

PC T5 PRO Ip, 24 – 80 W

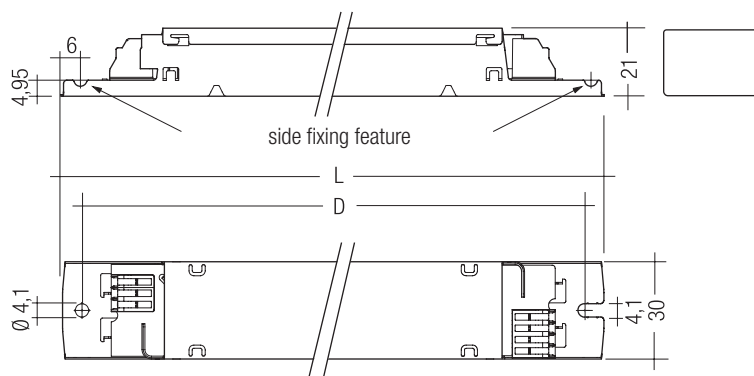
T5 high output, T8 and TC-L fluorescent lamps (CFL)

Product description

- Average life = 50,000 hours (at max ta. with a failure rate ≤ 0.2 % per 1,000 hours)
- Large temperature range (for values see table)
- Safety shutdown at end of life
- Automatic start after replacement of defective lamps
- For emergency lighting systems as per EN 50172
- Constant luminous flux irrespective of fluctuations in mains voltage
- For luminaires of protection class 1 and protection class 2
- For luminaires with F or M and MM as per EN 60598, VDE 0710 and VDE 0711
- Insulation Displacement Connection (IDC) terminal for rapid automatic or manual wiring
- Temperature protection as per EN 61347-2-3 C5e

Technical data

| | |
|------------------------|--|
| AC voltage range | 198 – 264 V |
| DC voltage range | 176 – 280 V (Lamp start ≥ 198 V DC) |
| Overvoltage protection | 320 V AC, 1 h |
| Defined warm start | ≤ 1.5 s |
| Operating frequency | ≥ 40 kHz |
| Type of protection | IP20 |



Ordering data

| Type | Article number |
|---|----------------|
| For luminaires with 1 lamp | |
| PC 1/24 T5 PRO Ip | 22176164 |
| PC 1/39 T5 PRO Ip | 22176165 |
| PC 1/49 T5 PRO Ip | 22176139 |
| PC 1/54 T5 PRO Ip | 22176140 |
| PC 1/80 T5 PRO Ip | 22176167 |
| For luminaires with 2 lamps | |
| PC 2/24 T5 PRO Ip | 22176168 |
| PC 2/39 T5 PRO Ip | 22176166 |
| PC 2/49 T5 PRO Ip | 22176099 |
| PC 2/54 T5 PRO Ip | 22176100 |
| PC 2/80 T5 PRO Ip | 22176234 |
| For luminaires with 3 or 4 lamps | |
| PC 3/4/24 T5 PRO Ip | 22176047 |

