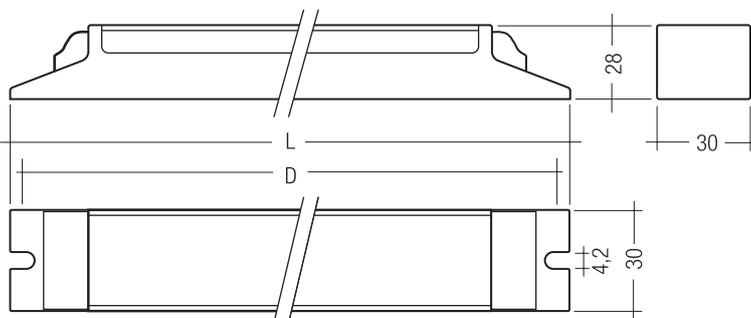




PC INDUSTRY T5, 35 – 80 W T5 fluorescent lamps

Product description

- CELMA Energy Efficiency Index A2
- Average life = 100,000 hours (at max ta. -10 °C and a failure rate of ≤ 0.1 % per 1,000 hours). Average life = 50,000 hours (at max ta. with a failure rate of ≤ 0.2% per 1,000 hours)
- Suitable for voltage peaks (burst/surge) up to 4 kV
- 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 1/35 T5 INDUSTRY	86459171
PC 1/49 T5 INDUSTRY	86458039
PC 1/54 T5 INDUSTRY	86458041
PC 1/80 T5 INDUSTRY	86458043
For luminaires with 2 lamps	
PC 2/35 T5 INDUSTRY	86459172
PC 2/49 T5 INDUSTRY	86458040
PC 2/54 T5 INDUSTRY	86458042
PC 2/80 T5 INDUSTRY	86458044

Packaging: 25 pieces/carton, 600 pieces/pallet



Standards, page 2

Wiring diagrams and installation examples, page

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 28 W	T5	PC 1/35 T5 INDUSTRY	456 mm	445 mm	0.42 kg	28.0 W	32.3 W	A2	0.16 A	0.14 A	0.98	0.96	75 °C	-30 ... 70 °C
1 x 35 W	T5	PC 1/35 T5 INDUSTRY	456 mm	445 mm	0.42 kg	35.0 W	39.0 W	A2	0.18 A	0.17 A	0.99	0.97	75 °C	-30 ... 70 °C
1 x 49 W	T5	PC 1/49 T5 INDUSTRY	456 mm	445 mm	0.42 kg	49.0 W	56.0 W	A2	0.27 A	0.25 A	0.96	0.95	77 °C	-30 ... 70 °C
1 x 54 W	T5	PC 1/54 T5 INDUSTRY	456 mm	445 mm	0.42 kg	54.0 W	60.0 W	A2	0.28 A	0.26 A	0.97	0.96	79 °C	-30 ... 70 °C
1 x 80 W	T5	PC 1/80 T5 INDUSTRY	456 mm	445 mm	0.42 kg	80.0 W	88.0 W	A2	0.41 A	0.38 A	0.98	0.97	80 °C	-30 ... 70 °C
For luminaires with 2 lamps														
2 x 28 W	T5	PC 2/35 T5 INDUSTRY	456 mm	445 mm	0.42 kg	56.0 W	64.7 W	A2	0.30 A	0.28 A	0.98	0.96	80 °C	-30 ... 70 °C
2 x 35 W	T5	PC 2/35 T5 INDUSTRY	456 mm	445 mm	0.42 kg	70.0 W	78.0 W	A2	0.36 A	0.34 A	0.99	0.97	80 °C	-30 ... 70 °C
2 x 49 W	T5	PC 2/49 T5 INDUSTRY	456 mm	445 mm	0.42 kg	98.0 W	107.0 W	A2	0.50 A	0.46 A	0.98	0.97	77 °C	-30 ... 70 °C
2 x 54 W	T5	PC 2/54 T5 INDUSTRY	456 mm	445 mm	0.42 kg	106.5 W	115.0 W	A2	0.51 A	0.48 A	0.99	0.97	79 °C	-30 ... 70 °C
2 x 80 W	T5	PC 2/80 T5 INDUSTRY	456 mm	445 mm	0.42 kg	160.0 W	172.0 W	A2	0.79 A	0.73 A	0.99	0.98	84 °C	-30 ... 60 °C

Standards

EN 55015
EN 60929
EN 50082-2
EN 61000-3-2
EN 61347-2-3
EN 61347-2-4
EN 61547
according to EN 50172

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

Intelligent Voltage Guard

Intelligent Voltage Guard is the name of the new electronic monitor from Tridonic. This innovative feature of the PC INDUSTRY 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. 305 V, 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 has struck.

