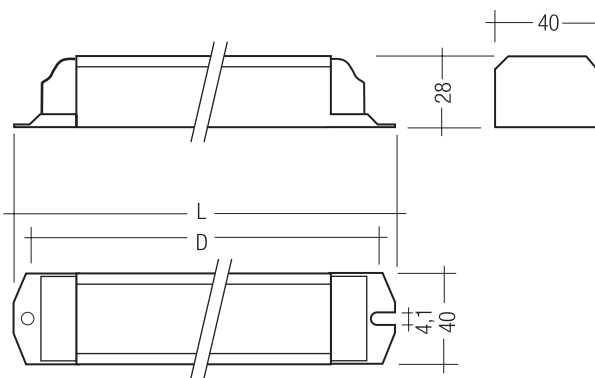


PC TCL PRO, 18 – 55 W

T5c, T8 and TC-L compact fluorescent lamps (CFL)

Product description

- Average life = 50,000 hours (at max ta.
with a failure rate $\leq 0.2\%$ 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



Standards, page 2

Wiring diagrams and installation examples, page 4

Ordering data

Type	Article number
For luminaires with 1 lamp	
PC 1/18/24 TCL PRO	22176068
PC 1/36 TCL PRO	22176141
PC 1/40 TCL PRO	22176142
PC 1/55 TCL PRO	22176169
For luminaires with 2 lamps	
PC 2/18/24 TCL PRO	22176069
PC 2/36 TCL PRO	22176170
PC 2/40 TCL PRO	22176143
PC 2/55 TCL PRO	22176233

Packaging 234 mm casing: 10 pieces/carton, 630 pieces/pallet

Packaging 360 mm casing: 10 pieces/carton, 420 pieces/pallet

Specific technical data

Lamp wattage	Lamp type	Type	Length L	Hole spacing D	Weight	Lamp wattage	Circuit power	EEL	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 18 W	TC-L	PC 1/18/24 TCL PRO	234 mm	220 mm	0.28 kg	16 W	18.5 W	A3	0.09 A	0.08 A	0.96	0.94	75 °C	-25 ... 60 °C
1 x 24 W	TC-L	PC 1/18/24 TCL PRO	234 mm	220 mm	0.28 kg	22 W	25.0 W	A3	0.12 A	0.11 A	0.98	0.96	75 °C	-25 ... 60 °C
1 x 38 W	T8	PC 1/36 TCL PRO	234 mm	220 mm	0.18 kg	32 W	34.2 W	A2	0.16 A	0.14 A	0.99	0.98	70 °C	-25 ... 60 °C
1 x 36 W	TC-L	PC 1/36 TCL PRO	234 mm	220 mm	0.18 kg	32 W	33.8 W	A2	0.16 A	0.14 A	0.99	0.98	70 °C	-25 ... 60 °C
1 x 40 W	TC-L	PC 1/40 TCL PRO	234 mm	220 mm	0.18 kg	40 W	44.1 W	A2	0.20 A	0.19 A	0.99	0.98	70 °C	-25 ... 60 °C
1 x 55 W	TC-L	PC 1/55 TCL PRO	234 mm	220 mm	0.20 kg	55 W	61.1 W	A2	0.28 A	0.26 A	0.98	0.98	75 °C	-25 ... 55 °C
1 x 55 W	T5c	PC 1/55 TCL PRO	234 mm	220 mm	0.20 kg	55 W	60.9 W	A2	0.28 A	0.26 A	0.98	0.98	70 °C	-25 ... 55 °C
For luminaires with 2 lamps														
2 x 18 W	TC-L	PC 2/18/24 TCL PRO	234 mm	220 mm	0.28 kg	32 W	36.0 W	A2	0.17 A	0.16 A	0.98	0.96	75 °C	-25 ... 60 °C
2 x 24 W	TC-L	PC 2/18/24 TCL PRO	234 mm	220 mm	0.28 kg	44 W	49.0 W	A2	0.22 A	0.21 A	0.99	0.97	75 °C	-25 ... 60 °C
2 x 38 W	T8	PC 2/36 TCL PRO	234 mm	220 mm	0.22 kg	64 W	72.6 W	A2	0.34 A	0.31 A	0.98	0.98	75 °C	-25 ... 50 °C
2 x 36 W	TC-L	PC 2/36 TCL PRO	234 mm	220 mm	0.22 kg	64 W	72.8 W	A2	0.34 A	0.31 A	0.98	0.98	75 °C	-25 ... 50 °C
2 x 40 W	TC-L	PC 2/40 TCL PRO	234 mm	220 mm	0.22 kg	80 W	89.6 W	A2	0.42 A	0.38 A	0.99	0.98	75 °C	-25 ... 55 °C
2 x 55 W	TC-L	PC 2/55 TCL PRO	360 mm	350 mm	0.30 kg	110 W	121.1 W	A2	0.56 A	0.52 A	0.99	0.99	70 °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 68-2-64 Fh
 IEC 68-2-29 Eb
 IEC 68-2-30

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. Measures can then be taken quickly to prevent damage to the control gear.

