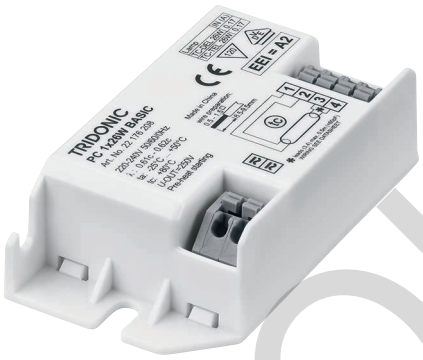
T5 TC-DEL TC-SEL TC-TEL TC-DD

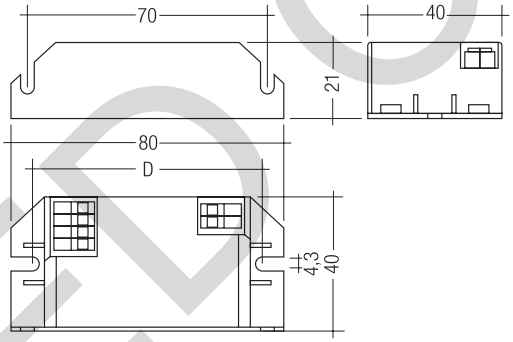
PC BASIC, 4 – 28 W

PC BASIC

Product description

- CELMA Energy Efficiency Index A2
- Nominal life-time up to 50,000 h (at max. ta with a failure rate max. 0.2 % per 1,000 h)
- Large temperature range (for values see table)
- Automatic start after replacement of defective lamps
- Safety shutdown of defective lamps and at end of life
- Temperature protection as per EN 61347-2-3 C5e
- 5 years guarantee





Technical data

AC voltage range	198 – 264 V
DC voltage range	176 – 264 V (Lamp start ≥ 198 V DC)
Overvoltage protection	270 V AC, 360 h
Defined warm start	≤ 2 s
Operating frequency	≥ 40 kHz
Type of protection	IP20

Standards, page 3

Lamp matrix, page 3

Wiring diagrams and installation examples, page 5

Ordering data

Type	Article number	Packaging carton	Packaging low volume	Packaging high volume	Weight per pc.
For luminaires with 1 lamp					
PC 1x4-13 W BASIC	**24138831**	25 pc(s).	1,100 pc(s).	7,700 pc(s).	0.041 kg
PC 1x5-16 W BASIC	**24138830**	25 pc(s).	1,100 pc(s).	7,700 pc(s).	0.041 kg
PC 1x5-16 W BASIC PCB	**24138836**	25 pc(s).	1,100 pc(s).	7,700 pc(s).	0.027 kg
PC 1x26 W BASIC	**22176208**	25 pc(s).	1,100 pc(s).	7,700 pc(s).	0.049 kg

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 220 V	Current at 50 Hz 240 V	λ at 50 Hz 220 V	λ at 50 Hz 240 V	tc point max.②	Ambient temperature ta ②
For luminaires with 1 lamp														
1 x 4 W	T5	**PC 1x4-13 W BASIC**	24138831	80.0 x 40.0 x 21 mm	70 mm	3.5 W	5.0 W	A2	0.045 A	0.043 A	0.51	0.48	80 °C	-25 … 50 °C
1 x 6 W	T5	**PC 1x4-13 W BASIC**	24138831	80.0 x 40.0 x 21 mm	70 mm	5.0 W	7.0 W	A2	0.059 A	0.057 A	0.54	0.51	80 °C	-25 … 50 °C
1 x 8 W	T5	**PC 1x4-13 W BASIC**	24138831	80.0 x 40.0 x 21 mm	70 mm	6.5 W	8.5 W	A2	0.067 A	0.063 A	0.58	0.56	80 °C	-25 … 50 °C
1 x 5 W	TC-SEL	**PC 1x5-16 W BASIC**	24138830	80.0 x 40.0 x 21 mm	70 mm	4.5 W	6.5 W	A2	0.055 A	0.051 A	0.54	0.53	85 °C	-25 … 50 °C
1 x 7 W	TC-SEL	**PC 1x5-16 W BASIC**	24138830	80.0 x 40.0 x 21 mm	70 mm	6.0 W	8.0 W	A2	0.065 A	0.063 A	0.56	0.53	85 °C	-25 … 50 °C
1 x 9 W	TC-SEL	**PC 1x5-16 W BASIC**	24138830	80.0 x 40.0 x 21 mm	70 mm	7.5 W	10.0 W	A2	0.078 A	0.073 A	0.58	0.57	85 °C	-25 … 50 °C
1 x 28 W	TC-DD	**PC 1x26 W BASIC**①	22176208	80.0 x 40.0 x 21 mm	70 mm	21.5 W	25.0 W	A2	0.180 A	0.170 A	0.62	0.61	80 °C	-25 … 45 °C
1 x 26 W	TC-DEL	**PC 1x26 W BASIC**	22176208	80.0 x 40.0 x 21 mm	70 mm	20.5 W	24.0 W	A2	0.180 A	0.170 A	0.62	0.61	80 °C	-25 … 50 °C
1 x 26 W	TC-TEL	**PC 1x26 W BASIC**	22176208	80.0 x 40.0 x 21 mm	70 mm	21.0 W	24.5 W	A2	0.180 A	0.170 A	0.62	0.61	80 °C	-25 … 50 °C

