.00         | 1.31               | 0.46       | 0.51         | 0.70               | 9         | 65      | 55       | 90     | 76          | 1.3    |
| 125                                 | 125     | 1.15    | OMB125-05                 | 89000980       | 14.2       | 139.2       | 1.15         | 1.58               | 0.48       | 0.62         | 0.89               | 10        | 60      | 65       | 100    | 86          | 1.5    |
| 175                                 | 130     | 1.50    | OMB175                    |                | 17.6       | 192.6       | 1.50         | 2.08               | 0.51       | 0.86         | 1.25               | 12        | 65      | 85       | 120    | 106         | 2.0    |
| 250                                 | 130     | 2.13    | OMB250                    |                | 23.3       | 273.3       | 2.13         | 2.96               | 0.51       | 1.21         | 1.77               | 18        | 65      | 120      | 155    | 141         | 2.8    |
| <b>Metal-halide</b>                 |         |         |                           |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |
| 50                                  | 95      | 0.61    | OMB50-02                  | 89001025       | 11.7       | 61.7        | 0.61         | 0.75               | 0.40       | 0.27         | 0.35               | 6         | 65      | 30       | 65     | 51          | 0.8    |
| 70                                  | 90      | 1.00    | OMSL70A-01 <sup>3</sup>   | 89001195       | 8.6        | 78.6        | 1.00         | 1.12               | 0.31       | 0.35         | 0.41               | 11        | 30      | 85       | 120    | 106         | 2.0    |
| 70                                  | 90      | 1.00    | OMSL70A (TH) <sup>1</sup> | 89002558       | 8.6        | 78.6        | 1.00         | 1.12               | 0.31       | 0.35         | 0.41               | 11        | 30      | 85       | 120    | 106         | 2.0    |
| 70                                  | 90      | 1.00    | OMS70A-05                 | 89001163       | 15.3       | 85.3        | 1.00         | 1.20               | 0.34       | 0.38         | 0.48               | 10        | 65      | 65       | 100    | 86          | 1.5    |
| 70                                  | 90      | 1.00    | OMS70A (TH) <sup>1</sup>  |                | 15.3       | 85.3        | 1.00         | 1.20               | 0.34       | 0.38         | 0.48               | 10        | 65      | 65       | 100    | 86          | 1.5    |
| 100                                 | 100     | 1.10    | OMH100                    |                | 15.7       | 115.7       | 1.10         | 1.37               | 0.42       | 0.51         | 0.67               | 10        | 70      | 65       | 100    | 86          | 1.5    |
| 100                                 | 100     | 1.10    | OMH100 (TH) <sup>1</sup>  |                | 15.7       | 115.7       | 1.10         | 1.37               | 0.42       | 0.51         | 0.67               | 10        | 70      | 65       | 100    | 86          | 1.5    |
| 150                                 | 100     | 1.80    | OMS150-11                 | 89001103       | 21.5       | 171.5       | 1.80         | 2.20               | 0.38       | 0.76         | 0.98               | 18        | 60      | 105      | 155    | 141         | 2.4    |
| 150                                 | 100     | 1.80    | OMS150 (TH) <sup>1</sup>  |                | 23.0       | 173.0       | 1.80         | 2.20               | 0.38       | 0.77         | 0.99               | 18        | 65      | 105      | 155    | 141         | 2.4    |
| 175                                 | 130     | 1.50    | OMB175                    |                | 17.6       | 192.6       | 1.50         | 2.08               | 0.51       | 0.86         | 1.25               | 12        | 65      | 85       | 120    | 106         | 2.0    |
| 250                                 | 130     | 2.13    | OMB250                    |                | 23.3       | 273.3       | 2.13         | 2.96               | 0.51       | 1.21         | 1.77               | 18        | 65      | 120      | 155    | 141         | 2.8    |
| 250                                 | 100     | 3.00    | OMS250.5 <sup>2</sup>     |                | 38.4       | 288.4       | 3.00         | 3.73               | 0.38       | 1.28         | 1.67               | 30        | 65      | 85       | 120    | 106         | 2.1    |
| <b>High-pressure sodium</b>         |         |         |                           |                |            |             |              |                    |            |              |                    |           |         |          |        |             |        |
| 50                                  | 85      | 0.76    | OMS50-03                  | 89001146       | 12.5       | 62.5        | 0.76         | 0.90               | 0.33       | 0.28         | 0.35               | 8         | 65      | 55       | 90     | 76          | 1.4    |
| 70                                  | 90      | 0.95    | OMS70                     |                | 15.2       | 85.2        | 0.94         | 1.15               | 0.36       | 0.38         | 0.49               | 10        | 70      | 55       | 90     | 76          | 1.4    |
| 70                                  | 90      | 1.00    | OMSL70A-01 <sup>3</sup>   | 89001195       | 8.6        | 78.6        | 1.00         | 1.12               | 0.31       | 0.35         | 0.41               | 11        | 30      | 85       | 120    | 106         | 2.0    |
| 70                                  | 90      | 1.00    | OMSL70A (TH) <sup>1</sup> | 89002558       | 8.6        | 78.6        | 1.00         | 1.12               | 0.31       | 0.35         | 0.41               | 11        | 30      | 85       | 120    | 106         | 2.0    |
| 70                                  | 90      | 1.00    | OMS70A-05                 | 89001163       | 15.3       | 85.3        | 1.00         | 1.20               | 0.34       | 0.38         | 0.48               | 10        | 65      | 65       | 100    | 86          | 1.5    |
| 70                                  | 90      | 1.00    | OMS70A (TH) <sup>1</sup>  |                | 15.3       | 85.3        | 1.00         | 1.20               | 0.34       | 0.38         | 0.48               | 10        | 65      | 65       | 100    | 86          | 1.5    |
| 100                                 | 100     | 1.20    | OMS100-02                 | 89001079       | 16.6       | 116.6       | 1.20         | 1.49               | 0.39       | 0.52         | 0.68               | 12        | 65      | 75       | 110    | 96          | 1.7    |
| 150                                 | 100     | 1.80    | OMS150-11                 | 89001103       | 21.5       | 171.5       | 1.80         | 2.20               | 0.38       | 0.76         | 0.98               | 18        | 60      | 105      | 155    | 141         | 2.4    |
| 150                                 | 100     | 1.80    | OMS150 (TH) <sup>1</sup>  |                | 23.0       | 173.0       | 1.80         | 2.20               | 0.38       | 0.77         | 0.99               | 18        | 65      | 105      | 155    | 141         | 2.4    |
| 250                                 | 100     | 3.00    | OMS250.5 <sup>2</sup>     |                | 38.4       | 288.4       | 3.00         | 3.73               | 0.38       | 1.28         | 1.67               | 30        | 65      | 85       | 120    | 106         | 2.1    |

## notes

1. Ballasts have built-in thermal cutout devices specifically for short-arc metal-halide lamps.
2. Split ballast, two required.
3. With multiple voltage tapings  
Ballasts for other wattage ratings available on request.



## OG type ballasts

- vacuum impregnation
- very low noise level
- long service life
- glass fibre filled nylon coil covers
- 24A double-screw terminals
- winding insulation Class H materials
- fixed air gap ensuring permanent calibration
- tw150 winding temperature rating
- resistant to moisture and corrosion

### 100% final testing

- continuity
- winding short circuit
- insulation
- impedance

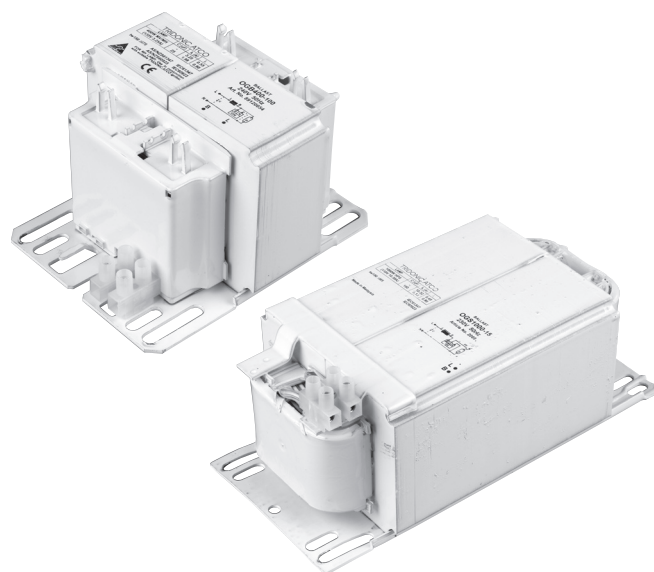
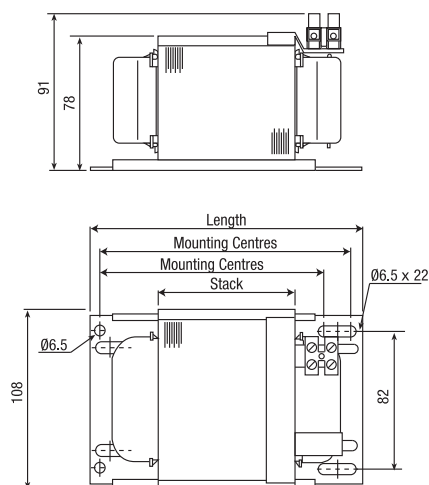
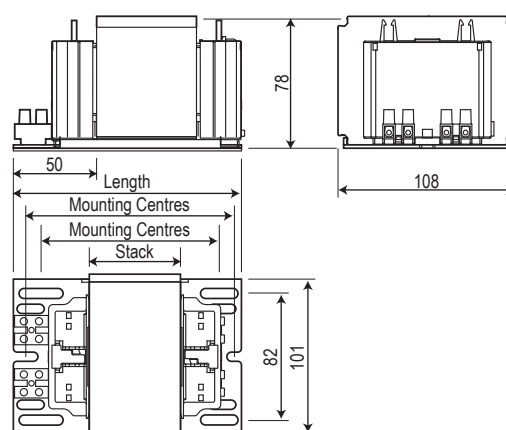


figure 1



OG type ballasts with stack sizes 30–160 mm

figure 2



OG type ballasts with stack sizes 30-100 mm

## 220 V 50 Hz – OG ballasts

| Lamp                                |         |         | Ballast                      |                | Electrical |             |              |                    |            |              |                    |           | Thermal | Physical |        |        |             |        |
|-------------------------------------|---------|---------|------------------------------|----------------|------------|-------------|--------------|--------------------|------------|--------------|--------------------|-----------|---------|----------|--------|--------|-------------|--------|
| wattage                             | voltage | current | type                         | article number | loss hot   | input power | lamp current | lamp start current | circuit PF | line current | line start current | capacitor | winding | stack    | figure | length | mtg centres | weight |
| W                                   | V       | A       |                              |                | W          | W           | A            | A                  | cosφ       | A@0.9PF      | A@0.9PF            | μF@0.9PF  | Δt      | mm       |        | mm     | mm          | kg     |
| <b>High-pressure mercury vapour</b> |         |         |                              |                |            |             |              |                    |            |              |                    |           |         |          |        |        |             |        |
| 250                                 | 130     | 2.13    | OGB250-102                   | 89120824       | 19         | 269         | 2.13         | 3.40               | 0.57       | 1.36         | 2.28               | 18        | 60      | 30       | 2      | 120    | 91-107      | 2.4    |
| 250                                 | 130     | 2.13    | OGB250-08                    |                | 19         | 269         | 2.13         | 3.40               | 0.57       | 1.36         | 2.28               | 18        | 60      | 30       | 1      | 110    | 81-97       | 2.4    |
| 250                                 | 130     | 2.13    | OGB250/125 <sup>3</sup>      |                | 18         | 268         | 2.13         | 3.30               | 0.57       | 1.35         | 2.20               | 18        | 60      | 30       | 1      | 110    | 81-97       | 2.4    |
| 400                                 | 135     | 3.25    | OGB400-125                   | 89122648       | 26         | 426         | 3.25         | 5.30               | 0.60       | 2.15         | 3.68               | 25        | 70      | 40       | 2      | 130    | 101-117     | 3.1    |
| 400                                 | 135     | 3.25    | OGB400-108                   |                | 22         | 422         | 3.25         | 5.40               | 0.59       | 2.13         | 3.72               | 25        | 55      | 50       | 2      | 140    | 111-127     | 3.7    |
| 400                                 | 135     | 3.25    | OGB400/250 <sup>3</sup>      |                | 24         | 424         | 3.25         | 5.10               | 0.59       | 2.14         | 3.53               | 25        | 70      | 50       | 1      | 120    | 91-107      | 3.7    |
| 700                                 | 140     | 5.40    | OGB700-05                    |                | 30         | 730         | 5.40         | 9.10               | 0.61       | 3.69         | 6.52               | 40        | 55      | 80       | 1      | 160    | 131-147     | 5.5    |
| 1,000                               | 145     | 7.50    | OGB1000-05                   | 27020811       | 44         | 1,044       | 7.50         | 12.30              | 0.63       | 5.27         | 9.08               | 55        | 55      | 110      | 1      | 190    | 161-177     | 7.0    |
| <b>Metal-halide</b>                 |         |         |                              |                |            |             |              |                    |            |              |                    |           |         |          |        |        |             |        |
| 150                                 | 100     | 1.80    | OGS150-103                   |                | 17         | 167         | 1.80         | 2.30               | 0.42       | 0.84         | 1.13               | 20        | 55      | 30       | 2      | 120    | 91-107      | 2.4    |
| 150                                 | 100     | 1.80    | OGS150-110 (TH) <sup>1</sup> |                | 17         | 167         | 1.80         | 2.30               | 0.42       | 0.84         | 1.13               | 20        | 55      | 30       | 2      | 120    | 91-107      | 2.4    |
| 250                                 | 130     | 2.13    | OGB250-102                   | 89120824       | 19         | 269         | 2.13         | 3.40               | 0.57       | 1.36         | 2.28               | 18        | 60      | 30       | 2      | 120    | 91-107      | 2.4    |
| 250                                 | 130     | 2.13    | OGB250-08                    |                | 19         | 269         | 2.13         | 3.40               | 0.57       | 1.36         | 2.28               | 18        | 60      | 30       | 1      | 110    | 81-97       | 2.4    |
| 250                                 | 100     | 3.00    | OGS250-103                   | 89121030       | 24         | 274         | 3.00         | 4.00               | 0.42       | 1.38         | 1.94               | 35        | 65      | 40       | 2      | 130    | 101-117     | 3.1    |
| 250                                 | 100     | 3.00    | OGS250-108 (TH) <sup>1</sup> |                | 24         | 274         | 3.00         | 4.00               | 0.42       | 1.38         | 1.94               | 35        | 65      | 40       | 2      | 130    | 101-117     | 3.1    |
| 400                                 | 135     | 3.25    | OGB400-125                   | 89122648       | 26         | 426         | 3.25         | 5.30               | 0.60       | 2.15         | 3.68               | 25        | 70      | 40       | 2      | 130    | 101-117     | 3.1    |
| 400                                 | 135     | 3.25    | OGB400-108                   |                | 22         | 422         | 3.25         | 5.40               | 0.59       | 2.13         | 3.72               | 25        | 55      | 50       | 2      | 140    | 111-127     | 3.7    |
| 400                                 | 120     | 3.50    | OGH400-102                   | 89120944       | 25         | 425         | 3.50         | 5.80               | 0.55       | 2.15         | 3.73               | 30        | 60      | 45       | 2      | 140    | 111-127     | 3.4    |
| 400                                 | 100     | 4.60    | OGS400-102                   | 89121082       | 34         | 434         | 4.60         | 6.70               | 0.43       | 2.19         | 3.35               | 50        | 65      | 60       | 2      | 150    | 121-137     | 4.3    |
| 400                                 | 100     | 4.60    | OGS400-65                    |                | 34         | 434         | 4.60         | 6.70               | 0.43       | 2.19         | 3.35               | 50        | 65      | 60       | 1      | 140    | 111-127     | 4.3    |
| 1,000                               | 130     | 8.25    | OGH1000-05                   | 27020906       | 48         | 1,048       | 8.25         | 12.80              | 0.58       | 5.29         | 8.62               | 65        | 55      | 120      | 1      | 200    | 171-187     | 7.5    |
| 1,000                               | 120     | 9.50    | OGH1000A-06                  | 27020917       | 62         | 1,062       | 9.50         | 14.00              | 0.51       | 5.36         | 8.30               | 85        | 70      | 120      | 1      | 200    | 171-187     | 7.5    |
| <b>High-pressure sodium vapour</b>  |         |         |                              |                |            |             |              |                    |            |              |                    |           |         |          |        |        |             |        |
| 150                                 | 100     | 1.80    | OGS150-103                   |                | 17         | 167         | 1.80         | 2.30               | 0.42       | 0.84         | 1.13               | 20        | 55      | 30       | 2      | 120    | 91-107      | 2.4    |
| 150                                 | 100     | 1.80    | OGS150-110 (TH) <sup>1</sup> |                | 17         | 167         | 1.80         | 2.30               | 0.42       | 0.84         | 1.13               | 20        | 55      | 30       | 2      | 120    | 91-107      | 2.4    |
| 250                                 | 100     | 3.00    | OGS250-103                   | 89121030       | 24         | 274         | 3.00         | 4.00               | 0.42       | 1.38         | 1.94               | 35        | 65      | 40       | 2      | 130    | 101-117     | 3.1    |
| 250                                 | 100     | 3.00    | OGS250-108 (TH) <sup>1</sup> |                | 24         | 274         | 3.00         | 4.00               | 0.42       | 1.38         | 1.94               | 35        | 65      | 40       | 2      | 130    | 101-117     | 3.1    |
| 250                                 | 100     | 3.00    | OGS250/150-101 <sup>3</sup>  | 89121017       | 24         | 274         | 3.00         | 3.90               | 0.42       | 1.38         | 1.89               | 35        | 70      | 50       | 2      | 140    | 111-127     | 3.7    |
| 400                                 | 100     | 4.60    | OGS400-102                   | 89121082       | 34         | 434         | 4.60         | 6.70               | 0.43       | 2.19         | 3.35               | 50        | 65      | 60       | 2      | 150    | 121-137     | 4.3    |
| 400                                 | 100     | 4.60    | OGS400-65                    |                | 34         | 434         | 4.60         | 6.70               | 0.43       | 2.19         | 3.35               | 50        | 65      | 60       | 1      | 140    | 111-127     | 4.3    |
| 400                                 | 100     | 4.60    | OGS400/250-101 <sup>3</sup>  | 89121071       | 34         | 434         | 4.60         | 6.20               | 0.43       | 2.19         | 3.10               | 50        | 60      | 70       | 2      | 160    | 131-147     | 4.9    |
| 600                                 | 110     | 6.20    | OGS600-04                    |                | 40         | 640         | 6.20         | 8.15               | 0.47       | 3.23         | 4.46               | 60        | 60      | 90       | 1      | 170    | 141-157     | 6.0    |
| 1,000                               | 110     | 10.30   | OGS1000-06                   | 27020961       | 58         | 1,058       | 10.30        | 13.90              | 0.47       | 5.34         | 7.57               | 100       | 65      | 140      | 1      | 220    | 191-207     | 8.9    |
| 1,000                               | 110     | 10.3    | OGS1000-10 <sup>2</sup>      | 27020964       | 58         | 1058        | 10.3         | 13.9               | 0.47       | 5.34         | 7.57               | 100       | 65      | 140      | 1      | 220    | 191-207     | 8.9    |

## notes

1. Ballasts have built-in thermal cutout devices specifically for short-arc metal-halide lamps.
2. With multiple voltage tapings
3. With power tapings

Ballasts for other wattage ratings available on request.

## 220 V 60 Hz – OG ballasts

| Lamp                                |         |         | Ballast                  |                | Electrical |             |              |                    |            |              |                    |           | Thermal | Physical |        |        |             |        |
|-------------------------------------|---------|---------|--------------------------|----------------|------------|-------------|--------------|--------------------|------------|--------------|--------------------|-----------|---------|----------|--------|--------|-------------|--------|
| wattage                             | voltage | current | type                     | article number | loss hot   | input power | lamp current | lamp start current | circuit PF | line current | line start current | capacitor | winding | stack    | figure | length | mtg centres | weight |
| W                                   | V       | A       |                          |                | W          | W           | A            | A                  | cosφ       | A@0.9PF      | A@0.9PF            | μF@0.9PF  | Δt      | mm       |        | mm     | mm          | kg     |
| <b>High-pressure mercury vapour</b> |         |         |                          |                |            |             |              |                    |            |              |                    |           |         |          |        |        |             |        |
| 250                                 | 130     | 2.13    | OGB250-103               |                | 18         | 268         | 2.13         | 3.20               | 0.57       | 1.35         | 2.14               | 15        | 60      | 30       | 2      | 120    | 91-107      | 2.4    |
| 400                                 | 135     | 3.25    | OGB400-104               | 89120858       | 25         | 425         | 3.25         | 5.90               | 0.59       | 2.15         | 4.09               | 25        | 70      | 30       | 2      | 120    | 91-107      | 2.4    |
| 400                                 | 135     | 3.25    | OGB400-109               | 89120862       | 22         | 422         | 3.25         | 5.30               | 0.59       | 2.13         | 3.65               | 25        | 60      | 40       | 2      | 130    | 101-117     | 3.1    |
| 700                                 | 140     | 5.40    | OGB700-06                | 27020898       | 33         | 733         | 5.40         | 8.40               | 0.62       | 3.70         | 6.05               | 35        | 60      | 70       | 1      | 150    | 121-137     | 5.0    |
| 1,000                               | 145     | 7.50    | OGB1000-04               | 27020810       | 43         | 1,043       | 7.50         | 12.10              | 0.63       | 5.27         | 8.89               | 45        | 55      | 100      | 1      | 190    | 151-167     | 6.5    |
| <b>Metal-halide</b>                 |         |         |                          |                |            |             |              |                    |            |              |                    |           |         |          |        |        |             |        |
| 150                                 | 100     | 1.80    | OGS150-104               | 89120994       | 17         | 167         | 1.80         | 2.20               | 0.42       | 0.84         | 1.08               | 16        | 55      | 30       | 2      | 120    | 91-107      | 2.4    |
| 250                                 | 130     | 2.13    | OGB250-103               |                | 18         | 268         | 2.13         | 3.20               | 0.57       | 1.35         | 2.14               | 15        | 60      | 30       | 2      | 120    | 91-107      | 2.4    |
| 250                                 | 100     | 3.00    | OGS250-104               | 89121031       | 25         | 275         | 3.00         | 4.20               | 0.42       | 1.39         | 2.04               | 30        | 65      | 30       | 2      | 120    | 91-107      | 2.4    |
| 250                                 | 100     | 3.00    | OGS250-02                |                | 25         | 275         | 3.00         | 4.20               | 0.42       | 1.39         | 2.04               | 30        | 65      | 30       | 1      | 110    | 81-97       | 2.4    |
| 400                                 | 135     | 3.25    | OGB400-104               | 89120858       | 25         | 425         | 3.25         | 5.90               | 0.59       | 2.15         | 4.09               | 25        | 70      | 30       | 2      | 120    | 91-107      | 2.4    |
| 400                                 | 135     | 3.25    | OGB400-109               | 89120862       | 22         | 422         | 3.25         | 5.30               | 0.59       | 2.13         | 3.65               | 25        | 60      | 40       | 2      | 130    | 101-117     | 3.1    |
| 400                                 | 120     | 3.50    | OGH400-103               |                | 26         | 426         | 3.50         | 5.55               | 0.55       | 2.15         | 3.58               | 25        | 70      | 40       | 2      | 130    | 101-117     | 3.1    |
| 400                                 | 120     | 3.50    | OGH400-04                |                | 26         | 426         | 3.50         | 5.55               | 0.55       | 2.15         | 3.58               | 25        | 70      | 40       | 1      | 130    | 101-117     | 3.1    |
| 400                                 | 100     | 4.60    | OGS400-103               | 89121083       | 34         | 434         | 4.60         | 6.20               | 0.43       | 2.19         | 3.10               | 40        | 65      | 50       | 2      | 140    | 111-127     | 3.7    |
| 1,000                               | 130     | 8.25    | OGH1000-03               | 27020905       | 48         | 1,048       | 8.25         | 12.90              | 0.58       | 5.29         | 8.69               | 55        | 60      | 100      | 1      | 180    | 151-167     | 6.5    |
| 1,000                               | 120     | 9.50    | OGH1000A-02              | 27020915       | 60         | 1,060       | 9.50         | 13.20              | 0.51       | 5.35         | 7.81               | 75        | 65      | 120      | 1      | 200    | 171-187     | 7.5    |
| 1,000                               | 120     | 9.50    | OGH1000A-16 <sup>2</sup> | 27020919       | 54         | 1054        | 9.50         | 13.2               | 0.50       | 5.32         | 7.77               | 75        | 55      | 140      | 1      | 243    | 232         | 8.9    |
| <b>High-pressure sodium vapour</b>  |         |         |                          |                |            |             |              |                    |            |              |                    |           |         |          |        |        |             |        |
| 150                                 | 100     | 1.80    | OGS150-104               | 89120994       | 17         | 167         | 1.80         | 2.20               | 0.42       | 0.84         | 1.08               | 16        | 55      | 30       | 2      | 120    | 91-107      | 2.4    |
| 250                                 | 100     | 3.00    | OGS250-104               | 89121031       | 25         | 275         | 3.00         | 4.20               | 0.42       | 1.39         | 2.04               | 30        | 65      | 30       | 2      | 120    | 91-107      | 2.4    |
| 250                                 | 100     | 3.00    | OGS250-02                |                | 25         | 275         | 3.00         | 4.20               | 0.42       | 1.39         | 2.04               | 30        | 65      | 30       | 1      | 110    | 81-97       | 2.4    |
| 400                                 | 100     | 4.60    | OGS400-103               | 89121083       | 34         | 434         | 4.60         | 6.20               | 0.43       | 2.19         | 3.10               | 40        | 65      | 50       | 2      | 140    | 111-127     | 3.7    |
| 600                                 | 110     | 6.20    | OGS600-05                | 27021131       | 39         | 639         | 6.20         | 8.15               | 0.47       | 3.23         | 4.45               | 50        | 55      | 80       | 1      | 160    | 131-147     | 5.5    |
| 1,000                               | 110     | 10.30   | OGS1000-01               | 27020956       | 56         | 1,056       | 10.30        | 14.00              | 0.47       | 5.33         | 7.61               | 85        | 55      | 120      | 1      | 200    | 171-187     | 7.5    |

## notes

1. Ballasts have built-in thermal cutout devices specifically for short-arc metal-halide lamps.
2. With baseplate to suit D96 box  
Ballasts for other wattage ratings available on request.