- If the mains voltage rises above approx. 306 V (voltage depends on the ballast type), the lamp starts 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 $U_n = 220\text{ V}_{DC}$	Mains current at $U_n = 240\text{ V}_{DC}$
PC 1/18/24 TCL PRO	TC-L	1x18 W	80 mA	75 mA
PC 1/18/24 TCL PRO	TC-L	1x24 W	114 mA	105 mA
PC 1/36 TCL PRO	T8	1x38 W	157 mA	143 mA
PC 1/36 TCL PRO	TC-L	1x36 W	155 mA	142 mA
PC 1/40 TCL PRO	TC-L	1x40 W	202 mA	185 mA
PC 1/55 TCL PRO	TC-L	1x55 W	280 mA	256 mA
PC 1/55 TCL PRO	T5c	1x55 W	278 mA	255 mA
PC 2/18/24 TCL PRO	TC-L	2x18 W	160 mA	147 mA
PC 2/18/24 TCL PRO	TC-L	2x24 W	231 mA	214 mA
PC 2/36 TCL PRO	T8	2x38 W	333 mA	304 mA
PC 2/36 TCL PRO	TC-L	2x36 W	333 mA	305 mA
PC 2/40 TCL PRO	TC-L	2x40 W	412 mA	377 mA
PC 2/55 TCL PRO	TC-L	2x55 W	556 mA	507 mA

Harmonic distortion in the mains supply

Typ	Lamp type	Wattage	THD at 230 V/50 Hz
PC 1/18/24 TCL PRO	TC-L	1x18 W	< 10 %
PC 1/18/24 TCL PRO	TC-L	1x24 W	< 10 %
PC 1/36 TCL PRO	T8	1x38 W	< 10 %
PC 1/36 TCL PRO	TC-L	1x36 W	< 10 %
PC 1/40 TCL PRO	TC-L	1x40 W	< 10 %
PC 1/55 TCL PRO	TC-L	1x55 W	< 10 %
PC 1/55 TCL PRO	T5c	1x55 W	< 10 %
PC 2/18/24 TCL PRO	TC-L	2x18 W	< 10 %
PC 2/18/24 TCL PRO	TC-L	2x24 W	< 10 %
PC 2/36 TCL PRO	T8	2x38 W	< 10 %
PC 2/36 TCL PRO	TC-L	2x36 W	< 10 %
PC 2/40 TCL PRO	TC-L	2x40 W	< 10 %
PC 2/55 TCL PRO	TC-L	2x55 W	< 10 %

Working voltage

Type	Lamp type	Wattage	U_{out}
PC 1/18/24 TCL PRO	TC-L	1x18 W	250 V
PC 1/18/24 TCL PRO	TC-L	1x24 W	250 V
PC 1/36 TCL PRO	T8	1x38 W	250 V
PC 1/36 TCL PRO	TC-L	1x36 W	250 V
PC 1/40 TCL PRO	TC-L	1x40 W	250 V
PC 1/55 TCL PRO	TC-L	1x55 W	250 V
PC 1/55 TCL PRO	T5c	1x55 W	250 V
PC 2/18/24 TCL PRO	TC-L	2x18 W	250 V
PC 2/18/24 TCL PRO	TC-L	2x24 W	250 V
PC 2/36 TCL PRO	T8	2x38 W	250 V
PC 2/36 TCL PRO	TC-L	2x36 W	250 V
PC 2/40 TCL PRO	TC-L	2x40 W	250 V
PC 2/55 TCL PRO	TC-L	2x55 W	250 V

Ballast lumen factor (EN 60929 8.1)

Type	Lamp type	Wattage	AC/DC-BLF bei $U = 198\text{--}254\text{ V}$, 25 °C
PC 1/18/24 TCL PRO	TC-L	1x18 W	0.98
PC 1/18/24 TCL PRO	TC-L	1x24 W	1.00
PC 1/36 TCL PRO	T8	1x38 W	1.00
PC 1/36 TCL PRO	TC-L	1x36 W	1.00
PC 1/40 TCL PRO	TC-L	1x40 W	1.00
PC 1/55 TCL PRO	TC-L	1x55 W	1.00
PC 1/55 TCL PRO	T5c	1x55 W	0.98
PC 2/18/24 TCL PRO	TC-L	2x18 W	0.99
PC 2/18/24 TCL PRO	TC-L	2x24 W	1.00
PC 2/36 TCL PRO	T8	2x38 W	1.00
PC 2/36 TCL PRO	TC-L	2x36 W	1.00
PC 2/40 TCL PRO	TC-L	2x40 W	1.00
PC 2/55 TCL PRO	TC-L	2x55 W	1.00

