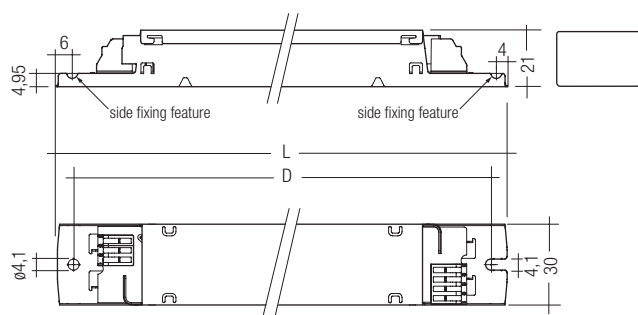


Electronic ballasts
Linear lamps T5, 16 mm and compact lamps TC-L

PC T5 PRO Ip 14–35 W 220–240 V 50/60/0 Hz, HE



- defined lamp warm start is 1.5 s
- constant light output independent of fluctuations in mains voltage
- Average service life = 50,000 h (at ta max. with a failure rate ≤ 0.2 % per 1,000 operating hours)
- AC voltage range 198–264 V
- DC voltage range 176–280 V, (lamp start ≥ 198 V DC)
- power factor > 0.95
- overvoltage protection 320 V AC, 1 h
- overvoltage indication starting at input voltage ≥ 306 V AC
- undervoltage protection (shut down) < 150 V AC / 176 V DC
- operating frequency ≥ 40 kHz

- suitable for automatic and manual wiring with insulation displacement connector (IDC)
- wide operating temperature range from -25 °C up to $+55$ °C (values see table)
- suitable for use in emergency lighting installations in accordance with EN 50172
- safe switch off of defective lamps
- automatic re-start after lamp change
- for luminaires with ∇ or ∇ and ∇ ∇ in acc. with EN 60598 / VDE 0710 and VDE 0711
- suitable for luminaires with protection class 1 and protection class 2
- Ingress protection IP 20
- thermal protection according to EN 61347-2-3 C5e

Packaging

L = 280:
box of 10
96 cartons/pallet
960 pieces/pallet

Packaging

L = 360:
box of 10
76 cartons/pallet
760 pieces/pallet

Standards:

EN 55015: 2006 + A1: 2007
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		Ballast													
watt- age W	type	type	article number	length mm	fixing centres D mm	weight kg	lamp- power W	circuit power W ①	Celma- class EEI	current at 50 Hz 220V A	240V A	λ at 50 Hz 220V	240V	tc point °C	temperature range ta °C
1x14	T5	PC 1/14-21-28-35 T5 PRO Ip 220–240 V 50/60/0 Hz	22176096	280	270	0.20	14.0	16.0	A2	0.07	0.07	0.98	0.96	75	-25 → +55
2x14	T5	PC 2/14-21-28-35 T5 PRO Ip 220–240 V 50/60/0 Hz	22176097	360	350	0.26	28.0	31.0	A2	0.14	0.14	0.98	0.96	80	-25 → +50
3x14	T5	PC 3/4/14 T5 PRO Ip 220–240 V 50/60/0 Hz	22176315	360	350	0.25	42.0	47.1	A2	0.22	0.20	0.98	0.97	65	-25 → +50
4x14	T5	PC 3/4/14 T5 PRO Ip 220–240 V 50/60/0 Hz	22176315	360	350	0.25	56.0	62.3	A2	0.29	0.26	0.99	0.98	70	-25 → +50
1x21	T5	PC 1/14-21-28-35 T5 PRO Ip 220–240 V 50/60/0 Hz	22176096	280	270	0.20	20.6	22.5	A2	0.10	0.10	0.98	0.96	75	-25 → +55
2x21	T5	PC 2/14-21-28-35 T5 PRO Ip 220–240 V 50/60/0 Hz	22176097	360	350	0.26	41.2	45.5	A2	0.21	0.20	0.99	0.97	80	-25 → +50
1x28	T5	PC 1/14-21-28-35 T5 PRO Ip 220–240 V 50/60/0 Hz	22176096	280	270	0.20	27.9	30.5	A2	0.14	0.13	0.98	0.96	75	-25 → +55
2x28	T5	PC 2/14-21-28-35 T5 PRO Ip 220–240 V 50/60/0 Hz	22176097	360	350	0.26	55.8	61.0	A2	0.28	0.26	0.99	0.97	80	-25 → +50
1x28	TC-L	PC 1/14-21-28-35 T5 PRO Ip 220–240 V 50/60/0 Hz	22176096	280	270	0.20	25.8	29.0	A2	0.13	0.12	0.98	0.97	70	-25 → +55
2x28	TC-L	PC 2/14-21-28-35 T5 PRO Ip 220–240 V 50/60/0 Hz	22176097	360	350	0.26	49.7	54.5	A2	0.25	0.23	0.98	0.97	70	-25 → +50
1x35	T5	PC 1/14-21-28-35 T5 PRO Ip 220–240 V 50/60/0 Hz	22176096	280	270	0.20	35.5	38.5	A2	0.18	0.17	0.98	0.96	75	-25 → +55
2x35	T5	PC 2/14-21-28-35 T5 PRO Ip 220–240 V 50/60/0 Hz	22176097	360	350	0.26	71.0	76.5	A2	0.35	0.33	0.99	0.97	80	-25 → +50

