



### PC T8 TOP Ip, PC T8 TOP sl, 18 – 58 W PC TOP

#### Product description

- CELMA Energy Efficiency Index EEI = A2
- Nominal life up to 50,000 h (at ta 50 °C with a failure rate max. 0.2 % per 1,000 h)
- Large temperature range (for values see table)
- Constant luminous flux irrespective of fluctuations in mains voltage
- Lamp preheating for min. 30,000 starts without replacement of lamps
- Designed for THD < 10 %
- For luminaires of protection class I and protection class II
- Automatic start after replacement of defective lamps
- Safety shutdown of defective lamps and at end of lamp life
- Plug terminal for rapid automatic or manual wiring
- For emergency lighting systems as per EN 50172

#### Technical data

|                        |                                     |
|------------------------|-------------------------------------|
| Mains voltage range    | 220 – 240 V                         |
| AC voltage range       | 198 – 264 V                         |
| DC voltage range       | 176 – 280 V (lamp start ≥ 198 V DC) |
| Mains frequency        | 0 / 50 / 60 Hz                      |
| Overvoltage protection | 320 V AC, 1 h                       |
| Defined warm start     | ≤ 1.5 s                             |
| Operating frequency    | ≥ 40 kHz                            |
| Type of protection     | IP20                                |



Fig. 1

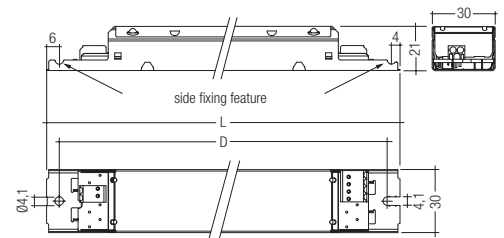
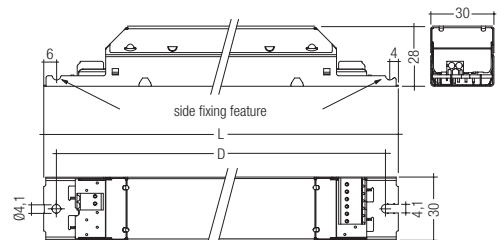


Fig. 2



#### Ordering data

| Type                                    | Article number | Figure | Packaging, carton | Packaging, pallet | Weight per pcs. |
|-----------------------------------------|----------------|--------|-------------------|-------------------|-----------------|
| <b>For luminaires with 1 lamp</b>       |                |        |                   |                   |                 |
| PC 1x18 T8 TOP sl                       | 22185222       | 2      | 10 pieces         | 1,900 pieces      | 0.148 kg        |
| PC 1x36 T8 TOP sl                       | 22185223       | 2      | 10 pieces         | 1,900 pieces      | 0.148 kg        |
| PC 1x58 T8 TOP sl                       | 22185224       | 2      | 10 pieces         | 1,900 pieces      | 0.148 kg        |
| <b>For luminaires with 2 lamps</b>      |                |        |                   |                   |                 |
| PC 2x18 T8 TOP sl                       | 22185225       | 2      | 10 pieces         | 1,600 pieces      | 0.174 kg        |
| PC 2x36 T8 TOP sl                       | 22185226       | 2      | 10 pieces         | 1,600 pieces      | 0.212 kg        |
| PC 2x58 T8 TOP sl                       | 22185227       | 2      | 10 pieces         | 1,600 pieces      | 0.212 kg        |
| <b>For luminaires with 3 or 4 lamps</b> |                |        |                   |                   |                 |
| PC 3/4x18 T8 TOP Ip                     | 22185228       | 1      | 10 pieces         | 960 pieces        | 0.190 kg        |