## 230 V 50 Hz – OG ballasts

| Lamp                                |         |         | Ballast                          |                | Electrical |             |              |                    |            |              |                    |           | Thermal | Physical |        |        |             |        |
|-------------------------------------|---------|---------|----------------------------------|----------------|------------|-------------|--------------|--------------------|------------|--------------|--------------------|-----------|---------|----------|--------|--------|-------------|--------|
| wattage                             | voltage | current | type                             | article number | loss hot   | input power | lamp current | lamp start current | circuit PF | line current | line start current | capacitor | winding | stack    | figure | length | mtg centres | weight |
| W                                   | V       | A       |                                  |                | W          | W           | A            | A                  | cosφ       | A@0.9PF      | A@0.9PF            | μF0.9PF   | Δt      | mm       |        | mm     | mm          | kg     |
| <b>High-pressure mercury vapour</b> |         |         |                                  |                |            |             |              |                    |            |              |                    |           |         |          |        |        |             |        |
| 250                                 | 130     | 2.13    | OGB250-104                       |                | 20         | 270         | 2.13         | 3.20               | 0.55       | 1.30         | 2.06               | 18        | 65      | 30       | 2      | 120    | 91-107      | 2.4    |
| 400                                 | 135     | 3.25    | OGB400-105                       |                | 27         | 427         | 3.25         | 5.20               | 0.57       | 2.06         | 3.47               | 25        | 70      | 40       | 2      | 130    | 101-117     | 3.1    |
| 400                                 | 135     | 3.25    | OGB400-107                       |                | 23         | 423         | 3.25         | 5.10               | 0.57       | 2.04         | 3.37               | 25        | 60      | 50       | 2      | 140    | 111-127     | 3.7    |
| 700                                 | 140     | 5.40    | OGB700-04                        |                | 32         | 732         | 5.40         | 8.80               | 0.59       | 3.54         | 6.05               | 40        | 60      | 80       | 1      | 160    | 131-147     | 5.5    |
| 1,000                               | 145     | 7.50    | OGB1000-02                       |                | 48         | 1,048       | 7.50         | 11.90              | 0.61       | 5.06         | 8.43               | 55        | 60      | 110      | 1      | 190    | 161-177     | 7.0    |
| <b>Metal-halide</b>                 |         |         |                                  |                |            |             |              |                    |            |              |                    |           |         |          |        |        |             |        |
| 150                                 | 100     | 1.80    | OGS150-105                       | 89120995       | 18         | 168         | 1.80         | 2.30               | 0.41       | 0.81         | 1.09               | 18        | 60      | 30       | 2      | 120    | 91-107      | 2.4    |
| 150                                 | 100     | 1.80    | OGS150 TH <sup>1</sup>           | 89003641       | 18         | 168         | 1.80         | 2.30               | 0.41       | 0.81         | 1.09               | 18        | 60      | 30       | 2      | 120    | 91-107      | 2.4    |
| 250                                 | 130     | 2.13    | OGB250-104                       |                | 20         | 270         | 2.13         | 3.20               | 0.55       | 1.30         | 2.06               | 18        | 65      | 30       | 2      | 120    | 91-107      | 2.4    |
| 250                                 | 133     | 2.10    | OGH250-101PS <sup>1,2</sup>      | 89003532       | 19         | 269         | 2.10         | 3.22               | 0.56       | 1.30         | 2.09               | 18        | 60      | 30       | 2      | 130    | 101-117     | 2.4    |
| 250                                 | 100     | 3.00    | OGS250-105                       | 89121032       | 25         | 275         | 3.00         | 3.90               | 0.40       | 1.33         | 1.81               | 35        | 65      | 40       | 2      | 130    | 101-117     | 3.1    |
| 250                                 | 100     | 3.00    | OGS250 TH <sup>1</sup>           | 89003595       | 25         | 275         | 3.00         | 3.90               | 0.40       | 1.33         | 1.81               | 35        | 65      | 40       | 2      | 130    | 101-117     | 3.1    |
| 300                                 | 133     | 2.45    | OGH300-103PS <sup>1,2</sup>      | 89003638       | 20         | 320         | 2.45         | 3.75               | 0.57       | 1.55         | 2.48               | 20        | 65      | 40       | 2      | 130    | 101-117     | 3.1    |
| 320                                 | 135     | 2.63    | OGH320-103PS <sup>1,2</sup>      | 89003637       | 23         | 343         | 2.63         | 3.96               | 0.57       | 1.66         | 2.62               | 20        | 55      | 40       | 2      | 130    | 101-117     | 3.1    |
| 350                                 | 135     | 2.80    | OGH350-103PS <sup>1,2</sup>      | 89003530       | 28         | 378         | 2.80         | 4.40               | 0.59       | 1.83         | 3.01               | 25        | 60      | 40       | 2      | 130    | 101-117     | 3.1    |
| 400                                 | 135     | 3.25    | OGB400-105                       |                | 27         | 427         | 3.25         | 5.20               | 0.57       | 2.06         | 3.47               | 25        | 70      | 40       | 2      | 130    | 101-117     | 3.1    |
| 400                                 | 135     | 3.25    | OGB400-107                       |                | 23         | 423         | 3.25         | 5.10               | 0.57       | 2.04         | 3.37               | 25        | 60      | 50       | 2      | 140    | 111-127     | 3.7    |
| 400                                 | 120     | 3.50    | OGH400-101                       | 89120943       | 25         | 425         | 3.50         | 5.55               | 0.53       | 2.05         | 3.42               | 30        | 60      | 45       | 2      | 140    | 111-127     | 3.4    |
| 400                                 | 135     | 3.20    | OGH400-101W <sup>1,2</sup>       | 89003521       | 28         | 428         | 3.20         | 4.95               | 0.58       | 2.07         | 3.36               | 25        | 60      | 40       | 2      | 130    | 101-117     | 3.1    |
| 400                                 | 135     | 3.20    | OGH400/250-101W <sup>1,2,3</sup> | 89003634       | 26         | 426         | 3.20         | 4.96               | 0.58       | 2.06         | 3.35               | 25        | 50      | 60       | 2      | 140    | 111-127     | 4.3    |
| 400                                 | 100     | 4.60    | OGS400-104                       | 89121084       | 35         | 435         | 4.60         | 6.10               | 0.41       | 2.10         | 2.93               | 50        | 65      | 60       | 2      | 150    | 121-137     | 4.3    |
| 400                                 | 100     | 4.60    | OGS400 TH <sup>1</sup>           | 89003596       | 35         | 435         | 4.60         | 6.10               | 0.41       | 2.10         | 2.93               | 50        | 65      | 60       | 2      | 150    | 121-137     | 4.3    |
| 1,000                               | 130     | 8.25    | OGH1000-07                       |                | 50         | 1,050       | 8.25         | 12.60              | 0.55       | 5.07         | 8.13               | 65        | 55      | 120      | 1      | 200    | 171-187     | 7.5    |
| 1,000                               | 130     | 8.25    | OGH1000-27                       | 27022646       | 50         | 1050        | 8.25         | 12.6               | 0.55       | 5.07         | 8.13               | 65        | 55      | 120      | 1      | 220    | 191-207     | 7.5    |
| 1,000                               | 120     | 9.50    | OGH1000A-03                      |                | 63         | 1,063       | 9.50         | 14.10              | 0.49       | 5.14         | 8.00               | 85        | 70      | 120      | 1      | 200    | 171-187     | 7.5    |
| <b>High-pressure sodium vapour</b>  |         |         |                                  |                |            |             |              |                    |            |              |                    |           |         |          |        |        |             |        |
| 150                                 | 100     | 1.80    | OGS150-105                       | 89120995       | 18         | 168         | 1.80         | 2.30               | 0.41       | 0.81         | 1.09               | 18        | 60      | 30       | 2      | 120    | 91-107      | 2.4    |
| 150                                 | 100     | 1.80    | OGS150 TH <sup>1</sup>           | 89003641       | 18         | 168         | 1.80         | 2.30               | 0.41       | 0.81         | 1.09               | 18        | 60      | 30       | 2      | 120    | 91-107      | 2.4    |
| 250                                 | 100     | 3.00    | OGS250-105                       | 89121032       | 25         | 275         | 3.00         | 3.90               | 0.40       | 1.33         | 1.81               | 35        | 65      | 40       | 2      | 130    | 101-117     | 3.1    |
| 250                                 | 100     | 3.00    | OGS250 TH <sup>1</sup>           | 89003595       | 25         | 275         | 3.00         | 3.90               | 0.40       | 1.33         | 1.81               | 35        | 65      | 40       | 2      | 130    | 101-117     | 3.1    |
| 400                                 | 100     | 4.60    | OGS400-104                       | 89121084       | 35         | 435         | 4.60         | 6.10               | 0.41       | 2.10         | 2.93               | 50        | 65      | 60       | 2      | 150    | 121-137     | 4.3    |
| 400                                 | 100     | 4.60    | OGS400 TH <sup>1</sup>           | 89003596       | 35         | 435         | 4.60         | 6.10               | 0.41       | 2.10         | 2.93               | 50        | 65      | 60       | 2      | 150    | 121-137     | 4.3    |
| 600                                 | 110     | 6.20    | OGS600-03                        |                | 42         | 642         | 6.20         | 8.25               | 0.45       | 3.10         | 4.33               | 60        | 65      | 90       | 1      | 170    | 141-157     | 6.0    |
| 1000                                | 110     | 10.3    | OGS1000-10 <sup>2</sup>          | 27020964       | 60         | 1060        | 10.3         | 14.1               | 0.45       | 5.12         | 7.36               | 100       | 65      | 140      | 1      | 220    | 191-207     | 8.9    |
| 1,000                               | 110     | 10.30   | OGS1000-15                       |                | 60         | 1,060       | 10.30        | 14.10              | 0.45       | 5.12         | 7.36               | 100       | 65      | 140      | 1      | 220    | 191-207     | 8.9    |

## notes

1. Ballasts have built-in thermal cutout devices specifically for short-arc metal-halide lamps.
2. With multiple voltage tapplings
3. With power tapplings

Ballasts for other wattage ratings available on request.

## 240 V 50 Hz – OG ballasts

| Lamp                         |         |         | Ballast                          |                | Electrical |             |              |                    |            |              |                    |           | Thermal | Physical |        |        |             |        |
|------------------------------|---------|---------|----------------------------------|----------------|------------|-------------|--------------|--------------------|------------|--------------|--------------------|-----------|---------|----------|--------|--------|-------------|--------|
| wattage                      | voltage | current | type                             | article number | loss hot   | input power | lamp current | lamp start current | circuit PF | line current | line start current | capacitor | winding | stack    | figure | length | mtg centres | weight |
| W                            | V       | A       |                                  |                | W          | W           | A            | A                  | cosφ       | A@0.9PF      | A@0.9PF            | μF0.9PF   | Δt      | mm       |        | mm     | mm          | kg     |
| High-pressure mercury vapour |         |         |                                  |                |            |             |              |                    |            |              |                    |           |         |          |        |        |             |        |
| 250                          | 130     | 2.13    | OGB250-100                       | 89120822       | 21         | 271         | 2.13         | 3.10               | 0.53       | 1.25         | 1.92               | 18        | 65      | 30       | 2      | 120    | 91-107      | 2.4    |
| 250                          | 130     | 2.13    | OGB250                           | 27002334       | 21         | 271         | 2.13         | 3.10               | 0.53       | 1.25         | 1.92               | 18        | 65      | 30       | 1      | 110    | 81-97       | 2.4    |
| 250                          | 130     | 2.13    | OGB250/125 <sup>5</sup>          |                | 20         | 270         | 2.13         | 3.10               | 0.53       | 1.25         | 1.91               | 18        | 60      | 30       | 1      | 110    | 81-97       | 2.4    |
| 400                          | 135     | 3.25    | OGB400-100                       | 89120854       | 29         | 429         | 3.25         | 5.00               | 0.55       | 1.99         | 3.21               | 25        | 75      | 40       | 2      | 130    | 101-117     | 3.1    |
| 400                          | 135     | 3.25    | OGB400                           | 27020845       | 29         | 429         | 3.25         | 5.00               | 0.55       | 1.99         | 3.21               | 25        | 75      | 40       | 1      | 120    | 91-107      | 3.1    |
| 400                          | 135     | 3.25    | OGB400-106                       |                | 24         | 424         | 3.25         | 4.90               | 0.54       | 1.96         | 3.11               | 25        | 65      | 50       | 2      | 140    | 111-127     | 3.7    |
| 400                          | 135     | 3.25    | OGB400-114                       | 89120867       | 22         | 422         | 3.25         | 4.90               | 0.54       | 1.95         | 3.09               | 25        | 55      | 60       | 2      | 150    | 121-137     | 4.3    |
| 400                          | 135     | 3.25    | OGB400/250 <sup>5</sup>          | 27020846       | 27         | 427         | 3.25         | 4.90               | 0.55       | 1.98         | 3.13               | 25        | 70      | 50       | 1      | 120    | 91-107      | 3.7    |
| 700                          | 140     | 5.40    | OGB700                           | 27020895       | 34         | 734         | 5.40         | 9.00               | 0.57       | 3.40         | 5.95               | 40        | 60      | 80       | 1      | 160    | 131-147     | 5.3    |
| 700                          | 140     | 5.40    | OGB700 <sup>3</sup>              |                | 34         | 734         | 5.40         | 9.00               | 0.57       | 3.40         | 5.95               | 40        | 60      | 80       | 1      | 160    | 131-147     | 5.3    |
| 1,000                        | 145     | 7.50    | OGB1000                          | 27020808       | 41         | 1,041       | 7.50         | 12.00              | 0.58       | 4.82         | 8.10               | 55        | 65      | 120      | 1      | 200    | 171-187     | 7.5    |
| Metal-halide                 |         |         |                                  |                |            |             |              |                    |            |              |                    |           |         |          |        |        |             |        |
| 150                          | 100     | 1.80    | OGS150-100                       | 89120990       | 18         | 168         | 1.80         | 2.20               | 0.39       | 0.78         | 1.00               | 18        | 60      | 30       | 2      | 120    | 91-107      | 2.4    |
| 150                          | 100     | 1.80    | OGS150-102 (TH) <sup>1</sup>     | 89120992       | 18         | 168         | 1.80         | 2.20               | 0.39       | 0.78         | 1.00               | 18        | 60      | 30       | 2      | 120    | 91-107      | 2.4    |
| 150                          | 100     | 1.80    | OGS150-108                       | 89120996       | 14         | 164         | 1.80         | 2.10               | 0.38       | 0.76         | 0.93               | 18        | 45      | 50       | 2      | 140    | 111-127     | 3.7    |
| 250                          | 130     | 2.13    | OGB250-100                       | 89120822       | 21         | 271         | 2.13         | 3.10               | 0.53       | 1.25         | 1.92               | 18        | 65      | 30       | 2      | 120    | 91-107      | 2.4    |
| 250                          | 130     | 2.13    | OGB250                           | 27002334       | 21         | 271         | 2.13         | 3.10               | 0.53       | 1.25         | 1.92               | 18        | 65      | 30       | 1      | 110    | 81-97       | 2.4    |
| 250                          | 133     | 2.10    | OGH250-101PS <sup>1,4</sup>      | 89003532       | 21         | 271         | 2.10         | 3.15               | 0.54       | 1.25         | 1.98               | 18        | 60      | 30       | 2      | 130    | 101-117     | 2.4    |
| 250                          | 100     | 3.00    | OGS250-100                       | 89121027       | 26         | 276         | 3.00         | 3.90               | 0.38       | 1.28         | 1.74               | 30        | 70      | 40       | 2      | 130    | 101-117     | 3.1    |
| 250                          | 100     | 3.00    | OGS250                           | 27021015       | 26         | 276         | 3.00         | 3.90               | 0.38       | 1.28         | 1.74               | 30        | 70      | 40       | 1      | 120    | 91-107      | 3.1    |
| 250                          | 100     | 3.00    | OGS250-102 (TH) <sup>1</sup>     |                | 26         | 276         | 3.00         | 3.90               | 0.38       | 1.28         | 1.74               | 30        | 70      | 40       | 2      | 130    | 101-117     | 3.1    |
| 250                          | 100     | 3.00    | OGS250-45 <sup>6</sup>           | 27021715       | 26         | 276         | 3.00         | 3.90               | 0.38       | 1.28         | 1.74               | 30        | 70      | 40       | 1      | 120    | 91-107      | 3.1    |
| 250                          | 100     | 3.00    | OGS250-107                       |                | 22         | 272         | 3.00         | 3.70               | 0.38       | 1.26         | 1.63               | 30        | 60      | 50       | 2      | 140    | 111-127     | 3.7    |
| 300                          | 133     | 2.45    | OGH300-103PS <sup>1,4</sup>      | 89003638       | 22         | 322         | 2.45         | 3.68               | 0.55       | 1.49         | 2.35               | 20        | 65      | 40       | 2      | 130    | 101-117     | 3.1    |
| 320                          | 135     | 2.63    | OGH320-103PS <sup>1,4</sup>      | 89003637       | 25         | 345         | 2.63         | 3.90               | 0.55       | 1.60         | 2.49               | 20        | 55      | 40       | 2      | 130    | 101-117     | 3.1    |
| 350                          | 135     | 2.80    | OGH350-103PS <sup>1,4</sup>      | 89003530       | 30         | 380         | 2.80         | 4.30               | 0.57       | 1.76         | 2.84               | 25        | 60      | 40       | 2      | 130    | 101-117     | 3.1    |
| 350                          | 135     | 2.80    | OGH350-05                        | 27022851       | 30         | 380         | 2.80         | 4.30               | 0.57       | 1.76         | 2.84               | 25        | 60      | 40       | 1      | 120    | 91-107      | 3.1    |
| 400                          | 135     | 3.25    | OGB400-100                       | 89120854       | 29         | 429         | 3.25         | 5.00               | 0.55       | 1.99         | 3.21               | 25        | 75      | 40       | 2      | 130    | 101-117     | 3.1    |
| 400                          | 135     | 3.25    | OGB400                           | 27020845       | 29         | 429         | 3.25         | 5.00               | 0.55       | 1.99         | 3.21               | 25        | 75      | 40       | 1      | 120    | 91-107      | 3.1    |
| 400                          | 135     | 3.25    | OGB400-106                       |                | 24         | 424         | 3.25         | 4.90               | 0.54       | 1.96         | 3.11               | 25        | 65      | 50       | 2      | 140    | 111-127     | 3.7    |
| 400                          | 135     | 3.25    | OGB400-114                       | 89120867       | 22         | 422         | 3.25         | 4.90               | 0.54       | 1.95         | 3.09               | 25        | 55      | 60       | 2      | 150    | 121-137     | 4.3    |
| 400                          | 120     | 3.50    | OGH400-100                       | 89120942       | 27         | 427         | 3.50         | 5.60               | 0.51       | 1.98         | 3.32               | 30        | 65      | 45       | 2      | 140    | 111-127     | 3.4    |
| 400                          | 135     | 3.20    | OGH400-101W <sup>1,4</sup>       | 89003521       | 30         | 430         | 3.20         | 4.88               | 0.56       | 1.99         | 3.19               | 25        | 60      | 40       | 2      | 130    | 101-117     | 3.1    |
| 400                          | 135     | 3.20    | OGH400/250-101W <sup>1,4,5</sup> | 89003634       | 28         | 428         | 3.20         | 4.88               | 0.56       | 1.98         | 3.17               | 25        | 50      | 60       | 2      | 140    | 111-127     | 4.3    |
| 400                          | 100     | 4.60    | OGS400-100                       | 89121080       | 37         | 437         | 4.60         | 6.10               | 0.40       | 2.02         | 2.82               | 45        | 70      | 60       | 2      | 150    | 121-137     | 4.3    |
| 400                          | 100     | 4.60    | OGS400-109 (TH) <sup>1</sup>     |                | 37         | 437         | 4.60         | 6.10               | 0.40       | 2.02         | 2.82               | 45        | 70      | 60       | 2      | 150    | 121-137     | 4.3    |
| 400                          | 100     | 4.60    | OGS400-52 <sup>6</sup>           | 27021697       | 37         | 437         | 4.60         | 6.10               | 0.40       | 2.02         | 2.82               | 45        | 70      | 60       | 1      | 120    | 91-107      | 4.3    |
| 400                          | 100     | 4.60    | OGS400-106                       | 89121086       | 34         | 434         | 4.60         | 5.80               | 0.39       | 2.01         | 2.66               | 45        | 60      | 70       | 2      | 160    | 131-147     | 4.9    |
| 400                          | 100     | 4.60    | OGS400-29                        | 27021110       | 31         | 431         | 4.60         | 5.80               | 0.39       | 2.00         | 2.64               | 45        | 60      | 80       | 1      | 120    | 91-107      | 5.3    |
| 400                          | 100     | 4.60    | OGLIS 400 C042W <sup>1</sup>     | 27002445       | 31         | 431         | 4.60         | 5.80               | 0.39       | 2.00         | 2.64               | 45        | 60      | 80       | 1      | 120    | 91-107      | 5.3    |
| 1,000                        | 130     | 8.25    | OGH1000                          | 27020903       | 53         | 1,053       | 8.25         | 12.10              | 0.53       | 4.88         | 7.51               | 65        | 60      | 120      | 1      | 200    | 171-187     | 7.5    |
| 1,000                        | 130     | 8.25    | OGH1000 <sup>3</sup>             | 27022684       | 53         | 1053        | 8.25         | 12.1               | 0.53       | 4.88         | 7.51               | 65        | 60      | 120      | 1      | 200    | 171-187     | 7.5    |
| 1,000                        | 130     | 8.25    | OGH1000-16 <sup>2,3</sup>        | 27022681       | 53         | 1053        | 8.25         | 12.1               | 0.53       | 4.88         | 7.51               | 65        | 60      | 120      | 1      | 243    | 232         | 7.5    |
| 1,000                        | 120     | 9.50    | OGH1000A                         | 27020913       | 64         | 1,064       | 9.50         | 13.00              | 0.47       | 4.93         | 7.05               | 85        | 70      | 140      | 1      | 220    | 191-207     | 8.9    |
| 1,000                        | 120     | 9.50    | OGH1000A-07 <sup>6</sup>         | 27020918       | 64         | 1064        | 9.50         | 13.0               | 0.47       | 4.93         | 7.05               | 85        | 70      | 140      | 1      | 220    | 191-207     | 8.9    |
| 1,000                        | 120     | 9.50    | OGH1000A-11 <sup>2,6</sup>       | 27022683       | 64         | 1064        | 9.50         | 13.0               | 0.47       | 4.93         | 7.05               | 85        | 70      | 140      | 1      | 243    | 232         | 8.9    |
| 1,000                        | 120     | 9.50    | OGHS1000                         | 27022884       | 57         | 1057        | 9.50         | 13.1               | 0.46       | 4.89         | 7.09               | 85        | 70      | 140      | 1      | 220    | 191-207     | 8.9    |

## notes

1. Ballasts have built-in thermal cutout devices specifically for short-arc metal-halide lamps.
  2. With baseplate to suit D96 box
  3. With flying leads
  4. With multiple voltage tappings
  5. With power tappings
  6. With ignitor tap suitable for use with ATIG-16 or ZRM 4000 powerPULSE ignitor
  7. With ignitor tap suitable for use with ATIG-11 or ZRM 4000 powerPULSE ignitor
- Ballasts for other wattage ratings available on request.