① measured according to EN 50294



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 TridonicAtco. This innovative feature of the PC PRO family of control gear from TridonicAtco 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 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 currents in DC operation

type	lamp type	wattage W	mains current at Un = 220 VDC	mains current at Un = 240 VDC
PC 1/14-21-28-35 T5 PRO Ip	T5	1x14	73 mA	67 mA
PC 2/14-21-28-35 T5 PRO Ip	T5	2x14	141 mA	129 mA
PC 3/4/14 T5 PRO Ip	T5	3x14	217 mA	201 mA
PC 3/4/14 T5 PRO Ip	T5	4x14	287 mA	264 mA
PC 1/14-21-28-35 T5 PRO Ip	T5	1x21	102 mA	94 mA
PC 2/14-21-28-35 T5 PRO Ip	T5	2x21	207 mA	190 mA
PC 1/14-21-28-35 T5 PRO Ip	T5	1x28	139 mA	127 mA
PC 2/14-21-28-35 T5 PRO Ip	T5	2x28	277 mA	254 mA
PC 1/14-21-28-35 T5 PRO Ip	TC-L	1x28	125 mA	115 mA
PC 2/14-21-28-35 T5 PRO Ip	TC-L	2x28	250 mA	230 mA
PC 1/14-21-28-35 T5 PRO Ip	T5	1x35	175 mA	160 mA
PC 2/14-21-28-35 T5 PRO Ip	T5	2x35	348 mA	319 mA

Harmonic distortion in the mains supply

type	lamp type	wattage W	THD at 230 V / 50 Hz
PC 1/14-21-28-35 T5 PRO Ip	T5	1x14	< 12 %
PC 2/14-21-28-35 T5 PRO Ip	T5	2x14	< 12 %
PC 3/4/14 T5 PRO Ip	T5	3x14	< 10 %
PC 3/4/14 T5 PRO Ip	T5	4x14	< 10 %
PC 1/14-21-28-35 T5 PRO Ip	T5	1x21	< 10 %
PC 2/14-21-28-35 T5 PRO Ip	T5	2x21	< 10 %
PC 1/14-21-28-35 T5 PRO Ip	T5	1x28	< 10 %
PC 2/14-21-28-35 T5 PRO Ip	T5	2x28	< 10 %
PC 1/14-21-28-35 T5 PRO Ip	TC-L	1x28	< 10 %
PC 2/14-21-28-35 T5 PRO Ip	TC-L	2x28	< 10 %
PC 1/14-21-28-35 T5 PRO Ip	T5	1x35	< 10 %
PC 2/14-21-28-35 T5 PRO Ip	T5	2x35	< 10 %

Output voltage

type	lamp type	wattage W	U _{out}
PC 1/14-21-28-35 T5 PRO Ip	T5	1x14	300 V
PC 2/14-21-28-35 T5 PRO Ip	T5	2x14	400 V
PC 3/4/14 T5 PRO Ip	T5	3x14	400 V
PC 3/4/14 T5 PRO Ip	T5	4x14	400 V
PC 1/14-21-28-35 T5 PRO Ip	T5	1x21	300 V
PC 2/14-21-28-35 T5 PRO Ip	T5	2x21	400 V
PC 1/14-21-28-35 T5 PRO Ip	T5	1x28	300 V
PC 2/14-21-28-35 T5 PRO Ip	T5	2x28	400 V
PC 1/14-21-28-35 T5 PRO Ip	TC-L	1x28	300 V
PC 2/14-21-28-35 T5 PRO Ip	TC-L	2x28	400 V
PC 1/14-21-28-35 T5 PRO Ip	T5	1x35	300 V
PC 2/14-21-28-35 T5 PRO Ip	T5	2x35	400 V