Standards, page 2

Wiring diagrams and installation examples, page 5

#### Specific technical data

| Lamp wattage                            | Lamp type | Type                | Article number | Dimensions L x W x H | Hole spacing D | Lamp power | Circuit power | EEI | Current at 50 Hz |         | λ at 50 Hz |       | tc point max. | Ambient temperature ta | tc/ta for ≥ 50,000 h |
|-----------------------------------------|-----------|---------------------|----------------|----------------------|----------------|------------|---------------|-----|------------------|---------|------------|-------|---------------|------------------------|----------------------|
|                                         |           |                     |                |                      |                |            |               |     | 220 V            | 240 V   | 220 V      | 240 V |               |                        |                      |
| <b>For luminaires with 1 lamp</b>       |           |                     |                |                      |                |            |               |     |                  |         |            |       |               |                        |                      |
| 1 x 18 W                                | T8        | PC 1x18 T8 TOP sl   | 22185222       | 230 x 30 x 28 mm     | 220 mm         | 16.0 W     | 19.3 W        | A2  | 0.086 A          | 0.077 A | 0.98       | 0.96  | 65 °C         | -20 ... 55 °C          | 60/50 °C             |
| 1 x 36 W                                | T8        | PC 1x36 T8 TOP sl   | 22185223       | 230 x 30 x 28 mm     | 220 mm         | 32.0 W     | 36.7 W        | A2  | 0.165 A          | 0.148 A | 0.99       | 0.97  | 65 °C         | -20 ... 55 °C          | 60/50 °C             |
| 1 x 58 W                                | T8        | PC 1x58 T8 TOP sl   | 22185224       | 230 x 30 x 28 mm     | 220 mm         | 50.0 W     | 56.2 W        | A2  | 0.253 A          | 0.227 A | 0.99       | 0.97  | 70 °C         | -20 ... 55 °C          | 65/50 °C             |
| <b>For luminaires with 2 lamps</b>      |           |                     |                |                      |                |            |               |     |                  |         |            |       |               |                        |                      |
| 2 x 18 W                                | T8        | PC 2x18 T8 TOP sl   | 22185225       | 280 x 30 x 28 mm     | 270 mm         | 32.0 W     | 38.6 W        | A2  | 0.174 A          | 0.156 A | 0.99       | 0.97  | 65 °C         | -20 ... 55 °C          | 60/50 °C             |
| 2 x 36 W                                | T8        | PC 2x36 T8 TOP sl   | 22185226       | 280 x 30 x 28 mm     | 270 mm         | 64.0 W     | 73.4 W        | A2  | 0.330 A          | 0.303 A | 0.99       | 0.98  | 70 °C         | -20 ... 55 °C          | 65/50 °C             |
| 2 x 58 W                                | T8        | PC 2x58 T8 TOP sl   | 22185227       | 280 x 30 x 28 mm     | 270 mm         | 100.0 W    | 112.4 W       | A2  | 0.506 A          | 0.459 A | 0.99       | 0.98  | 75 °C         | -20 ... 55 °C          | 70/50 °C             |
| <b>For luminaires with 3 or 4 lamps</b> |           |                     |                |                      |                |            |               |     |                  |         |            |       |               |                        |                      |
| 3 x 18 W                                | T8        | PC 3/4x18 T8 TOP Ip | 22185228       | 280 x 30 x 21 mm     | 270 mm         | 50.4 W     | 57.8 W        | A2  | 0.268 A          | 0.246 A | 0.99       | 0.97  | 65 °C         | -20 ... 55 °C          | 60/50 °C             |
| 4 x 18 W                                | T8        | PC 3/4x18 T8 TOP Ip | 22185228       | 280 x 30 x 21 mm     | 270 mm         | 64.0 W     | 77.2 W        | A2  | 0.355 A          | 0.325 A | 0.99       | 0.97  | 70 °C         | -20 ... 55 °C          | 65/50 °C             |

## Standards

EN 55015  
EN 61347-2-4  
EN 61347-2-3  
EN 60929  
EN 61000-3-2  
EN 61547  
in accordance with EN 50172  
IEC 68-2-64 Fh  
IEC 68-2-29 Eb  
IEC 68-2-30

## Lamp starting characteristics

Warm start  
Starting time 1.5 s with AC and DC operation  
Cathode heating will be reduced after preheat time

## AC operation

Mains voltage:  
220 – 240 V 50/60 Hz  
198 – 264 V 50/60 Hz including safety  
tolerance ( $\pm 10\%$ )  
202 – 254 V 50/60 Hz including performance  
tolerance ( $+6\%$  /  $-8\%$ )

## DC operation

220 – 240 V 0 Hz  
198 – 280 V 0 Hz certain lamp start  
176 – 280 V 0 Hz operating range  
Light output level in DC operation: 100 %

## Emergency lighting

Use in emergency lighting installations according  
to EN 50172 or for emergency luminaires  
according to EN 61347-2-3 appendix J.

