



## Product overview - electronic Ballasts

One of the first companies to develop and manufacture electronic ballasts, Helvar's history in these products extends back to the early 1980s. Since that time, Helvar has remained at the forefront, offering a comprehensive range of innovative electronic ballasts covering all relevant applications with T5, T8 and compact fluorescent lamps

### Standard electronic Ballasts

|               | For T5 lamps | For T8 lamps | For compact lamps |
|---------------|--------------|--------------|-------------------|
| <b>EL-s</b>   | ●            | ●            | ●                 |
| <b>EL-su</b>  | ●            | ●            | ●                 |
| <b>EL-ngn</b> | -            | ●            | -                 |
| <b>EL-TCs</b> | -            | -            | ●                 |

### Analogue controllable electronic ballasts

|              | For T5 lamps | For T8 lamps | For compact lamps |
|--------------|--------------|--------------|-------------------|
| <b>EL-sc</b> | ●            | ●            | ●                 |

### Digital DALI electronic ballasts

|                  | For T5 lamps | For T8 lamps | For compact lamps |
|------------------|--------------|--------------|-------------------|
| <b>EL-iDim</b>   | ●            | ●            | ●                 |
| <b>EL-iDim-c</b> | -            | -            | ●                 |



EL-ngn, EL-s & EL-TCs

## Standard electronic ballasts – highest energy savings and reliability

Continuous research and development in new technologies has led to the introduction of a host of innovative products over the years. Among the latest of these are the EL-TCs and the EL-ngn standard ballasts. These ballasts are characterized by excellent thermal design, resulting in the highest energy savings and highest reliability, and embodying Helvar's 'green values' that help to guarantee minimum environmental impact!

Helvar uses only the highest-quality components and materials in the manufacture of its ballasts, and combines this with quality design and extensive testing under the harshest conditions. It's hardly surprising then that failure rates are among the lowest in the market, exceeding industrial expectations 10-fold!

Helvar's manufacturing processes are also certified to ISO 9001 and ISO14001.

### EL-s – many imitators, few equals

EL-s is a high-performance ballast meeting the toughest market requirements. It was also the first slim-line ballast in the market, with a height of only 21 mm. This offers a huge advantage to luminaire designers having to squeeze ballasts into T5 luminaires. The feature was so much appreciated by the OEMs that it's been copied by all Helvar's competitors and has become an industry standard.

With its advanced thermal design and the use of OCC technology, the EL-s also has one of the lowest power losses in the market. The superior safety and EMC performance make them suitable for use in protection class II fittings. Moreover, its multi-lamp operation feature enables one ballast to drive all HE-T5 lamps in an installation. It is also possible to drive a combination of T8/TC-L and T5/TC-L lamps with one ballast. This offers major advantages in reduced logistics and transportation costs, as well as contributing to reduced CO<sub>2</sub> emissions.



### EL-TCs – the cool runner

There are only 4 ballasts in the EL-TCs range. These ballasts, however, are capable of driving as many as 50 lamps in various TC-DE, TC-TE, TC-SE, TC-DD, T5c, TC-L, TC-F, T8 and T5 lamp combinations! The beauty of the ballasts is their 'dual-technology' that cost-effectively combines both single- and twin- lamp versions into one ballast.

What's more, the EL-TCs is surprisingly small, yet it is still capable of running cool even under full thermal stress, thanks to its OCC technology and the clever thermal design of its PCB. This feature has been praised by many OEMs and it is widely acknowledged to be the most reliable CFL ballast in the market.

### EL-ngn – the Next GeNeration

The EL-ngn is the latest innovation for high-volume markets from Helvar, developed to meet the needs of luminaire designers looking to replace magnetic ballasts with an electronic version combining the benefits of both! Its no-compromise design offers the highest specifications, and its green credentials are confirmed by the fact that it has the highest Energy Efficiency Index (EEI) of A2. It is also considered to be one of the most user-friendly ballasts, and its proven reliability means that it is widely accepted by even the most demanding and quality-conscious OEMs.

The EL-ngn is available for T8 lamps in 1-, 2- and 4-lamp configurations.

### OCC™ -

#### Optimum Cathode Control

The proven OCC™ - Optimum Cathode Control technology used in Helvar EL-s, EL-sc, EL-iDim and EL-TCs electronic ballast ranges.

OCC™ ensures that the electrical parameters supplied to the lamp are always optimum, minimising system losses and maximising lamp lifetime. The achieved energy saving is considerable compared to existing ballasts on the market.

## Electronic ballasts for T5 fluorescent lamps

1



14-80 W 220-240V 50-60Hz

- Only 21 mm high
- Optimal lamp operation
- Wide operational ambient temperature range
- Standard & sidemount possibilities
- Low power losses
- Silent operation
- Stabilised flickerfree light
- High power factor