Packaging 280 mm casing: 10 pieces/carton, 960 pieces/pallet

Packaging 360 mm casing: 10 pieces/carton, 760 pieces/pallet

Packaging 425 mm casing: 10 pieces/carton, 640 pieces/pallet



Standards, page 3

Wiring diagrams and installation examples, page 6

Specific technical data

| Lamp wattage | Lamp type | Type | Length L | Hole spacing D | Weight | Lamp wattage | Circuit power | EEI | Current at 50 Hz | | λ at 50 Hz | | tc point | Ambient temperature ta |
|----------------------------------|--------------|---------------------|----------|-------------------|---------|-----------------|------------------|-----|------------------|--------|------------|-------|----------|---------------------------|
| | | | | | | | | | 220 V | 240 V | 220 V | 240 V | | |
| For luminaires with 1 lamp | | | | | | | | | | | | | | |
| 1 x 24 W | T5 | PC 1/24 T5 PRO Ip | 280 mm | 270 mm | 0.18 kg | 22.5 W | 25.7 W | A2 | 0.12 A | 0.11 A | 0.96 | 0.95 | 70 °C | -25 ... 60 °C |
| 1 x 24 W | TC-L | PC 1/24 T5 PRO Ip | 280 mm | 270 mm | 0.18 kg | 22.0 W | 24.9 W | A2 | 0.12 A | 0.11 A | 0.96 | 0.95 | 70 °C | -25 ... 60 °C |
| 1 x 39 W | T5 | PC 1/39 T5 PRO Ip | 280 mm | 270 mm | 0.18 kg | 38.0 W | 40.4 W | A2 | 0.19 A | 0.17 A | 0.98 | 0.97 | 75 °C | -25 ... 60 °C |
| 1 x 49 W | T5 | PC 1/49 T5 PRO Ip | 280 mm | 270 mm | 0.20 kg | 49.2 W | 52.5 W | A2 | 0.24 A | 0.23 A | 0.99 | 0.97 | 75 °C | -25 ... 55 °C |
| 1 x 54 W | T5 | PC 1/54 T5 PRO Ip | 280 mm | 270 mm | 0.20 kg | 54.1 W | 57.5 W | A2 | 0.26 A | 0.25 A | 0.99 | 0.97 | 70 °C | -25 ... 50 °C |
| 1 x 55 W | TC-L | PC 1/54 T5 PRO Ip | 280 mm | 270 mm | 0.20 kg | 55.0 W | 59.0 W | A2 | 0.26 A | 0.24 A | 0.98 | 0.97 | 70 °C | -25 ... 50 °C |
| 1 x 80 W | T5 | PC 1/80 T5 PRO Ip | 360 mm | 350 mm | 0.25 kg | 79.8 W | 85.8 W | A2 | 0.40 A | 0.36 A | 0.99 | 0.98 | 75 °C | -25 ... 55 °C |
| For luminaires with 2 lamps | | | | | | | | | | | | | | |
| 2 x 24 W | T5 | PC 2/24 T5 PRO Ip | 360 mm | 350 mm | 0.22 kg | 45.0 W | 48.8 W | A2 | 0.23 A | 0.21 A | 0.98 | 0.97 | 70 °C | -25 ... 60 °C |
| 2 x 24 W | TC-L | PC 2/24 T5 PRO Ip | 360 mm | 350 mm | 0.22 kg | 44.0 W | 48.8 W | A2 | 0.23 A | 0.21 A | 0.98 | 0.97 | 70 °C | -25 ... 60 °C |
| 2 x 39 W | T5 | PC 2/39 T5 PRO Ip | 360 mm | 350 mm | 0.25 kg | 76.0 W | 83.4 W | A2 | 0.39 A | 0.36 A | 0.98 | 0.98 | 75 °C | -25 ... 55 °C |
| 2 x 49 W | T5 | PC 2/49 T5 PRO Ip | 360 mm | 350 mm | 0.26 kg | 98.4 W | 107.0 W | A2 | 0.49 A | 0.46 A | 0.99 | 0.97 | 80 °C | -25 ... 50 °C |
| 2 x 54 W | T5 | PC 2/54 T5 PRO Ip | 360 mm | 350 mm | 0.26 kg | 108.2 W | 114.5 W | A2 | 0.53 A | 0.49 A | 0.99 | 0.97 | 80 °C | -25 ... 50 °C |
| 2 x 55 W | TC-L | PC 2/54 T5 PRO Ip | 360 mm | 350 mm | 0.26 kg | 108.2 W | 114.5 W | A2 | 0.53 A | 0.49 A | 0.99 | 0.97 | 80 °C | -25 ... 50 °C |
| 2 x 80 W | T5 | PC 2/80 T5 PRO Ip | 425 mm | 415 mm | 0.33 kg | 160.0 W | 166.6 W | A2 | 0.77 A | 0.70 A | 0.99 | 0.99 | 75 °C | -25 ... 55 °C |
| For luminaires with 3 or 4 lamps | | | | | | | | | | | | | | |
| 3 x 24 W | T5 | PC 3/4/24 T5 PRO Ip | 425 mm | 415 mm | 0.28 kg | 67.5 W | 76.0 W | A2 | 0.35 A | 0.33 A | 0.98 | 0.97 | 75 °C | -25 ... 55 °C |
| 4 x 24 W | T5 | PC 3/4/24 T5 PRO Ip | 425 mm | 415 mm | 0.28 kg | 90.0 W | 99.0 W | A2 | 0.45 A | 0.42 A | 0.99 | 0.98 | 75 °C | -25 ... 50 °C |