Instant start after mains interruption < 0.5 s

## Mains currents in DC operation

| Type                | lamp type | wattage | mains current at<br>$U_n = 220V_{DC}$ | mains current at<br>$U_n = 240V_{DC}$ |
|---------------------|-----------|---------|---------------------------------------|---------------------------------------|
| PC 1x18 T8 TOP sl   | T8        | 1x18 W  | 86 mA                                 | 77 mA                                 |
| PC 1x36 T8 TOP sl   | T8        | 1x36 W  | 165 mA                                | 148 mA                                |
| PC 1x58 T8 TOP sl   | T8        | 1x58 W  | 253 mA                                | 227 mA                                |
| PC 2x18 T8 TOP sl   | T8        | 2x18 W  | 174 mA                                | 156 mA                                |
| PC 2x36 T8 TOP sl   | T8        | 2x36 W  | 330 mA                                | 303 mA                                |
| PC 2x58 T8 TOP sl   | T8        | 2x58 W  | 506 mA                                | 459 mA                                |
| PC 3/4x18 T8 TOP lp | T8        | 3x18 W  | 268 mA                                | 246 mA                                |
|                     | T8        | 4x18 W  | 355 mA                                | 325 mA                                |

## Harmonic distortion in the mains supply

| Type                | lamp type | wattage | THD<br>at 230 V / 50 Hz |
|---------------------|-----------|---------|-------------------------|
| PC 1x18 T8 TOP sl   | T8        | 1x18 W  | < 10 %                  |
| PC 1x36 T8 TOP sl   | T8        | 1x36 W  | < 10 %                  |
| PC 1x58 T8 TOP sl   | T8        | 1x58 W  | < 10 %                  |
| PC 2x18 T8 TOP sl   | T8        | 2x18 W  | < 10 %                  |
| PC 2x36 T8 TOP sl   | T8        | 2x36 W  | < 10 %                  |
| PC 2x58 T8 TOP sl   | T8        | 2x58 W  | < 10 %                  |
| PC 3/4x18 T8 TOP lp | T8        | 3x18 W  | < 10 %                  |
|                     | T8        | 4x18 W  | < 10 %                  |

## Output voltage

| Type                | lamp type | wattage | $U_{out}$ |
|---------------------|-----------|---------|-----------|
| PC 1x18 T8 TOP sl   | T8        | 1x18 W  | 400 V     |
| PC 1x36 T8 TOP sl   | T8        | 1x36 W  | 400 V     |
| PC 1x58 T8 TOP sl   | T8        | 1x58 W  | 400 V     |
| PC 2x18 T8 TOP sl   | T8        | 2x18 W  | 400 V     |
| PC 2x36 T8 TOP sl   | T8        | 2x36 W  | 400 V     |
| PC 2x58 T8 TOP sl   | T8        | 2x58 W  | 400 V     |
| PC 3/4x18 T8 TOP lp | T8        | 3x18 W  | 350 V     |
|                     | T8        | 4x18 W  | 350 V     |

## Ballast lumen factor (EN 60929 8.1)

| Type                | lamp type | wattage | AC/DC-BLF<br>at $U = 198-254 V$ , $25^\circ C$ |
|---------------------|-----------|---------|------------------------------------------------|
| PC 1x18 T8 TOP sl   | T8        | 1x18 W  | 1.00                                           |
| PC 1x36 T8 TOP sl   | T8        | 1x36 W  | 1.00                                           |
| PC 1x58 T8 TOP sl   | T8        | 1x58 W  | 1.00                                           |
| PC 2x18 T8 TOP sl   | T8        | 2x18 W  | 1.00                                           |
| PC 2x36 T8 TOP sl   | T8        | 2x36 W  | 1.00                                           |
| PC 2x58 T8 TOP sl   | T8        | 2x58 W  | 1.00                                           |
| PC 3/4x18 T8 TOP lp | T8        | 3x18 W  | 1.05                                           |
|                     | T8        | 4x18 W  | 1.00                                           |

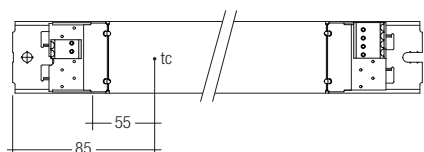
### Energy class CELMA EEI = A2<sup>1)</sup>

PC T8 TOP ignition technology (smart heating) optimises lamp start and ensures no energy is wasted. After the lamp has struck the filament heating is reduced automatically to a defined minimum value. This reduction in filament heating, saves energy, yet maintains the proper operating conditions for the lamp. The lamp is always operated within specification.