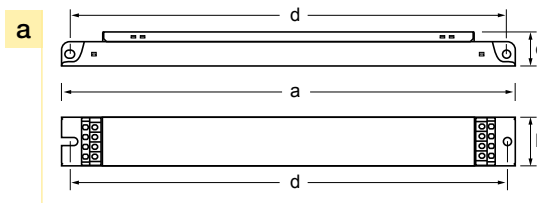
**EEL = A2**

| Lamp type | Wattage | No. of lamps | Ballast    | EEL | Dimensions | Connection | Weight | Circuit power | Mains current | Lamp power |
|-----------|---------|--------------|------------|-----|------------|------------|--------|---------------|---------------|------------|
|           |         |              |            |     |            |            | (g)    | (W)           | (A)           | (W)        |
|           |         |              |            |     |            | (p.14)     |        |               |               |            |
|           | 14      | 1            | EL1x14-35s | A2  | 1          | 1          | 175    | 15.5          | 0.08-0.07     | 13.7       |
|           | 14      | 2            | EL2x14-35s | A2  | 2          | 3          | 250    | 31            | 0.15-0.13     | 13.7       |
|           | 14      | 3            | EL3/4x14s  | A2  | 2          | 5          | 250    | 46            | 0.22-0.19     | 13.7       |
|           | 14      | 4            | EL3/4x14s  | A2  | 2          | 6          | 250    | 62            | 0.29-0.26     | 13.7       |
|           | 21      | 1            | EL1x14-35s | A2  | 1          | 1          | 175    | 23            | 0.12-0.10     | 20.7       |
|           | 21      | 2            | EL2x14-35s | A2  | 2          | 3          | 250    | 45            | 0.22-0.19     | 20.7       |
|           | 24      | 1            | EL1x24s    | A2  | 1          | 1          | 190    | 25            | 0.12-0.11     | 22,5       |
|           | 24      | 2            | EL2x24s    | A2  | 2          | 2          | 230    | 49            | 0.24-0.21     | 22,5       |
|           | 28      | 1            | EL1x14-35s | A2  | 1          | 1          | 175    | 30            | 0.15-0.12     | 27.8       |
|           | 28      | 2            | EL2x14-35s | A2  | 2          | 3          | 250    | 60            | 0.29-0.25     | 27.8       |
|           | 35      | 1            | EL1x14-35s | A2  | 1          | 1          | 175    | 38            | 0.18-0.16     | 34.7       |
|           | 35      | 2            | EL2x14-35s | A2  | 2          | 3          | 250    | 75            | 0.35-0.31     | 34.7       |
|           | 39      | 1            | EL1x39/36s | A2  | 1          | 1          | 190    | 42            | 0.19-0.18     | 38         |
|           | 39      | 2            | EL2x39/36s | A2  | 2          | 2          | 245    | 81            | 0.36-0.32     | 38         |
|           | 49      | 1            | EL1x49s    | A2  | 1          | 1          | 190    | 52.5          | 0.25-0.23     | 49.3       |
|           | 49      | 2            | EL2x49s    | A2  | 2          | 3          | 260    | 104           | 0.50-0.45     | 49.3       |
|           | 54      | 1            | EL1x54s    | A2  | 1          | 1          | 200    | 58            | 0.26-0.24     | 53.8       |
|           | 54      | 2            | EL2x54s    | A2  | 2          | 2          | 260    | 114.5         | 0.53-0.48     | 53.8       |
|           | 80      | 1            | EL1x80s    | A2  | 1          | 1          | 200    | 85            | 0.40-0.36     | 80         |



**Note:** See pages 14-15 for connection diagrams and additional characteristics.

| Dimensions      | 1   | 2   |
|-----------------|-----|-----|
| Length 'a' (mm) | 280 | 360 |
| Width 'b' (mm)  | 30  | 30  |
| Height 'c' (mm) | 21  | 21  |
| 'd' (mm)        | 270 | 350 |



### Delivery information

| Ballast   | Unit package            |                       | Transportation package           |                    |                    |
|-----------|-------------------------|-----------------------|----------------------------------|--------------------|--------------------|
|           | Minimum delivery amount | Plastic binding strip | One-way pallet 1200 x 820 (pcs.) | Pallet weight (kg) | Pallet height (cm) |
| EL1 x s   | 10                      | ●                     | 2000                             | 350 - 420          | 57                 |
| EL2 x s   | 10                      | ●                     | 1500                             | 395                | 57                 |
| EL3/4 x s | 10                      | ●                     | 1500                             | 390                | 57                 |

Electronic ballasts for T5 fluorescent lamps



14-80 W 220-240V 50-60Hz

1

- Only 21 mm high
- Optimal lamp operation
- Wide operational ambient temperature range
- Standard & sidemount possibilities
- With terminals for both manual and automatic wiring (IDC & push-in)
- Low power losses
- Silent operation
- Stabilized flickerfree light
- High power factor



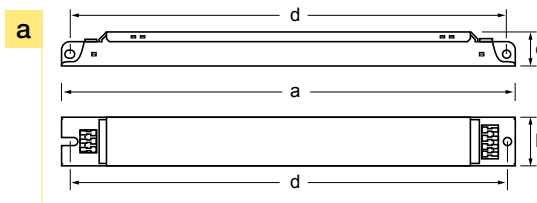
EEI = A2

| Lamp type | Wattage | No. of lamps | Ballast      | EEI    | Dimensions | Connection | Weight | Circuit power | Mains current | Lamp power |
|-----------|---------|--------------|--------------|--------|------------|------------|--------|---------------|---------------|------------|
|           |         |              |              |        |            |            | (g)    | (W)           | (A)           | (W)        |
|           | 14      | 1            | EL1x14-35s-u | A2     | 1          | 1          | 175    | 15.5          | 0.08-0.07     | 13.7       |
|           | 14      | 2            | EL2x14-35s-u | A2     | 2          | 4          | 250    | 31            | 0.15-0.13     | 13.7       |
|           | 14      | 3            | EL3/4x14s-u  | A2     | 1          | 7          | 210    | 46            | 0.22-0.19     | 13.7       |
|           | 14      | 4            | EL3/4x14s-u  | A2     | 1          | 8          | 210    | 62            | 0.29-0.26     | 13.7       |
|           | 21      | 1            | EL1x14-35s-u | A2     | 1          | 1          | 175    | 23            | 0.12-0.10     | 20.7       |
|           | 21      | 2            | EL2x14-35s-u | A2     | 2          | 4          | 250    | 45            | 0.22-0.19     | 20.7       |
|           | 24      | 3            | EL3/4x24s-u  | A2 BAT | 1          | 7          | 215    | 73            | 0.34-0.30     | 22.5       |
|           | 24      | 4            | EL3/4x24s-u  | A2 BAT | 1          | 8          | 215    | 97            | 0.44-0.40     | 22.5       |
|           | 28      | 1            | EL1x14-35s-u | A2     | 1          | 1          | 175    | 30            | 0.15-0.12     | 27.8       |
|           | 28      | 2            | EL2x14-35s-u | A2     | 2          | 4          | 250    | 60            | 0.29-0.25     | 27.8       |
|           | 35      | 1            | EL1x14-35s-u | A2     | 1          | 1          | 175    | 38            | 0.18-0.16     | 34.7       |
|           | 35      | 2            | EL2x14-35s-u | A2     | 2          | 4          | 250    | 75            | 0.35-0.31     | 34.7       |
|           | 49      | 1            | EL1x49s-u    | A2     | 1          | 1          | 190    | 52.5          | 0.25-0.23     | 49.3       |
|           | 49      | 2            | EL2x49s-u    | A2     | 2          | 4          | 260    | 104           | 0.50-0.45     | 49.3       |
|           | 80      | 2            | EL2x80s-u    | A2 BAT | 2          | 4          | 305    | 170           | 0.80-0.73     | 80         |



Note: See pages 14-15 for connection diagrams and additional characteristics.