## 240 V 50 Hz – OG ballasts

| Lamp                               |         |         | Ballast                      |                | Electrical |             |              |                    |            |              |                    |           | Thermal | Physical |        |        |             |        |
|------------------------------------|---------|---------|------------------------------|----------------|------------|-------------|--------------|--------------------|------------|--------------|--------------------|-----------|---------|----------|--------|--------|-------------|--------|
| wattage                            | voltage | current | type                         | article number | loss hot   | input power | lamp current | lamp start current | circuit PF | line current | line start current | capacitor | winding | stack    | figure | length | mtg centres | weight |
| W                                  | V       | A       |                              |                | W          | W           | A            | A                  | cos        | A@0.9PF      | A@0.9PF            | µF0.9PF   | Δt      | mm       |        | mm     | mm          | kg     |
| <b>High-pressure sodium vapour</b> |         |         |                              |                |            |             |              |                    |            |              |                    |           |         |          |        |        |             |        |
| 150                                | 100     | 1.80    | OGS150-100                   | 89120990       | 18         | 168         | 1.80         | 2.20               | 0.39       | 0.78         | 1.00               | 18        | 60      | 30       | 2      | 120    | 91-107      | 2.4    |
| 150                                | 100     | 1.80    | OGS150-102 (TH) <sup>1</sup> | 89120992       | 18         | 168         | 1.80         | 2.20               | 0.39       | 0.78         | 1.00               | 18        | 60      | 30       | 2      | 120    | 91-107      | 2.4    |
| 150                                | 100     | 1.80    | OGS150-108                   | 89120996       | 14         | 164         | 1.80         | 2.10               | 0.38       | 0.76         | 0.93               | 18        | 45      | 50       | 2      | 140    | 111-127     | 3.7    |
| 250                                | 100     | 3.00    | OGS250-100                   | 89121027       | 26         | 276         | 3.00         | 3.90               | 0.38       | 1.28         | 1.74               | 30        | 70      | 40       | 2      | 130    | 101-117     | 3.1    |
| 250                                | 100     | 3.00    | OGS250                       | 27021015       | 26         | 276         | 3.00         | 3.90               | 0.38       | 1.28         | 1.74               | 30        | 70      | 40       | 1      | 120    | 91-107      | 3.1    |
| 250                                | 100     | 3.00    | OGS250-102 (TH) <sup>1</sup> |                | 26         | 276         | 3.00         | 3.90               | 0.38       | 1.28         | 1.74               | 30        | 70      | 40       | 2      | 130    | 101-117     | 3.1    |
| 250                                | 100     | 3.00    | OGS250-45 <sup>7</sup>       | 27021715       | 26         | 276         | 3.00         | 3.90               | 0.38       | 1.28         | 1.74               | 30        | 70      | 40       | 1      | 120    | 91-107      | 3.1    |
| 250                                | 100     | 3.00    | OGS250-107                   |                | 22         | 272         | 3.00         | 3.70               | 0.38       | 1.26         | 1.63               | 30        | 60      | 50       | 2      | 140    | 111-127     | 3.7    |
| 250                                | 100     | 3.00    | OGS250/150-100 <sup>5</sup>  |                | 28         | 278         | 3.00         | 3.70               | 0.39       | 1.29         | 1.67               | 30        | 70      | 50       | 2      | 140    | 111-127     | 3.7    |
| 400                                | 100     | 4.60    | OGS400-100                   | 89121080       | 37         | 437         | 4.60         | 6.10               | 0.40       | 2.02         | 2.82               | 45        | 70      | 60       | 2      | 150    | 121-137     | 4.3    |
| 400                                | 100     | 4.60    | OGS400-109 (TH) <sup>1</sup> |                | 37         | 437         | 4.60         | 6.10               | 0.40       | 2.02         | 2.82               | 45        | 70      | 60       | 2      | 150    | 121-137     | 4.3    |
| 400                                | 100     | 4.60    | OGS400-52 <sup>7</sup>       | 27021697       | 37         | 437         | 4.60         | 6.10               | 0.40       | 2.02         | 2.82               | 45        | 70      | 60       | 1      | 120    | 91-107      | 4.3    |
| 400                                | 100     | 4.60    | OGS400-106                   | 89121086       | 34         | 434         | 4.60         | 5.80               | 0.39       | 2.01         | 2.66               | 45        | 60      | 70       | 2      | 160    | 131-147     | 4.9    |
| 400                                | 100     | 4.60    | OGS400-29                    |                | 31         | 431         | 4.60         | 5.80               | 0.39       | 2.00         | 2.64               | 45        | 60      | 80       | 1      | 120    | 91-107      | 5.3    |
| 400                                | 100     | 4.60    | OGLIS 400 C042W <sup>1</sup> | 27002445       | 31         | 431         | 4.60         | 5.80               | 0.39       | 2.00         | 2.64               | 45        | 60      | 80       | 1      | 120    | 91-107      | 5.3    |
| 400                                | 100     | 4.60    | OGS400/250-100 <sup>5</sup>  | 89121070       | 37         | 437         | 4.60         | 5.80               | 0.40       | 2.02         | 2.68               | 45        | 60      | 70       | 2      | 160    | 131-147     | 4.9    |
| 600                                | 110     | 6.20    | OGS600-100                   | 89122873       | 45         | 645         | 6.20         | 8.00               | 0.43       | 2.99         | 4.05               | 60        | 70      | 80       | 2      | 160    | 131-147     | 5.3    |
| 600                                | 110     | 6.20    | OGS600                       | 27021127       | 41         | 641         | 6.20         | 8.00               | 0.43       | 2.97         | 4.02               | 60        | 70      | 90       | 1      | 170    | 141-157     | 6.0    |
| 600                                | 110     | 6.20    | OGS600-106                   | 89122883       | 41         | 641         | 6.20         | 8.00               | 0.43       | 2.97         | 4.02               | 60        | 65      | 90       | 1      | 180    | 151-167     | 6.0    |
| 600                                | 110     | 6.20    | OGS600-10 <sup>7</sup>       | 27022673       | 41         | 641         | 6.20         | 8.00               | 0.43       | 2.97         | 4.02               | 60        | 65      | 90       | 1      | 140    | 111-127     | 6.0    |
| 660                                | 140     | 5.40    | OGS660                       | 27021138       | 32         | 692         | 5.40         | 8.00               | 0.53       | 3.20         | 4.98               | 45        | 65      | 80       | 1      | 160    | 131-147     | 5.3    |
| 940                                | 145     | 7.50    | OGS940 <sup>3</sup>          | 27021141       | 41         | 981         | 7.50         | 12.0               | 0.55       | 4.54         | 7.63               | 60        | 65      | 120      | 1      | 220    | 191-207     | 7.5    |
| 940                                | 145     | 7.50    | OGS940-02 <sup>3</sup>       | 27021143       | 41         | 981         | 7.50         | 12.0               | 0.55       | 4.54         | 7.63               | 60        | 65      | 120      | 1      | 200    | 171-187     | 7.5    |
| 940                                | 145     | 7.50    | OGS940-06 <sup>2,3</sup>     | 27022676       | 41         | 981         | 7.50         | 12.0               | 0.55       | 4.54         | 7.63               | 60        | 65      | 120      | 1      | 243    | 232         | 7.5    |
| 1,000                              | 110     | 10.30   | OGS1000                      | 27020955       | 60         | 1,060       | 10.30        | 13.10              | 0.43       | 4.91         | 6.55               | 95        | 75      | 140      | 1      | 220    | 191-207     | 8.9    |
| 1,000                              | 110     | 10.3    | OGS1000-23 <sup>2,3</sup>    |                | 60         | 1060        | 10.3         | 13.1               | 0.43       | 4.91         | 6.55               | 95        | 75      | 140      | 1      | 243    | 232         | 8.9    |
| 1,000                              | 110     | 10.3    | OGS1000-11 <sup>7</sup>      | 27020965       | 60         | 1060        | 10.3         | 13.1               | 0.43       | 4.91         | 6.55               | 95        | 75      | 140      | 1      | 220    | 191-207     | 8.9    |
| 1,000                              | 110     | 10.3    | OGS1000-18 <sup>2,7</sup>    | 27022667       | 60         | 1060        | 10.3         | 13.1               | 0.43       | 4.91         | 6.55               | 95        | 75      | 140      | 1      | 243    | 232         | 8.9    |
| 1,000                              | 110     | 10.3    | OGHS1000                     | 27022884       | 60         | 1060        | 10.3         | 13.1               | 0.43       | 4.91         | 6.55               | 95        | 75      | 140      | 1      | 220    | 191-207     | 8.9    |

## notes

- Ballasts have built-in thermal cutout devices specifically for short-arc metal-halide lamps.
  - With baseplate to suit D96 box
  - With flying leads
  - With multiple voltage tappings
  - With power tappings
  - With ignitor tap suitable for use with ATIG-16 or ZRM 4000 powerPULSE ignitor
  - With ignitor tap suitable for use with ATIG-11 or ZRM 4000 powerPULSE ignitor
- Ballasts for other wattage ratings available on request.

## 250 V 50 Hz – OG ballasts

| Lamp                         |         |         | Ballast                   |                | Electrical |             |              |                    |            |              |                    |           | Thermal | Physical |        |        |             |        |
|------------------------------|---------|---------|---------------------------|----------------|------------|-------------|--------------|--------------------|------------|--------------|--------------------|-----------|---------|----------|--------|--------|-------------|--------|
| wattage                      | voltage | current | type                      | article number | loss hot   | input power | lamp current | lamp start current | circuit PF | line current | line start current | capacitor | winding | stack    | figure | length | mtg centres | weight |
| W                            | V       | A       |                           |                | W          | W           | A            | A                  | cosφ       | A@0.9PF      | A@0.9PF            | μF0.9PF   | Δt      | mm       |        | mm     | mm          | kg     |
| High-pressure mercury vapour |         |         |                           |                |            |             |              |                    |            |              |                    |           |         |          |        |        |             |        |
| 250                          | 130     | 2.13    | OGB250-112                | 89120829       | 23.5       | 273.5       | 2.13         | 3.02               | 0.51       | 1.22         | 1.81               | 18        | 65      | 30       | 2      | 120    | 91-107      | 2.4    |
| 250                          | 130     | 2.13    | OGB250-05                 | 27020817       | 23.5       | 273.5       | 2.13         | 3.02               | 0.51       | 1.22         | 1.81               | 18        | 65      | 30       | 1      | 110    | 81-97       | 2.4    |
| 250                          | 130     | 2.13    | OGB250-23                 |                | 15.0       | 265.0       | 2.13         | 3.01               | 0.50       | 1.18         | 1.75               | 18        | 55      | 50       | 1      | 120    | 91-107      | 3.7    |
| 400                          | 135     | 3.25    | OGB400-112                | 89120866       | 31.0       | 431.0       | 3.25         | 4.69               | 0.53       | 1.92         | 2.90               | 25        | 75      | 40       | 2      | 130    | 101-117     | 3.1    |
| 400                          | 135     | 3.25    | OGB400-09                 | 27020852       | 31.0       | 431.0       | 3.25         | 4.69               | 0.53       | 1.92         | 2.90               | 25        | 75      | 40       | 1      | 120    | 91-107      | 3.1    |
| 400                          | 135     | 3.25    | OGB400-30                 | 27020882       | 20.5       | 420.5       | 3.25         | 4.69               | 0.52       | 1.87         | 2.83               | 25        | 60      | 60       | 1      | 140    | 111-127     | 4.3    |
| 700                          | 140     | 5.40    | OGB700-01                 |                | 33.5       | 733.5       | 5.40         | 7.75               | 0.54       | 3.26         | 4.91               | 40        | 60      | 80       | 1      | 160    | 131-147     | 5.3    |
| Metal-halide                 |         |         |                           |                |            |             |              |                    |            |              |                    |           |         |          |        |        |             |        |
| 150                          | 100     | 1.80    | OGS150-109                | 89120997       | 18.5       | 168.5       | 1.80         | 2.21               | 0.37       | 0.75         | 0.97               | 18        | 60      | 30       | 2      | 120    | 91-107      | 2.4    |
| 150                          | 100     | 1.80    | OGS150-09                 | 27020988       | 18.5       | 168.5       | 1.80         | 2.21               | 0.37       | 0.75         | 0.97               | 18        | 60      | 30       | 1      | 110    | 81-97       | 2.4    |
| 250                          | 130     | 2.13    | OGB250-112                | 89120829       | 23.5       | 273.5       | 2.13         | 3.02               | 0.51       | 1.22         | 1.81               | 18        | 65      | 30       | 2      | 120    | 91-107      | 2.4    |
| 250                          | 130     | 2.13    | OGB250-05                 | 27020817       | 23.5       | 273.5       | 2.13         | 3.02               | 0.51       | 1.22         | 1.81               | 18        | 65      | 30       | 1      | 110    | 81-97       | 2.4    |
| 250                          | 130     | 2.13    | OGB250-23                 |                | 15.0       | 265.0       | 2.13         | 3.01               | 0.50       | 1.18         | 1.75               | 18        | 55      | 50       | 1      | 120    | 91-107      | 3.7    |
| 250                          | 100     | 3.00    | OGS250-109                | 89121036       | 27.0       | 277.0       | 3.00         | 3.65               | 0.37       | 1.23         | 1.57               | 30        | 70      | 40       | 2      | 130    | 101-117     | 3.1    |
| 250                          | 100     | 3.00    | OGS250-04                 |                | 21.0       | 271.0       | 3.00         | 3.67               | 0.36       | 1.20         | 1.55               | 30        | 60      | 60       | 1      | 140    | 111-127     | 4.3    |
| 400                          | 135     | 3.25    | OGB400-112                | 89120866       | 31.0       | 431.0       | 3.25         | 4.69               | 0.53       | 1.92         | 2.90               | 25        | 75      | 40       | 2      | 130    | 101-117     | 3.1    |
| 400                          | 135     | 3.25    | OGB400-09                 | 27020852       | 31.0       | 431.0       | 3.25         | 4.69               | 0.53       | 1.92         | 2.90               | 25        | 75      | 40       | 1      | 120    | 91-107      | 3.1    |
| 400                          | 135     | 3.25    | OGB400-30                 | 27020882       | 20.5       | 420.5       | 3.25         | 4.69               | 0.52       | 1.87         | 2.83               | 25        | 65      | 60       | 1      | 140    | 111-127     | 4.3    |
| 400                          | 100     | 4.60    | OGS400-112                |                | 36.0       | 436.0       | 4.60         | 5.53               | 0.38       | 1.94         | 2.45               | 45        | 70      | 60       | 2      | 150    | 121-137     | 4.3    |
| 400                          | 100     | 4.60    | OGS400-09                 | 27021078       | 36.5       | 436.5       | 4.60         | 5.59               | 0.38       | 1.94         | 2.48               | 45        | 75      | 60       | 1      | 140    | 111-127     | 4.3    |
| 400                          | 100     | 4.60    | OGS400-22                 | 27022692       | 33.5       | 433.5       | 4.60         | 5.54               | 0.38       | 1.93         | 2.44               | 45        | 65      | 80       | 1      | 120    | 91-107      | 5.3    |
| 1,000                        | 130     | 8.25    | OGH1000-10                |                | 51.5       | 1,051.5     | 8.25         | 11.30              | 0.51       | 4.67         | 6.72               | 65        | 60      | 140      | 1      | 220    | 191-207     | 8.9    |
| 1,000                        | 130     | 8.25    | OGH1000-22 <sup>2,3</sup> |                | 51.5       | 1052        | 8.25         | 11.30              | 0.51       | 4.67         | 6.72               | 65        | 60      | 140      | 1      | 243    | 232         | 8.9    |
| High-pressure sodium vapour  |         |         |                           |                |            |             |              |                    |            |              |                    |           |         |          |        |        |             |        |
| 150                          | 100     | 1.80    | OGS150-109                | 89120997       | 18.5       | 168.5       | 1.80         | 2.21               | 0.37       | 0.75         | 0.97               | 18        | 60      | 30       | 2      | 120    | 91-107      | 2.4    |
| 150                          | 100     | 1.80    | OGS150-09                 | 27020988       | 18.5       | 168.5       | 1.80         | 2.21               | 0.37       | 0.75         | 0.97               | 18        | 60      | 30       | 1      | 110    | 81-97       | 2.4    |
| 250                          | 100     | 3.00    | OGS250-109                | 89121036       | 27.0       | 277.0       | 3.00         | 3.65               | 0.37       | 1.23         | 1.57               | 30        | 70      | 40       | 2      | 130    | 101-117     | 3.1    |
| 250                          | 100     | 3.00    | OGS250-04                 |                | 21.0       | 271.0       | 3.00         | 3.67               | 0.36       | 1.20         | 1.55               | 30        | 60      | 60       | 1      | 140    | 111-127     | 4.3    |
| 400                          | 100     | 4.60    | OGS400-112                |                | 36.0       | 436.0       | 4.60         | 5.53               | 0.38       | 1.94         | 2.45               | 45        | 70      | 60       | 2      | 150    | 121-137     | 4.3    |
| 400                          | 100     | 4.60    | OGS400-09                 | 27021078       | 36.5       | 436.5       | 4.60         | 5.59               | 0.38       | 1.94         | 2.48               | 45        | 75      | 60       | 1      | 140    | 111-127     | 4.3    |
| 400                          | 100     | 4.60    | OGS400-22                 | 27022692       | 33.5       | 433.5       | 4.60         | 5.54               | 0.38       | 1.93         | 2.44               | 45        | 65      | 80       | 1      | 120    | 91-107      | 5.3    |
| 1,000                        | 110     | 10.30   | OGS1000-02                |                | 55.0       | 1,055.0     | 10.20        | 12.60              | 0.41       | 4.69         | 6.08               | 95        | 75      | 140      | 1      | 220    | 191-207     | 8.9    |
| 1,000                        | 110     | 10.30   | OGS1000-42 <sup>2,4</sup> |                | 55.0       | 1,055.0     | 10.20        | 12.60              | 0.41       | 4.69         | 6.08               | 95        | 75      | 140      | 1      | 220    | 191-207     | 8.9    |

## notes

1. Ballasts have built-in thermal cutout devices specifically for short-arc metal-halide lamps.
2. With baseplate to suit D96 box
3. With flying leads
4. With ignitor tap suitable for use with ATIG-11 or ZRM 4000 powerPULSE ignitor  
Ballasts for other wattage ratings available on request.