<sup>1)</sup> according to the EU directives on ecodesign requirements (EC) No. 245/2009 and (EC) No. 347/2010

### Ambient Temperature

#### PC 1x... T8 TOP sl



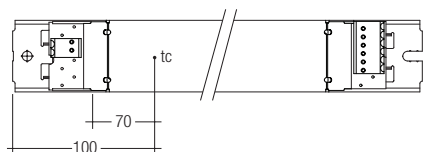
The nominal  $t_a$  and  $t_c$  point are related to the ballast life duration.

The relation of  $t_c$  to  $t_a$  temperature depends also on the luminaire design. If the measured  $t_c$  temperature is approx. 5 K below  $t_c$  max.,  $t_a$  temperature should be checked and eventually critical components (e.g. ELCAP) measured.

Detailed information on request.

PC T8 TOP is designed for an average service life of 50,000 hours (at  $t_a$  for  $\geq 50,000$  h) under reference conditions and with a failure probability of less than 10 %. This corresponds to an average failure rate of 0.2 % for every 1,000 hours of operation.

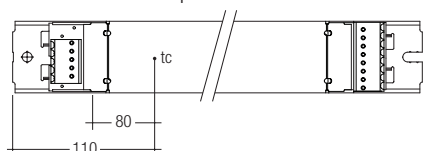
#### PC 2x... T8 TOP sl



Humidity: 5 % up to max. 85 %,  
not condensed  
(max. 56 days/year at 85 %)

Storage temperature: -40 °C up to max. +80 °C

#### PC 3x/4x... T8 TOP lp



The devices have to be within the specified temperature range ( $t_a$ ) before they can be operated.

### Expected lifetime

| Type                | Lamp type | Lamp wattage | $t_a$    | 40 °C       | 50 °C    | 55 °C    |
|---------------------|-----------|--------------|----------|-------------|----------|----------|
| PC 1x18 T8 TOP sl   | T8        | 1x18 W       | $t_c$    | 50 °C       | 60 °C    | 65 °C    |
|                     |           |              | Lifetime | > 100,000 h | 50,000 h | 30,000 h |
| PC 1x36 T8 TOP sl   | T8        | 1x36 W       | $t_c$    | 50 °C       | 60 °C    | 65 °C    |
|                     |           |              | Lifetime | > 100,000 h | 50,000 h | 30,000 h |
| PC 1x58 T8 TOP sl   | T8        | 1x58 W       | $t_c$    | 55 °C       | 65 °C    | 70 °C    |
|                     |           |              | Lifetime | > 100,000 h | 50,000 h | 30,000 h |
| PC 2x18 T8 TOP sl   | T8        | 2x18 W       | $t_c$    | 50 °C       | 60 °C    | 65 °C    |
|                     |           |              | Lifetime | > 100,000 h | 50,000 h | 30,000 h |
| PC 2x36 T8 TOP sl   | T8        | 2x36 W       | $t_c$    | 55 °C       | 65 °C    | 70 °C    |
|                     |           |              | Lifetime | > 100,000 h | 50,000 h | 30,000 h |
| PC 2x58 T8 TOP sl   | T8        | 2x58 W       | $t_c$    | 65 °C       | 70 °C    | 75 °C    |
|                     |           |              | Lifetime | 70,000 h    | 50,000 h | 30,000 h |
| PC 3/4x18 T8 TOP lp | T8        | 3x18 W       | $t_c$    | 50 °C       | 60 °C    | 65 °C    |
|                     |           |              | Lifetime | 100,000 h   | 50,000 h | 30,000 h |
|                     |           | 4x18 W       | $t_c$    | 55 °C       | 65 °C    | 70 °C    |
|                     |           |              | Lifetime | 100,000 h   | 50,000 h | 30,000 h |

