



### PCA T8 BASIC Ip xitec II, 18 – 58 W T8 fluorescent lamps

#### Product description

- Processor-controlled ballast with xitec II inside
- CELMA energy class A1 BAT<sup>1)</sup>
- Noise-free precise control via DSI signal, switchDIM or corridorFUNCTION
- Nominal lifetime up to 100,000 h (at ta 50 °C with a failure rate of max. 0,2 % per 1.000 h)
- 5-year guarantee

#### Interfaces

- DSI
- switchDIM (with memory function)
- corridorFUNCTION (3 preprogrammed profiles)
- Integrated SMART-Interface for operation with SMART-Sensor 5D 19f and corridorFUNCTION plugs

#### Functions

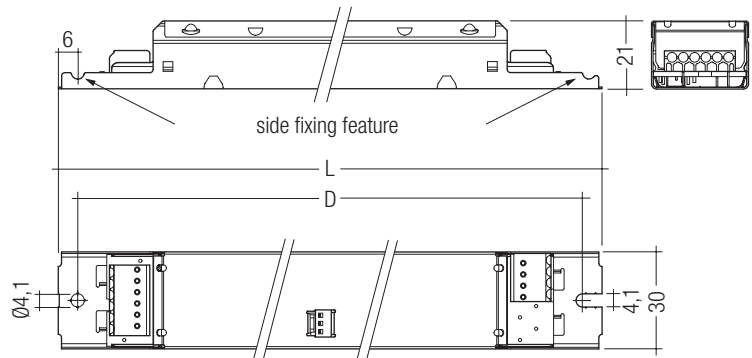
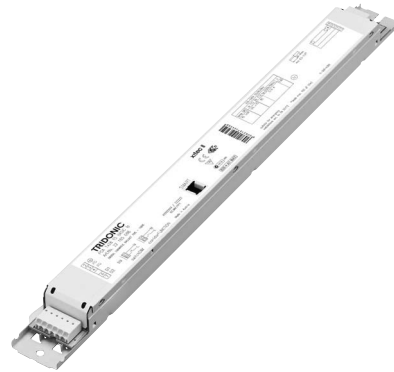
- Intelligent Temperature Guard (overtemperature protection)
- Intelligent Voltage Guard (overvoltage indication and undervoltage shutdown)
- Optimum filament heating in any dimmer setting
- Disconnection of filament heating from a dimming level of approx. 90 % for maximum energy efficiency (SMART-Heating Concept)
- corridorFUNCTION with daylight control
- Automatically triggered emergency lighting value in DC mode, 15 %
- For emergency lighting systems as per EN 50172
- Automatic start after replacement of defective lamps
- Automatic shutdown if the lamp is faulty

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



Standards, page 3

Wiring diagrams and installation examples, page 8



#### Technical data

AC voltage range	198 – 264 V
DC voltage range	176 – 280 V (lamp start $\geq$ 198 V DC)
Overvoltage protection	320 V AC, 1 h
Typ. power input on standby	< 0.2 W
Protective hot restart	0.5 s for AC / 0.2 s for DC
Dimming range	10 – 100 %
Lamp start possible from	10 %
Operating frequency	~40 – 130 kHz
Height	21 mm

#### Ordering data

Type	Article number
<b>For luminaires with 1 lamp</b>	
PCA 1x18 T8 BASIC Ip xitec II	22185241
PCA 1x36 T8 BASIC Ip xitec II	xxx
PCA 1x58 T8 BASIC Ip xitec II	xxx
<b>For luminaires with 2 lamps</b>	
PCA 2x18 T8 BASIC Ip xitec II	22185244
PCA 2x36 T8 BASIC Ip xitec II	xxx
PCA 2x58 T8 BASIC Ip xitec II	xxx