## OM PAK assemblies

| Lamp                                                      |         |         | Control gear                   |                | Electrical |             |              |                    |              |                    | Thermal               | Physical |             |        |        |
|-----------------------------------------------------------|---------|---------|--------------------------------|----------------|------------|-------------|--------------|--------------------|--------------|--------------------|-----------------------|----------|-------------|--------|--------|
| wattage                                                   | voltage | current | type                           | article number | loss hot   | input power | lamp current | lamp start current | line current | line start current | max. amb. temperature | length   | mtg centres | weight | carton |
| W                                                         | V       | A       |                                |                | W          | W           | A            | A                  | A@0.9PF      | A@0.9PF            | °C                    | mm       | mm          | kg     | qty    |
| 220 V 50 Hz                                               |         |         |                                |                |            |             |              |                    |              |                    |                       |          |             |        |        |
| <b>Metal halide and High-pressure sodium vapour lamps</b> |         |         |                                |                |            |             |              |                    |              |                    |                       |          |             |        |        |
| 35                                                        | 85      | 0.53    | OM PAK 35 M A712 220V 50HZ W   |                | 8          | 43          | 0.53         | 0.65               | 0.22         | 0.28               | 40                    | 210      | 193.0       | 1.4    | 4      |
| 220 V 60 Hz                                               |         |         |                                |                |            |             |              |                    |              |                    |                       |          |             |        |        |
| <b>Metal halide and High-pressure sodium vapour lamps</b> |         |         |                                |                |            |             |              |                    |              |                    |                       |          |             |        |        |
| 35                                                        | 85      | 0.53    | OM PAK 35 M A712 220V 60HZ W   |                | 8          | 43          | 0.53         | 0.65               | 0.22         | 0.28               | 40                    | 210      | 193.0       | 1.4    | 4      |
| 70                                                        | 90      | 1.00    | OM PAK 70 M A712 220V 60HZ K   |                | 13         | 83          | 1.00         | 1.45               | 0.42         | 0.64               | 40                    | 210      | 193.0       | 1.8    | 4      |
| 150                                                       | 100     | 1.80    | OM PAK 150 M A712 220V 60HZ W  |                | 20.5       | 170.5       | 1.80         | 2.26               | 0.86         | 1.14               | 40                    | 260      | 243.5       | 2.6    | 3      |
| 230 V 50 Hz                                               |         |         |                                |                |            |             |              |                    |              |                    |                       |          |             |        |        |
| <b>Metal halide and High-pressure sodium vapour lamps</b> |         |         |                                |                |            |             |              |                    |              |                    |                       |          |             |        |        |
| 150                                                       | 100     | 1.80    | OM PAK 150 M A713 230V 50HZ W  |                | 21.5       | 171.5       | 1.80         | 2.39               | 0.83         | 1.16               | 40                    | 260      | 243.5       | 2.6    | 3      |
| 240 V 50 Hz                                               |         |         |                                |                |            |             |              |                    |              |                    |                       |          |             |        |        |
| <b>High-pressure mercury vapour lamps</b>                 |         |         |                                |                |            |             |              |                    |              |                    |                       |          |             |        |        |
| 50                                                        | 95      | 0.61    | OM PAK 50 Q A604 240V 50HZ K   |                | 9          | 59          | 0.61         | 0.76               | 0.27         | 0.36               | 40                    | 210      | 193.0       | 1.4    | 4      |
| 80                                                        | 115     | 0.80    | OM PAK 80 Q A604 240V 50HZ K   |                | 13.5       | 93.5        | 0.80         | 1.33               | 0.43         | 0.76               | 40                    | 210      | 193.0       | 1.4    | 4      |
| 125                                                       | 125     | 1.15    | OM PAK 125 Q A604 240V 50HZ K  |                | 15.5       | 140.5       | 1.15         | 1.90               | 0.65         | 1.13               | 40                    | 210      | 193.0       | 1.8    | 4      |
| 250                                                       | 130     | 2.13    | OM PAK 250 Q A604 240V 50HZ K  |                | 24.5       | 274.5       | 2.13         | 3.60               | 1.27         | 2.26               | 40                    | 260      | 243.5       | 2.6    | 3      |
| <b>Metal halide lamps</b>                                 |         |         |                                |                |            |             |              |                    |              |                    |                       |          |             |        |        |
| 100                                                       | 100     | 1.10    | OM PAK 100 M A614 240V 50HZ W  | 89002914       | 14         | 114         | 1.10         | 1.40               | 0.53         | 0.71               | 40                    | 210      | 193.0       | 1.8    | 4      |
| 100                                                       | 100     | 1.10    | OM PAK 100 M A634 240V 50HZ W  | 89003613       | 14         | 114         | 1.10         | 1.40               | 0.53         | 0.71               | 40                    | 210      | 193.0       | 1.8    | 4      |
| <b>Metal halide and High-pressure sodium vapour lamps</b> |         |         |                                |                |            |             |              |                    |              |                    |                       |          |             |        |        |
| 35                                                        | 85      | 0.53    | OM PAK 35 M A014 240V 50HZ K   | 89003610       | 9          | 44          | 0.53         | 0.60               | 0.20         | 0.24               | 40                    | 210      | 193.0       | 1.4    | 4      |
| 35                                                        | 85      | 0.53    | OM PAK 35 M A614 240V 50HZ W   | 89002912       | 9          | 44          | 0.53         | 0.60               | 0.20         | 0.24               | 40                    | 210      | 193.0       | 1.4    | 4      |
| 35                                                        | 85      | 0.53    | OM PAK 35 M A634 240V 50HZ W   | 89003309       | 9          | 44          | 0.53         | 0.60               | 0.20         | 0.24               | 40                    | 210      | 193.0       | 1.4    | 4      |
| 35                                                        | 85      | 0.53    | OM PAK 35 M AA34 240V 50HZ W   | 89003651       | 9          | 44          | 0.53         | 0.60               | 0.20         | 0.24               | 40                    | 210      | 193.0       | 1.4    | 4      |
| 70                                                        | 90      | 1.00    | OM PAK 70 M A014 240V 50HZ K 1 | 89003484       | 16         | 86          | 1.00         | 1.22               | 0.40         | 0.51               | 40                    | 210      | 193.0       | 1.5    | 4      |
| 70                                                        | 90      | 1.00    | OM PAK 70 M A014 240V 50HZ W 1 | 89002860       | 16         | 86          | 1.00         | 1.22               | 0.40         | 0.51               | 40                    | 210      | 193.0       | 1.5    | 4      |
| 70                                                        | 90      | 1.00    | OM PAK 70 M A034 240V 50HZ W 1 | 89002910       | 16         | 86          | 1.00         | 1.22               | 0.40         | 0.51               | 40                    | 210      | 193.0       | 1.5    | 4      |
| 70                                                        | 90      | 1.00    | OM PAK 70 M A614 240V 50HZ W 1 | 89002862       | 16         | 86          | 1.00         | 1.22               | 0.40         | 0.51               | 40                    | 210      | 193.0       | 1.8    | 4      |
| 70                                                        | 90      | 1.00    | OM PAK 70 M A634 240V 50HZ W 1 | 89002913       | 16         | 86          | 1.00         | 1.22               | 0.40         | 0.51               | 40                    | 210      | 193.0       | 1.8    | 4      |
| 70                                                        | 90      | 1.00    | OM PAK 70 M AA34 240V 50HZ W 1 | 89003652       | 16         | 86          | 1.00         | 1.22               | 0.40         | 0.51               | 40                    | 210      | 193.0       | 1.8    | 4      |
| 150                                                       | 100     | 1.80    | OM PAK 150 M A014 240V 50HZ K  | 89003485       | 22.5       | 172.5       | 1.80         | 2.35               | 0.80         | 1.09               | 40                    | 260      | 243.5       | 2.3    | 4      |
| 150                                                       | 100     | 1.80    | OM PAK 150 M A014 240V 50HZ W  | 89002861       | 22.5       | 172.5       | 1.80         | 2.35               | 0.80         | 1.09               | 40                    | 260      | 243.5       | 2.3    | 4      |
| 150                                                       | 100     | 1.80    | OM PAK 150 M A034 240V 50HZ W  | 89002911       | 22.5       | 172.5       | 1.80         | 2.35               | 0.80         | 1.09               | 40                    | 260      | 243.5       | 2.3    | 4      |
| 150                                                       | 100     | 1.80    | OM PAK 150 M A604 240V 50HZ W  |                | 22.5       | 172.5       | 1.80         | 2.35               | 0.80         | 1.09               | 40                    | 260      | 243.5       | 2.6    | 3      |
| 150                                                       | 100     | 1.80    | OM PAK 150 M A614 240V 50HZ W  | 89002863       | 22.5       | 172.5       | 1.80         | 2.35               | 0.80         | 1.09               | 40                    | 260      | 243.5       | 2.6    | 3      |
| 150                                                       | 100     | 1.80    | OM PAK 150 M A634 240V 50HZ W  | 89002915       | 22.5       | 172.5       | 1.80         | 2.35               | 0.80         | 1.09               | 40                    | 260      | 243.5       | 2.6    | 3      |
| 150                                                       | 100     | 1.80    | OM PAK 150 M AA34 240V 50HZ W  | 89003653       | 22.5       | 172.5       | 1.80         | 2.35               | 0.80         | 1.09               | 40                    | 260      | 243.5       | 2.6    | 3      |

## notes

- Control gear for other voltage, frequency and wattage ratings available on request.
1. Double-ended high-pressure sodium vapour lamps with ignition voltage 4.0 - 5.0 kV

## Gear tray assemblies

Standard gear tray assemblies are available to suit a large range of lamps. The smaller gear tray is also designed to fit the standard D430 enclosure.

### Features

- zinc sealed steel
- folded sides for mechanical strength and to provide clearances for component fasteners, such as nuts, screws and rivets (stand-off height - 12 mm)
- provision for two position mounting

### Applications

- switchboard type cubicles
- base of light poles for street or sports lighting

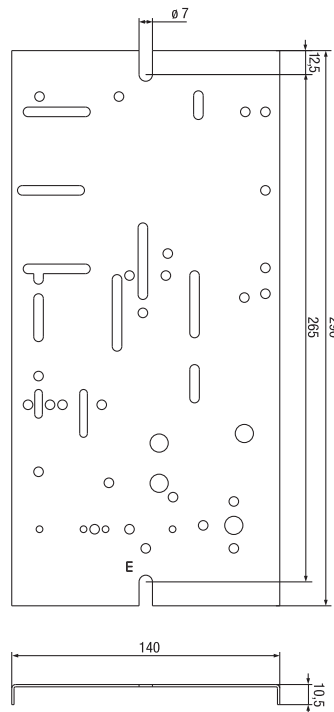
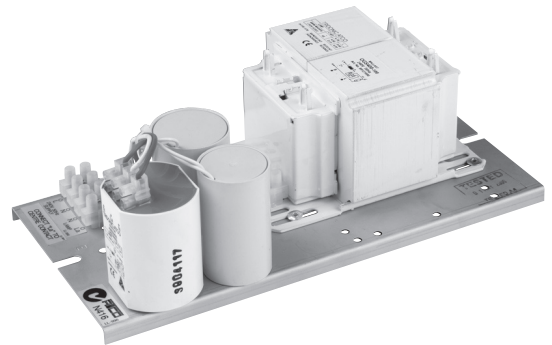
### Typical configurations are

- 80 W to 1,000 W high-pressure mercury vapour lamps
- 70 W to 2,000 W metal halide lamps
- 70 W to 1,000 W high-pressure sodium vapour lamps

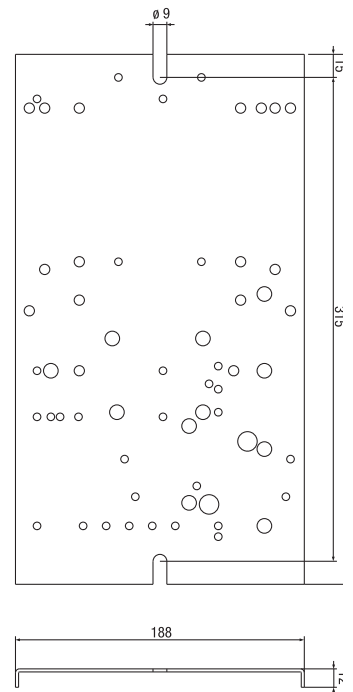
### Optional extras include

- HRC fuses
- blocking inductors
- ignitors – subject to mounting distance from lamp
- multi-voltage tapped ballasts

### 100% final testing



Gear tray to fit D430 box



Gear tray for other applications

## Gear tray assemblies

| Lamp    |         |         | Control gear |                | Electrical |             |              |                    |              |                    | Thermal               | Physical |             |        |        |
|---------|---------|---------|--------------|----------------|------------|-------------|--------------|--------------------|--------------|--------------------|-----------------------|----------|-------------|--------|--------|
| wattage | voltage | current | type         | article number | loss hot   | input power | lamp current | lamp start current | line current | line start current | max. amb. temperature | length   | mtg centres | weight | carton |
| W       | V       | A       |              |                | W          | W           | A            | A                  | A@0.9PF      | A@0.9PF            | ° C                   | mm       | mm          | kg     | qty    |

240 V 50 Hz

## High-pressure mercury vapour lamps

|     |     |      |           |          |     |      |      |      |       |       |    |     |     |   |   |
|-----|-----|------|-----------|----------|-----|------|------|------|-------|-------|----|-----|-----|---|---|
| 80  | 115 | 0.80 | MV80GT    |          | 9.5 | 89.5 | 0.80 | 1.11 | 0.414 | 0.604 | 40 | 290 | 265 | 2 | 1 |
| 125 | 125 | 0.53 | MV125GT   |          | 12  | 137  | 1.15 | 1.66 | 0.634 | 0.961 | 40 | 290 | 265 | 2 | 1 |
| 250 | 130 | 2.13 | MV250GT   |          | 21  | 271  | 2.13 | 3.10 | 1.250 | 1.920 | 40 | 290 | 265 | 3 | 1 |
| 400 | 135 | 3.25 | MV400GT-2 | 89120752 | 29  | 429  | 3.25 | 5.00 | 1.990 | 3.210 | 40 | 290 | 265 | 4 | 1 |

## Metal halide lamps

|       |     |      |              |          |     |       |       |       |       |        |    |     |     |      |   |
|-------|-----|------|--------------|----------|-----|-------|-------|-------|-------|--------|----|-----|-----|------|---|
| 175   | 130 | 1.50 | MH175GT      |          | 16  | 191   | 1.50  | 2.29  | 0.884 | 1.420  | 40 | 290 | 265 | 3.0  | 1 |
| 250   | 130 | 2.13 | MH250GT      |          | 21  | 271   | 2.13  | 3.10  | 1.250 | 1.920  | 40 | 290 | 265 | 3.5  | 1 |
| 400   | 135 | 3.25 | MH400GT      | 89120726 | 29  | 429   | 3.25  | 5.00  | 1.990 | 3.210  | 40 | 290 | 265 | 4.0  | 1 |
| 1,000 | 130 | 8.25 | MH1000GT-01  | 89120704 | 53  | 1,053 | 8.25  | 12.10 | 4.880 | 7.510  | 40 | 345 | 315 | 9.0  | 1 |
| 1,000 | 120 | 9.5  | MH1000AGT-02 | 89121928 | 64  | 1,064 | 9.50  | 13.00 | 4.930 | 7.080  | 40 | 345 | 315 | 10.0 | 1 |
| 1,000 | 265 | 4.20 | CWMH1000GT   | 89120217 | 79  | 1,079 | 4.20  | 5.82  | 4.700 | 2.100  | 40 | 345 | 315 | 13.5 | 1 |
| 1,500 | 500 | 3.30 | CWBL1500GT   | 89120139 | 120 | 1,620 | 3.30  | 5.00  | 6.800 | 3.000  | 40 | 345 | 315 | 20.5 | 1 |
| 2,000 | 135 | 16.5 | MH2000LGT    | 89120431 | 77  | 2,077 | 16.50 | 25.10 | 9.620 | 15.400 | 40 | 345 | 315 | 17.5 | 1 |

## High-pressure sodium vapour lamps

|       |     |       |              |          |    |       |       |       |       |       |    |     |     |      |   |
|-------|-----|-------|--------------|----------|----|-------|-------|-------|-------|-------|----|-----|-----|------|---|
| 70    | 90  | 1.00  | HS70AGT      |          | 14 | 84    | 1.00  | 1.16  | 0.389 | 0.474 | 40 | 290 | 265 | 2.5  | 1 |
| 150   | 100 | 1.80  | HS150GT      |          | 18 | 168   | 1.80  | 2.20  | 0.778 | 1.000 | 40 | 290 | 265 | 3.5  | 1 |
| 250   | 100 | 3.00  | HS250GT      |          | 26 | 276   | 3.00  | 3.90  | 1.280 | 1.740 | 40 | 290 | 265 | 4.0  | 1 |
| 400   | 100 | 4.60  | HS400GT      |          | 37 | 437   | 4.60  | 6.10  | 2.020 | 2.820 | 40 | 290 | 265 | 5.5  | 1 |
| 1,000 | 110 | 10.30 | HS1000GT-01  | 89120557 | 60 | 1,060 | 10.30 | 13.10 | 4.910 | 6.550 | 40 | 345 | 315 | 10.0 | 1 |
| 1,000 | 250 | 4.70  | CWHS1000GT-2 | 89120168 | 92 | 1,092 | 4.70  | 6.80  | 4.640 | 3.000 | 40 | 345 | 315 | 20.5 | 1 |

415 V 50 Hz

## Metal halide lamps

|       |     |       |                                |          |     |       |       |       |       |       |    |     |     |      |   |
|-------|-----|-------|--------------------------------|----------|-----|-------|-------|-------|-------|-------|----|-----|-----|------|---|
| 1,000 | 265 | 4.20  | CWMH1000GT-4                   | 89120222 | 79  | 1,079 | 4.20  | 5.82  | 4.700 | 2.100 | 40 | 345 | 315 | 14.0 | 1 |
| 1,500 | 500 | 3.30  | CWBL1500GT-4-01                | 89120143 | 120 | 1,620 | 3.30  | 5.00  | 6.800 | 3.000 | 40 | 345 | 315 | 20.5 | 1 |
| 2,000 | 205 | 11.30 | MH2000DGT-01 400/415/430V 50Hz | 89120406 | 98  | 2,048 | 11.30 | 14.60 | 5.480 | 7.440 | 40 | 345 | 315 | 17.5 | 1 |
| 2,000 | 230 | 10.30 | MH2000DGT-01 400/415/430V 50Hz | 89120406 | 85  | 2,085 | 10.30 | 14.60 | 5.580 | 8.310 | 40 | 345 | 315 | 17.5 | 1 |
| 2,000 | 245 | 8.80  | MH2000GT                       | 89120424 | 80  | 2,080 | 8.80  | 13.50 | 5.570 | 9.000 | 40 | 345 | 315 | 16.5 | 1 |

## High-pressure sodium vapour lamps

|       |     |      |                  |          |    |       |      |      |       |       |    |     |     |      |   |
|-------|-----|------|------------------|----------|----|-------|------|------|-------|-------|----|-----|-----|------|---|
| 1,000 | 250 | 4.70 | CWHS1000GT-4-SP1 | 89120173 | 95 | 2,045 | 4.70 | 6.80 | 2.700 | 1.600 | 40 | 345 | 315 | 21.0 | 1 |
|-------|-----|------|------------------|----------|----|-------|------|------|-------|-------|----|-----|-----|------|---|

## notes

Control gear for other voltage, frequency and wattage ratings available on request.

## D430 weatherproof assemblies

The D430 cast aluminium box is a heavy duty IP65 rated enclosure intended for either wall or pole mounting. The box has provision for 2 x 20 mm conduit entries.

### Features

- cast aluminium alloy 401
- mounting strap - aluminium alloy 6063 or similar.
- weatherproof seal - neoprene rubber gasket
- tamperproof stainless steel allen key screw lid fastener
- deep lid providing easy access to the control gear for quick connection and troubleshooting

### Applications

- primarily used to house lighting control gear but is also suitable for transformers, swimming pool controls, alarms, contactors, thermostats and the like

### Typical configurations are

- 80 W to 400 W high-pressure mercury vapour lamps
- 70 W to 400 W metal halide lamps
- 70 W to 400 W high-pressure sodium vapour lamps

In some instances an economical solution can be offered by using the D430 enclosure to accommodate two complete sets of control gear, bearing in mind there are thermal limitations depending on lamp wattage.

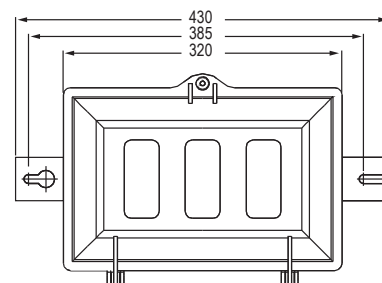
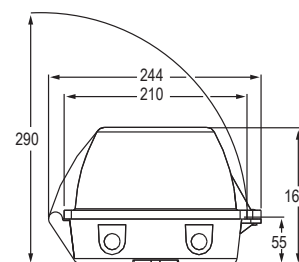
### Optional extras include

- HRC fuses
- blocking inductors
- ignitors - subject to mounting distance from lamp
- multi-voltage tapped ballasts

### 100% final testing



D430 weatherproof (IP65) enclosure



## D430 weatherproof assemblies

| Lamp                                      |         |         | Control gear |                | Electrical |               |                |                      |                      |                            | Thermal                  | Physical  |                |           |            |
|-------------------------------------------|---------|---------|--------------|----------------|------------|---------------|----------------|----------------------|----------------------|----------------------------|--------------------------|-----------|----------------|-----------|------------|
| wattage                                   | voltage | current | type         | article number | loss hot W | input power W | lamp current A | lamp start current A | line current A@0.9PF | line start current A@0.9PF | max. amb. temperature °C | length mm | mtg centres mm | weight kg | carton qty |
| W                                         | V       | A       |              |                | W          | W             | A              | A                    | A@0.9PF              | A@0.9PF                    | °C                       | mm        | mm             | kg        | qty        |
| 240 V 50 Hz                               |         |         |              |                |            |               |                |                      |                      |                            |                          |           |                |           |            |
| <b>High-pressure mercury vapour lamps</b> |         |         |              |                |            |               |                |                      |                      |                            |                          |           |                |           |            |
| 80                                        | 115     | 0.80    | MV80D430     |                | 9.5        | 89.5          | 0.80           | 1.11                 | 0.414                | 0.604                      | 40                       | 430       | 385            | 3.5       | 1          |
| 125                                       | 125     | 0.53    | MV125D430    |                | 12         | 137           | 1.15           | 1.66                 | 0.634                | 0.961                      | 40                       | 430       | 385            | 3.5       | 1          |
| 250                                       | 130     | 2.13    | MV250D430    |                | 21         | 271           | 2.13           | 3.10                 | 1.250                | 1.920                      | 40                       | 430       | 385            | 4.5       | 1          |
| 400                                       | 135     | 3.25    | MV400D430    |                | 29         | 429           | 3.25           | 5.00                 | 1.990                | 3.210                      | 40                       | 430       | 385            | 5.5       | 1          |
| <b>Metal halide lamps</b>                 |         |         |              |                |            |               |                |                      |                      |                            |                          |           |                |           |            |
| 175                                       | 130     | 1.50    | MH175D430    |                | 16         | 191           | 1.50           | 2.29                 | 0.884                | 1.420                      | 40                       | 430       | 385            | 4.5       | 1          |
| 250                                       | 130     | 2.13    | MH250D430    |                | 21         | 271           | 2.13           | 3.10                 | 1.250                | 1.920                      | 40                       | 430       | 385            | 5.0       | 1          |
| 400                                       | 135     | 3.25    | MH400D430    |                | 29         | 429           | 3.25           | 5.00                 | 1.990                | 3.210                      | 40                       | 430       | 385            | 5.5       | 1          |
| <b>High-pressure sodium vapour lamps</b>  |         |         |              |                |            |               |                |                      |                      |                            |                          |           |                |           |            |
| 70                                        | 90      | 1.00    | HS70AD430    |                | 14         | 84            | 1.00           | 1.16                 | 0.389                | 0.474                      | 40                       | 430       | 385            | 4.0       | 1          |
| 150                                       | 100     | 1.80    | HS150D430    |                | 18         | 168           | 1.80           | 2.20                 | 0.778                | 1.000                      | 40                       | 430       | 385            | 5.0       | 1          |
| 250                                       | 100     | 3.00    | HS250D430    |                | 26         | 276           | 3.00           | 3.90                 | 1.280                | 1.740                      | 40                       | 430       | 385            | 5.5       | 1          |
| 400                                       | 100     | 4.60    | HS400D430    | 89120577       | 37         | 437           | 4.60           | 6.10                 | 2.020                | 2.820                      | 40                       | 430       | 385            | 7.0       | 1          |

## notes

Control gear for other voltage, frequency and wattage ratings available on request.

## D96 weatherproof assemblies

The D96 cast aluminium box is a heavy duty IP65 rated enclosure designed and developed in Australia for harsh environmental conditions. It is intended for either wall or pole mounting and has provision for 3 x 20 mm conduit entries. The clever compartmental design allows the operation of two 1,000 W control gear in a single enclosure at high ambient temperatures.

### Features

- die-cast aluminium alloy
- mounting strap - aluminium alloy 6063 or similar
- weatherproof seal - neoprene rubber gasket
- tamperproof stainless steel allen key screw lid fastener
- deep lid providing easy access to the control gear for quick connection and troubleshooting

### Typical configurations are

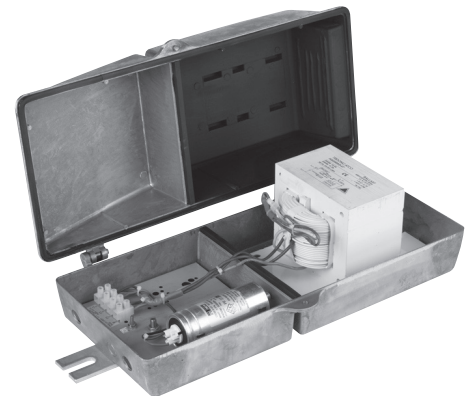
- 400 W to 1,000 W high-pressure mercury vapour lamps
- 400 W to 2,000 W metal halide lamps
- 400 W to 1,000 W high-pressure sodium vapour lamps

Twin control gear configurations are also available in the one D96 enclosure offering an economical solution for floodlighting applications.