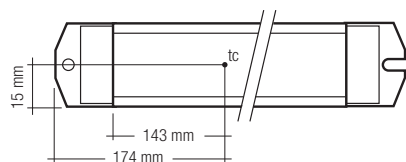
PC PRO with xitec processor

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 = A2 / A3¹⁾

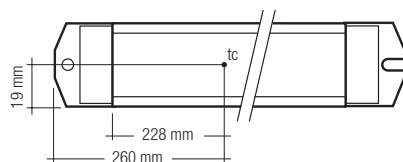
PC TCL PRO ignition technology (smart heating) optimises lamp start and ensures no energy is wasted. After the lamp has struck the filament heating is reduced automatically to a defined minimum value. This reduction in filament heating, saves energy, yet maintains the proper operating conditions for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

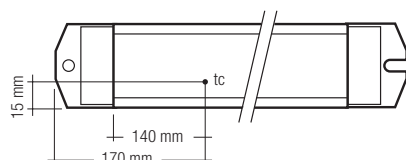
Ambient Temperature

PC 1/36 TCL PRO
PC 1/40 TCL PRO
PC 2/40 TCL PRO

PC 2/36 TCL PRO
PC 1/55 TCL PRO



PC 2/55 TCL PRO



PC 1/18/24 TCL PRO
PC 2/18/24 TCL PRO

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. 5K below t_c max., t_a temperature should be checked and eventually critical components (e.g. ELCAP) measured.

Detailed information on request.

PC TCL PRO 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 (t_a) before they can be operated.

Maximum loading of automatic circuit breakers

Automatic circuit	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 1/18/24 TCL PRO	30	40	48	60	15	20	24	30
PC 1/36 TCL PRO	34	48	54	68	17	24	27	34
PC 1/40 TCL PRO	32	46	52	62	16	23	26	31
PC 1/55 TCL PRO	28	38	50	60	14	19	25	30
PC 1/18/24 TCL PRO	24	32	38	46	12	16	19	23
PC 1/36 TCL PRO	24	34	44	50	12	17	22	25
PC 1/40 TCL PRO	16	24	28	32	8	12	14	16
PC 1/55 TCL PRO	8	14	18	20	4	7	9	10

Wiring advice

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

For safety reasons, the PC TCL PRO 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.

With standard solid wire 0.5/0.75 mm² the capacitance of the lead is approx. 30–80 pF/m. This value is influenced by the way the wiring is made. In borderline cases the capacitance must be measured inside the luminaire.

Keep lamp wires short. Lamp connection with twin ballast should be made with symmetrical wiring.

Hot leads (9.10) and cold leads (11.12.13.14) should be separated as much as possible.

Ballast	Terminal	Maximum capacitance allowed			
Type		Cold	Hot	Kalt	Hei
PC 1xx TCL PRO		11, 12	9, 10	200 pF	100 pF
PC 2xx TCL PRO		11, 12, 13, 14	9, 10	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.).

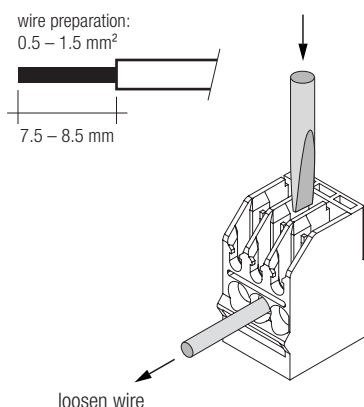
Installation instructions

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 0.5–1.5 mm² according to the specification from WAGO
- strip 7.5–8.5 mm of insulation from the cables to ensure perfect operation of the push terminals



T5c lamp information



wattage	diameter
55 W	max. 305 mm

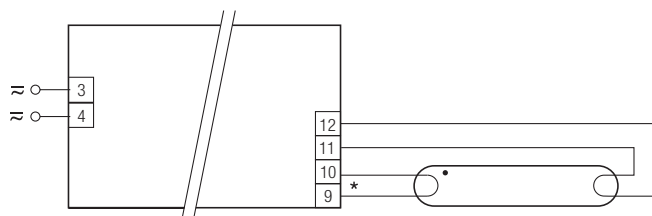
T8 lamp information



wattage	length
38 W	1050 mm

TC-L lamp information

	wattage	length
	18 W	209 mm
	24 W	309 mm
	36 W	415 mm
	40 W	535 mm
	55 W	535 mm



* leads 9, 10 max. 1.0 m (< 100 pF)
 leads 11, 12 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 1x18-55 W TCL PRO

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
- 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

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.

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.

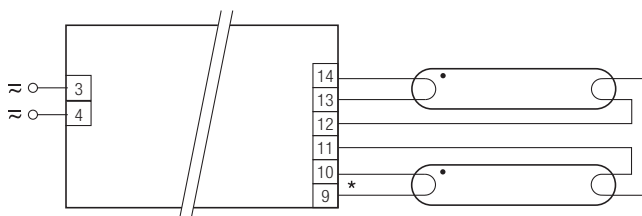
As an alternative, IEC 60598-1 Annex Q describes a test of the electrical strength with 1500 V_{AC} (or 1.414 x 1500 V_{DC}). To avoid damage to the electronic devices this test must not be conducted.

Additional information

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

Guarantee conditions at
www.tridonic.com → Services

No warranty if device was opened.



* leads 9, 10 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 2x18-55 W TCL PRO