① For enclosed luminaires to fulfil the requirement of circuit power ≤ 25 W according to EN 61000-3-2. For AC operation only.

② Temperature specification printed circuit board

Standards
EN 55015
EN 61000-3-2
EN 61347-2-3
EN 61347-2-4
EN 61547

Glow-wire test
according to EN 60598-1 with increased temperature of 850 °C passed.

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

Min. lamp starting temperature -25 °C

DC operation
220 – 240 V_{DC}
198 – 264 V_{DC} certain lamp start
176 – 264 V_{DC} operating possible

Min. lamp starting temperature -25 °C

With a DC supply L and N terminals are interchangeable.

EOS/ESD safety guidelines
The device / module contains components that are sensitive to electrostatic discharge and may only be installed in the factory and on site if appropriate EOS/ESD protection measures have been taken. No special measures need be taken for devices/modules with enclosed casings (contact with the pc board not possible), just normal installation practice. Please note the requirements set out in the document EOS / ESD guidelines (Guideline_EOS_ESD.pdf) at:
http://www.tridonic.com/com/en/technical-docs.asp

Abnormal operation protection
All ballasts are equipped with a protection circuit against abnormal operation. The circuit is used to shut down the ballast if the lamp fails to strike, or if the lamp is defect.

The ballast can be restarted after shut down by turning off the supply for 10 seconds or by replacing the lamp.

Ingress protection
IP 20 for boxed versions

Protection class
The ballasts are suitable for use in class I or class II luminaires.

Energy class CELMA EEI = A2[1)]

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

Harmonic distortion in the mains supply
EMC standard EN 61000-3-2 for lighting equipment with active input power ≤ 25 W.

All ballasts comply with the standard EN 61000-3-2 to operate lighting equipment with an active input power ≤ 25 W where distortion limits for current drawn from the supply are 86 % for 3rd harmonic and 61 % for 5th harmonic only.

Remark
The EMC standard applies to the luminaire and reflects the specific properties of each fitting whether single or multi-lamp.

Ballast lumen factor

Type	Lamp type	Wattage	AC/DC-BLF at 230 V, 50 Hz
PC 1x4-13 W BASIC	T5	1x4 W	1.00
PC 1x4-13 W BASIC	T5	1x6 W	1.03
PC 1x4-13 W BASIC	T5	1x8 W	1.01
PC 1x5-16 W BASIC	TC-SEL	1x5 W	0.98
PC 1x5-16 W BASIC	TC-SEL	1x7 W	0.96
PC 1x5-16 W BASIC	TC-SEL	1x9 W	0.98
PC 1x26 W BASIC	TC-DD	1x28 W	0.85
PC 1x26 W BASIC	TC-DEL	1x26 W	0.91
PC 1x26 W BASIC	TC-TEL	1x26 W	0.97

Lamp matrix

Lamp		PC Basic 4–13 W	PC Basic 5–16 W	PC Basic 28 W
TC-SEL	**5 W**		•	
	7 W		•	
	9 W		•	
TC-DEL	**26 W**			•
TC-TEL	**26 W**			•
T5	**4 W**	•		
	6 W	•		
	8 W	•		
TC-DD	**28 W**			•

Mains currents in DC operation

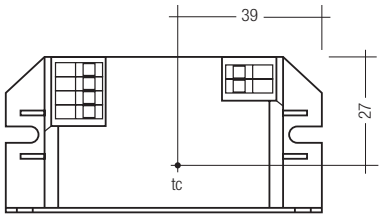
Type	Lamp type	Wattage	mains current at U_n = 220 V_{DC}	mains current at U_n = 240 V_{DC}
	T5	1x4 W	23 mA	21 mA
PC 1x4-13 W BASIC	T5	1x6 W	32 mA	29 mA
	T5	1x8 W	39 mA	35 mA
	TC-SEL	1x5 W	30 mA	27 mA
PC 1x5-16 W BASIC	TC-SEL	1x7 W	36 mA	33 mA
	TC-SEL	1x9 W	45 mA	42 mA
	TC-DD	1x28 W	112 mA	104 mA
PC 1x26 W BASIC	TC-DEL	1x26 W	112 mA	104 mA
	TC-TEL	1x26 W	112 mA	104 mA