Ballast lumen factor

EN 60929 8.1

type	lamp type	wattage W	AC/DC-BLF at U = 198–254 V, 25 °C
PC 1/14-21-28-35 T5 PRO Ip	T5	1x14	1.00
PC 2/14-21-28-35 T5 PRO Ip	T5	2x14	1.00
PC 3/4/14 T5 PRO Ip	T5	3x14	1.00
PC 3/4/14 T5 PRO Ip	T5	4x14	1.00
PC 1/14-21-28-35 T5 PRO Ip	T5	1x21	1.00
PC 2/14-21-28-35 T5 PRO Ip	T5	2x21	1.00
PC 1/14-21-28-35 T5 PRO Ip	T5	1x28	1.00
PC 2/14-21-28-35 T5 PRO Ip	T5	2x28	1.00
PC 1/14-21-28-35 T5 PRO Ip	TC-L	1x28	0.93
PC 2/14-21-28-35 T5 PRO Ip	TC-L	2x28	0.93
PC 1/14-21-28-35 T5 PRO Ip	T5	1x35	1.00
PC 2/14-21-28-35 T5 PRO Ip	T5	2x35	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.

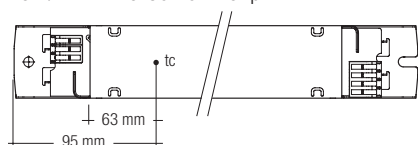


Energy class CELMA EEI = A2

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.

Ambient Temperature

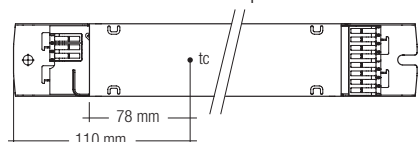
PC 1/14-21-28-35 T5 PRO Ip



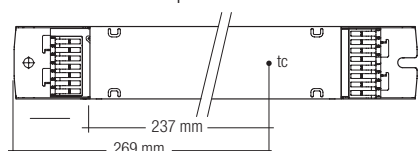
The nominal t_a and t_c point are related to the ballast life duration. The relation of t_c to t_a temperature depends also on the luminaire design. If the measured t_c temperature is approx. 5 K below t_c max., t_a temperature should be checked and eventually critical components (e.g. ELCAP) measured. Detailed information on request.

PC 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.

PC 2/14-21-28-35 T5 PRO Ip



PC 3/4/14 T5 PRO Ip



Maximum loading of automatic circuit breakers

Automatic circuit breaker type	C10	C13	C16	C20	B10	B13	B16	B20
Installation \varnothing	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 1/14-21-28-35 T5 PRO Ip	32	44	50	64	16	22	25	32
PC 2/14-21-28-35 T5 PRO Ip	18	24	28	34	9	12	14	17
PC 3/4/14 T5 PRO Ip	32	42	52	65	20	30	33	39

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.

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 with multi-lamp ballasts should be made with symmetrical wiring
- for 1 and 2 lamp ballasts: hot leads 9, 10, 15, 16 and cold leads 11, 12, 13, 14 should be separated as much as possible

Ballast Type	Terminal		Maximum capacitance allowed	
	Cold	Hot	Cold	Hot
PC 1/14-21-28-35 T5 PRO Ip	11, 12	9, 10	200 pF	100 pF
PC 2/14-21-28-35 T5 PRO Ip	11, 12, 13, 14	9, 10, 15, 16	200 pF	100 pF
PC 3/4/14 T5 PRO Ip	5, 6, 7, 8, 11, 12, 13, 14, 15, 16	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



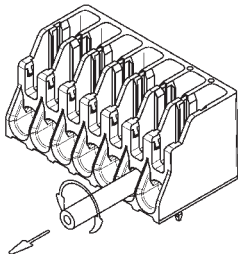
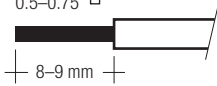
IDC interface