| Dimensions      | 1   | 2   |
|-----------------|-----|-----|
| Length 'a' (mm) | 280 | 360 |
| Width 'b' (mm)  | 30  | 30  |
| Height 'c' (mm) | 21  | 21  |
| 'd' (mm)        | 270 | 350 |



| Delivery information |                         |                       |                                  |                    |                    |
|----------------------|-------------------------|-----------------------|----------------------------------|--------------------|--------------------|
| Ballast              | Unit package            |                       | Transportation package           |                    |                    |
|                      | Minimum delivery amount | Plastic binding strip | One-way pallet 1200 x 820 (pcs.) | Pallet weight (kg) | Pallet height (cm) |
| EL1 x s-u            | 10                      | ●                     | 2000                             | 350 - 420          | 57                 |
| EL2 x s-u            | 10                      | ●                     | 1500                             | 395                | 57                 |
| EL3/4 x s-u          | 10                      | ●                     | 1500                             | 390                | 57                 |

## Electronic ballasts for T8 fluorescent lamps

1




18-70 W 220-240V 50-60Hz

- Only 21 mm high
- Optimal lamp operation
- Wide operational ambient temperature range
- Standard & sidemount possibilities
- Optional terminals for automatic wiring
- Low power losses
- Silent operation
- Stabilized flickerfree light
- High power factor



**EEL = A2**

| Lamp type  | Wattage | No. of lamps | Ballast        | EEL | Dimensions | Connection | Weight | Circuit power | Mains current | Lamp power |
|--|---------|--------------|----------------|-----|------------|------------|--------|---------------|---------------|------------|
|  |         |              |                |     |            | (p.14)     | (g)    | (W)           | (A)           | (W)        |
|  | 18      | 1            | EL1x18s        | A2  | 1          | 1          | 190    | 18            | 0.09-0.08     | 16         |
|  | 18      | 2            | EL2x18s        | A2  | 2          | 2          | 230    | 34.5          | 0.16-0.15     | 16         |
|  | 18      | 3            | EL3/4x18s      | A2  | 2          | 5          | 250    | 52            | 0.25-0.23     | 16         |
|  | 18      | 3            | EL3/4x18s-u**  | A2  | 3          | 7          | 210    | 52            | 0.25-0.23     | 16         |
|  | 18      | 4            | EL3/4x18s      | A2  | 2          | 6          | 250    | 69            | 0.33-0.30     | 16         |
|  | 18      | 4            | EL3/4x18s-u**  | A2  | 3          | 8          | 210    | 69            | 0.33-0.30     | 16         |
|  | 36      | 1            | EL1x36/40/18s  | A2  | 1          | 1          | 190    | 35            | 0.16-0.15     | 32         |
|  | 36      | 1            | EL1x36/40s-u** | A2  | 3          | 1          | 190    | 35            | 0.16-0.15     | 32         |
|  | 36      | 2            | EL2x36/40s     | A2  | 2          | 2          | 245    | 69            | 0.32-0.29     | 32         |
|  | 36      | 2            | EL2x36/40s-u** | A2  | 4          | 4          | 245    | 69            | 0.32-0.29     | 32         |
|  | 58      | 1            | EL1x58s        | A2  | 1          | 1          | 200    | 54            | 0.26-0.23     | 50         |
|  | 58      | 1            | EL1x58s-u**    | A2  | 3          | 1          | 200    | 54            | 0.26-0.23     | 50         |
|  | 58      | 2            | EL2x58s        | A2  | 2          | 2          | 260    | 106.5         | 0.50-0.45     | 50         |
|  | 58      | 2            | EL2x58s-u**    | A2  | 4          | 4          | 260    | 106.5         | 0.50-0.45     | 50         |
|  | 70      | 1            | EL1x70s        | A2  | 1          | 1          | 200    | 64.5          | 0.30-0.28     | 60         |
|  | 70      | 2            | EL2x70s        | A2  | 2          | 2          | 260    | 128           | 0.59-0.54     | 60         |

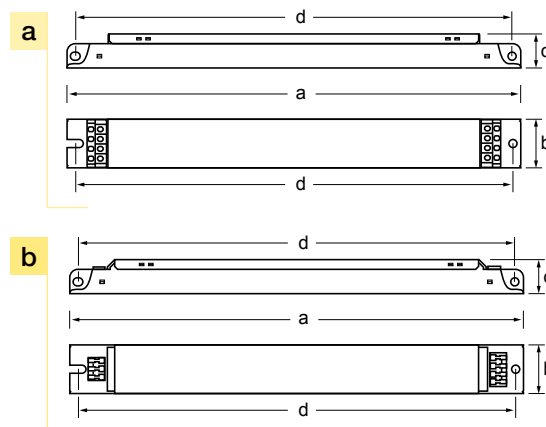
**Note:** See pages 14-15 for connection diagrams and additional characteristics.

\*\*\*) With terminals for both manual and automatic wiring (IDC & push-in)

| Dimensions      | 1   | 2   | 3   | 4   |
|-----------------|-----|-----|-----|-----|
| drawing         | a   | a   | b   | b   |
| Length 'a' (mm) | 280 | 360 | 280 | 360 |
| Width 'b' (mm)  | 30  | 30  | 30  | 30  |
| Height 'c' (mm) | 21  | 21  | 21  | 21  |
| 'd' (mm)        | 270 | 350 | 270 | 350 |

### Delivery information

| Ballast   | Unit package            |                       | Transportation package           |                    |                    |
|-----------|-------------------------|-----------------------|----------------------------------|--------------------|--------------------|
|           | Minimum delivery amount | Plastic binding strip | One-way pallet 1200 x 820 (pcs.) | Pallet weight (kg) | Pallet height (cm) |
| EL1 x s   | 10                      | ●                     | 2000                             | 350 - 420          | 57                 |
| EL2 x s   | 10                      | ●                     | 1500                             | 395                | 57                 |
| EL3/4 x s | 10                      | ●                     | 1500                             | 385                | 57                 |



Electronic ballasts for T8 fluorescent lamps



18-58 W 220-240V 50-60Hz

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- Energy saving
- Warm Start according to lamp standards
- Flickerless light
- Covers EMC requirements
- Low harmonics
- Low power losses
- Stabilized output