Standards

EN 55015
EN 61347-2-4
EN 61347-2-3
EN 60929
EN 61000-3-2
EN 61547
according to EN 50172
IEC 60068-2-64 Fh
IEC 60068-2-29 Eb
IEC 60068-2-30

Lamp starting characteristics

Warm start
Starting time 1.5 secs 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

Intelligent Voltage Guard

Intelligent Voltage Guard is the name of the new
electronic monitor from Tridonic. This innovative
feature of the PC PRO family of control gear from
Tridonic immediately shows if the mains voltage
rises above or falls below certain thresholds. Measu-
res can then be taken quickly to prevent damage to
the control gear.

- If the mains voltage rises above 306 V the lamps
start flashing on and off.
- This signal “demands” disconnection of the
power supply to the lighting system.
- If the mains voltage falls below 150 V the control
gear automatically disconnects the lamp circuit
to protect the control gear from being irreparably
damaged.

Smart Heating

Innovative heating circuit. Reduced filament heating
after lamp ignition.

Mains current in DC operation

| Type | Lamp type | Wattage | Mains current at $U_n = 220 V_{DC}$ | Mains current at $U_n = 240 V_{DC}$ |
|---------------------|-----------|---------|--|--|
| PC 1/24 T5 PRO Ip | T5 | 1x24 W | 118 mA | 108 mA |
| PC 1/24 T5 PRO Ip | TC-L | 1x24 W | 114 mA | 104 mA |
| PC 2/24 T5 PRO Ip | T5 | 2x24 W | 224 mA | 204 mA |
| PC 2/24 T5 PRO Ip | TC-L | 2x24 W | 224 mA | 205 mA |
| PC 3/4/24 T5 PRO Ip | T5 | 3x24 W | 338 mA | 310 mA |
| PC 3/4/24 T5 PRO Ip | T5 | 4x24 W | 446 mA | 408 mA |
| PC 1/39 T5 PRO Ip | T5 | 1x39 W | 186 mA | 170 mA |
| PC 2/39 T5 PRO Ip | T5 | 2x39 W | 382 mA | 349 mA |
| PC 1/49 T5 PRO Ip | T5 | 1x49 W | 239 mA | 219 mA |
| PC 2/49 T5 PRO Ip | T5 | 2x49 W | 486 mA | 446 mA |
| PC 1/54 T5 PRO Ip | T5 | 1x54 W | 261 mA | 240 mA |
| PC 1/54 T5 PRO Ip | TC-L | 1x55 W | 263 mA | 241 mA |
| PC 2/54 T5 PRO Ip | T5 | 2x54 W | 520 mA | 477 mA |
| PC 2/54 T5 PRO Ip | TC-L | 2x55 W | 520 mA | 477 mA |
| PC 1/80 T5 PRO Ip | T5 | 1x80 W | 392 mA | 359 mA |
| PC 2/80 T5 PRO Ip | T5 | 2x80 W | 765 mA | 701 mA |

Harmonic distortion in the mains supply

| Type | Lamp type | Wattage | THD at 230 V / 50 Hz |
|---------------------|-----------|---------|-------------------------|
| PC 1/24 T5 PRO Ip | T5 | 1x24 W | $< 10\%$ |
| PC 1/24 T5 PRO Ip | TC-L | 1x24 W | $< 10\%$ |
| PC 2/24 T5 PRO Ip | T5 | 2x24 W | $< 10\%$ |
| PC 2/24 T5 PRO Ip | TC-L | 2x24 W | $< 10\%$ |
| PC 3/4/24 T5 PRO Ip | T5 | 3x24 W | $< 10\%$ |
| PC 3/4/24 T5 PRO Ip | T5 | 4x24 W | $< 10\%$ |
| PC 1/39 T5 PRO Ip | T5 | 1x39 W | $< 10\%$ |
| PC 2/39 T5 PRO Ip | T5 | 2x39 W | $< 10\%$ |
| PC 1/49 T5 PRO Ip | T5 | 1x49 W | $< 10\%$ |
| PC 2/49 T5 PRO Ip | T5 | 2x49 W | $< 10\%$ |
| PC 1/54 T5 PRO Ip | T5 | 1x54 W | $< 10\%$ |
| PC 1/54 T5 PRO Ip | TC-L | 1x55 W | $< 10\%$ |
| PC 2/54 T5 PRO Ip | T5 | 2x54 W | $< 10\%$ |
| PC 2/54 T5 PRO Ip | TC-L | 2x55 W | $< 10\%$ |
| PC 1/80 T5 PRO Ip | T5 | 1x80 W | $< 10\%$ |
| PC 2/80 T5 PRO Ip | T5 | 2x80 W | $< 10\%$ |