x = not permitted

### Maximum loading of automatic circuit breakers

| Automatic circuit breaker type | C10                 | C13                 | C16                 | C20                 | B10                 | B13                 | B16                 | B20                 | Inrush current  |
|--------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-----------------|
| Installation Ø                 | 1.5 mm <sup>2</sup> | 1.5 mm <sup>2</sup> | 1.5 mm <sup>2</sup> | 2.5 mm <sup>2</sup> | 1.5 mm <sup>2</sup> | 1.5 mm <sup>2</sup> | 1.5 mm <sup>2</sup> | 2.5 mm <sup>2</sup> | $I_{max}$ Pulse |
| PC 1x18 T8 TOP sl              | 44                  | 64                  | 74                  | 104                 | 22                  | 32                  | 37                  | 52                  | 12.9 A 208 µs   |
| PC 1x36 T8 TOP sl              | 38                  | 52                  | 60                  | 72                  | 19                  | 26                  | 30                  | 36                  | 17.4 A 203 µs   |
| PC 1x58 T8 TOP sl              | 38                  | 56                  | 80                  | 92                  | 19                  | 28                  | 40                  | 46                  | 17.9 A 169 µs   |
| PC 2x18 T8 TOP sl              | 36                  | 50                  | 60                  | 72                  | 18                  | 25                  | 30                  | 36                  | 18.3 A 184 µs   |
| PC 2x36 T8 TOP sl              | 24                  | 32                  | 38                  | 44                  | 12                  | 16                  | 19                  | 22                  | 43.2 A 150 µs   |
| PC 2x58 T8 TOP sl              | 22                  | 34                  | 52                  | 68                  | 11                  | 17                  | 26                  | 34                  | 50.2 A 175 µs   |
| PC 3/4x18 T8 TOP lp            | 30                  | 40                  | 52                  | 64                  | 15                  | 20                  | 26                  | 32                  | 22.7 A 219 µs   |

### Wiring advice

The lead length is dependant on the capacitance of the cable.  
For safety reasons, the PC T8 TOP must only be earthed in the case of a safety class 1 luminaire.  
Earthing is not required for the device to operate. Connection to earth reduces radio interference.

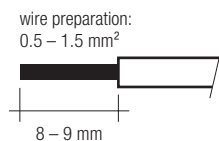
| Ballast            | Terminal                    | Maximum capacitance allowed |        |        |        |
|--------------------|-----------------------------|-----------------------------|--------|--------|--------|
|                    |                             | Cold                        | Hot    | Cold   | Hot    |
| PC 1x... T8 TOP sl | 13, 14                      |                             | 15, 16 | 200 pF | 100 pF |
| PC 2x... T8 TOP sl | 11, 12, 13, 14              |                             | 15, 16 | 200 pF | 100 pF |
| PC 3x18 T8 TOP Ip  | 9, 10, 11, 12, 13, 14       |                             | 15, 16 | 200 pF | 100 pF |
| PC 4x18 T8 TOP Ip  | 6, 7, 9, 10, 11, 12, 13, 14 |                             | 15, 16 | 200 pF | 100 pF |

To avoid the damage of the control gear, the wiring must be protected against short circuits to earth (sharp edged metal parts, metal cable clips, louver, etc.)

### Installation instructions

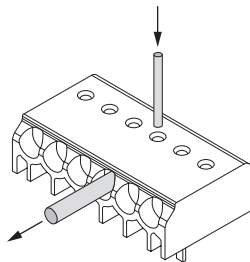
#### Wiring type and cross section

Solid wire with a cross section of 0.5–1.5 mm<sup>2</sup>. Strip 8–9 mm of insulation from the cables to ensure perfect operation of terminals.

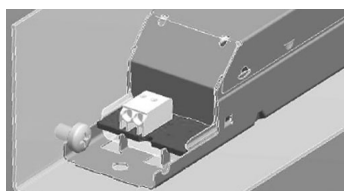


#### Release of the wiring

Loosen wire through twisting and pulling or using a Ø 1 mm release tool.



#### Side fixing feature



Screw M4, screw head diameter 8–10 mm

#### Defective lamp

If a lamp is defective, the ballast switches off and goes into standby. There is an automatic restart once the lamp has been changed.

With standard solid wire 0.5/0.75 mm<sup>2</sup> the capacitance of the lead is 30–80 pF/m. This value is influenced by the way the wiring is made.

- keep lamp wires short
- lamp connection with multi-lamp ballasts should be made with symmetrical wiring
- lamp leads marked with \* should be separated as much as possible from other lamp leads

### RFI

Tridonic ballasts are RFI protected in accordance with EN 55015. To operate the luminaire correctly and to minimise RFI we recommend the following instructions:

- Connection to the lamps of the “hot leads” must be kept as short as possible (marked with \*)
- Mains leads should be kept apart from lamp leads (ideally 5–10 cm distance)
- Do not run mains leads adjacent to the electronic ballast
- Twist the lamp leads
- Keep the distance of lamp leads from the metal work as large as possible
- Ballast must be earthed, either over the terminal or over the mounting screw of the ballast
- Mains wiring to be twisted when through wiring
- Keep the mains leads inside the luminaire as short as possible

### Isolation and electric strength testing of luminaires

Electronic devices can be damaged by high voltage. This has to be considered during the routine testing of the luminaires in production.