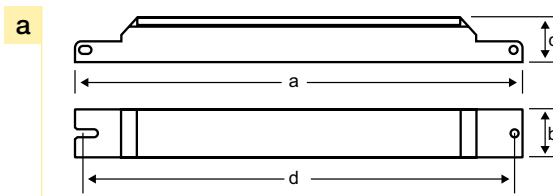


**EEI = A2**

| Lamp type | Wattage | No. of lamps | Ballast   | EEI | Dimensions | Connection | Weight | Circuit power | Mains current | Lamp power |
|-----------|---------|--------------|-----------|-----|------------|------------|--------|---------------|---------------|------------|
|           |         |              |           |     |            | (p.14)     | (g)    | (W)           | (A)           | (W)        |
|           | 18      | 1            | EL1x18ngn | A2  | 1          | 1          | 190    | 19            | 0.09-0.08     | 16         |
|           | 18      | 2            | EL2x18ngn | A2  | 1          | 9          | 200    | 37            | 0.16-0.15     | 16         |
|           | 18      | 4            | EL4x18ngn | A2  | 1          | 10         | 200    | 72            | 0.33-0.30     | 16         |
|           | 36      | 1            | EL1x36ngn | A2  | 1          | 1          | 191    | 36            | 0.16-0.15     | 32         |
|           | 36      | 2            | EL2x36ngn | A2  | 1          | 9          | 205    | 71            | 0.32-0.29     | 32         |
|           | 58      | 1            | EL1x58ngn | A2  | 1          | 1          | 193    | 55            | 0.26-0.23     | 50         |
|           | 58      | 2            | EL2x58ngn | A2  | 1          | 9          | 218    | 108           | 0.50-0.45     | 50         |

Note: See pages 14-15 for connection diagrams and additional characteristics.

| Dimensions      | 1   |
|-----------------|-----|
| Length 'a' (mm) | 280 |
| Width 'b' (mm)  | 30  |
| Height 'c' (mm) | 28  |
| 'd' (mm)        | 270 |



| Delivery information |                         |                       |                                  |                    |                    |
|----------------------|-------------------------|-----------------------|----------------------------------|--------------------|--------------------|
| Ballast              | Unit package            |                       | Transportation package           |                    |                    |
|                      | Minimum delivery amount | Plastic binding strip | One-way pallet 1200 x 820 (pcs.) | Pallet weight (kg) | Pallet height (cm) |
| EL1 x ngn            | 10                      | ●                     | 1600                             | 330                | 60                 |
| EL2 x ngn            | 10                      | ●                     | 1600                             | 320-360            | 60                 |
| EL4 x ngn            | 10                      | ●                     | 1600                             | 370                | 60                 |

## Electronic ballasts for compact fluorescent lamps

1



18-80 W 220-240V 50-60Hz

- Only 21 mm high
- Optimal lamp operation
- Wide operational ambient temperature range
- Standard & sidemount possibilities
- Low power losses
- Silent operation
- Stabilized flickerfree light
- High power factor



**EEL = A2**

| Lamp type | Wattage | No. of lamps            | Ballast                      | EEI    | Dimensions | Connection | Weight | Circuit power | Mains current | Lamp power |
|-----------|---------|-------------------------|------------------------------|--------|------------|------------|--------|---------------|---------------|------------|
|           |         |                         |                              |        |            |            |        |               |               |            |
| TC-L      | 18      | 1                       | EL1x36/40/18s                | A2     | 1          | 1          | 190    | 18            | 0.08          | 16         |
|           | 18      | 1                       | EL1x36/40s-u <sup>1)2)</sup> | A2     | 3          | 1          | 190    | 18            | 0.08          | 16         |
|           | 24      | 1                       | EL1x24s                      | A2     | 1          | 1          | 190    | 25            | 0.12-0.11     | 22.5       |
|           | 24      | 2                       | EL2x24s                      | A2     | 2          | 2          | 230    | 49            | 0.24-0.21     | 22.5       |
|           | 24      | 3                       | EL3/4x24s-u <sup>1)</sup>    | A2 BAT | 3          | 7          | 215    | 73            | 0.34-0.30     | 22.5       |
|           | 24      | 4                       | EL3/4x24s-u <sup>1)</sup>    | A2 BAT | 3          | 8          | 215    | 97            | 0.44-0.40     | 22.5       |
|           | 36      | 1                       | EL1x39/36s                   | A2     | 1          | 1          | 190    | 35            | 0.16-0.15     | 32         |
|           | 36      | 2                       | EL2x39/36s                   | A2     | 2          | 2          | 245    | 69            | 0.32-0.29     | 32         |
|           | 40      | 1                       | EL1x36/40/18s                | A2     | 1          | 1          | 190    | 45            | 0.20-0.18     | 40         |
|           | 40      | 1                       | EL1x36/40s-u <sup>1)</sup>   | A2     | 3          | 1          | 190    | 45            | 0.20-0.18     | 40         |
|           | 40      | 2                       | EL2x36/40s                   | A2     | 2          | 2          | 245    | 87            | 0.40-0.36     | 40         |
|           | 55      | 1                       | EL1x55s                      | A2     | 1          | 1          | 200    | 59.5          | 0.28-0.25     | 55         |
|           | 55      | 2                       | EL2x55s                      | A2     | 2          | 2          | 260    | 117           | 0.55-0.50     | 55         |
|           | 80      | 1                       | EL1x80s                      | A2     | 1          | 1          | 200    | 85            | 0.40-0.36     | 80         |
| 80        | 1       | EL2x80s-u <sup>1)</sup> | A2 BAT                       | 4      | 4          | 305        | 170    | 0.80-0.73     | 80            |            |
| TC-F      | 18      | 1                       | EL1x36/40/18s                | A2     | 1          | 1          | 190    | 18            | 0.08          | 16         |
|           | 18      | 1                       | EL1x36/40s-u <sup>1)2)</sup> | A2     | 3          | 1          | 190    | 18            | 0.08          | 16         |
|           | 24      | 1                       | EL1x24s                      | A2     | 1          | 1          | 190    | 25            | 0.12-0.11     | 22.5       |
|           | 24      | 2                       | EL2x24s                      | A2     | 2          | 2          | 230    | 49            | 0.24-0.21     | 22.5       |
|           | 36      | 1                       | EL1x39/36s                   | A2     | 1          | 1          | 190    | 35            | 0.16-0.15     | 32         |
|           | 36      | 2                       | EL2x39/36s                   | A2     | 2          | 2          | 245    | 69            | 0.32-0.29     | 32         |