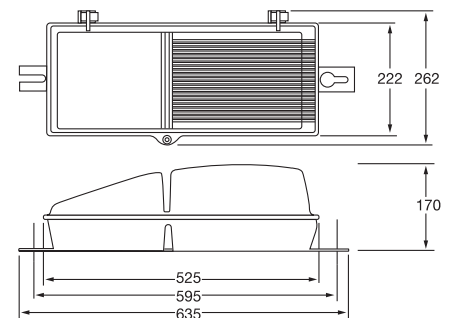
### Optional extras include

- HRC fuses
- blocking inductors
- ignitors - subject to mounting distance from lamp
- multi-voltage tapped ballasts
- step dimming (bi-level switching)

### 100% final testing



D96 weatherproof (IP65) enclosure



## D96 weatherproof assemblies

| Lamp                                     |         |         | Control gear   |                | Electrical |             |              |                    |              |                    | Thermal               | Physical |             |        |        |
|------------------------------------------|---------|---------|----------------|----------------|------------|-------------|--------------|--------------------|--------------|--------------------|-----------------------|----------|-------------|--------|--------|
| wattage                                  | voltage | current | type           | article number | loss hot   | input power | lamp current | lamp start current | line current | line start current | max. amb. temperature | length   | mtg centres | weight | carton |
| W                                        | V       | A       |                |                | W          | W           | A            | A                  | A@0.9PF      | A@0.9PF            | °C                    | mm       | mm          | kg     | qty    |
| 220 V 60 Hz                              |         |         |                |                |            |             |              |                    |              |                    |                       |          |             |        |        |
| <b>Metal halide lamps</b>                |         |         |                |                |            |             |              |                    |              |                    |                       |          |             |        |        |
| 1,000                                    | 120     | 9.50    | MH1000AD96-11  | 89120668       | 60         | 1,060       | 9.50         | 13.20              | 4.91         | 7.16               | 45                    | 635      | 595         | 14.5   | 1      |
| 240 V 50 Hz                              |         |         |                |                |            |             |              |                    |              |                    |                       |          |             |        |        |
| <b>Metal halide lamps</b>                |         |         |                |                |            |             |              |                    |              |                    |                       |          |             |        |        |
| 400                                      | 135     | 3.25    | MH400D96       | 89122879       | 29         | 429         | 3.25         | 5.00               | 1.99         | 3.21               | 45                    | 635      | 595         | 9.5    | 1      |
| 400                                      | 135     | 3.25    | MH2X400D96     |                | 58         | 858         | 6.50         | 10.00              | 3.97         | 6.42               | 45                    | 635      | 595         | 12.5   | 1      |
| 400                                      | 135     | 3.25    | CWMH400D96     |                | 58         | 458         | 3.25         | 3.73               | 2.00         | 0.80               | 45                    | 635      | 595         | 13.5   | 1      |
| 1,000                                    | 130     | 8.25    | MH1000D96      | 89120694       | 53         | 1,053       | 8.25         | 12.10              | 4.88         | 7.51               | 45                    | 635      | 595         | 14.5   | 1      |
| 1,000                                    | 120     | 9.50    | MH1000AD96-12  | 89120689       | 64         | 1,064       | 9.50         | 13.00              | 4.93         | 7.08               | 45                    | 635      | 595         | 15.5   | 1      |
| 1,000                                    | 75      | 15.00   | CS11000D96     | 89120378       | 90         | 1,090       | 15.00        | 16.80              | 4.90         | 5.90               | 40                    | 635      | 595         | 22.5   | 1      |
| 1,000                                    | 265     | 4.20    | CWMH1000D96    | 89120212       | 79         | 1,079       | 4.20         | 5.82               | 4.70         | 2.10               | 40                    | 635      | 595         | 19.0   | 1      |
| 1,500                                    | 265     | 6.30    | CWMH1500D96    | 89120232       | 136        | 1,636       | 6.30         | 8.80               | 7.10         | 4.50               | 35                    | 635      | 595         | 27.0   | 1      |
| 2,000                                    | 135     | 16.50   | MH2000LD96-05  | 89120430       | 77         | 2,077       | 16.50        | 25.10              | 9.62         | 15.40              | 40                    | 635      | 595         | 23.0   | 1      |
| <b>High-pressure sodium vapour lamps</b> |         |         |                |                |            |             |              |                    |              |                    |                       |          |             |        |        |
| 400                                      | 100     | 4.60    | HS2X400D96     |                | 74         | 874         | 9.20         | 12.20              | 4.05         | 5.63               | 45                    | 635      | 595         | 15.5   | 1      |
| 400                                      | 100     | 4.60    | CWHS400D96     |                | 70         | 470         | 4.60         | 5.60               | 2.04         | 1.15               | 40                    | 635      | 595         | 16.5   | 1      |
| 600                                      | 110     | 6.20    | HS2X600D96     |                | 90         | 1,290       | 12.40        | 16.00              | 5.97         | 8.09               | 40                    | 635      | 595         | 18.0   | 1      |
| 1,000                                    | 110     | 10.30   | HS1000D96      | 89120547       | 60         | 1,060       | 10.30        | 13.10              | 4.91         | 6.55               | 45                    | 635      | 595         | 15.5   | 1      |
| 1,000                                    | 110     | 10.30   | HS2X1000D96    |                | 120        | 2,120       | 20.60        | 26.20              | 9.81         | 13.11              | 40                    | 635      | 595         | 25.5   | 1      |
| 1,000                                    | 250     | 4.70    | CWHS1000D96    | 89120161       | 92         | 1,092       | 4.70         | 6.80               | 4.64         | 3.00               | 40                    | 635      | 595         | 26.0   | 1      |
| 380 V 60 Hz                              |         |         |                |                |            |             |              |                    |              |                    |                       |          |             |        |        |
| <b>Metal halide lamps</b>                |         |         |                |                |            |             |              |                    |              |                    |                       |          |             |        |        |
| 2,000                                    | 205     | 11.30   | MH2000DD96-15  | 89121675       | 90         | 2,040       | 11.30        | 15.80              | 5.46         | 8.02               | 40                    | 635      | 595         | 23.0   | 1      |
| 2,000                                    | 230     | 10.30   | MH2000DD96-15  | 89121675       | 78         | 2,078       | 10.30        | 15.80              | 5.56         | 8.96               | 40                    | 635      | 595         | 23.0   | 1      |
| 415 V 50 Hz                              |         |         |                |                |            |             |              |                    |              |                    |                       |          |             |        |        |
| <b>Metal halide lamps</b>                |         |         |                |                |            |             |              |                    |              |                    |                       |          |             |        |        |
| 400                                      | 135     | 3.25    | CWMH400D96-4   |                | 63         | 463         | 3.25         | 3.73               | 1.16         | 0.50               | 45                    | 635      | 595         | 14.5   | 1      |
| 1,000                                    | 265     | 4.20    | CWMH1000D96-4  | 89120216       | 79         | 1,079       | 4.20         | 5.82               | 4.70         | 2.10               | 40                    | 635      | 595         | 19.5   | 1      |
| 1,500                                    | 265     | 6.30    | CWMH1500D96-01 | 89120233       | 136        | 1,636       | 6.30         | 8.80               | 7.10         | 4.50               | 35                    | 635      | 595         | 27.0   | 1      |
| 1,500                                    | 500     | 3.30    | CWBL1500D96-04 | 89120135       | 120        | 1,620       | 3.30         | 5.00               | 6.80         | 3.00               | 35                    | 635      | 595         | 26.0   | 1      |
| 2,000                                    | 205     | 11.30   | MH2000DD96-06  | 89120398       | 98         | 2,048       | 11.30        | 14.60              | 5.48         | 7.44               | 40                    | 635      | 595         | 23.0   | 1      |
| 2,000                                    | 230     | 10.30   | MH2000DD96-06  | 89120398       | 85         | 2,085       | 10.30        | 14.60              | 5.58         | 8.31               | 40                    | 635      | 595         | 23.0   | 1      |
| 2,000                                    | 235     | 9.60    | MH2000D96-12   | 89121809       | 78         | 2,078       | 9.60         | 14.30              | 5.56         | 8.70               | 40                    | 635      | 595         | 23.5   | 1      |
| 2,000                                    | 245     | 8.80    | MH2000D96      | 89120385       | 80         | 2,080       | 8.80         | 13.50              | 5.57         | 9.00               | 40                    | 635      | 595         | 22.0   | 1      |
| <b>High-pressure sodium vapour lamps</b> |         |         |                |                |            |             |              |                    |              |                    |                       |          |             |        |        |
| 1,000                                    | 250     | 4.70    | CWHS1000D96-4  |                | 95         | 2,045       | 4.70         | 6.80               | 2.70         | 1.60               | 40                    | 635      | 595         | 26.5   | 1      |

## notes

Control gear for other voltage, frequency and wattage ratings available on request.





|                                                     |      |
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# Capacitors

## Power factor

For a pure resistive load in an electrical circuit, the voltage (V) and current (I) are in phase with each other and the overall power factor ( $\cos \phi$ ) has a value of unity. It can also be said that the average power (P) of the resistive circuit is equal to the apparent power (S), ie.  $P = V \times I$ .

However, in a pure reactive electrical circuit, there is no resistive component, the voltage and current are  $90^\circ$  out of phase, ie.  $\cos \phi = 0$ .

Electrical circuits containing a combination of both resistive and reactive elements display both average power and apparent power components.

Power factor is therefore the ratio by which the apparent power is multiplied in order to obtain the average power actually being consumed in the circuit, ie.  $P = V \times I \times \cos \phi$ .

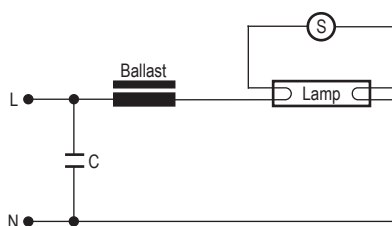
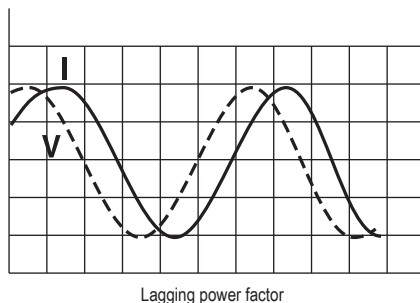
For example, a power factor of 0.5 indicates that the circuit has a reactive component having a phase angle of  $+60^\circ$  or  $-60^\circ$ .

In common practice most loads are inductive and therefore the current lags the voltage (lagging power factor), whereas a typical capacitive load has a leading power factor.

The major causes of low power factor in a circuit are lightly loaded electric motor and discharge lamp circuits in which the inductance of the control equipment, such as ballasts, results in a power factor usually in the range of 0.3 to 0.5.

When a capacitor is connected across an inductive load, it cancels the lagging effect of the inductance, increasing the power factor closer to unity.

figure 1



Fluorescent lamp circuit with parallel power factor correction capacitor.

## Fluorescent and HID lamp circuits

Fluorescent and HID lamp circuits have an inherent low power factor (around 0.4 to 0.5), due to the control gear inductance. The inductance is in the circuit to limit the current through the lamp, however, in lighting installations where many lamps are used, high input current increases the cost of mains reticulation.

Raising the power factor by means of the inclusion of a capacitor (opposite effect to an inductor) substantially reduces the current drawn from the mains, giving improvement in the reticulation efficiency, which in turn enables a reduction in copper wire size and transformer sizes (the generating equipment).

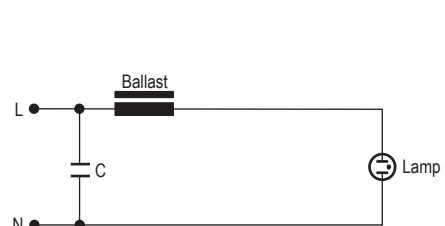
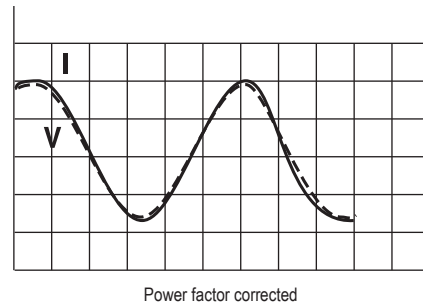
Most power distribution authorities have a requirement of high power factor (HPF) for lighting installations of generally 0.85 to 0.95 minimum.

A typical discharge lighting circuit without power factor correction, eg. 400 W high pressure sodium, has a power factor of approximately 0.4. Figure 1 shows the relationship of current and voltage in this application.

This power factor characteristic can be corrected to approximately 0.9 by adding a capacitor (leading) to the lagging line current to cancel the phase shift. Figure 2 illustrates this.

In common application therefore, by connecting a capacitor into the lighting circuit, the power factor can be improved to the values normally prescribed by the Regulatory Authorities so that practically inductance free operation results.

figure 2



HID lamp circuit with parallel power factor correction capacitor.

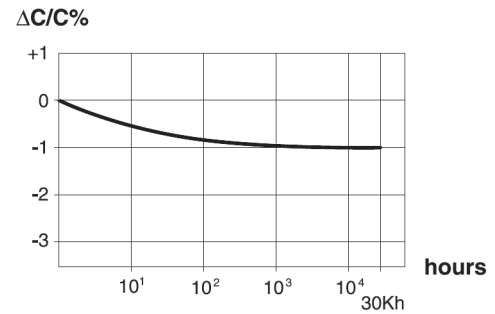
# Capacitors

## Features of metallised polypropylene

### Low capacitance loss

Polypropylene is an extremely efficient dielectric. The losses (or heating effects) are mainly restricted to internal connections and electrode resistance.

The temperature rise is typically about 1 °C. This means that higher ambient temperatures can be reached without the risk of thermal runaway.

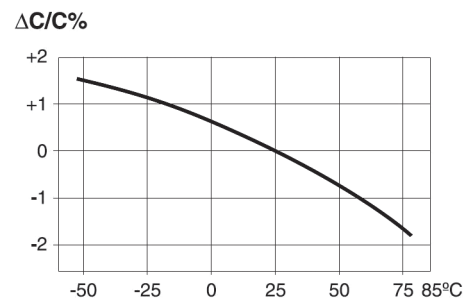


Capacitance versus Time  
under normal working conditions

### Self healing

The capacitor electrodes of a metallised polypropylene capacitor are thin layers of metal deposited on to the polypropylene under vacuum.

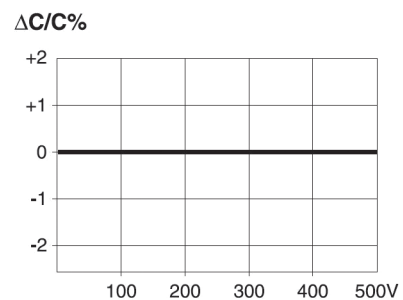
An isolated dielectric breakdown within the capacitor windings is "repaired" by vapourisation of the metal deposits around the "fault" area. The capacitor remains unchanged except for an insignificant capacitance loss.



Capacitance versus Temperature

### High insulation resistance

Some special applications demand high insulation resistance which can be satisfied with a metallised polypropylene capacitor. This means that the capacitor is capable of holding an electric charge for long periods. Resistance values are typically greater than 1,000MΩ.



Capacitance versus Voltage

# Capacitors

## Quality

Assured quality of capacitors is first and foremost and cannot be compromised. CMP uses accepted IEC and BSI Standards as the minimum measure of quality.

All CMP capacitors are manufactured in accordance to Australian and International Standards assuring the customer of the highest quality.

## Service life

The quality of the raw materials, the manufacturing technique and processes and the operating conditions determine the service life of the capacitor.

In accordance with relevant applicable standards, the stated operating life of a capacitor allows for a limited degradation of the capacitance of up to 10 % and a failure rate of up to 3 %. To demonstrate this performance there are a series of prescribed tests, which includes thermal cycling, application of voltage at elevated temperatures where the duration of this test at elevated voltage simulates the equivalent of 30,000hr operation.

Thermal stress above the limiting temperature of the capacitor, voltages above the rating of the capacitor, harmonic distortion and excessive humidity can have an influence on the service life expectancy or cause premature failures.

Capacitors shall not be mounted in the close vicinity of heat sources (such as conventional ballasts, lamps, etc.) as high ambient temperatures may cause premature ageing. Every 10 °C above the limiting temperature at the surface of the capacitor case will halve its service life.

The capacitors have been designed for continuous operation at the rated voltage marked on the label. Operating the capacitor 5 % above the rated voltage will result in a 35 % decrease in its service life.

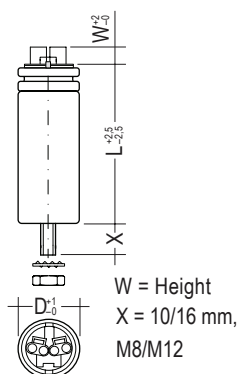


CP 2 – 45  $\mu$ F  
Supply voltage up to 250 V

### Product description

- Can: Aluminium
- Self healing polypropylene winding film
- Filling material: Liquid, based on vegetable oil, non-PCB
- Protection class: B, with overpressure protection
- Max. operating temperature of case: 100 °C
- Test class: 40/100/21
- Discharge resistor: yes, < 50 V within < 60 s
- Conforming with IEC/EN 61048 and IEC/EN 61049

For product data sheet go to [www.cmpcontrols.com](http://www.cmpcontrols.com), or available on request



### Technical data

|                       |                                              |
|-----------------------|----------------------------------------------|
| Rated supply voltage  | 280 V                                        |
| Mains frequency       | 50 / 60 Hz                                   |
| Capacitor tolerance   | $\pm 5\%$                                    |
| Operating temperature | -40 ... +100 °C                              |
| Push-in terminal      | 0.5 – 1.5 mm <sup>2</sup><br>for rigid wires |

### Ordering data

| Weight   | Packaging, carton | Type                                | Article number |
|----------|-------------------|-------------------------------------|----------------|
| 0.036 kg | 98 pieces         | CP 2.0 280V P2 AL 25x48 PI M8 OIL   | 09100621       |
| 0.037 kg | 98 pieces         | CP 4.0 280V P2 AL 25x48 PI M8 OIL   | 09100625       |
| 0.043 kg | 98 pieces         | CP 6.0 280V P2 AL 25x58 PI M8 OIL   | 09100622       |
| 0.047 kg | 98 pieces         | CP 8.0 280V P2 AL 25x68 PI M8 OIL   | 09100623       |
| 0.054 kg | 98 pieces         | CP 10.0 280V P2 AL 25x78 PI M8 OIL  | 09100624       |
| 0.050 kg | 72 pieces         | CP 12.0 280V P2 AL 30x58 PI M8 OIL  | 09100613       |
| 0.090 kg | 50 pieces         | CP 18.0 280V P2 AL 35x78 PI M8 OIL  | 09100615       |
| 0.090 kg | 50 pieces         | CP 20.0 280V P2 AL 35x78 PI M8 OIL  | 09100616       |
| 0.110 kg | 36 pieces         | CP 25.0 280V P2 AL 40x78 PI M8 OIL  | 09100617       |
| 0.110 kg | 36 pieces         | CP 30.0 280V P2 AL 40x93 PI M8 OIL  | 09100618       |
| 0.110 kg | 36 pieces         | CP 35.0 280V P2 AL 40x93 PI M8 OIL  | 09100619       |
| 0.200 kg | 32 pieces         | CP 45.0 280V P2 AL 45x119 PI M8 OIL | 09100620       |

### Specific technical data

| Capacity   | Type                                | Article number | Mounting | Diameter d | Length L | Height |
|------------|-------------------------------------|----------------|----------|------------|----------|--------|
| 2 $\mu$ F  | CP 2.0 280V P2 AL 25x48 PI M8 OIL   | 09100621       | M8       | 25         | 48 mm    | 22 mm  |
| 4 $\mu$ F  | CP 4.0 280V P2 AL 25x48 PI M8 OIL   | 09100625       | M8       | 25         | 48 mm    | 22 mm  |
| 6 $\mu$ F  | CP 6.0 280V P2 AL 25x58 PI M8 OIL   | 09100622       | M8       | 25         | 58 mm    | 22 mm  |
| 8 $\mu$ F  | CP 8.0 280V P2 AL 25x68 PI M8 OIL   | 09100623       | M8       | 25         | 68 mm    | 22 mm  |
| 10 $\mu$ F | CP 10.0 280V P2 AL 25x78 PI M8 OIL  | 09100624       | M8       | 25         | 78 mm    | 22 mm  |
| 12 $\mu$ F | CP 12.0 280V P2 AL 30x58 PI M8 OIL  | 09100613       | M8       | 30         | 58 mm    | 20 mm  |
| 18 $\mu$ F | CP 18.0 280V P2 AL 35x78 PI M8 OIL  | 09100615       | M8       | 35         | 78 mm    | 16 mm  |
| 20 $\mu$ F | CP 20.0 280V P2 AL 35x78 PI M8 OIL  | 09100616       | M8       | 35         | 78 mm    | 16 mm  |
| 25 $\mu$ F | CP 25.0 280V P2 AL 40x78 PI M8 OIL  | 09100617       | M8       | 40         | 78 mm    | 16 mm  |
| 30 $\mu$ F | CP 30.0 280V P2 AL 40x93 PI M8 OIL  | 09100618       | M8       | 40         | 93 mm    | 16 mm  |
| 35 $\mu$ F | CP 35.0 280V P2 AL 40x93 PI M8 OIL  | 09100619       | M8       | 40         | 93 mm    | 16 mm  |
| 45 $\mu$ F | CP 45.0 280V P2 AL 45x119 PI M8 OIL | 09100620       | M8       | 45         | 119 mm   | 16 mm  |

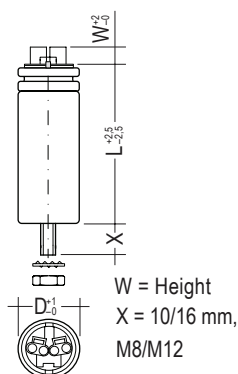


CP 20 – 50  $\mu$ F  
Supply voltage up to 440 V

### Product description

- Can: Aluminium
- Self healing polypropylene winding film
- Filling material: Liquid, based on vegetable oil, non-PCB
- Protection class: B, with overpressure protection
- Max. operating temperature of case: 85 °C
- Test class: 25/85/21
- Discharge resistor: yes, < 50 V within < 60 s
- Conforming with IEC/EN 61048 and IEC/EN 61049

For product data sheet go to [www.cmpcontrols.com](http://www.cmpcontrols.com), or available on request



### Technical data

|                       |                                              |
|-----------------------|----------------------------------------------|
| Rated supply voltage  | 440 V                                        |
| Mains frequency       | 50 / 60 Hz                                   |
| Capacitor tolerance   | $\pm 5\%$                                    |
| Operating temperature | -25 ... +85 °C                               |
| Push-in terminal      | 0.5 – 1.5 mm <sup>2</sup><br>for rigid wires |

### Ordering data

| Weight   | Packaging, carton | Packaging, pallet | Type                                | Article number |
|----------|-------------------|-------------------|-------------------------------------|----------------|
| 0.287 kg | 21 pieces         | 1,890 pieces      | CP 20.0 440V P2 AL 40x093 PI M8 OIL | 09010019       |
| 0.173 kg | 36 pieces         | 3,240 pieces      | CP 25.0 440V P2 AL 40x119 PI M8 OIL | 09100188       |
| 0.175 kg | 36 pieces         | 3,600 pieces      | CS 30.0-02 30.0 UF 440V S1          | 09100101       |
| 0.800 kg | 32 pieces         | 960 pieces        | CS 35.0-02 35.0 UF 440V RE S1       | 09100103       |
| 0.224 kg | 32 pieces         | 3,200 pieces      | CP 40.0 440V P2 AL 45x119 PI M8 OIL | 09100104       |
| 0.253 kg | 21 pieces         | 1,890 pieces      | CS 45.0-07 45.0 UF 440V RE S1       | 09100075       |
| 0.287 kg | 21 pieces         | 1,890 pieces      | CS 50.0-07 50.0 UF 440V RE S1       | 09100106       |

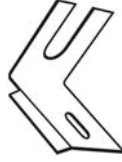
### Specific technical data

| Capacity   | Type                                | Article number | Mounting | Diameter d | Length L | Height |
|------------|-------------------------------------|----------------|----------|------------|----------|--------|
| 20 $\mu$ F | CP 20.0 440V P2 AL 40x093 PI M8 OIL | 09010019       | M8       | 40         | 93 mm    | 16 mm  |
| 25 $\mu$ F | CP 25.0 440V P2 AL 40x119 PI M8 OIL | 09100188       | M8       | 40         | 119 mm   | 16 mm  |
| 30 $\mu$ F | CS 30.0-02 30.0 UF 440V S1          | 09100101       | M8       | 40         | 119 mm   | 16 mm  |
| 35 $\mu$ F | CS 35.0-02 35.0 UF 440V RE S1       | 09100103       | M8       | 45         | 119 mm   | 16 mm  |
| 40 $\mu$ F | CP 40.0 440V P2 AL 45x119 PI M8 OIL | 09100104       | M8       | 45         | 119 mm   | 16 mm  |
| 45 $\mu$ F | CS 45.0-07 45.0 UF 440V RE S1       | 09100075       | M12      | 50         | 124 mm   | 16 mm  |
| 50 $\mu$ F | CS 50.0-07 50.0 UF 440V RE S1       | 09100106       | M12      | 50         | 124 mm   | 16 mm  |

Capacitor mounting accessories

Right angle mounting bracket, Article number 09000932

\* Cat. No. 60067



Clip, Article number 09006767

\* Cat. No. 60071

\* For 30-35 mm diameter capacitors

\* To suit 7 mm diameter hole, 0.50-0.53 mm metal thickness



Clip, Article number 09000933

\* Cat. No. 60072

\* For 40-45 mm diameter capacitors





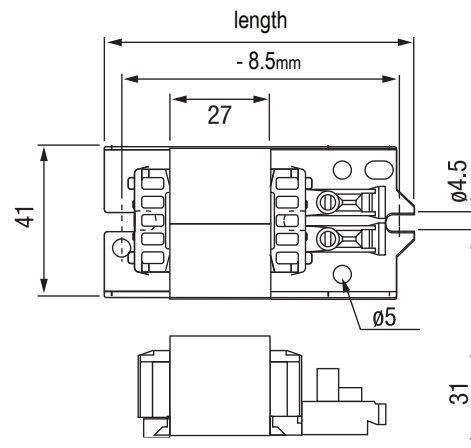
## Blocking inductors for HPF lighting circuits

Blocking inductors are used to stop high frequency signals from being excessively attenuated by shunt power factor correction capacitors. Such signals are superimposed on the mains network in certain areas to switch meter tariffs and loads.