Output voltage

| Type | Lamp type | Wattage | U_{out} |
|---------------------|-----------|---------|-----------|
| PC 1/24 T5 PRO Ip | T5 | 1x24 W | 250 V |
| PC 1/24 T5 PRO Ip | TC-L | 1x24 W | 250 V |
| PC 2/24 T5 PRO Ip | T5 | 2x24 W | 250 V |
| PC 2/24 T5 PRO Ip | TC-L | 2x24 W | 250 V |
| PC 3/4/24 T5 PRO Ip | T5 | 3x24 W | 350 V |
| PC 3/4/24 T5 PRO Ip | T5 | 4x24 W | 350 V |
| PC 1/39 T5 PRO Ip | T5 | 1x39 W | 250 V |
| PC 2/39 T5 PRO Ip | T5 | 2x39 W | 250 V |
| PC 1/49 T5 PRO Ip | T5 | 1x49 W | 300 V |
| PC 2/49 T5 PRO Ip | T5 | 2x49 W | 300 V |
| PC 1/54 T5 PRO Ip | T5 | 1x54 W | 250 V |
| PC 1/54 T5 PRO Ip | TC-L | 1x55 W | 250 V |
| PC 2/54 T5 PRO Ip | T5 | 2x54 W | 350 V |
| PC 2/54 T5 PRO Ip | TC-L | 2x55 W | 350 V |
| PC 1/80 T5 PRO Ip | T5 | 1x80 W | 300 V |
| PC 2/80 T5 PRO Ip | T5 | 2x80 W | 400 V |

Ballast lumen factor (EN 60929 8.1)

| Type | Lamp type | Wattage | AC/DC-BLF at U = 198–254 V, 25 °C |
|---------------------|-----------|---------|--------------------------------------|
| PC 1/24 T5 PRO Ip | T5 | 1x24 W | 1,00 |
| PC 1/24 T5 PRO Ip | TC-L | 1x24 W | 1,00 |
| PC 2/24 T5 PRO Ip | T5 | 2x24 W | 1,00 |
| PC 2/24 T5 PRO Ip | TC-L | 2x24 W | 1,00 |
| PC 3/4/24 T5 PRO Ip | T5 | 3x24 W | 1,03 |
| PC 3/4/24 T5 PRO Ip | T5 | 4x24 W | 1,07 |
| PC 1/39 T5 PRO Ip | T5 | 1x39 W | 1,00 |
| PC 2/39 T5 PRO Ip | T5 | 2x39 W | 1,00 |
| PC 1/49 T5 PRO Ip | T5 | 1x49 W | 1,00 |
| PC 2/49 T5 PRO Ip | T5 | 2x49 W | 1,00 |
| PC 1/54 T5 PRO Ip | T5 | 1x54 W | 1,00 |
| PC 1/54 T5 PRO Ip | TC-L | 1x55 W | 1,00 |
| PC 2/54 T5 PRO Ip | T5 | 2x54 W | 1,00 |
| PC 2/54 T5 PRO Ip | TC-L | 2x55 W | 0,95 |
| PC 1/80 T5 PRO Ip | T5 | 1x80 W | 1,00 |
| PC 2/80 T5 PRO Ip | T5 | 2x80 W | 1,00 |

PC PRO with xitec processor

Is the very latest in lighting management design technology. The lamp friendly warm start is delivering maximum lamp life and enables high switching frequency applications. Smallest power loss and new freedom in the lamp design thanks to convincing thermal management.

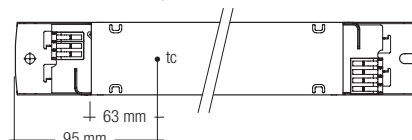
Energy class CELMA EEI = A2¹⁾

PC T5 PRO Ip 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.