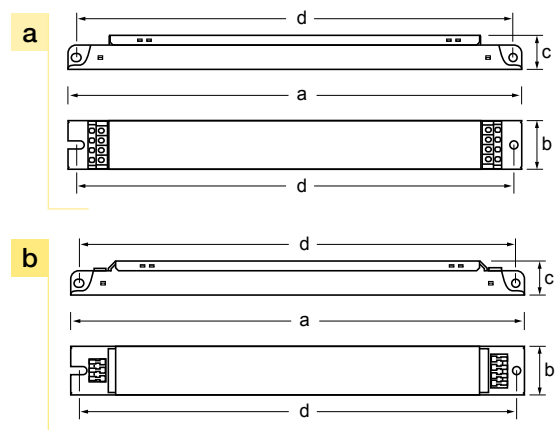
**Note:** See pages 14-15 for connection diagrams and additional characteristics.

- 1) With terminals for both manual and automatic wiring (IDC & push-in)
- 2) Tested and recommended by Helvar, not ENEC approved

| Dimensions      | 1   | 2   | 3   | 4   |
|-----------------|-----|-----|-----|-----|
| drawing         | a   | a   | b   | b   |
| Length 'a' (mm) | 280 | 360 | 280 | 360 |
| Width 'b' (mm)  | 30  | 30  | 30  | 30  |
| Height 'c' (mm) | 21  | 21  | 21  | 21  |
| 'd' (mm)        | 270 | 350 | 270 | 350 |

### Delivery information

| Ballast   | Unit package            |                       | Transportation package           |                    |                    |
|-----------|-------------------------|-----------------------|----------------------------------|--------------------|--------------------|
|           | Minimum delivery amount | Plastic binding strip | One-way pallet 1200 x 820 (pcs.) | Pallet weight (kg) | Pallet height (cm) |
| EL1 x s   | 10                      | ●                     | 2000                             | 350 - 420          | 57                 |
| EL2 x s   | 10                      | ●                     | 1500                             | 395                | 57                 |
| EL3/4 x s | 10                      | ●                     | 1500                             | 390                | 57                 |





## Electronic ballasts for compact fluorescent lamps



**10-40 W 220-240V 50-60Hz**

1

- Slim, only 28mm high
- Multilamp operation
- Single and twin lamp operation
- Low power losses
- Single case size



**EEl = A2**

| Lamp type    | Wattage | No. of lamps | Ballast          | EEl    | Connection<br>(p.14) | Weight<br>(g) | Circuit power<br>(W) | Mains current<br>(A) | Power factor | Lamp power<br>(W) |
|--------------|---------|--------------|------------------|--------|----------------------|---------------|----------------------|----------------------|--------------|-------------------|
| <b>TC-L</b>  | 18      | 1            | EL1/2x18-42TCs   | A2     | 11                   | 132           | 17                   | 0.08                 | 0.94c        | 14.8              |
|              | 18      | 2            | EL1/2x18-42TCs   | A2     | 12                   | 132           | 32                   | 0.14                 | 0.97         | 14.8              |
|              | 24      | 1            | EL1/2x18-42TCs   | A2     | 11                   | 132           | 26                   | 0.12                 | 0.95         | 23                |
|              | 24      | 2            | EL1/2x18-42TCs   | A2     | 12                   | 132           | 48                   | 0.21                 | 0.98         | 22.3              |
|              | 36      | 1            | EL1/2x36/38TCs   | A2 BAT | 11                   | 132           | 37                   | 0.17                 | 0.96         | 34                |
|              | 36      | 2            | EL1/2x36/38TCs   | A2 BAT | 12                   | 132           | 72                   | 0.32                 | 0.97         | 33                |
| <b>TC-F</b>  | 40      | 1            | EL1/2x18-42TCs   | A2     | 11                   | 132           | 42                   | 0.19                 | 0.98         | 39                |
|              | 18      | 1            | EL1/2x18-42TCs   | A2     | 11                   | 132           | 17                   | 0.08                 | 0.94c        | 14.8              |
|              | 18      | 2            | EL1/2x18-42TCs   | A2     | 12                   | 132           | 32                   | 0.14                 | 0.97         | 14.8              |
|              | 24      | 1            | EL1/2x18-42TCs   | A2     | 11                   | 132           | 26                   | 0.12                 | 0.95         | 23                |
|              | 24      | 2            | EL1/2x18-42TCs   | A2     | 12                   | 132           | 48                   | 0.21                 | 0.98         | 22.3              |
|              | 36      | 1            | EL1/2x36/38TCs   | A2 BAT | 11                   | 132           | 37                   | 0.17                 | 0.96         | 34                |
| <b>TC-DD</b> | 36      | 2            | EL1/2x36/38TCs   | A2 BAT | 12                   | 132           | 72                   | 0.32                 | 0.97         | 33                |
|              | 10      | 1            | EL1/2x9-13TCs    | A2     | 11                   | 118           | 12                   | 0.05                 | 0.91c        | 10.0              |
|              | 16      | 1            | EL1/2x9-13TCs    | A2     | 11                   | 118           | 17                   | 0.08                 | 0.95         | 15                |
|              | 21      | 1            | EL1/2x18-42TCs * | A2     | 11                   | 132           | 25                   | 0.11                 | 0.97         | 22.3              |
|              | 28      | 1            | EL1/2x18-42TCs   | A2     | 11                   | 132           | 29                   | 0.13                 | 0.97         | 27.0              |
|              | 38      | 1            | EL1/2x36/38TCs   | A2 BAT | 11                   | 132           | 38                   | 0.17                 | 0.96         | 34.8              |
| <b>T5c</b>   | 38      | 2            | EL1/2x36/38TCs   | A2 BAT | 12                   | 132           | 74                   | 0.32                 | 0.97         | 34                |
|              | 22      | 1            | EL1/2x18-42TCs   | A2     | 11                   | 132           | 25                   | 0.12                 | 0.95         | 22.6              |
|              | 40      | 1            | EL1/2x18-42TCs   | A2     | 11                   | 132           | 41                   | 0.19                 | 0.98         | 38.6              |