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

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

**Specific technical data**

Lamp wattage	Lamp type	Type	Article number	Length L	Hole spacing D	Weight	Circuit power <sup>①</sup>	Lamp wattage <sup>②</sup>	EEL	Current at 230 V / 50 Hz	λ at 50 Hz / 230 V	tc point	Ambient temperature ta <sup>②</sup>
<b>For luminaires with 1 lamp</b>													
1 x 18 W	T8	PCA 1x18 T8 BASIC Ip x:tec II	22185241	360 mm	350 mm	0.25 kg	18.5 W	16.5 W	A1 BAT	0.08 A	0.96	80 °C	-25 ... 70 °C
1 x 36 W	T8	PCA 1x36 T8 BASIC Ip x:tec II	xxx	360 mm	350 mm	0.25 kg	tbd	tbd	A1 BAT	tbd	tbd	tbd	tbd
1 x 58 W	T8	PCA 1x58 T8 BASIC Ip x:tec II	xxx	360 mm	350 mm	0.25 kg	tbd	tbd	A1 BAT	tbd	tbd	tbd	tbd
<b>For luminaires with 2 lamps</b>													
2 x 18 W	T8	PCA 2x18 T8 BASIC Ip x:tec II	22185244	360 mm	350 mm	0.25 kg	37.5 W	32.5 W	A1 BAT	0.16 A	0.98	75 °C	-25 ... 60 °C
2 x 36 W	T8	PCA 2x36 T8 BASIC Ip x:tec II	xxx	360 mm	350 mm	0.25 kg	tbd	tbd	A1 BAT	tbd	tbd	tbd	tbd
2 x 58 W	T8	PCA 2x58 T8 BASIC Ip x:tec II	xxx	425 mm	415 mm	0.35 kg	tbd	tbd	A1 BAT	tbd	tbd	tbd	tbd

<sup>①</sup> Valid at 100 % dimming level

<sup>②</sup> +10 °C to ta max: unrestricted dimming. -25 °C to +10 °C: unrestricted dimming from 100 % to 30 %. -25 °C to +10 °C, dimming below 30 %: malfunction possible but no damage to ECG. This applies to AC and DC operation.

### Standards

EN 55015  
EN 55022  
EN 60929  
EN 61000-3-2  
EN 61347-2-3  
EN 61547  
Suitable for emergency installations according to EN 50172  
CISPR 15  
CISPR 22  
IEC 60929  
IEC 61000-3-2  
IEC 61347-2-3  
IEC 61547

### Lamp starting characteristics

Warm start  
Starting time 0.5 s with AC  
Starting time 0.2 s with DC  
Start at dimming level from 10 – 100 %

### 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  
Use in emergency lighting installations according to EN 50172 or for emergency luminaires according to EN 61347-2-3 appendix J.

Mains current for defective or missing lamps at DC operation < 35 mA.

### Light output level in DC operation

Default value is 15 %

### Emergency units

The "PCA T8 BASIC Ip xrtec II" ballasts are compatible with all emergency units from Tridonic. See the table in the data sheet. Also all "5-pole" emergency units can be used. When used with other emergency units tests are necessary.

### Temperature range

Unlimited dimming range from 10 °C to  $t_a$  max.  
-25 °C to 10 °C: dimming operation from 100 % to 30 %. If dimm level goes below 30 % malfunction possible, but no electronic ballast damage.  
This applies to AC and DC operation.

### Mains currents in DC operation (at 15 % light output)

Type	Lamp type	Wattage	Mains current at	
			$U_n = 220 V_{oc}$	$U_n = 275 V_{oc}$
PCA 1x18 T8 BASIC Ip xrtec II	T8	1x18 W	0.04 A	0.03 A
PCA 1x36 T8 BASIC Ip xrtec II	T8	1x36 W	tbd	tbd
PCA 1x58 T8 BASIC Ip xrtec II	T8	1x58 W	tbd	tbd
PCA 2x18 T8 BASIC Ip xrtec II	T8	2x18 W	0.07 A	0.06 A
PCA 2x36 T8 BASIC Ip xrtec II	T8	2x36 W	tbd	tbd
PCA 2x58 T8 BASIC Ip xrtec II	T8	2x58 W	tbd	tbd