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

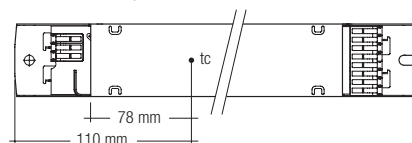
Temperature range

PC 1/24–54 T5 PRO Ip



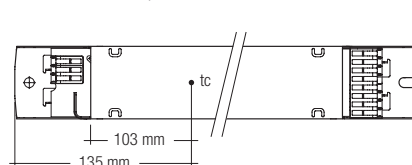
PC 2/24–54 T5 PRO Ip

PC 1/80 T5 PRO Ip



PC 2/80 T5 PRO Ip

PC 3/4/24 T5 PRO Ip



The nominal ta and tc point are related to the ballast life duration.

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

PC T5 PRO Ip is designed for an average service life of 50,000 hours 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.

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

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

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

Loading of automatic circuit breakers

| Automatic circuit breaker type | C10 | C13 | C16 | C20 | B10 | B13 | B16 | B20 |
|--------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Installation Ø | 1.5 mm ² | 1.5 mm ² | 1.5 mm ² | 2.5 mm ² | 1.5 mm ² | 1.5 mm ² | 1.5 mm ² | 2.5 mm ² |
| PC 1/24 T5 PRO Ip | 28 | 40 | 44 | 58 | 14 | 20 | 22 | 29 |
| PC 2/24 T5 PRO Ip | 28 | 40 | 44 | 58 | 14 | 20 | 22 | 29 |
| PC 3/4/24 T5 PRO Ip | 14 | 18 | 22 | 28 | 7 | 9 | 11 | 14 |
| PC 1/39 T5 PRO Ip | 28 | 40 | 44 | 58 | 14 | 20 | 22 | 29 |
| PC 2/39 T5 PRO Ip | 18 | 28 | 30 | 36 | 9 | 14 | 15 | 18 |
| PC 1/49 T5 PRO Ip | 28 | 40 | 44 | 58 | 14 | 20 | 22 | 29 |
| PC 1/54 T5 PRO Ip | 28 | 40 | 44 | 58 | 14 | 20 | 22 | 29 |
| PC 2/49 T5 PRO Ip | 18 | 28 | 30 | 36 | 9 | 14 | 15 | 18 |
| PC 2/54 T5 PRO Ip | 14 | 20 | 24 | 30 | 7 | 10 | 12 | 15 |
| PC 1/80 T5 PRO Ip | 18 | 28 | 30 | 36 | 9 | 14 | 15 | 18 |
| PC 2/80 T5 PRO Ip | 10 | 14 | 16 | 20 | 5 | 7 | 8 | 10 |

Wiring advice

The lead length is dependant on the capacitance of the cable.

For safety reasons, the PC T5 PRO Ip 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 | | | |
|---------------------|----------|-----------------------------|---------------|--------|--------|
| Type | | Cold | Hot | Cold | Hot |
| PC 1/xx T5 PRO Ip | | 11, 12 | 9, 10 | 200 pF | 100 pF |
| PC 2/xx T5 PRO Ip | | 11, 12, 13, 14 | 9, 10, 15, 16 | 200 pF | 100 pF |
| PC 3/4/24 T5 PRO Ip | | 5, 6, 7, 8, 11, 14 | 9, 10, 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.)

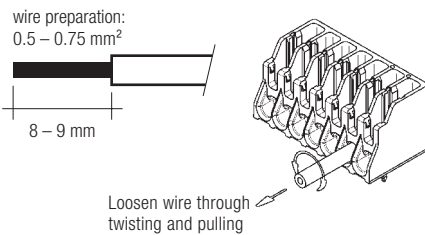
Installation instructions

IDC interface

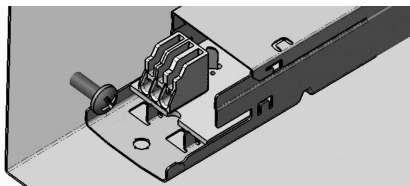
- solid wire with a cross section of 0.5 mm² according to the specification from WAGO