**Note:** See pages 14-15 for connection diagrams and additional characteristics.

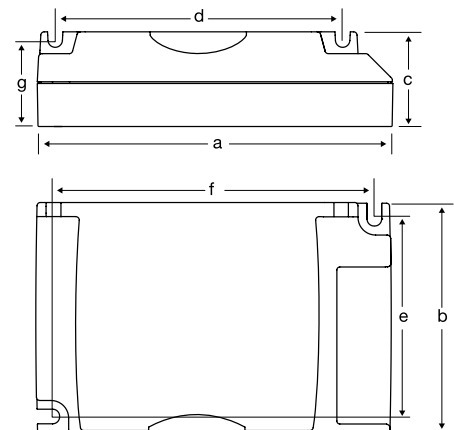
\*) Tested and recommended by Helvar, not ENEC approved

### Dimensions

|                 |       |
|-----------------|-------|
| Length 'a' (mm) | 103.5 |
| Width 'b' (mm)  | 67    |
| Height 'c' (mm) | 28    |
| 'd' (mm)        | 83.5  |
| 'e' (mm)        | 57.5  |
| 'f' (mm)        | 93.5  |
| 'g' (mm)        | 25.5  |

### Delivery information

| Ballast | Unit package            |            | Transportation package |                    |                    |
|---------|-------------------------|------------|------------------------|--------------------|--------------------|
|         | Minimum delivery amount | Carton Box | Pallet 820x1280 (pcs.) | Pallet weight (kg) | Pallet height (cm) |
| EL-TCs  | 60                      | ●          | 1800                   | 260                | 105                |



## Electronic ballasts for compact fluorescent lamps

1



9-26 W 220-240V 50-60Hz

- Slim only 28mm high
- Multilamp operation
- Single and twin lamp operation
- Low power losses
- Single case size



**EEL = A2**

| Lamp type    | Wattage | No. of lamps | Ballast        | EEL    | Connection<br>(p.14) | Weight<br>(g) | Circuit power<br>(W) | Mains current<br>(A) | Power factor | Lamp power<br>(W) |
|--------------|---------|--------------|----------------|--------|----------------------|---------------|----------------------|----------------------|--------------|-------------------|
| <b>TC-SE</b> | 9       | 1            | EL1/2x9-13TCs  | A2     | 11                   | 118           | 10                   | 0.05                 | 0.9c         | 8.5               |
|              | 9       | 2            | EL1/2x9-13TCs  | A2     | 12                   | 118           | 18                   | 0.08                 | 0.96         | 8.5               |
|              | 11      | 1            | EL1/2x9-13TCs  | A2     | 11                   | 118           | 14                   | 0.07                 | 0.93c        | 12.8              |
|              | 11      | 2            | EL1/2x9-13TCs  | A2     | 12                   | 118           | 27                   | 0.12                 | 0.98         | 12.9              |
| <b>PL-R</b>  | 14      | 1            | EL1/2x14/17TCs | A2 BAT | 11                   | 132           | 18                   | 0.09                 | 0.92c        | 16                |
|              | 14      | 2            | EL1/2x14/17TCs | A2 BAT | 12                   | 132           | 34                   | 0.15                 | 0.96         | 15.2              |
|              | 17      | 1            | EL1/2x14/17TCs | A2 BAT | 11                   | 132           | 21.5                 | 0.1                  | 0.93c        | 19.5              |
|              | 17      | 2            | EL1/2x14/17TCs | A2 BAT | 12                   | 132           | 41                   | 0.18                 | 0.96         | 18.6              |
| <b>TC-DE</b> | 10      | 1            | EL1/2x9-13TCs  | A2     | 11                   | 118           | 10                   | 0.05                 | 0.9c         | 8.9               |
|              | 10      | 2            | EL1/2x9-13TCs  | A2     | 12                   | 118           | 20                   | 0.09                 | 0.97         | 8.9               |
|              | 13      | 1            | EL1/2x9-13TCs  | A2     | 11                   | 118           | 15                   | 0.07                 | 0.94c        | 13.8              |
|              | 13      | 2            | EL1/2x9-13TCs  | A2     | 12                   | 118           | 28                   | 0.13                 | 0.98         | 13.5              |
|              | 18      | 1            | EL1/2x18TCs    | A2     | 11                   | 120           | 19                   | 0.09                 | 0.96         | 16.9              |
|              | 18      | 2            | EL1/2x18TCs    | A2     | 12                   | 120           | 36                   | 0.16                 | 0.98         | 16.9              |
|              | 26      | 1            | EL1/2x18-42TCs | A2     | 11                   | 132           | 27                   | 0.13                 | 0.96         | 24.7              |
|              | 26      | 2            | EL1/2x18-42TCs | A2     | 12                   | 132           | 51                   | 0.23                 | 0.98         | 23.8              |
|              | 26      | 2            | EL2x32/42TCs   | A2     | 12                   | 132           | 53                   | 0.24                 | 0.97         | 24                |

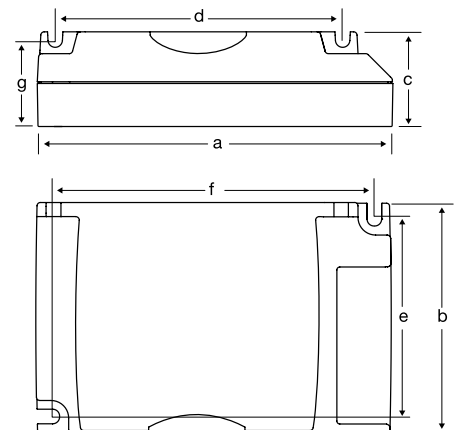
**Note:** See pages 14-15 for connection diagrams and additional characteristics.