### Ballast lumen factor AC operation (AC-BLF) EN 60929 8.1

Type	Lamp type	Wattage	AC-BLF at $U = 230 V_{ac}$
PCA 1x18 T8 BASIC Ip xrtec II	T8	1x18 W	tbd
PCA 1x36 T8 BASIC Ip xrtec II	T8	1x36 W	tbd
PCA 1x58 T8 BASIC Ip xrtec II	T8	1x58 W	tbd
PCA 2x18 T8 BASIC Ip xrtec II	T8	2x18 W	tbd
PCA 2x36 T8 BASIC Ip xrtec II	T8	2x36 W	tbd
PCA 2x58 T8 BASIC Ip xrtec II	T8	2x58 W	tbd

The ballast lumen factor for AC operation (AC-BLF) does not alter from  $U_n = 198 V_{ac}$  to  $U_n = 254 V_{ac}$ .  
The ballast lumen factor for DC operation (DC-BLF) on the basis of an automatic power reduction of the ballasts (default value is 15 %) will be smaller than AC. It does not alter in the DC operating range (198–280 V dc).

**Dimming**

Dimming curve is adapted to the eye sensitiveness.

Dimming range 10 % to 100 %

Digital control with DSI signal:

8 bit Manchester Code

Speed 10 % to 100 % in 0.8 s

**Control input (D1, D2)**

Digital DSI signal, push-to-make switch (switchDIM) or a motion detector (corridorFUNCTION) can be wired on the same terminals (D1 and D2).

**Digital signal DSI**

The control input is non-polar and protected against accidental connection with a mains voltage up to 264 V. The control signal is not SELV. Control cable has to be installed in accordance to the requirements of low voltage installations.

Different functions depending on each module.

**SMART interface**

An additional interface for the direct connection of the SMART-Sensor 5D 19f<sup>1)</sup> or corridorFUNCTION plugs. Application and functionality see corridorFUNCTION user manual.

SMART-Sensor 5D 19f<sup>1)</sup> light sensor operating mode:

The sensor registers actual ambient light and maintains the individually defined constant lux level.

After every mains reset the SMART interface automatically checks for an installed sensor.

With the sensor installed the PCA T8 BASIC Ip xtec II automatically runs in the constant lux level mode.

ON/OFF switch via mains, switchDIM or DSI signal.

DSI signal = 0 switches off,

DSI signal ≥ 1 switches on.

With switchDIM signals it is possible to change the controlled light level temporarily.

Temporarily means that after a switching cycle OFF/ON command the ballast will start at the preset value determined by the SMART-Sensor 5D 19f. The installation of the two wire bus is according to the appropriate low voltage regulations.

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<sup>1)</sup> SMART-Sensor 5D 19f: article number 86459169

**switchDIM**

Integrated switchDIM function allows a direct connection of a push to make switch for dimming and switching.

Brief push (< 0.6 s) switches ballast ON and OFF. The ballasts switch-ON at light level set at switch-OFF.

After switch ON the last setted dimming level will be activated again.

When the push to make switch is held, PCA ballasts are dimmed. After repush the PCA is dimmed in the opposite direction.

The switchDIM fade time is set to 3 s from min. to max. in the factory settings.

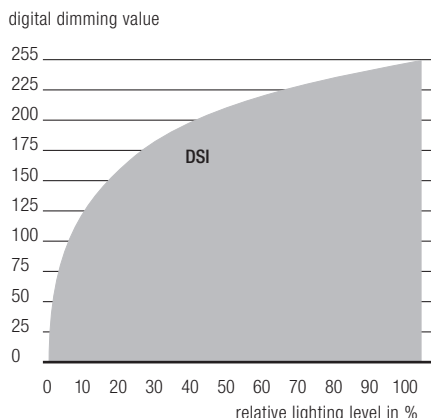
In installations with PCAs with different dimming levels or opposite dimming directions (e.g. after a system extension), all PCAs can be synchronized to 50 % dimming level by a 10 s push.