Mains currents in DC operation

Type	Lamp type	Wattage	Mains current at $U_n = 220 V_{DC}$	Mains current at $U_n = 240 V_{DC}$
PC 1/35 T5 INDUSTRY	T5	1x28 W	0.16 A	0.14 A
PC 2/35 T5 INDUSTRY	T5	2x28 W	0.30 A	0.28 A
PC 1/35 T5 INDUSTRY	T5	1x35 W	0.18 A	0.17 A
PC 2/35 T5 INDUSTRY	T5	2x35 W	0.36 A	0.34 A
PC 1/49 T5 INDUSTRY	T5	1x49 W	0.26 A	0.24 A
PC 2/49 T5 INDUSTRY	T5	2x49 W	0.49 A	0.45 A
PC 1/54 T5 INDUSTRY	T5	1x54 W	0.28 A	0.25 A
PC 2/54 T5 INDUSTRY	T5	2x54 W	0.51 A	0.48 A
PC 1/80 T5 INDUSTRY	T5	1x80 W	0.40 A	0.37 A
PC 2/80 T5 INDUSTRY	T5	2x80 W	0.80 A	0.74 A

Harmonic distortion in the mains supply

Type	Lamp type	Wattage	THD at 230 V / 50 Hz
PC 1/35 T5 INDUSTRY	T5	1x28 W	$< 10\%$
PC 2/35 T5 INDUSTRY	T5	2x28 W	$< 10\%$
PC 1/35 T5 INDUSTRY	T5	1x35 W	$< 10\%$
PC 2/35 T5 INDUSTRY	T5	2x35 W	$< 10\%$
PC 1/49 T5 INDUSTRY	T5	1x49 W	$< 10\%$
PC 2/49 T5 INDUSTRY	T5	2x49 W	$< 10\%$
PC 1/54 T5 INDUSTRY	T5	1x54 W	$< 10\%$
PC 2/54 T5 INDUSTRY	T5	2x54 W	$< 10\%$
PC 1/80 T5 INDUSTRY	T5	1x80 W	$< 10\%$
PC 2/80 T5 INDUSTRY	T5	2x80 W	$< 10\%$

Working voltage

Type	Lamp type	Wattage	U_{out}
PC 1/35 T5 INDUSTRY	T5	1x28 W	300 V
PC 2/35 T5 INDUSTRY	T5	2x28 W	300 V
PC 1/35 T5 INDUSTRY	T5	1x35 W	300 V
PC 2/35 T5 INDUSTRY	T5	2x35 W	300 V
PC 1/49 T5 INDUSTRY	T5	1x49 W	250 V
PC 2/49 T5 INDUSTRY	T5	2x49 W	300 V
PC 1/54 T5 INDUSTRY	T5	1x54 W	250 V
PC 2/54 T5 INDUSTRY	T5	2x54 W	350 V
PC 1/80 T5 INDUSTRY	T5	1x80 W	250 V
PC 2/80 T5 INDUSTRY	T5	2x80 W	400 V

Ballast lumen factor (EN 60929 8.1)

Type	Lamp type	Wattage	AC/DC-BLF at $U = 198\text{--}254$ V, 25 °C
PC 1/35 T5 INDUSTRY	T5	1x28 W	1.00
PC 2/35 T5 INDUSTRY	T5	2x28 W	1.00
PC 1/35 T5 INDUSTRY	T5	1x35 W	1.00
PC 2/35 T5 INDUSTRY	T5	2x35 W	1.00
PC 1/49 T5 INDUSTRY	T5	1x49 W	1.00
PC 2/49 T5 INDUSTRY	T5	2x49 W	1.00
PC 1/54 T5 INDUSTRY	T5	1x54 W	1.00
PC 2/54 T5 INDUSTRY	T5	2x54 W	1.00
PC 1/80 T5 INDUSTRY	T5	1x80 W	1.00
PC 2/80 T5 INDUSTRY	T5	2x80 W	1.00

All data are typical values

ASIC light management

ASIC (Application specific integrated circuit) 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.

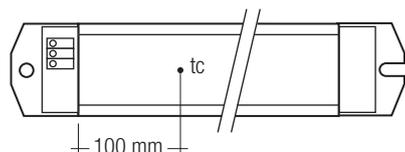
Energy class CELMA EEI = A2¹⁾

PC INDUSTRY 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

-30 °C to +70 °C



tc point is related to the ballast life duration.

PC INDUSTRY is designed for an average service life of 100,000 hours at $t_c = t_{c_{max}} - 10\text{ °C}$ under reference conditions and with a failure probability of less than 10 %. This corresponds to an average failure rate of 0.1 % 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.