### Dimensions

|                 |       |
|-----------------|-------|
| Length 'a' (mm) | 103.5 |
| Width 'b' (mm)  | 67    |
| Height 'c' (mm) | 28    |
| 'd' (mm)        | 83.5  |
| 'e' (mm)        | 57.5  |
| 'f' (mm)        | 93.5  |
| 'g' (mm)        | 25.5  |

### Delivery information

| Ballast | Unit package            |            | Transportation package |                    |                    |
|---------|-------------------------|------------|------------------------|--------------------|--------------------|
|         | Minimum delivery amount | Carton Box | Pallet 820x1280 (pcs.) | Pallet weight (kg) | Pallet height (cm) |
| EL-TCs  | 60                      | ●          | 1800                   | 260                | 105                |



## Electronic ballasts for compact fluorescent lamps



**13-57 W 220-240V 50-60Hz**

1

- Slim only 28mm high
- Multilamp operation
- Single and twin lamp operation
- Low power losses
- Single case size



**EEl = A2**

| Lamp type | Wattage | No. of lamps | Ballast        | EEl | Connection | Weight (g) | Circuit power (W) | Mains current (A) | Power factor | Lamp power (W) |
|-----------|---------|--------------|----------------|-----|------------|------------|-------------------|-------------------|--------------|----------------|
|           |         |              |                |     | (p.14)     |            |                   |                   |              |                |
| TC-TE     | 13      | 1            | EL1/2x9-13TCs  | A2  | 11         | 118        | 15                | 0.07              | 0.94c        | 13.8           |
|           | 13      | 2            | EL1/2x9-13TCs  | A2  | 12         | 118        | 28                | 0.13              | 0.98         | 13.5           |
|           | 18      | 1            | EL1/2x18TCs    | A2  | 11         | 120        | 19                | 0.09              | 0.96         | 16.9           |
|           | 18      | 2            | EL1/2x18TCs    | A2  | 12         | 120        | 36                | 0.16              | 0.98         | 16.9           |
|           | 26      | 1            | EL1/2x18-42TCs | A2  | 11         | 132        | 27                | 0.13              | 0.96         | 24.7           |
|           | 26      | 2            | EL1/2x18-42TCs | A2  | 12         | 132        | 51                | 0.23              | 0.98         | 23.8           |
|           | 26      | 2            | EL2x32/42TCs   | A2  | 12         | 132        | 53                | 0.24              | 0.97         | 24             |
|           | 32      | 1            | EL1/2x18-42TCs | A2  | 11         | 132        | 32                | 0.15              | 0.97         | 29.4           |
|           | 32      | 2            | EL2x32/42TCs   | A2  | 12         | 132        | 64                | 0.29              | 0.98         | 28.5           |
|           | 42      | 1            | EL1/2x18-42TCs | A2  | 11         | 132        | 44                | 0.2               | 0.98         | 42.2           |
|           | 42      | 2            | EL2x32/42TCs   | A2  | 12         | 132        | 85                | 0.38              | 0.98         | 40.5           |
|           | 57      | 1            | EL1/2x18-42TCs | A2  | 11         | 132        | 58.5              | 0.26              | 0.99         | 54             |

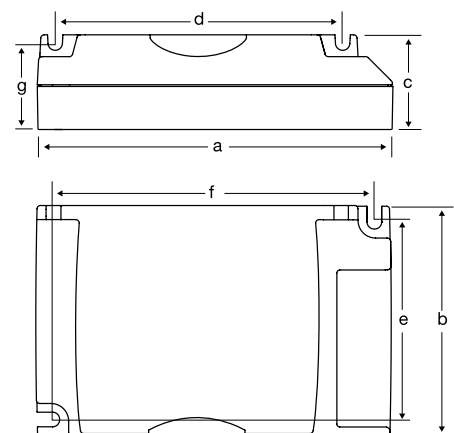
**Note:** See pages 14-15 for connection diagrams and additional characteristics.

### Dimensions

|                 |       |
|-----------------|-------|
| Length 'a' (mm) | 103.5 |
| Width 'b' (mm)  | 67    |
| Height 'c' (mm) | 28    |
| 'd' (mm)        | 83.5  |
| 'e' (mm)        | 57.5  |
| 'f' (mm)        | 93.5  |
| 'g' (mm)        | 25.5  |

### Delivery information

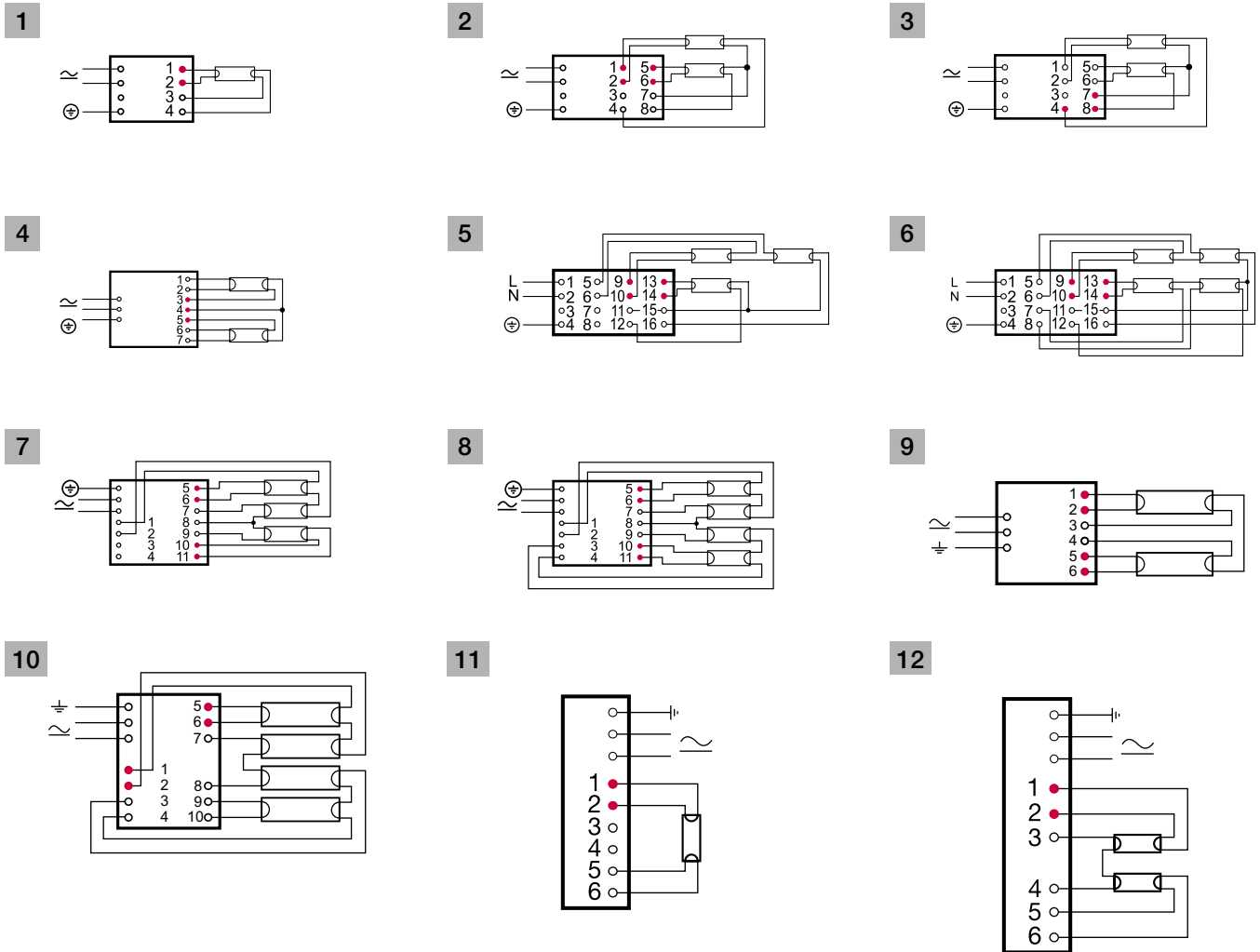
| Ballast | Unit package            |            | Transportation package |                    |                    |
|---------|-------------------------|------------|------------------------|--------------------|--------------------|
|         | Minimum delivery amount | Carton Box | Pallet 820x1280 (pcs.) | Pallet weight (kg) | Pallet height (cm) |
| EL-TCs  | 60                      | ●          | 1800                   | 260                | 105                |