Use of push to make switch with indicator lamp is not permitted.

switchDIM and corridorFUNCTION are very simple tools for controlling ballasts with conventional momentary-action switches or motion sensors. To ensure correct operation a sinusoidal mains voltage with a frequency of 50 Hz or 60 Hz is required at the control input.

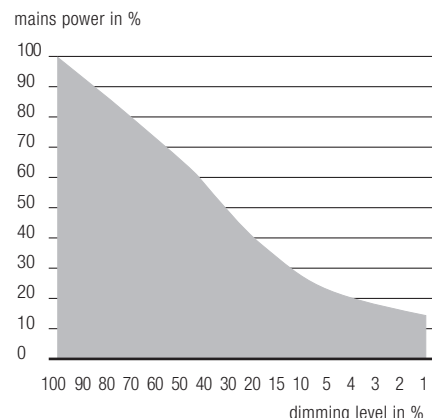
Special attention must be paid to achieving clear zero

**Dimming characteristics PCA T8 BASIC Ip xtec II**



Dimming characteristics as seen by the human eye  
Note: The dimming level of BASIC can be different to the graphic (dimming level 10 to 100 %)

**Energy saving PCA T8 BASIC Ip xtec II**



crossings. Serious mains faults may impair the operation of switchDIM and corridorFUNCTION.

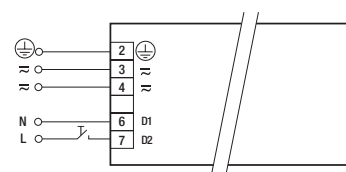
**corridorFUNCTION**

To activate the corridorFUNCTION a voltage of 230 V simply has to be applied for five minutes at switchDIM connection. The unit will then switch automatically to the corridorFUNCTION.

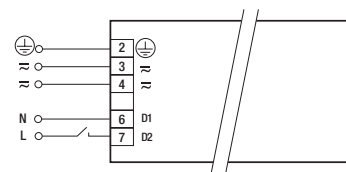
Note: If the corridorFUNCTION is wrongly activated in a switchDIM system (for example a switch is used instead of pushbutton), there is the option of installing a pushbutton and deactivating the corridorFUNCTION mode by five short pushes of the button within three seconds.

The corridorFUNCTION offers the added benefit of a second and third preprogrammed profile, which can be activated by the corridorFUNCTION plugs. It is also possible to combine the corridorFUNCTION with the SMART-Sensor 5D 19f light sensor.

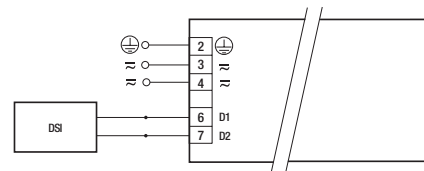
Application and functionality of profiles see user manual of the corridorFUNCTION.



switchDIM PCA T8 BASIC Ip xtec II



corridorFUNCTION PCA T8 BASIC Ip xtec II



DSI PCA T8 BASIC Ip xtec II

Dimmable ballasts from Tridonic have to be earthed.

#### Loading of automatic circuit breakers (Limitation via inrush current)

Automatic circuit breaker type	C10		C13		C16		C20		B10		B13		B16		B20		Inrush current (1.5 mm <sup>2</sup> )		Inrush current (2.5 mm <sup>2</sup> )		
	Installation Ø	1.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>	I <sub>max</sub>	time	I <sub>max</sub>	time
PCA 1x18 T8 BASIC Ip xitec II	50	82	161	201	25	41	120	107	19.3 A	166 µs	19.7 A	165 µs									
PCA 1x36 T8 BASIC Ip xitec II	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd
PCA 1x58 T8 BASIC Ip xitec II	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd
PCA 2x18 T8 BASIC Ip xitec II	34	50	76	86	17	25	38	43	20.3 A	204 µs	23.3 A	184 µs									
PCA 2x36 T8 BASIC Ip xitec II	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd
PCA 2x58 T8 BASIC Ip xitec II	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd

Continuous operation: to calculate the protective safety switch see main current, page 2

#### Intelligent Temperature Guard

The intelligent temperature guard protects the PCA T8 BASIC Ip xitec II from thermal overheating by reducing the output power or switching off in case of operation above the thermal limits of the luminaire or ballast. Depending on the luminaire design, the ITG operates at about 5 to 10 °C above tc temperature.