Expected lifetime

Type	Lamp type	Lamp power	t_a	40 °C	50 °C	55 °C	60 °C	65 °C	70 °C
PC 1x35 T5 Industry	T5	1x28 W 1x35 W	tc	45 °C	55 °C	60 °C	65 °C	70 °C	75 °C
			Lifetime	> 200,000 h	200,000 h	140,000 h	100,000 h	70,000 h	50,000 h
PC 1x49 T5 Industry	T5	1x49 W	tc	47 °C	57 °C	62 °C	67 °C	72 °C	77 °C
			Lifetime	> 200,000 h	200,000 h	140,000 h	100,000 h	70,000 h	50,000 h
PC 1x54 T5 Industry	T5	1x54 W	tc	49 °C	59 °C	64 °C	69 °C	74 °C	79 °C
			Lifetime	> 200,000 h	200,000 h	140,000 h	100,000 h	70,000 h	50,000 h
PC 1x80 T5 Industry	T5	1x80 W	tc	50 °C	60 °C	65 °C	70 °C	75 °C	80 °C
			Lifetime	> 200,000 h	200,000 h	140,000 h	100,000 h	70,000 h	50,000 h
PC 2x35 T5 Industry	T5	2x28 W 2x35 W	tc	50 °C	60 °C	65 °C	70 °C	75 °C	80 °C
			Lifetime	> 200,000 h	200,000 h	140,000 h	100,000 h	70,000 h	50,000 h
PC 2x49 T5 Industry	T5	2x49 W	tc	47 °C	57 °C	62 °C	67 °C	72 °C	77 °C
			Lifetime	> 200,000 h	200,000 h	140,000 h	100,000 h	70,000 h	50,000 h
PC 2x54 T5 Industry	T5	2x54 W	tc	49 °C	59 °C	64 °C	69 °C	74 °C	79 °C
			Lifetime	> 200,000 h	200,000 h	140,000 h	100,000 h	70,000 h	50,000 h
PC 2x80 T5 Industry	T5	2x80 W	tc	64 °C	74 °C	79 °C	84 °C	x	x
			Lifetime	140,000 h	100,000 h	70,000 h	50,000 h	x	x

x = not permitted

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 1/35 T5 INDUSTRY	38	52	60	72	19	26	30	36
PC 2/35 T5 INDUSTRY	24	32	38	44	12	16	19	22
PC 1/49 T5 INDUSTRY	28	40	44	58	14	20	22	29
PC 2/49 T5 INDUSTRY	18	28	30	36	9	14	15	18
PC 1/54 T5 INDUSTRY	28	40	44	58	14	20	22	29
PC 2/54 T5 INDUSTRY	14	20	24	30	7	10	12	15
PC 1/80 T5 INDUSTRY	18	28	30	44	9	14	15	22
PC 2/80 T5 INDUSTRY	8	14	16	20	4	7	8	10

Wiring advice

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

For safety reasons, the PC INDUSTRY 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, 15) should be separated as much as possible.

Ballast Type	Terminal	Maximum capacitance allowed			
		Cold	Hot	Kalt	Heiß
PC 1/xx T5 INDUSTRY		11, 12	9, 10	200 pF	100 pF
PC 2/xx T5 INDUSTRY		11, 12, 13, 14, 15	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.).

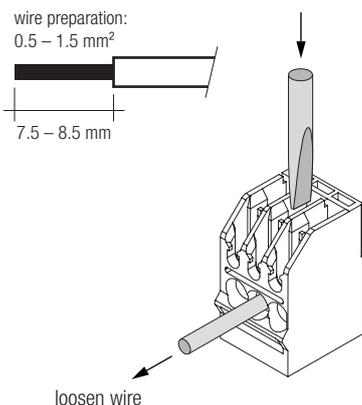
Installation instructions

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



T5 lamp information

	wattage	length
	49 W	1449 mm
	54 W	1149 mm
	80 W	1449 mm

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.

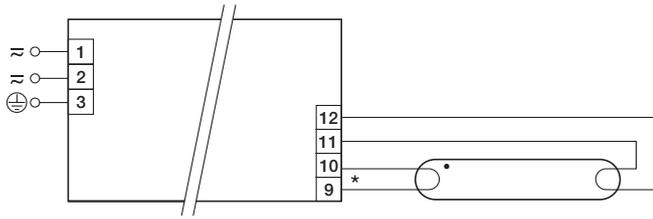
Additional information

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

Guarantee conditions at www.tridonic.com → Services

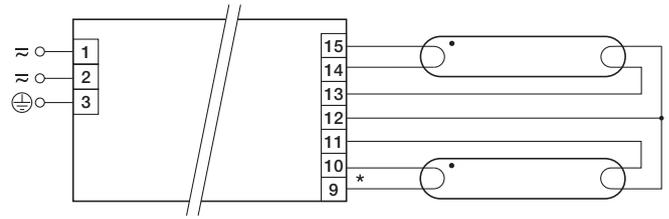
No warranty if device was opened.

Wiring diagrams



* 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 60598)
Protection class II - luminaires: no earth required

PC 1x35-80 W T5 INDUSTRY



* leads 9, 10 max. 1.0 m (< 100 pF)
leads 11, 12, 13, 14, 15 max. 2.0 m (< 200 pF)
Protection class I - luminaires: earth of ballast housing required (according to IEC 60598)
Protection class II - luminaires: no earth required

PC 2x35-80 W T5 INDUSTRY