According to IEC 60598-1 Annex Q (informative only!) or ENEC 303-Annex A, each luminaire should be submitted to an isolation test with 500 V<sub>DC</sub> for 1 second. This test voltage should be connected between the interconnected phase and neutral terminals and the earth terminal.

The isolation resistance must be at least 2 MΩ.

As an alternative, IEC 60598-1 Annex Q describes a test of the electrical strength with 1500 V<sub>AC</sub> (or 1.414 x 1500 V<sub>DC</sub>). To avoid damage to the electronic devices this test must not be conducted.

### Additional information

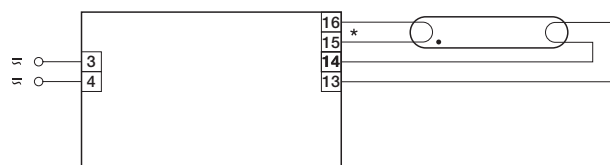
Additional technical information at [www.tridonic.com](http://www.tridonic.com) → Technical Data

Guarantee conditions at [www.tridonic.com](http://www.tridonic.com) → Services  
No warranty if device was opened.

### T8 lamp information

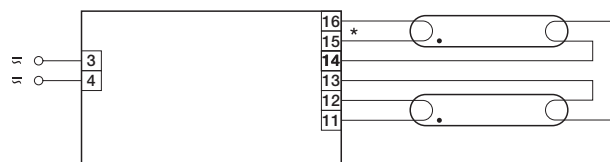
|  | wattage | length  |
|--|---------|---------|
|  | 18 W    | 590 mm  |
|  | 36 W    | 1200 mm |
|  | 58 W    | 1500 mm |

## Wiring diagrams



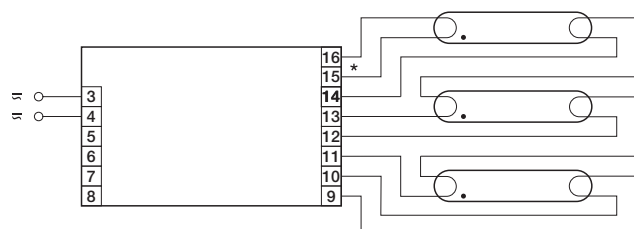
\* leads 15, 16 max. 1.0 m (< 100 pF)  
leads 13, 14 max. 2.0 m (< 200 pF)  
Protection class I – luminaires: earth of ballast housing required (according to IEC 598)  
Protection class II – luminaires: no earth required

PC 1x... T8 TOP sl



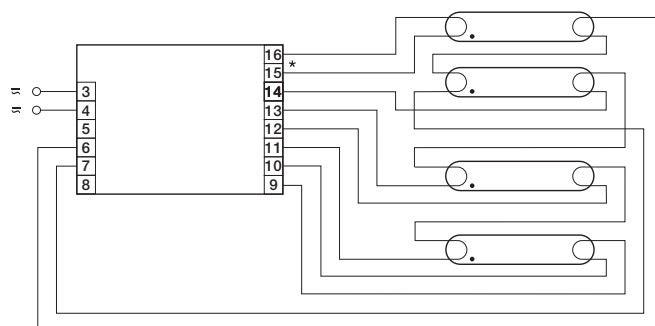
\* leads 15, 16 max. 1.0 m (< 100 pF)  
leads 11, 12, 13, 14 max. 2.0 m (< 200 pF)  
Protection class I – luminaires: earth of ballast housing required (according to IEC 598)  
Protection class II – luminaires: no earth required

PC 2x... T8 TOP sl



\* leads 15, 16 max. 1.0 m (< 100 pF)  
leads 9, 10, 11, 12, 13, 14 max. 2.0 m (< 200 pF)  
Protection class I – luminaires: earth of ballast housing required (according to IEC 598)  
Protection class II – luminaires: no earth required

PC 3x... T8 TOP lp



\* leads 15, 16 max. 1.0 m (< 100 pF)  
leads 6, 7, 9, 10, 11, 12, 13, 14, max. 2.0 m (< 200 pF)  
Protection class I – luminaires: earth of ballast housing required (according to IEC 598)  
Protection class II – luminaires: no earth required

PC 4x... T8 TOP lp