The blocking inductor must match the capacitor size to work correctly. To make selection easier, the description contains the suitable capacitor size in  $\mu\text{F}$ , eg. BE12 is suitable for a  $12\mu\text{F}$  capacitor.

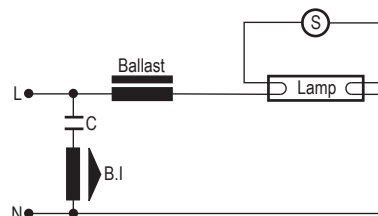
### Product description

- supply voltage frequency: 240V to 250V 50Hz
- blocking frequency: 750Hz to 1,050Hz
- series resonance frequency: 320Hz nominal
- maximum capacitor tolerance: +10% -5%
- terminals: screw

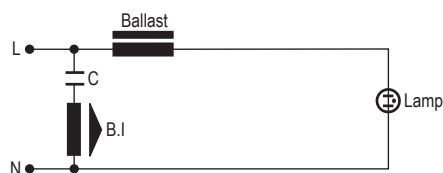


### Ordering data

| Weight   | Length(mm) | Packaging, carton | Type    | Article number |
|----------|------------|-------------------|---------|----------------|
| 0.330 kg | 110        | 36 pieces         | BE 4    | 89000706       |
| 0.330 kg | 110        | 36 pieces         | BE 8    | 89000715       |
| 0.330 kg | 110        | 36 pieces         | BE 9    | 89000716       |
| 0.330 kg | 110        | 36 pieces         | BE10-02 | 20888387       |
| 0.330 kg | 85         | 40 pieces         | BE11-01 | 89000692       |
| 0.330 kg | 110        | 36 pieces         | BE 12   | 89000693       |
| 0.330 kg | 110        | 36 pieces         | BE 18   | 89000697       |
| 0.330 kg | 85         | 40 pieces         | BE20-01 | 89002745       |
| 0.330 kg | 110        | 36 pieces         | BE 25   | 89000700       |
| 0.330 kg | 110        | 36 pieces         | BE 30   | 89000705       |
| 0.330 kg | 110        | 36 pieces         | BE35-02 | 20888286       |
| 0.330 kg | 110        | 36 pieces         | BE 40   | 89000708       |
| 0.330 kg | 110        | 36 pieces         | BE 45   | 89000709       |



Fluorescent lamp circuit with power factor correction capacitor and blocking inductor.



HID lamp circuit with power factor correction capacitor and blocking inductor.



|                                                            |      |
|------------------------------------------------------------|------|
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## Magnetic transformers for low-voltage halogen lamps

In principle, operation of low-voltage halogen lamps, which are universally popular for accent lighting, requires a transformer which adapts the mains voltage to a 12V operating voltage. All transformers also ensure that the protective measures required by relevant standards are met, for instance in the event of a short-circuit or voltage interruption.



LVL D427

Magnetic transformers are a rugged, extremely affordable solution offering long service life together with excellent thermal endurance.

CMP's diversified range of units for integration in luminaires and remote-mounted applications covers all relevant uses. The transformers guarantee operation of lamps in accordance with specifications, thereby enabling lamps to achieve their maximum luminous flux and service life.

Essentially, all CMP magnetic transformers are characterised by minimal power consumption, compact winding, optimised dimensions and high-quality materials. They are continuously controllable using phase-control dimmers for inductive loads.

### Designed for long service life

Thanks to their high-quality insulating material, coil form and the quality of the copper wire used, ECT, OMT and OGT open type transformers for integration in luminaires and LVL enclosed types for remote-mounted applications achieve a maximum service life of approximately 100,000 hours of operation, i.e. roughly 10 years of continuous operation with a winding temperature of 130°C. The winding temperature is calculated from the ambient temperature and the temperature increase due to intrinsic consumption. An upward or downward change in temperature of 10°C causes halving or doubling of the life of the unit respectively.

The transformers can be protected on the line side either by a time-delay fuse or by a built-in current-sensitive thermal cutout appropriate to the transformer type. Protection on the secondary side against overload and short-circuit trips if the lamp becomes faulty.

### **Consistent high quality**

Certified to ISO 9001, the production process and equipment guarantee a consistent high quality standard. All finished goods are 100 % end of line tested and only the highest quality raw materials are used.

### **Protection and approval**

It is mandatory under the Australian and New Zealand wiring rules that transformers for remote mounting are housed in a suitable enclosure and as a prescribed item must be approved by the Statutory Authority to AS/NZS 61558. The approval number must be clearly marked on the enclosure.

The enclosed transformer must be located in the installation in a position where it is easily accessible for inspection and maintenance.

The transformer enclosure and wiring to the light fitting must have adequate ventilation. If the wiring and the transformer enclosure are covered with building insulation material then substantial derating and overheating may occur.

### **The specialist for integrated applications**

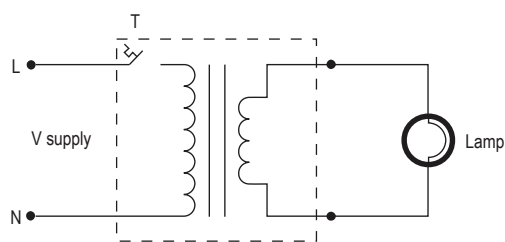
ECT magnetic transformers are characterised by especially compact dimensions ( 31 x 42 mm ) and an excellent price/performance ratio. This model is available with power ratings from 20 to 100 VA.

OMT transformers are compactly designed units of reduced length. The device has a cross-sectional area of 65 x 47 mm. Thanks to its high efficiency, the OMT model, which is available in versions from 25 to 200 VA, is also suitable for use at relatively high ambient temperatures.

OGT transformers reveal their full potential in situations where several lamps are connected. Power ratings range from 180 to 1,200VA versions.

## Technical tips for low-voltage lighting circuits

| Symptom                                      | Possible fault                    | Test and remedy                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lamp appears to be intact but will not light | Failed lamp                       | Replace lamp                                                                                                                                                                                                                                                                                                                           |
|                                              | Supply fault                      | Check supply volts and circuit fuse or breaker                                                                                                                                                                                                                                                                                         |
|                                              | Wiring fault                      | Check for loose connections on input and output of transformer and the lampholder connections                                                                                                                                                                                                                                          |
|                                              | Transformer fault                 | Check output voltage of transformer, if no voltage measured, substitute transformer                                                                                                                                                                                                                                                    |
| Blowing fuses or tripping circuit breakers   | Short circuit                     | Disconnect secondary at the transformer and re-energise the circuit. Should short circuit re-occur immediately (fuse blows), then try substituting the transformer. If short circuit does not immediately re-occur then replace the secondary wiring and/or the light fitting.                                                         |
| Lamp cycling on/off                          | Loose connection                  | Check for loose connection at supply source on primary and secondary connections of the transformer and also at the lamp                                                                                                                                                                                                               |
|                                              | Poor contact in lamp holder       | Check the lamp contact condition and if necessary replace lampholder                                                                                                                                                                                                                                                                   |
|                                              | Transformer cycling               | Check that transformer is installed in a ventilated area on a flat surface. Remove transformer away from heat source such as the lamp. Remove any insulation which may be around or covering the transformer.                                                                                                                          |
|                                              | Lamp and transformer incompatible | Check lamp wattage is the same as the transformer rating                                                                                                                                                                                                                                                                               |
| Short lamp life                              | High lamp power                   | Check voltage at lamp is the same as the transformer nominal secondary voltage rating.<br>Note: The voltage measurement must be recorded over time to check voltage fluctuations.                                                                                                                                                      |
|                                              | Lamp and transformer incompatible | Check lamp wattage is the same as the transformer rating. Also check the secondary voltage at the lamp, that it matches the lamp nominal voltage rating.                                                                                                                                                                               |
|                                              | Over temperature of lamp          | Check the light fitting and ensure the lamp is well ventilated                                                                                                                                                                                                                                                                         |
| High or low light output                     | Incorrect lamp wattage            | Check lamp wattage is the same as the transformer rating                                                                                                                                                                                                                                                                               |
|                                              | Supply voltage                    | Check supply voltage is correct and is the same as the transformer nominal voltage rating.<br>Note: The supply voltage measurement should be taken over time to check voltage fluctuations.                                                                                                                                            |
|                                              | Incorrect wiring                  | Electrical practice guidelines must be followed in selection of conductor rating to avoid the impact of voltage drop                                                                                                                                                                                                                   |
|                                              | Lamp voltage                      | Check secondary voltage of transformer, it must match the lamp rated voltage                                                                                                                                                                                                                                                           |
| Audible noise                                | Lamp noise                        | Check if lamp filament is generating noise due to dimmer controller                                                                                                                                                                                                                                                                    |
|                                              | Transformer noise                 | Check with the dimmer supplier or manufacturer to ensure the phase control dimmer is suitable for dimming inductive loads such as transformers. If dimmer switching is asymmetrical, it can induce a DC wave form into the transformer winding which can lead to overheating, noise and possible damage or failure of the transformer. |



Low voltage lighting transformer circuit

## ECT transformers, 20-100 VA 50/60 Hz



Figure 1

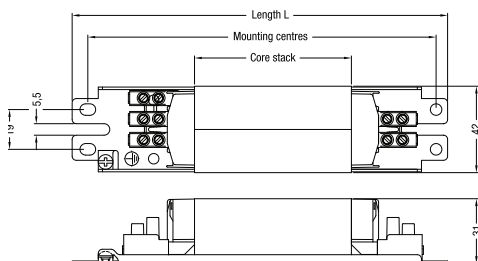
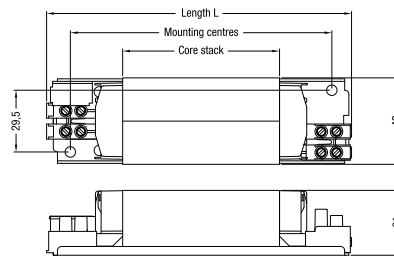


Figure 2



- slim cross-section and compact
- low magnetic stray field
- excellent load weight ratio
- vacuum impregnation
- insulation class 'H'
- long service life
- mains voltage: 240 V 50/60 Hz  
(other voltages and frequencies on request)
- standard secondary voltage 12 V, VA quoted  
at full resistive load 100 % duty cycle  
(other voltages and VA ratings on request)

- screw terminals
- high current on secondary may require  
alternative connector or flying leads at  
the discretion of CMP
- recommended total load is 70 to 100 %  
of the VA rating
- short-circuit protection via built-in self-resetting  
thermal cutout or external fuse

**Approved to**  
• AS/NZS 61558

**100% final testing**  
• high voltage  
• winding short circuit  
• secondary voltage

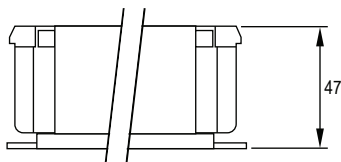
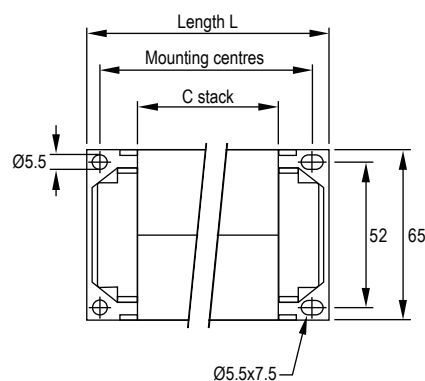
| VA  | type                           | article no. | thermal cutout | recommended<br>primary<br>fuse (mA) | $U_L/U_0$ | losses | stack | length | mounting<br>centres | weight |
|-----|--------------------------------|-------------|----------------|-------------------------------------|-----------|--------|-------|--------|---------------------|--------|
| 50  | ECT 75 127/12 V <sup>1</sup>   |             | -              | 500                                 | 83        | 12.9   | 75    | 142    | 125                 | 0.85   |
| 105 | ECT 160 127/12 V               |             | -              | 1000                                | 83        | 27.1   | 160   | 265    | 250                 | 1.50   |
| 50  | ECT 75 220/12 V <sup>1</sup>   | 89000772    | -              | 315                                 | 83        | 12.9   | 75    | 142    | 125                 | 0.85   |
| 100 | ECT 160 220/12 V               | 89000741    | -              | 600                                 | 84        | 25.3   | 160   | 265    | 250                 | 1.50   |
| 100 | ECT 160 220/24 V               |             | -              | 600                                 | 84        | 25.3   | 160   | 265    | 250                 | 1.50   |
| 50  | ECT 75 230/11.4 V <sup>1</sup> | 89003588    | 120            | -                                   | 83        | 12.9   | 75    | 142    | 125                 | 0.85   |
| 50  | ECT 75 230/12 V <sup>1</sup>   |             | -              | 250                                 | 83        | 12.9   | 75    | 142    | 125                 | 0.85   |
| 50  | ECT 90-15-01 230/12 V          | 89000781    | -              | 315                                 | 86        | 11.9   | 90    | 195    | 180                 | 1.00   |
| 50  | ECT 90-230/12 V                | 89000786    | 120            | -                                   | 86        | 11.9   | 90    | 195    | 180                 | 1.00   |
| 105 | ECT 160 230/11.4 V             |             | -              | 600                                 | 83        | 27.1   | 160   | 265    | 250                 | 1.50   |
| 20  | ECT 35 240/11.4 V              |             | 120            | -                                   | 83        | 5.2    | 35    | 140    | 125                 | 0.45   |
| 35  | ECT 50 240/11.4 V              |             | 120            | -                                   | 83        | 9.0    | 50    | 155    | 140                 | 0.55   |
| 35  | ECT 60 240/12 V                |             | 120            | -                                   | 86        | 8.8    | 60    | 165    | 150                 | 0.65   |
| 50  | ECT 75 240/11.4 V              | 89000769    | 120            | -                                   | 83        | 12.9   | 75    | 180    | 165                 | 0.85   |
| 50  | ECT 75 240/12 V <sup>1</sup>   | 89000767    | -              | 250                                 | 83        | 12.9   | 75    | 142    | 125                 | 0.85   |
| 50  | ECT 90 240/12 V                |             | 120            | -                                   | 86        | 11.9   | 90    | 195    | 180                 | 1.00   |
| 70  | ECT 105 240/11.4 V             | 89000717    | 120            | -                                   | 83        | 18.1   | 105   | 210    | 195                 | 1.10   |
| 80  | ECT 120 240/11.4 V             |             | 120            | -                                   | 83        | 20.7   | 120   | 225    | 210                 | 1.20   |
| 80  | ECT 140 240/12 V               |             | 120            | -                                   | 86        | 19.0   | 140   | 245    | 230                 | 1.40   |
| 100 | ECT 160 240/12 V               | 89000739    | 120            | -                                   | 84        | 25.3   | 160   | 265    | 250                 | 1.50   |

notes

1. refer to figure 2



## OMT transformers, 25-200 VA 50/60 Hz



- high power density relative to low weight
- low magnetic stray field
- excellent load weight ratio
- vacuum impregnation
- insulation class 'H'
- long service life
- mains voltage: 240 V 50/60 Hz  
(other voltages and frequencies on request)

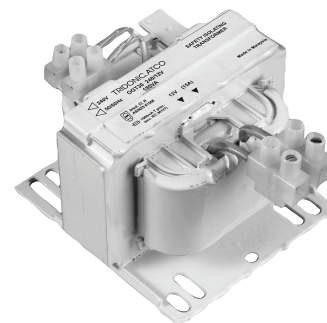
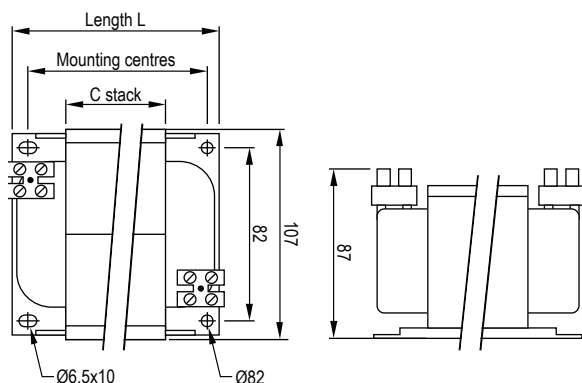
- standard secondary voltage 12 V, VA quoted at full resistive load 100 % duty cycle (other voltages and VA ratings on request)
- integrated screw terminals
- high current on secondary may require alternative connector or flying leads at the discretion of CMP
- recommended total load is 40 to 100 % of the VA rating
- short-circuit protection requires external fuse

**Approved to**  
• AS/NZS 61558

**100% final testing**  
• high voltage  
• winding short circuit  
• secondary voltage

| VA  | type                    | article no. | thermal cutout | recommended primary fuse (mA) | $U_L/U_0$ | losses | stack | length | mounting centres | weight |
|-----|-------------------------|-------------|----------------|-------------------------------|-----------|--------|-------|--------|------------------|--------|
| 100 | OMT 75 220/12 V         | 89001399    | 140            | 80                            | 93        | 13.0   | 75    | 110    | 96               | 1.80   |
| 100 | OMT 75 220/24 V         | 89001569    | 140            | 80                            | 93        | 13.0   | 75    | 110    | 96               | 1.80   |
| 100 | OMTM 55-6-01 220/12 V   | 89001689    | -              |                               | 90        | 14.9   | 55    | 90     | 76               | 1.30   |
| 200 | OMT 120 220/12 V        | 89001396    | 140            | 1600                          | 93        | 25.9   | 120   | 155    | 141              | 2.65   |
| 200 | OMT 120 220/24 V        | 89001454    | 140            | 1600                          | 93        | 25.9   | 120   | 155    | 141              | 2.65   |
| 25  | OMT 30 240/12 V         | 89001501    | 140            | 315                           | 93        | 3.2    | 30    | 65     | 51               | 0.75   |
| 25  | OMT 30 240/24 V         | 89001502    | 140            | 315                           | 93        | 3.2    | 30    | 65     | 51               | 0.75   |
| 40  | OMT 40 240/24 V         | 89001521    | 140            | 400                           | 93        | 5.2    | 40    | 75     | 61               | 1.00   |
| 40  | OMT 40 240/32 V         | 89001522    | 140            | 400                           | 93        | 5.2    | 40    | 75     | 61               | 1.00   |
| 50  | OMTM 40-2-SP01 240/12 V | 89001665    | 140            | 400                           | 92        | 7.5    | 40    | 75     | 61               | 1.00   |
| 50  | OMTM 40-2-SP03 240/24 V |             | 140            | 400                           | 92        | 7.5    | 40    | 75     | 61               | 1.00   |
| 50  | OMTM 55-2-SP09 240/32 V | 89001686    | 140            | 630                           | 95        | 5.5    | 55    | 90     | 76               | 1.30   |
| 65  | OMT 55 240/115 V        | 89001537    | 140            | 630                           | 93        | 8.4    | 55    | 90     | 76               | 1.30   |
| 65  | OMT 55 240/12 V         |             | 140            | 630                           | 93        | 8.4    | 55    | 90     | 76               | 1.30   |
| 65  | OMT 55 240/24 V         | 89001541    | 140            | 630                           | 93        | 8.4    | 55    | 90     | 76               | 1.30   |
| 80  | OMT 65 240/12 V         |             | 140            |                               | 93        | 10.4   | 65    | 100    | 86               | 1.55   |
| 100 | OMT 75 240/110 V        | 89001580    | 140            | 800                           | 93        | 13.0   | 75    | 110    | 96               | 1.80   |
| 100 | OMT 75 240/12 V         | 89001582    | 140            | 800                           | 93        | 13.0   | 75    | 110    | 96               | 1.80   |
| 100 | OMT 75 240/24 V         | 89001589    | 140            | 800                           | 93        | 13.0   | 75    | 110    | 96               | 1.80   |
| 100 | OMT 75 240/32 V         | 89001593    | 140            | 800                           | 93        | 13.0   | 75    | 110    | 96               | 1.80   |
| 150 | OMTM 75-2-SP17 240/12 V | 89001710    | 140            | 800                           | 90        | 22.4   | 75    | 110    | 96               | 1.80   |
| 160 | OMT 105 240/12 V        | 89001415    | 140            | 1250                          | 93        | 20.7   | 105   | 140    | 126              | 2.40   |
| 160 | OMT 105 240/24 V        | 89001420    | 140            | 1250                          | 93        | 20.7   | 105   | 140    | 126              | 2.40   |
| 200 | OMT 120 240/12 V        | 89001461    | 140            | 1600                          | 93        | 25.9   | 120   | 155    | 141              | 2.65   |
| 200 | OMT 120 240/24 V        | 89001468    | 140            | 1600                          | 93        | 25.9   | 120   | 155    | 141              | 2.65   |
| 200 | OMT 120 240/32 V        | 89001473    | 140            | 1600                          | 93        | 25.9   | 120   | 155    | 141              | 2.65   |
| 25  | OMT 30 415/240 V        | 89001510    | -              | 16                            | 93        | 3.2    | 30    | 65     | 51               | 0.75   |
| 25  | OMT 30 415/24 V         | 89001511    | -              | 16                            | 93        | 3.2    | 30    | 65     | 51               | 0.75   |
| 40  | OMT 40 415/240 V        | 89001528    | -              | 20                            | 93        | 5.2    | 40    | 75     | 61               | 1.00   |
| 40  | OMT 40 415/24 V         |             | -              | 20                            | 93        | 5.2    | 40    | 75     | 61               | 1.00   |
| 100 | OMT 75 415/240 V        | 89001608    | -              | 40                            | 93        | 13.0   | 75    | 110    | 96               | 1.80   |
| 100 | OMT 75 415/24 V         | 89001609    | -              | 40                            | 93        | 13.0   | 75    | 110    | 96               | 1.80   |
| 120 | OMTM 75-4-03 415/32 V   |             | -              | 40                            | 92        | 17.9   | 75    | 120    | 106              | 1.80   |
| 200 | OMT 120 415/240 V       | 89001484    | -              | 100                           | 93        | 25.9   | 120   | 155    | 141              | 2.65   |

## OGT transformers, 180-1200 VA 50/60 Hz



- excellent regulation 5 %
- high power density
- low magnetic stray field
- excellent load weight ratio
- vacuum impregnation
- insulation class 'H'
- long service life
- mains voltage: 240 V 50/60 Hz  
(other voltages and frequencies on request)
- standard secondary voltage 12 V, VA quoted  
at full resistive load 100 % duty cycle  
(other voltages and VA ratings on request)