Horizontal interface

- solid wire with a cross section of 0.5–0.75 mm² according to the specification from WAGO
- solid wire with a cross section of 1.0 mm² with an insulation diameter up to 2.5 mm
- strip 9 mm of insulation from the cables to ensure perfect operation of the push terminals
- Loosen wire through twisting and pulling



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.

| T5 High Output (FO) | wattage | length |
|---------------------|---------|---------|
| | 24 W | 549 mm |
| | 39 W | 849 mm |
| | 49 W | 1449 mm |
| | 54 W | 1149 mm |
| | 80 W | 1449 mm |

With standard solid wire 0.5/0.75 mm² 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 should be made with symmetrical wiring
- hot leads 9, 10, 15, 16 and cold leads 11, 12, 13, 14 should be separated as much as possible

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_{DC} 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.

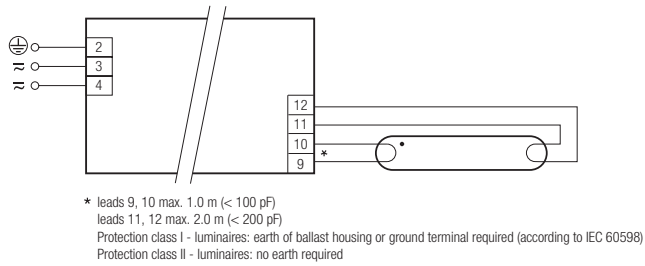
As an alternative, IEC 60598-1 Annex Q describes a test of the electrical strength with 1500 V_{AC} (or 1.414 x 1500 V_{DC}). To avoid damage to the electronic devices this test must not be conducted.

Additional information

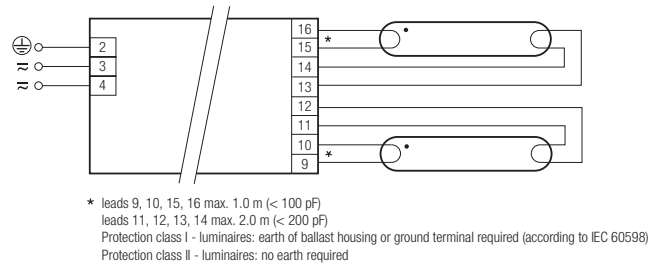
Additional technical information at www.tridonic.com → Technical Data

Guarantee conditions at www.tridonic.com → Services

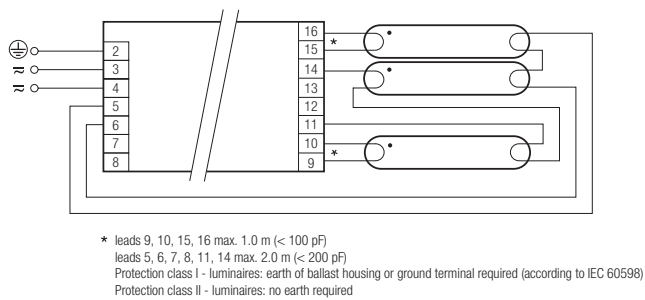
No warranty if device was opened.



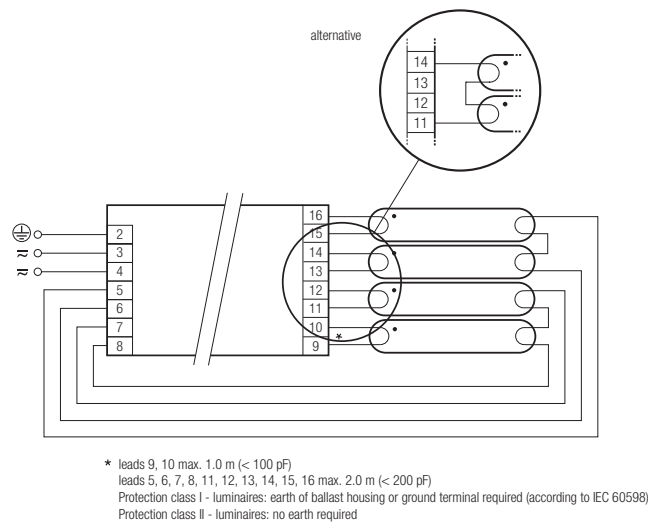
PC 1/24-80 T5 PRO Ip



PC 2/24-80 T5 PRO Ip



PC 3/24 T5 PRO Ip



PC 4/24 T5 PRO Ip