# Connection diagrams

## 1 EL-s, EL-su, EL-ngn, EL-TCs

**NOTE:** All wiring to the connectors marked with a red dot (hot wires) should be as short as possible.



|    |   |
|----|---|
| 1  | EL1x ...s, EL1x...ngn   |
| 2  | EL2x18s, EL2x24s, EL2x36/40s, EL2x39/36s, EL2x54s, EL2x55s, EL2x58s, EL2x70s              |
| 3  | EL2x14-35s, EL2x49s   |
| 4  | EL2x14-35s-u, EL2x36/40s-u, EL2x49s-u, EL2x58s-u, EL2x80s-u                               |
| 5  | EL3/4x14s, EL3/4x18s (three lamp connection)  |
| 6  | EL3/4x14s, EL3/4x18s (four lamp connection)   |
| 7  | EL3/4x14s-u, EL3/4x18s-u, EL3/4x24s-u (three lamp connection)                             |
| 8  | EL3/4x14s-u, EL3/4x18s-u, EL3/4x24s-u (four lamp connection)                              |
| 9  | EL2x18ngn, EL2x36ngn, EL2x58ngn   |
| 10 | EL4x18ngn   |
| 11 | EL1/2x14/17TCs , EL1/2x18-42TCs, EL1/2x18TCs, EL1/2x9-13TCs, EL1/2x36/38TCs               |
| 12 | EL1/2x14/17TCs , EL1/2x18-42TCs, EL1/2x18TCs, EL1/2x9-13TCs, EL2x32/42TCs, EL1/2x36/38TCs |

## Characteristics

1

|   | EL-s / EL-su                   | EL-ngn                         | EL-TCs                         |
|---|--------------------------------|--------------------------------|--------------------------------|
| Max.temperature at t <sub>c</sub> point     | 75°C <sup>3) 4)</sup>          | 75 °C                          | 75°C                           |
| Ambient temperature range                   | -20...+50°C                    | -20...+50°C                    | -20...+50°C                    |
| Storage temperature range                   | -40...+80°C                    | -40...+80 °C                   | -40...+80°C                    |
| Maximum relative humidity                   | no condensation                | no condensation                | no condensation                |
| Number of starts per lamp                   | > 50 000                       | > 50 000                       | > 50 000                       |
| AC Range                                    | 198-264 VAC <sup>5)6)</sup>    | 198-264 VAC                    | 198-264 VAC                    |
| DC range (starting voltage >190VDC)         | 176-280 VDC <sup>6)</sup>      | 176-280 VDC                    | 176-280 VDC <sup>1)</sup>      |
| Over voltage duration                       | 320 VAC, 1 h                   | 320 VAC, 1 h                   | 320 V / 1 h                    |
| Power factor (at maximum), typical          | 0.98                           | 0.98                           | > 0.95                         |
| Earth leakage current                       | < 0.4 mA                       | < 0.4 mA                       | < 0.4 mA                       |
| Maximum working voltage (U <sub>out</sub> ) | 400 V                          | 350 V                          | 250 V <sup>2)</sup>            |
| Lifetime (90% survival)                     | 50 000 h,<br>at t <sub>c</sub> | 50 000 h,<br>at t <sub>c</sub> | 50 000 h,<br>at t <sub>c</sub> |
| Max length of ballast to lamp wiring        | 2 m                            | 1.5 m                          | 1 m/2 m (hot/cold)             |
| Ignition time, typical                      | ~1.0 s                         | < 1 s                          | ~1 s                           |

1) For 2x42W lamp, DC range is 190-280V

2) EL2x32/42TCs 300V

3) For EL 3/4x14s and EL 3/4x18s, t<sub>c</sub> = 80°C

4) For EL 2x70s, t<sub>c</sub> = 70°C

5) For EL2x70s and EL2x80s-u AC range is 204-264V

6) EL2x70s, EL2x55s and EL2x80s-u max 6 hours at 176-190VDC

## Standards

|  | EL-s / EL-su | EL-ngn | EL-TCs |
|--|--------------|--------|--------|
| General and safety requirements EN61347-2-3  | ●            | ●      | ●      |
| Additional safety requirements for AC/DC supplied ballasts acc. to EN61347-2-3 Annex J | ●            | ●      | ●      |
| Performance requirements EN60929   | ●            | ●      | ●      |
| Lamp life acc. to EN60081 / EN60901 <sup>*</sup>                                       | ●            | ●      | ●      |
| Mains current harmonics, acc. to EN61000-3-2   | ●            | ●      | ●      |
| Radio Frequency Interference, acc. to EN55015  | ●            | ●      | ●      |
| Immunity standard, acc.to EN61547  | ●            | ●      | ●      |
| Vibration test EN60068-2-64 test Fh  | ●            | ●      | ●      |
| Bump test EN60068-2-29 test Eb   | ●            | ●      | ●      |
| Thermal protection class EN61347, C5e  | ●            | ●      | ●      |

\* EN 60081 for T5 & T8 fluorescent lamps, EN 60901 for compact fluorescent lamps