Maximum 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 1x4–13 W Basic	90	117	144	181	90	117	144	181
PC 1x5–16 W Basic	80	106	130	163	80	106	130	163
PC 1x14–21 W Basic	56	83	102	127	28	54	102	127
PC 1x18–24 W Basic	56	73	90	112	28	54	90	112
PC 1x26 W Basic	56	71	88	110	28	54	88	110

Max. load per MCB at supply voltage U_n = 230 V

Temperature range
from -25 °C to +50 °C



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.

Expected life-time

Type	Lamp type	Lamp power	**ta**	**40 °C**	**45 °C**	**50 °C**	**60 °C**
PC 1x4-13 W BASIC	T5 T5 T5	1x4 W 1x6 W 1x8 W	tc	70 °C	75 °C	80 °C	x
			Life-time	100,000 h	70,000 h	50,000 h	x
PC 1x5-16 W BASIC	TC-SEL TC-SEL TC-SEL	1x3 W 1x7 W 1x9 W	tc	75 °C	80 °C	85 °C	x
			Life-time	100,000 h	70,000 h	50,000 h	x
PC 1x26 W BASIC	TC-DD	1x28 W	tc	75 °C	80 °C	x	x
			Life-time	70,000 h	50,000 h	x	x
PC 1x26 W BASIC	TC-DEL TC-TEL	1x26 W 1x26 W	tc	70 °C	75 °C	80 °C	x
			Life-time	100,000 h	70,000 h	50,000 h	x

x = not permitted

Wiring advice

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

Ballast	Terminal		Maximum capacitance allowed	
Type	Cold	Hot	Cold	Hot
PC 1x4–13 W Basic	1, 2	3, 4	120 pF	60 pF
PC 1x5–16 W Basic	1, 2	3, 4	120 pF	60 pF
PC 1x26 W Basic	1, 2	3, 4	120 pF	60 pF

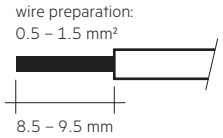
To avoid the damage of the control gear, the wiring must be protected against short circuits to earth (sharp edged metal parts, metal cable clips, louver, etc.)

With standard solid wire 0.5 / 0.75 mm² the capacitance of the lead is 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. Lamp connection should be as short as possible and be made with symmetrical wiring.

Installation instructions

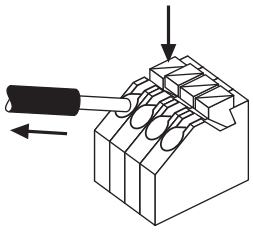
Wiring type and cross section

The wiring can be in stranded wires with ferrules or solid with a cross section of 0.5 – 1.5 mm². Strip 9.5 mm of insulation from the cables to ensure perfect operation of push-wire terminals.



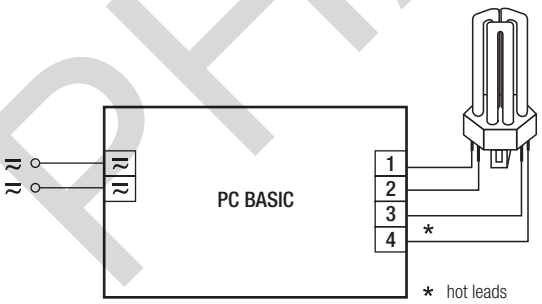
Release of the wiring

Press down the “push button” and remove the cable from front.



Ballasts are not suitable for any kind of dimming applications.

Wiring diagram



* leads 3, 4 max. 0.5 m (< 60 pF)
leads 1, 2 max. 1.0 m (< 120 pF)

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 must be kept as short as possible
- Mains leads should be kept apart from lamp leads (ideally 5 – 10 cm distance)
- Do not lead mains leads too closely along the electronic ballast
- Keep the distance of lamp leads from the metal work as large as possible
- Mains wiring to be twisted when through wiring
- Keep the mains leads inside the luminaire as short as possible

Insulation 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 insulation 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 insulation 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

Life-time declarations are informative and represent no warranty claim.
No warranty if device was opened.