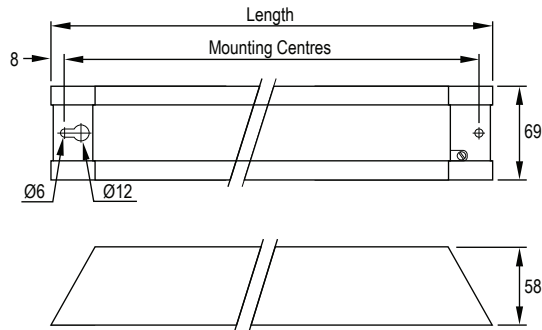
- screw terminals
- high current on secondary may require  
alternative connector or flying leads at the  
discretion of CMP
- recommended total load is 20 to 100 %  
of the VA rating
- short-circuit protection requires external fuse

**Approved to**  
• AS/NZS 61558

**100% final testing**  
• high voltage  
• winding short circuit  
• secondary voltage

| VA    | type              | article no. | thermal cutout | recommended<br>primary<br>fuse (mA) | $U_L/U_O$ | losses | stack | length | mounting<br>centres | weight |
|-------|-------------------|-------------|----------------|-------------------------------------|-----------|--------|-------|--------|---------------------|--------|
| 320   | OGT 50 220/12 V   | 27021259    | -              | 1600                                | 95        | 26.4   | 50    | 130    | 101-117             | 3.5    |
| 320   | OGT 50 220/24 V   |             | -              | 1600                                | 95        | 26.4   | 50    | 130    | 101-117             | 3.5    |
| 400   | OGT 60 220/12 V   | 27002332    | -              | 2000                                | 95        | 33.0   | 60    | 140    | 111-127             | 4.0    |
| 400   | OGT 60 220/24 V   | 27002333    | -              | 2000                                | 95        | 33.0   | 60    | 140    | 111-127             | 4.0    |
| 500   | OGT 70 220/12 V   | 27021328    | -              | 2500                                | 95        | 41.3   | 70    | 150    | 121-137             | 5.0    |
| 500   | OGT 70 220/24 V   | 27021329    | -              | 2500                                | 95        | 41.3   | 70    | 150    | 121-137             | 5.0    |
| 550   | OGTM 70 230/24 V  | 27003523    | -              | 2500                                | 95        | 56.0   | 70    | 150    | 121-137             | 5.0    |
| 180   | OGT 30 240/12 V   |             | -              |                                     | 95        | 14.9   | 30    | 110    | 81-97               | 2.5    |
| 250   | OGT 40 240/12 V   |             | -              | 1250                                | 95        | 20.7   | 40    | 120    | 91-107              | 3.0    |
| 250   | OGT 40 240/115 V  | 27021224    | -              | 1250                                | 95        | 20.7   | 40    | 120    | 91-107              | 3.0    |
| 250   | OGT 40 240/24 V   | 27021227    | -              | 1250                                | 95        | 20.7   | 40    | 120    | 91-107              | 3.0    |
| 320   | OGT 50 240/12 V   | 27021275    | -              | 1600                                | 95        | 26.4   | 50    | 130    | 101-117             | 3.5    |
| 320   | OGT 50 240/24 V   | 27021279    | -              | 1600                                | 95        | 26.4   | 50    | 130    | 101-117             | 3.5    |
| 400   | OGT 60 240/12 V   |             | -              | 2000                                | 95        | 33.0   | 60    | 140    | 111-127             | 4.0    |
| 400   | OGT 60 240/24 V   | 27021313    | -              | 2000                                | 95        | 33.0   | 60    | 140    | 111-127             | 4.0    |
| 500   | OGT 70 240/115 V  | 27021334    | -              | 2500                                | 95        | 41.3   | 70    | 150    | 121-137             | 5.0    |
| 500   | OGT 70 240/12 V   | 27021336    | -              | 2500                                | 95        | 41.3   | 70    | 150    | 121-137             | 5.0    |
| 550   | OGTM 70 240/24 V  | 27003524    | -              | 2500                                | 95        | 56.0   | 70    | 150    | 121-137             | 5.0    |
| 550   | OGT 80 240/12 V   |             | -              |                                     | 95        | 45.4   | 80    | 160    | 131-147             | 5.5    |
| 650   | OGT 90 240/12 V   |             | -              |                                     | 95        | 53.7   | 90    | 170    | 141-157             | 6.0    |
| 750   | OGT 100 240/12 V  | 27002335    | -              | 4000                                | 95        | 62.0   | 100   | 180    | 151-167             | 6.5    |
| 800   | OGT 110 240/12 V  |             | -              |                                     | 95        | 66.1   | 110   | 190    | 161-177             | 7.0    |
| 900   | OGT 120 240/12 V  |             | -              |                                     | 95        | 74.3   | 120   | 200    | 171-187             | 7.5    |
| 1.000 | OGT 140 240/12 V  |             | -              | 5000                                | 95        | 82.6   | 140   | 220    | 191-207             | 8.5    |
| 1.000 | OGT 140 240/115 V | 27021163    | -              | 5000                                | 95        | 82.6   | 140   | 220    | 191-207             | 8.5    |
| 1.000 | OGT 140 240/24 V  | 27021166    | -              | 5000                                | 95        | 82.6   | 140   | 220    | 191-207             | 8.5    |
| 1.200 | OGT 160 240/12 V  |             | -              |                                     | 95        | 99.1   | 160   | 240    | 211-227             | 9.5    |

## LVL (D427) indoor transformers, 65-200 VA 50/60 Hz



Enclosure type D427



- robust extruded aluminium enclosure (58 x 69 mm)
- IP 31 protection rating
- high power density relative to low weight
- long service life
- mains voltage: 240 V 50/60 Hz (other voltages and frequencies on request)
- standard secondary voltage 12 V, VA quoted at full resistive load 100 % duty cycle (other voltages and VA ratings on request)

- screw terminals; 160VA and above have stud output terminals
- recommended total load is 40 to 100 % of the VA rating
- short-circuit protection via secondary fuse

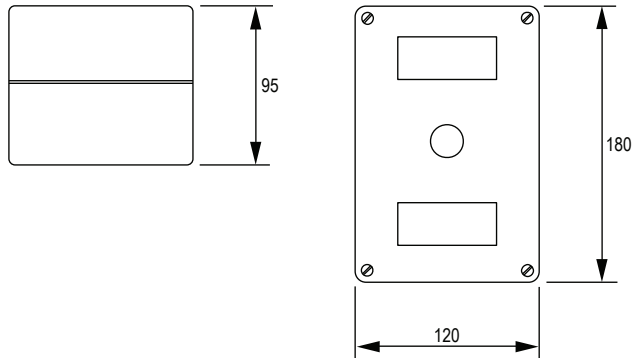
**Approved to**  
• AS/NZS 61558

**100% final testing**  
• high voltage  
• winding short circuit  
• secondary voltage

**Flex and plug version available**  
• LVL 13A-2  
• LVL 14A-2  
• LVL 11A-2  
• LVL 8A-2

| VA  | type                   | article no. | thermal cutout | recommended secondary fuse (A) | $U_L/U_0$ | losses | length | mounting centres | weight |
|-----|------------------------|-------------|----------------|--------------------------------|-----------|--------|--------|------------------|--------|
| 65  | LVL13-2 240/12 V       |             | Y              | 10.0                           | 93        | 8.4    | 320    | 300              | 1.9    |
| 100 | LVL14-2 240/12 V       | 89000918    | Y              | 15.0                           | 93        | 13.0   | 340    | 320              | 2.3    |
| 100 | LVL14-2-24 V 240/24 V  |             | Y              | 7.5                            | 93        | 13.0   | 340    | 320              | 2.3    |
| 100 | LVL14A-2-24 V 240/24 V | 89000923    | Y              | 7.5                            | 93        | 13.0   | 320    | 300              | 2.3    |
| 160 | LVL11-2 240/12 V       | 89000904    | Y              | 25.0                           | 93        | 20.7   | 360    | 340              | 3.0    |
| 160 | LVL11-2-24 V 240/24 V  | 89000906    | Y              | 12.0                           | 93        | 20.7   | 360    | 340              | 3.0    |
| 200 | LVL8-2 240/12 V        | 89000938    | Y              | 30.0                           | 93        | 25.9   | 360    | 340              | 3.3    |
| 200 | LVL8-2-24 V 240/24 V   | 89000939    | Y              | 15.0                           | 93        | 25.9   | 360    | 340              | 3.3    |
| 200 | LVL8A-2 240/12 V       | 89000941    | Y              | 30.0                           | 93        | 25.9   | 340    | 320              | 3.3    |

## LVL (D490) weatherproof transformers, 50-200 VA 50/60 Hz



Enclosure type D490



- high impact green polycarbonate enclosure (180 x 120 x 95 mm)
- IP 24 protection rating
- 4 x 16 mm (knock-out) conduit entries
- high power density relative to low weight
- long service life
- mains voltage: 240 V 50/60 Hz (other voltages and frequencies on request)
- standard secondary voltage 12 V, VA quoted at full resistive load 100 % duty cycle (other voltages and VA ratings on request)

- screw terminals; 160VA and above have stud output terminals
- recommended total load is 40 to 100 % of the VA rating
- short-circuit protection via secondary fuse

**Approved to**  
• AS/NZS 61558

**100% final testing**  
• high voltage  
• winding short circuit  
• secondary voltage

| VA  | type                  | article no. | thermal cutout | recommended secondary fuse (A) | $U_L/U_0$ | losses | length | mounting centres | weight |
|-----|-----------------------|-------------|----------------|--------------------------------|-----------|--------|--------|------------------|--------|
| 50  | LVL10-2-SP22 240/12 V | 89000891    | Y              | 7.5                            | 93        | 6.5    | 180    | 165              | 2.2    |
| 75  | LVL10-2-SP23 240/12 V |             | Y              | 10.0                           | 93        | 9.7    | 180    | 165              | 2.4    |
| 100 | LVL10-2-SP24 240/12 V | 89000893    | Y              | 15.0                           | 93        | 13.0   | 180    | 165              | 2.6    |
| 160 | LVL10-2-SP20 240/12 V | 89000890    | Y              | 25.0                           | 93        | 20.7   | 180    | 165              | 3.0    |
| 200 | LVL6-2-24-01 240/24 V | 89120673    | -              | 15.0                           | 96        | 12.6   | 180    | 165              | 3.8    |
| 200 | LVL6-2-SP01 240/12 V  | 89120677    | -              | 25.0                           | 96        | 12.6   | 180    | 165              | 3.8    |

## LVL 48 below ground transformers, 50-200 VA 50/60 Hz

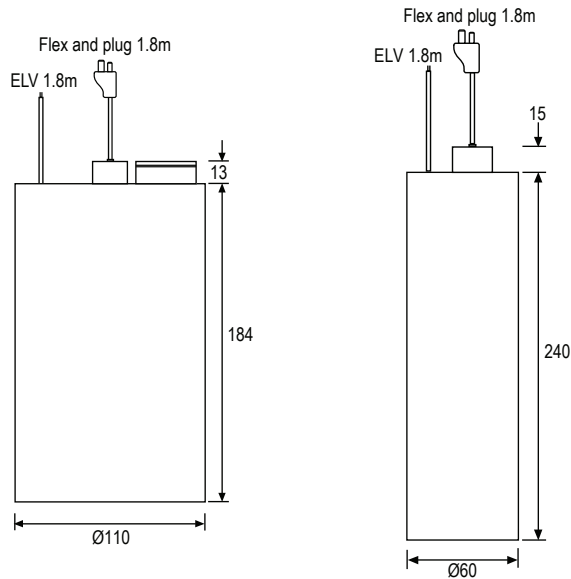


figure 1

figure 2



Designed for buried applications when installed by a licenced electrical contractor in accordance with AS/NZS 3000.

- encapsulated construction
- IP 67 protection rating
- long service life
- mains voltage: 240 V 50/60 Hz (other voltages and frequencies on request)

- standard secondary voltage 12 V, VA quoted at full resistive load 100 % duty cycle (other voltages and VA ratings on request)
- short-circuit protection via built-in self-resetting thermal cutout (50 VA) or secondary fuse (100-200 VA)

**Approved to**

- AS/NZS 61558

**100% final testing**

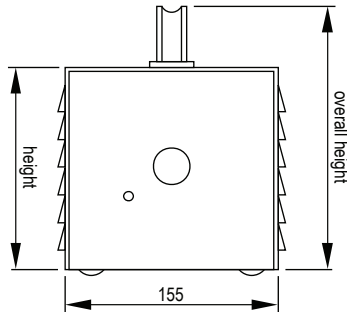
- high voltage
- winding short circuit
- secondary voltage

| VA  | type                  | article no. | thermal cutout | recommended secondary fuse (A) | $U_L/U_0$ | losses | length | mounting centres | weight |
|-----|-----------------------|-------------|----------------|--------------------------------|-----------|--------|--------|------------------|--------|
| 50  | LVL48A-2-01 240/12V   | 89000930    | Y              | -                              | 91        | 10.8   | 240    | -                | 3.0    |
| 50  | LVL48A-2-13 240/12V * | 89000933    | Y              | -                              | 91        | 10.8   | 240    | -                | 3.0    |
| 100 | LVL48A-2-02 240/12V   | 89120661    | -              | 20                             | 97        | 6.3    | 184    | -                | 5.5    |
| 200 | LVL48A-2-03 240/12V   | 89120662    | -              | 30                             | 97        | 12.6   | 184    | -                | 6.5    |

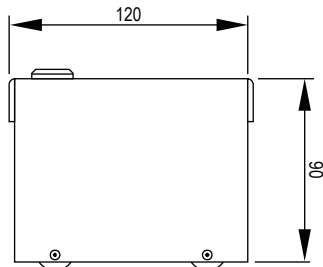
notes

- \* input flex, no plug

## LVL (D600) indoor transformers, 250-650 VA 50/60 Hz



LVL4-2, LVL17-2, LVL19-2



LVL21-2



- fabricated metal enclosure
- IP 31 protection rating
- excellent regulation 5 %
- high power density
- long service life
- mains voltage: 240 V 50/60 Hz (other voltages and frequencies on request)

- standard secondary voltage 12 V, VA quoted at full resistive load 100 % duty cycle (other voltages and VA ratings on request)
- stud output terminals
- recommended total load is 20 to 100 % of the VA rating
- short-circuit protection via secondary fuse

**Approved to**  
• AS/NZS 61558

**100% final testing**  
• high voltage  
• winding short circuit  
• secondary voltage

**Flex and plug version available**  
• LVL 4A-2  
• LVL 21A-2  
• LVL 19A-2  
• LVL 17A-2

| VA  | type                  | article no. | thermal cutout | recommended secondary fuse (A) | $U_L/U_0$ | losses | length | width | height | weight |
|-----|-----------------------|-------------|----------------|--------------------------------|-----------|--------|--------|-------|--------|--------|
| 250 | LVL4-2 240/12 V       | 89120659    | -              | 30                             | 95        | 20.7   | 230    | 155   | 170    | 4.6    |
| 250 | LVL4-2-24 V 240/24 V  | 89120660    | -              | 12                             | 95        | 20.7   | 230    | 155   | 170    | 4.6    |
| 320 | LVL21-2 240/12 V      | 89120641    | -              | 35                             | 95        | 26.4   | 240    | 120   | 90     | 4.8    |
| 320 | LVL21-2-24 V 240/24 V | 89120642    | -              | 20                             | 95        | 26.4   | 240    | 120   | 90     | 4.8    |
| 320 | LVL21A-2 240/12 V     | 89120646    | -              | 35                             | 95        | 26.4   | 240    | 120   | 90     | 4.8    |
| 500 | LVL19-2 240/12 V      | 89120632    | -              | 50                             | 95        | 41.3   | 320    | 155   | 190    | 7.9    |
| 650 | LVL17-2 240/12 V      | 89120626    | -              | 63                             | 95        | 53.7   | 320    | 155   | 190    | 8.9    |
| 650 | LVL17-2-24 V 240/24 V | 89120627    | -              | 35                             | 95        | 53.7   | 320    | 155   | 190    | 8.9    |



|                                                                                       |      |
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## Lamps and lighting control equipment

The factors governing the growth of the electric lamp industry include the initial cost and the lamp life. The efficiency with which the input energy is converted into visible light is also important and it is interesting to look at the efficacy of improved light sources.

In discharge lamps, a gas or vapour is contained in an arc tube. When a stream of electrons pass through the arc tube, the gas or vapour is ionised, it becomes excited and emits radiant energy. The energy radiated is distributed over wavelengths characteristic of the particular gas or vapour mix in which the discharge takes place.

The market requirements of modern light sources are defined essentially by economy and design. In lamp technology, design means size, shape and photometric performance such as luminance and colour. Discharge lamps in the form of compact fluorescent, metal halide and sodium lamps have been developed for general lighting applications, specifically in response to the market requirements of economy, design and energy efficacy.

### The function of control equipment

The correct operation of discharge lamps depends largely on the properties of the control gear and poor or incompatible equipment will inevitably result in imperfect functioning of the lamp. The control equipment and the lamp must be compatible in all respects. The control gear must limit the electric current passing through the lamp to a specified value prescribed for that particular lamp and this match is the prime criteria for ensuring compatibility between control gear and lamp. Therefore, each type and rating of discharge lamp requires compatible control gear to ensure the lamp operates within its specified electrical parameters.

Inevitably, watts losses occur in any current limiting device, therefore the question of how much power is lost (or in other words the efficiency of the control equipment) is an important factor when considering the performance of a lighting system.

The improved efficiency of only a few watts per control gear set can rapidly add up to kilowatts in large project applications. There are different types of control equipment technologies and methods of current limitation, each having its own advantages and disadvantages.

### Requirements of the control equipment

Discharge lamps cannot function directly on main supply voltage. Certain devices have to be built into the circuit in the form of what we call control equipment. Depending on the type of lamp, the control equipment performs one or more of the following primary functions:

- it provides the ignition voltage higher than the normal operating voltage to enable initial lamp starting
- it ensures that the lamp continues to operate despite the fact that twice during each AC cycle the voltage is zero
- it prevents the self destruction of the lamp by limiting and stabilising the lamp current. This is a necessary measure in view of the negative resistance characteristic of discharge lamps.

In addition to these primary functions, lighting control equipment must also fulfil a number of other important requirements:

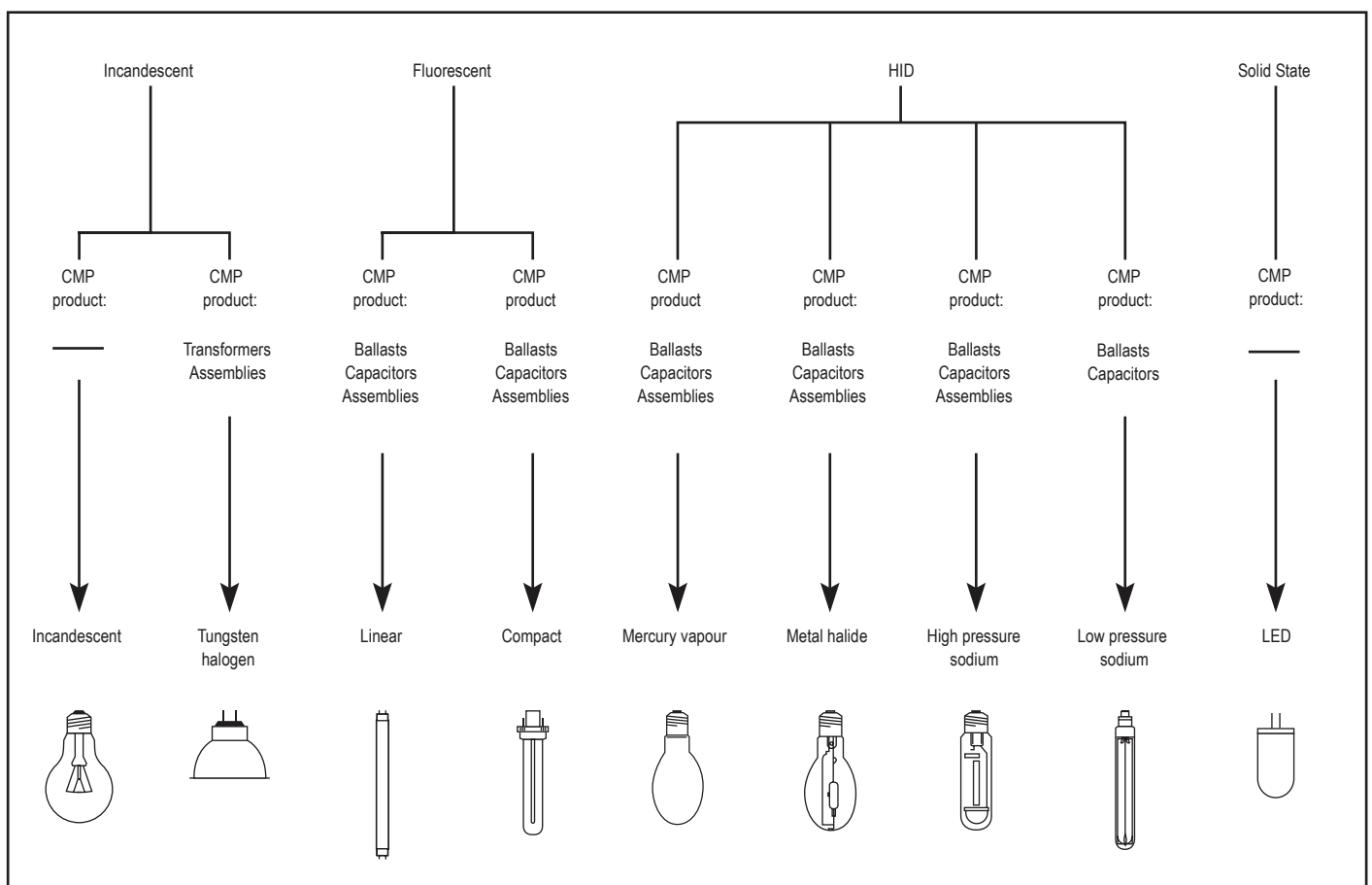
- it must ensure a sufficiently high power factor
- it must limit the generation of harmonics
- it must offer adequate suppression of any radio interference that might be produced by the lighting system.

Finally, the control equipment must satisfy other requirements dictated by both the luminaire manufacturer and the user:

- to have control components of compact dimensions
- to have low watts loss, high efficiency characteristics which also impact the control equipment temperature
- to have low operating noise level and long service life
- to have a high impedance to frequencies used for ripple switching (if required)

| Light source                    | Efficacy (lumens/watt ) |
|---------------------------------|-------------------------|
| Candle                          | 0.1                     |
| Gas mantle                      | 2.0                     |
| Carbon arc                      | 7.0                     |
| Early carbon filament           | 2.0                     |
| Cellulose filament              | 3.0                     |
| Tungsten vacuum                 | 9.0                     |
| Tungsten gas-filled coiled coil | 15.0                    |
| Mercury vapour                  | 40-60                   |
| LED white                       | 50-70                   |
| Fluorescent lamp                | 64-104                  |
| Metal halide                    | 70-90                   |
| High pressure sodium            | 90-125                  |
| Low pressure sodium             | 120-200                 |

## Lamp families



## Don't save light – save energy

CMP is internationally recognised as a world class manufacturer and supplier of energy saving lighting control equipment. “Don't Save Light – Save Energy” is synonymous with energy saving lighting and optimised performance of lamps and systems for industrial, commercial, as well as domestic applications.

Even though the long-term environmental effects of greenhouse gas emissions on the earth's climate remain uncertain, the responsibility to explore and develop economically viable opportunities to reduce emissions through energy efficiency improvements is of paramount importance to CMP.

Energy efficiency is really about cost management. In the big picture, for every unit of energy demand saved, three or four units of fuel are saved back at the power plant, plus the pollution that goes with burning that fuel. The application of energy efficient lighting ultimately leads to significant savings in electricity demand, particularly in commercial and industrial installations. Reducing energy demand, is therefore both economically sensible and environmentally responsible.