#### Intelligent Voltage Guard

Intelligent Voltage Guard is the name of the electronic monitor from Tridonic. This innovative feature of the PCA family of control gear from Tridonic immediately shows if the mains voltage rises above certain thresholds. Measures can then be taken quickly to prevent damage to the control gear.

- If the mains voltage rises above approx. 318 V<sub>rms</sub> (voltage depends on the ballast type), the lamp starts flashing on and off.
- To avoid a damage of the device the mains supply has to be switched off at this signal.

#### Harmonic distortion in the mains supply (at 230 V / 50 Hz)

Type	Lamp type	Wattage	THD	3	5	7	9	11
PCA 1x18 T8 BASIC Ip xitec II	T8	1x18 W	9	5	2	1	1	1
PCA 1x36 T8 BASIC Ip xitec II	T8	1x36 W	tbd	tbd	tbd	tbd	tbd	tbd
PCA 1x58 T8 BASIC Ip xitec II	T8	1x58 W	tbd	tbd	tbd	tbd	tbd	tbd
PCA 2x18 T8 BASIC Ip xitec II	T8	2x18 W	8	5	2	1	1	1
PCA 2x36 T8 BASIC Ip xitec II	T8	2x36 W	tbd	tbd	tbd	tbd	tbd	tbd
PCA 2x58 T8 BASIC Ip xitec II	T8	2x58 W	tbd	tbd	tbd	tbd	tbd	tbd

#### Operating voltage

Type	Lamp type	Wattage	U <sub>out</sub>
PCA 1x18 T8 BASIC Ip xitec II	T8	1x18 W	430 V
PCA 1x36 T8 BASIC Ip xitec II	T8	1x36 W	430 V
PCA 1x58 T8 BASIC Ip xitec II	T8	1x58 W	430 V
PCA 2x18 T8 BASIC Ip xitec II	T8	2x18 W	430 V
PCA 2x36 T8 BASIC Ip xitec II	T8	2x36 W	430 V
PCA 2x58 T8 BASIC Ip xitec II	T8	2x58 W	430 V

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 lifetime

Type	Lamp type	Wattage	ta = 40 °C			ta = 50 °C			ta = 60 °C				
			tc	50 °C	60 °C	70 °C	tc	50 °C	60 °C	70 °C	tc	50 °C	60 °C
PCA 1x18 T8 BASIC Ip xitec II	T8	1 x 18 W	tc	50 °C	60 °C	70 °C	tc	50 °C	60 °C	70 °C	tc	50 °C	60 °C
			Lifetime	≥ 100,000 h	≥ 100,000 h	≥ 100,000 h	tbd	tbd	tbd	tbd	tbd	tbd	tbd
PCA 1x36 T8 BASIC Ip xitec II	T8	1 x 36 W	tc	tbd	tbd	tbd	tc	tbd	tbd	tbd	tc	tbd	tbd
			Lifetime	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd
PCA 1x58 T8 BASIC Ip xitec II	T8	1 x 58 W	tc	tbd	tbd	tbd	tc	tbd	tbd	tbd	tc	tbd	tbd
			Lifetime	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd
PCA 2x18 T8 BASIC Ip xitec II	T8	2 x 18 W	tc	60 °C	70 °C	80 °C	tc	60 °C	70 °C	80 °C	tc	60 °C	70 °C
			Lifetime	≥ 100,000 h	≥ 100,000 h	≥ 50,000 h	tbd	tbd	tbd	tbd	tbd	tbd	tbd
PCA 2x36 T8 BASIC Ip xitec II	T8	2 x 36 W	tc	tbd	tbd	tbd	tc	tbd	tbd	tbd	tc	tbd	tbd
			Lifetime	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd
PCA 2x58 T8 BASIC Ip xitec II	T8	2 x 58 W	tc	tbd	tbd	tbd	tc	tbd	tbd	tbd	tc	tbd	tbd
			Lifetime	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd

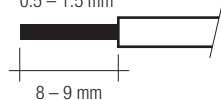
x = not permitted

## Installation instructions

### Wiring type and cross section

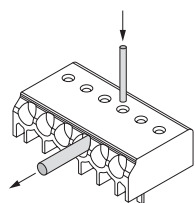
The wiring can be solid cable with a cross section of 0.5 to 1.5 mm<sup>2</sup>. For the push-wire connection you have to strip the insulation (8–9 mm).

wire preparation:  
0.5 – 1.5 mm<sup>2</sup>



### Release of the wiring

Loosen wire through twisting and pulling or using a Ø 1 mm release tool.



### Wiring advice

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

Ballast Type	Terminal	Maximum capacitance allowed			
		Cold		Hot	
PCA 1xx T8 BASIC Ip xitec II		13, 14	15, 16	200 pF	100 pF
PCA 2xx T8 BASIC Ip xitec II		12, 13, 14	10, 11, 15, 16	200 pF	100 pF

With standard solid wire 0.5/0.75 mm<sup>2</sup> the capacitance of the lead is 30–80 pF/m.

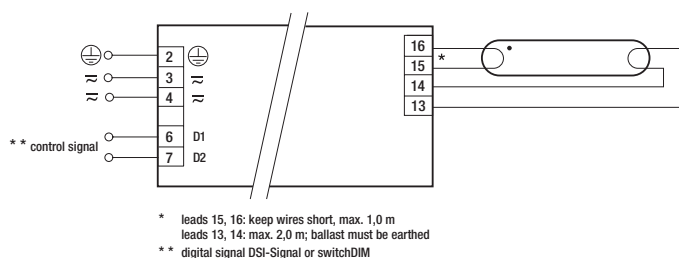
This value is influenced by the way the wiring is made.

Lamp connection should be made with symmetrical wiring.

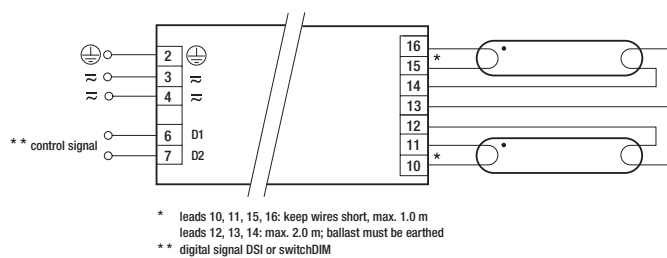
Hot leads (10, 11, 15, 16) and cold leads (12, 13, 14) should be separated as much as possible.

When using two or more dimmable ballasts in one luminaire with separate dimming controls, the lamp leads must be kept separate.

Dimmable ballasts from Tridonic have to be earthed.



PCA T8 BASIC Ip xitec II 1x14–80 W



PCA T8 BASIC Ip xitec II 2x14–80 W

Dimmable ballasts from Tridonic have to be earthed.

### RFI

- 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
- Mains wiring to be twisted when through wiring
- Keep the mains leads inside the luminaire as short as possible

### General advise

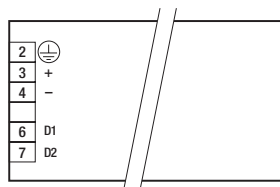
Electronic ballasts are virtually noise free.

Magnetic fields generated during the ignition cycle can cause some background noise but only for a few milliseconds.

### Operation on DC voltage

Our ballasts are constructed to operate DC voltage and pulsed DC voltage.

To operate ballasts with pulsed DC voltage the polarity is absolute mandatory.



### 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.

For further technical information please visit [www.tridonic.com](http://www.tridonic.com)