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

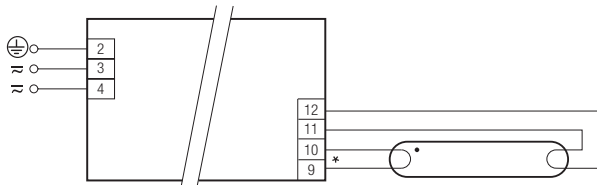
Horizontal interface

- solid wire with a cross section of 0.5–0.75 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

wire preparation:
0.5–0.75 □

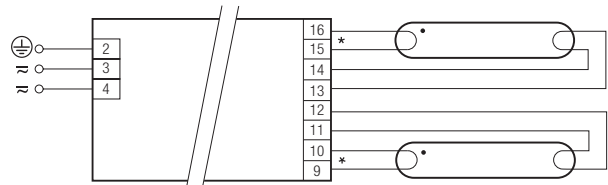


Loosen wire through twisting and pulling



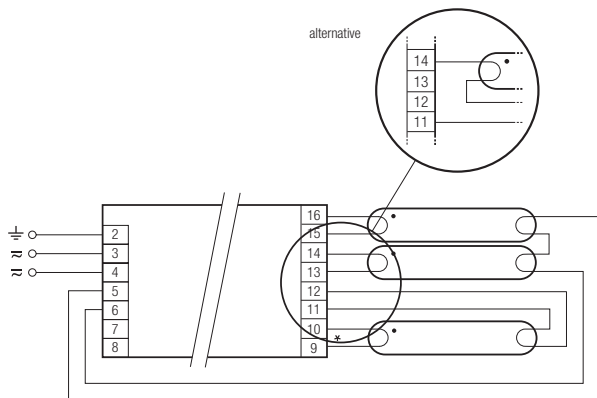
* leads 9, 10 max. 1.0 m (< 100 pF)
leads 11, 12 max. 2.0 m (< 200 pF)
SK I - luminaires: earth of ballast housing required (according to IEC 598)
SK II - luminaires: no earth required

PC 1/14-21-28-35 T5 PRO Ip



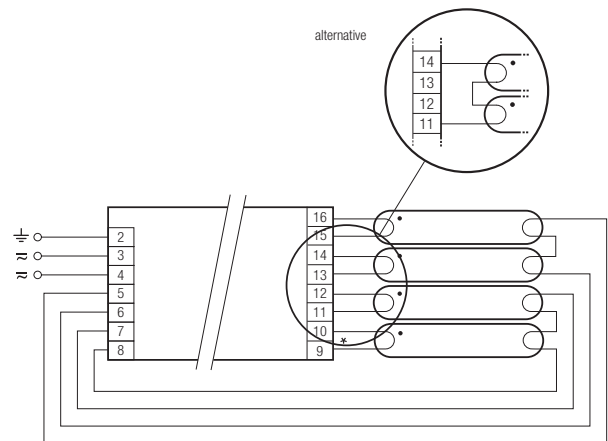
* leads 9, 10, 15, 16 max. 1.0 m (< 100 pF)
leads 11, 12, 13, 14 max. 2.0 m (< 200 pF)
SK I - luminaires: earth of ballast housing required (according to IEC 598)
SK II - luminaires: no earth required

PC 2/14-21-28-35 T5 PRO Ip



* leads 9, 10 max. 1.0 m (< 100 pF)
leads 5, 6, 7, 8, 11, 12, 13, 14, 15, 16 max. 2.0 m (< 200 pF)
SK I - luminaires: earth of ballast housing required (according to IEC 598)
SK II - luminaires: no earth required

PC 3/4/14 T5 PRO Ip



* leads 9, 10 max. 1.0 m (< 100 pF)
leads 5, 6, 7, 8, 11, 12, 13, 14, 15, 16 max. 2.0 m (< 200 pF)
SK I - luminaires: earth of ballast housing required (according to IEC 598)
SK II - luminaires: no earth required

PC 3/4/14 T5 PRO Ip

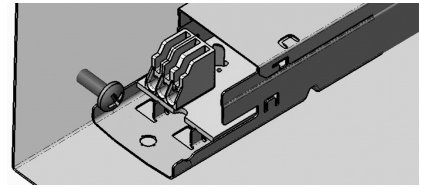
RFI

TridonicAtco ballasts are RFI protected in accordance with EN 55015: 2006 + A1: 2007.

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

Side fixing feature



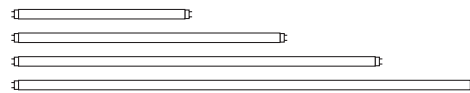
Screw M4, screw head diameter 8–10 mm

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 lamp information

T5 High Efficiency (FH)



wattage	length
14 W	549 mm
21 W	849 mm
28 W	1149 mm
35 W	1449 mm