### Lighting

A lighting system should enable people to see effectively and comfortably; energy performance considerations should not detract from this primary objective. The energy load of a system depends on the use of efficient lamps operating in efficient luminaires, using efficient control equipment. Ballasts for fluorescent lamps may offer the most sustainable improvement in the energy demand of commercial and industrial lighting systems. This is because the ballast is a hard-wired component that is not easily tampered with, it lasts the life of a light fitting and its energy performance is maintenance free.

### Ballasts

Initially the EC ballast was the most reliable, economical, Australian made ferromagnetic ballast. It was developed and manufactured to cater for the insatiable demands of lighting markets, wanting a quality, affordable product. This has been achieved, far exceeding expectations for sustainability, and more than accommodating the needs of the industry.

As the requirements became more sophisticated, and to establish itself at the forefront of energy efficient lighting, the Low Loss Energy Control LLEC ballast was developed. The CMP LLEC ballast set a new industry standard for lighting efficiency.

The CMP range of ferro-magnetic ballasts offer a choice of watts loss efficiency characteristics (the unproductive power consumed by the ballast) when operated in accordance with International (IEC) Standards.

CMP is proud to be associated with the development and manufacture of exciting and innovative products, helping to take the lighting industry into the future.

CMP has a full range of magnetic ballasts and transformers, for fluorescent, high intensity discharge and low voltage halogen lamps.

## Energy savings in a commercial building

Lighting is a significant proportion of the energy demand. For example, in a multi-story office building, it can account for up to 40% of an annual power bill. Incorporating an energy efficient lighting system will significantly reduce energy costs.

Low loss ferro-magnetic ballasts offer:

- permanent reduction in energy use
- a long and reliable life
- no maintenance
- short payback – small capital outlay

Consider a medium sized commercial building. Savings can be calculated when using LLEC ferro-magnetic ballasts in lieu of standard ballasts.

### A solid investment

An analysis of the cost difference using LLEC low loss over EC standard ferro-magnetic ballasts relative to the energy savings in our typical medium sized commercial building example reveals a very solid investment opportunity.

For low loss, the initial outlay is repaid in one year and the investment outlay is returned more than ninefold in the first 10 years. Even with low energy costs, this represents an excellent return on investment and a sound commercial business decision.

### Added bonus

An added bonus is significant saving in air-conditioning costs. In the case of our example of 10,000 LLEC low loss ferro-magnetic ballasts generating 4 watts less heat per circuit, that means 40kW of heat load does not have to be extracted from the building space. The additional running cost saving on the air-conditioning, taking into account heating requirements in cooler months, can be calculated and in this case would be typically in excess of A\$ 8,800 minimum per year. This represents another significant saving and ensures the payback period is even more commercially acceptable.

In Australia and New Zealand, CMP has been at the forefront of development of energy efficient ballasts that comply with the Australian and New Zealand Minimum Energy Performance Standards (MEPS).

### Look to the future

CMP ballasts offer a technology that is easily applied providing significant permanent load reduction. When looking at life cycle costs, CMP ballasts introduce savings that cannot be ignored, and actually offer a very profitable investment opportunity. Consider the energy cost of yesterday, the energy cost of today and forecast the energy cost of tomorrow, and then decide. Whatever the decision, CMP has the right Lighting Control Equipment for the application.

| Criteria             | Unit       | EC (EEI= C) | LLEC (EEI= B1) |
|----------------------|------------|-------------|----------------|
| Quantity of ballasts |            | 10,000      | 10,000         |
| Input power          |            | 46          | 42             |
| Energy savings       | W          | –           | 4              |
| Operating period     | hours/day  | 10          | –              |
|                      | days/week  | 5.5         | –              |
|                      | weeks/year | 50          | –              |
| Energy costs*        | A\$/kWh    | 0.16        | –              |
| Annual savings       | A\$        | –           | 17,600         |
| Added savings+       | A\$        | –           | 8,800          |

\* based on average commercial user (subject to variation)

+ HVAC: air-conditioning

## Quality policy

Our Quality Policy is founded on the importance that our customers, people, processes and suppliers play in the overall quality of products and services we provide. To achieve this:

- We strive to exceed customer expectations by understanding customer requirements and building a sustainable customer relationship.
- We develop a progressive culture where people enjoy working, are continually trained and take ownership as part of our continuous improvements.
- We strive for continuous quality improvement and excellence through continued development of our Quality System.
- We have structured procedures that are simple and easy to use that add value to the organisation and are geared towards our customer requirements.
- We use only those key suppliers that have demonstrated that they have a Quality Assurance system appropriate to the reliable supply of the products.
- We conform to the Quality system requirements of AS/NZS ISO 9001:2008.
- We use internationally recognised benchmarks to continually guide and review our progress.

### Recognition of international excellence

#### A commitment to quality

As the leading manufacturer of lighting control equipment, CMP success is built on a philosophy of always striving to achieve excellence in every field. This not only applies to levels of excellence in control equipment and component engineering, but also in our service to the customer.

Our commitment is manifested in benchmark standards of product reliability, customer relations, product support and attention to detail. Our aim is to be recognised as a customer focused, quality-oriented organisation.

#### ISO9001 Standard Certified

A key element of commitment to quality is the establishment, implementation and maintenance of an internationally recognized quality system, consistent with the requirements of the Quality System Standard.

This is our commitment to providing a total quality system supporting CMP components from conception, through manufacture to the customer.



**Quality  
Endorsed  
Company**

Standards Australia  
ISO 9001  
Lic QEC 22895

## Minimum Energy Performance Standards (MEPS)

The Australian ( and New Zealand ) Government introduced a program of Minimum Energy Performance Standard (MEPS) for fluorescent lamp ballasts within the framework of the National Appliance Equipment Efficiency Program early 2003. From that time, State and Territory laws have required fluorescent lamp ballasts to be registered by the manufacturer, or the importer, as to their Energy Efficiency Index (EEI) within the MEPS efficiency requirements.

### MEPS classifications (Energy Efficiency Index)

The corrected total input power of the lamp-ballast circuit is defined as “Energy Efficiency Index” (EEI) of the lamp-ballast combination. There are 7 classifications of efficiency with every class defined by a limiting value of total input power related to the pertinent ballast lumen factor. A BLF of 1.00 is defined for high frequency electronic ballasts and 0.95 for ferromagnetic ballasts.

Classification of Ballast – Lamp Circuit  
for Energy Efficiency in Lighting

A1 BAT A1 A2 BAT A2 A3 B1 B2 C D

Electronic ballasts

Ferro-magnetic ballasts

With defined limiting value for each class

### What are the technical requirements in Australia?

In Australia, MEPS is applied to ballasts used with linear fluorescent lamps ( type T ) from 15W and above. There is no mandatory requirement for ballasts used with compact fluorescent lamps but such ballasts can be voluntarily marked.

The Australian MEPS levels are essentially harmonised with the European Commission requirements drafted in late 2000 ( EU directive 2000/55/EC ). The EU requirements cover a wider range of lamps, including most compact fluorescent lamps, except integral types.

Full details are contained in AS/NZS 4783.2, Energy Labelling and Minimum Energy Performance Standards Requirements and AS/NZS 4783.1, Method of Measurement to Determine Energy Consumption and Performance of Ballast-Lamp Circuits.

### Benefits

From Government studies, the impact of the MEPS Regulation suggests that the standard Class C ballast will disappear from the Australian market, replaced by more efficient Class A ( electronic ) and B1 and B2 ( lower watts loss ) ballasts.

In so doing, the community will have saved almost \$ 270 million by 2010. At the same period, the annual abatement of greenhouse gas derived from this measure will be in the order of 350,000 tonnes.

| Lamp type | Lamp power                                  |        | EEI-Class           |                 |        |        |        |        |        |        |
|-----------|---------------------------------------------|--------|---------------------|-----------------|--------|--------|--------|--------|--------|--------|
|           | 50 Hz                                       | HF     | Ilcos code          | A1 <sup>2</sup> | A2     | A3     | B1     | B2     | C      | D      |
| T         | maximum corrected total input power – watts |        |                     |                 |        |        |        |        |        |        |
|           | 15 W                                        | 13.5 W | FD-15-E-G13-26/450  | 18 W            | ≤ 16 W | ≤ 18 W | ≤ 21 W | ≤ 23 W | ≤ 25 W | > 25 W |
|           | 18 W                                        | 16 W   | FD-18-E-G13-26/600  | 21 W            | ≤ 19 W | ≤ 21 W | ≤ 24 W | ≤ 26 W | ≤ 28 W | > 28 W |
|           | 30 W                                        | 24 W   | FD-30-E-G13-26/895  | 30 W            | ≤ 31 W | ≤ 33 W | ≤ 36 W | ≤ 38 W | ≤ 40 W | > 40 W |
|           | 36 W                                        | 32 W   | FD-36-E-G13-26/1200 | 38 W            | ≤ 36 W | ≤ 38 W | ≤ 41 W | ≤ 43 W | ≤ 45 W | > 45 W |
|           | 58 W                                        | 50 W   | FD-58-E-G13-26/1500 | 59 W            | ≤ 55 W | ≤ 59 W | ≤ 64 W | ≤ 67 W | ≤ 70 W | > 70 W |

#### Notes

- Values are for 230V rated ballasts, an additional 0.5 and 1.0W is added for the 240 and 250 V rated ballasts respectively.
- A ballast marked with classification EE± A1 shall be dimmable and the values in the table refer to the maximum total input power at 100%. The total circuit power at 25% light output shall not exceed 50% of the value stated for Class A3 of the same lamp.

## Energy classification table for lighting systems in accordance with ErP directive 2009/125/EC

| Lamp data   |                 |                                                      |                         |      | Ballast efficiency ( $P_{\text{lamp}} / P_{\text{input}}$ ) |        |        |        |        |
|-------------|-----------------|------------------------------------------------------|-------------------------|------|-------------------------------------------------------------|--------|--------|--------|--------|
| Lamp type   | Nominal wattage | ILCOS code                                           | Rated / typical wattage |      | A2 BAT                                                      | A2     | A3     | B1     | B2     |
|             |                 |                                                      | 50 Hz                   | HF   |                                                             |        |        |        |        |
|             | W               |                                                      | W                       | W    |                                                             |        |        |        |        |
| T8          | 15              | FD-15-E-G13-26/450                                   | 15                      | 13.5 | 87.8 %                                                      | 84.4 % | 75.0 % | 67.9 % | 62.0 % |
| T8          | 18              | FD-18-E-G13-26/600                                   | 18                      | 16   | 87.7 %                                                      | 84.2 % | 76.2 % | 71.3 % | 65.8 % |
| T8          | 30              | FD-30-E-G13-26/900                                   | 30                      | 24   | 82.1 %                                                      | 77.4 % | 72.7 % | 79.2 % | 75.0 % |
| T8          | 36              | FD-36-E-G13-26/1200                                  | 36                      | 32   | 91.4 %                                                      | 88.9 % | 84.2 % | 83.4 % | 79.5 % |
| T8          | 38              | FD-38-E-G13-26/1050                                  | 38.5                    | 32   | 87.7 %                                                      | 84.2 % | 80.0 % | 84.1 % | 80.4 % |
| T8          | 58              | FD-58-E-G13-26/1500                                  | 58                      | 50   | 93.0 %                                                      | 90.9 % | 84.7 % | 86.1 % | 82.2 % |
| T8          | 70              | FD-70-E-G13-26/1800                                  | 69.5                    | 60   | 90.9 %                                                      | 88.2 % | 83.3 % | 86.3 % | 83.1 % |
| TC-L        | 18              | FSD-18-E-2G11                                        | 18                      | 16   | 87.7 %                                                      | 84.2 % | 76.2 % | 71.3 % | 65.8 % |
| TC-L        | 24              | FSD-24-E-2G11                                        | 24                      | 22   | 90.7 %                                                      | 88.0 % | 81.5 % | 76.0 % | 71.3 % |
| TC-L        | 36              | FSD-36-E-2G11                                        | 36                      | 32   | 91.4 %                                                      | 88.9 % | 84.2 % | 83.4 % | 79.5 % |
| TCF         | 18              | FSS-18-E-2G10                                        | 18                      | 16   | 87.7 %                                                      | 84.2 % | 76.2 % | 71.3 % | 65.8 % |
| TCF         | 24              | FSS-24-E-2G10                                        | 24                      | 22   | 90.7 %                                                      | 88.0 % | 81.5 % | 76.0 % | 71.3 % |
| TCF         | 36              | FSS-36-E-2G10                                        | 36                      | 32   | 91.4 %                                                      | 88.9 % | 84.2 % | 83.4 % | 79.5 % |
| TC-D/ DE    | 10              | FSQ-10-E-G24q=1<br>FSQ-10-I-G24d=1                   | 10                      | 9.5  | 89.4 %                                                      | 86.4 % | 73.1 % | 67.9 % | 59.4 % |
| TC-D/ DE    | 13              | FSQ-13-E-G24q=1<br>FSQ-13-I-G24d=1                   | 13                      | 12.5 | 91.7 %                                                      | 89.3 % | 78.1 % | 72.6 % | 65.0 % |
| TC-D/ DE    | 18              | FSQ-18-E-G24q=2<br>FSQ-18-I-G24d=2                   | 18                      | 16.5 | 89.8 %                                                      | 86.8 % | 78.6 % | 71.3 % | 65.8 % |
| TC-D/ DE    | 26              | FSQ-26-E-G24q=3<br>FSQ-26-I-G24d=3                   | 26                      | 24   | 91.4 %                                                      | 88.9 % | 82.8 % | 77.2 % | 72.6 % |
| TC-T/ TE    | 13              | FSM-13-E-GX24q=1<br>FSM-13-I-GX24d=1                 | 13                      | 12.5 | 91.7 %                                                      | 89.3 % | 78.1 % | 72.6 % | 65.0 % |
| TC-T/ TE    | 18              | FSM-18-E-GX24q=2<br>FSM-18-I-GX24d=2                 | 18                      | 16.5 | 89.8 %                                                      | 86.8 % | 78.6 % | 71.3 % | 65.8 % |
| TC-T/ TC-TE | 26              | FSM-26-E-GX24q=3<br>FSM-26-I-GX24d=3                 | 26.5                    | 24   | 91.4 %                                                      | 88.9 % | 82.8 % | 77.5 % | 73.0 % |
| TC-DD/ DDE  | 10              | FSS-10-E-GR10q<br>FSS-10-L/P/H-GR10q                 | 10.5                    | 9.5  | 86.4 %                                                      | 82.6 % | 70.4 % | 68.8 % | 60.5 % |
| TC-DD/ DDE  | 16              | FSS-16-E-GR10q<br>FSS-16-I-GR8<br>FSS-16-L/P/H-GR10q | 16                      | 15   | 87.0 %                                                      | 83.3 % | 75.0 % | 72.4 % | 66.1 % |
| TC-DD/ DDE  | 21              | FSS-21-E-GR10q<br>FSS-21-L/P/H-GR10q                 | 21                      | 19.5 | 89.7 %                                                      | 86.7 % | 78.0 % | 73.9 % | 68.8 % |
| TC-DD/ DDE  | 28              | FSS-28-E-GR10q<br>FSS-28-I-GR8<br>FSS-28-L/P/H-GR10q | 28                      | 24.5 | 89.1 %                                                      | 86.0 % | 80.3 % | 78.2 % | 73.9 % |
| TC-DD/ DDE  | 38              | FSS-38-E-GR10q<br>FSS-38-L/P/H-GR10q                 | 38.5                    | 34.5 | 92.0 %                                                      | 89.6 % | 85.2 % | 84.1 % | 80.4 % |
| TC          | 5               | FSD-5-I-G23<br>FSD-5-E-2G7                           | 5.4                     | 5    | 72.7 %                                                      | 66.7 % | 58.8 % | 49.3 % | 41.4 % |
| TC          | 7               | FSD-7-I-G23<br>FSD-7-E-2G7                           | 7.1                     | 6.5  | 77.6 %                                                      | 72.2 % | 65.0 % | 55.7 % | 47.8 % |
| TC          | 9               | FSD-9-I-G23<br>FSD-9-E-2G7                           | 8.7                     | 8    | 78.0 %                                                      | 72.7 % | 66.7 % | 60.3 % | 52.6 % |
| TC          | 11              | FSD-11-I-G23<br>FSD-11-E-2G7                         | 11.8                    | 11   | 83.0 %                                                      | 78.6 % | 73.3 % | 66.7 % | 59.6 % |
| T5          | 4               | FD-4-E-G5-16/150                                     | 4.5                     | 3.6  | 64.9 %                                                      | 58.1 % | 50.0 % | 45.0 % | 37.2 % |
| T5          | 6               | FD-6-E-G5-16/225                                     | 6                       | 5.4  | 71.3 %                                                      | 65.1 % | 58.1 % | 51.8 % | 43.8 % |

| Lamp data |                 |                                                |                         |      | Ballast efficiency ( $P_{\text{lamp}} / P_{\text{input}}$ ) |        |        |        |        |
|-----------|-----------------|------------------------------------------------|-------------------------|------|-------------------------------------------------------------|--------|--------|--------|--------|
| Lamp type | Nominal wattage | ILCOS code                                     | Rated / typical wattage |      | A2 BAT                                                      | A2     | A3     | B1     | B2     |
|           |                 |                                                | 50 Hz                   | HF   |                                                             |        |        |        |        |
|           | W               |                                                | W                       | W    |                                                             |        |        |        |        |
| T5        | 8               | FDH-8-E-G5-16/300                              | 7.1                     | 7.5  | 69.9 %                                                      | 63.6 % | 58.6 % | 48.9 % | 42.7 % |
| T5        | 13              | FD-13-E-G5-16/525                              | 13                      | 12.8 | 84.2 %                                                      | 80.0 % | 75.3 % | 72.6 % | 65.0 % |
| T9-C      | 22              | FSC-22-E-G10q-29/200                           | 22                      | 19   | 89.4 %                                                      | 86.4 % | 79.2 % | 74.6 % | 69.7 % |
| T9-C      | 32              | FSC-32-E-G10q-29/300                           | 32                      | 30   | 88.9 %                                                      | 85.7 % | 81.1 % | 80.0 % | 76.0 % |
| T9-C      | 40              | FSC-40-E-G10q-29/400                           | 40                      | 32   | 89.5 %                                                      | 86.5 % | 82.1 % | 82.6 % | 79.2 % |
| T2        | 6               | FDH-6-L/P-W4.3x8.5d-7/220                      |                         | 5    | 72.7 %                                                      | 66.7 % | 58.8 % |        |        |
| T2        | 8               | FDH-8-L/P-W4.3x8.5d-7/320                      |                         | 7.8  | 76.5 %                                                      | 70.9 % | 65.0 % |        |        |
| T2        | 11              | FDH-11-L/P-W4.3x8.5d-7/420                     |                         | 10.8 | 81.8 %                                                      | 77.1 % | 72.0 % |        |        |
| T2        | 13              | FDH-13-L/P-W4.3x8.5d-7/520                     |                         | 13.3 | 84.7 %                                                      | 80.6 % | 76.0 % |        |        |
| T2        | 21              | FDH-21-L/P-W4.3x8.5d-7/                        |                         | 21   | 88.9 %                                                      | 85.7 % | 79.2 % |        |        |
| T2        | 23              | FDH-23-L/P-W4.3x8.5d-7/                        |                         | 23   | 89.8 %                                                      | 86.8 % | 80.7 % |        |        |
| T5-E      | 14              | FDH-14-G5-L/P-16/550                           |                         | 13.7 | 84.7 %                                                      | 80.6 % | 72.1 % |        |        |
| T5-E      | 21              | FDH-21-G5-L/P-16/850                           |                         | 20.7 | 89.3 %                                                      | 86.3 % | 79.6 % |        |        |
| T5-E      | 24              | FDH-24-G5-L/P-16/550                           |                         | 22.5 | 89.6 %                                                      | 86.5 % | 80.4 % |        |        |
| T5-E      | 28              | FDH-28-G5-L/P-16/1150                          |                         | 27.8 | 89.8 %                                                      | 86.9 % | 81.8 % |        |        |
| T5-E      | 35              | FDH-35-G5-L/P-16/1450                          |                         | 34.7 | 91.5 %                                                      | 89.0 % | 82.6 % |        |        |
| T5-E      | 39              | FDH-39-G5-L/P-16/850                           |                         | 38   | 91.0 %                                                      | 88.4 % | 82.6 % |        |        |
| T5-E      | 49              | FDH-49-G5-L/P-16/1450                          |                         | 49.3 | 91.6 %                                                      | 89.2 % | 84.6 % |        |        |
| T5-E      | 54              | FDH-54-G5-L/P-16/1150                          |                         | 53.8 | 92.0 %                                                      | 89.7 % | 85.4 % |        |        |
| T5-E      | 80              | FDH-80-G5-L/P-16/1150                          |                         | 80   | 93.0 %                                                      | 90.9 % | 87.0 % |        |        |
| T5-E      | 95              | FDH-95-G5-L/P-16/1150                          |                         | 95   | 92.7 %                                                      | 90.5 % | 84.1 % |        |        |
| T5-E      | 120             | FDH-120-G5-L/P-16/1450                         |                         | 120  | 92.5 %                                                      | 90.2 % | 84.5 % |        |        |
| T5-C      | 22              | FSCH-22-L/P-2GX13-16/225                       |                         | 22.3 | 88.1 %                                                      | 84.8 % | 78.8 % |        |        |
| T5-C      | 40              | FSCH-40-L/P-2GX13-16/300                       |                         | 39.9 | 91.4 %                                                      | 88.9 % | 83.3 % |        |        |
| T5-C      | 55              | FSCH-55-L/P-2GX13-16/300                       |                         | 55   | 92.4 %                                                      | 90.2 % | 84.6 % |        |        |
| T5-C      | 60              | FSCH-60-L/P-2GX13-16/375                       |                         | 60   | 93.0 %                                                      | 90.9 % | 85.7 % |        |        |
| TC-LE     | 40              | FSDH-40-L/P-2G11                               |                         | 40   | 91.4 %                                                      | 88.9 % | 83.3 % |        |        |
| TC-LE     | 55              | FSDH-55-L/P-2G11                               |                         | 55   | 92.4 %                                                      | 90.2 % | 84.6 % |        |        |
| TC-LE     | 80              | FSDH-80-L/P-2G11                               |                         | 80   | 93.0 %                                                      | 90.9 % | 87.0 % |        |        |
| TC-TE     | 32              | FSMH-32-L/P-2GX24q=3                           |                         | 32   | 91.4 %                                                      | 88.9 % | 82.1 % |        |        |
| TC-TE     | 42              | FSMH-42-L/P-2GX24q=4                           |                         | 43   | 93.5 %                                                      | 91.5 % | 86.0 % |        |        |
| TC-TE     | 57              | FSM6H-57-L/P-2GX24q=5<br>FSM8H-57-L/P-2GX24q=5 |                         | 56   | 91.4 %                                                      | 88.9 % | 83.6 % |        |        |
| TC-TE     | 70              | FSM6H-70-L/P-2GX24q=6<br>FSM8H-70-L/P-2GX24q=6 |                         | 70   | 93.0 %                                                      | 90.9 % | 85.4 % |        |        |
| TC-TE     | 60              | FSM6H-60-L/P-2G8=1                             |                         | 63   | 92.3 %                                                      | 90.0 % | 84.0 % |        |        |
| TC-TE     | 62              | FSM8H-62-L/P-2G8=2                             |                         | 62   | 92.2 %                                                      | 89.9 % | 83.8 % |        |        |
| TC-TE     | 82              | FSM8H-82-L/P-2G8=2                             |                         | 82   | 92.4 %                                                      | 90.1 % | 83.7 % |        |        |
| TC-TE     | 85              | FSM6H-85-L/P-2G8=1                             |                         | 87   | 92.8 %                                                      | 90.6 % | 84.5 % |        |        |
| TC-TE     | 120             | FSM6H-120-L/P-2G8=1<br>FSM8H-120-L/P-2G8=1     |                         | 122  | 92.6 %                                                      | 90.4 % | 84.7 % |        |        |
| TC-DD     | 55              | FSSH-55-L/P-GRY10q3                            |                         | 55   | 92.4 %                                                      | 90.2 % | 84.6 % |        |        |