Product description

- Processor-controlled ballast with xtect II inside
- Highest possible energy class CELMA EEI = A1 BAT®
- Noise-free precise control via DSI signal, switchDIM or corridorFUNCTION
- Nominal life up to 100,000 h (at ta 50 °C with a failure rate max. 0.2 % per 1,000 h)
- 5-year guarantee

Interfaces

- DSI
- switchDIM (with memory function)
- corridorFUNCTION (3 preprogrammed profiles)
- Integrated SMART interface for function 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 ambient light 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

Technical data

- Mains voltage range 220 – 240 V
- AC voltage range 198 – 264 V
- DC voltage range 176 – 280 V (lamp start ≥ 198 V DC)
- Mains frequency 0 / 50 / 60 Hz
- 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
- Type of protection IP20

Ordering data

<table>
<thead>
<tr>
<th>Type</th>
<th>Article number</th>
<th>Packaging, carton</th>
<th>Packaging, pallet</th>
<th>Weight per pc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>For luminaires with 1 lamp</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCA 1x18 T8 BASIC lp xtect II</td>
<td>22185241</td>
<td>10 pc(s).</td>
<td>760 pc(s).</td>
<td>0.222 kg</td>
</tr>
<tr>
<td>PCA 1x36 T8 BASIC lp xtect II</td>
<td>28000042</td>
<td>10 pc(s).</td>
<td>760 pc(s).</td>
<td>0.219 kg</td>
</tr>
<tr>
<td>PCA 1x58 T8 BASIC lp xtect II</td>
<td>28000043</td>
<td>10 pc(s).</td>
<td>760 pc(s).</td>
<td>0.231 kg</td>
</tr>
<tr>
<td>For luminaires with 2 lamps</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCA 2x18 T8 BASIC lp xtect II</td>
<td>22185244</td>
<td>10 pc(s).</td>
<td>760 pc(s).</td>
<td>0.253 kg</td>
</tr>
<tr>
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<td>10 pc(s).</td>
<td>760 pc(s).</td>
<td>0.253 kg</td>
</tr>
<tr>
<td>PCA 2x58 T8 BASIC lp xtect II</td>
<td>28000045</td>
<td>10 pc(s).</td>
<td>640 pc(s).</td>
<td>0.334 kg</td>
</tr>
</tbody>
</table>
### Specific technical data

<table>
<thead>
<tr>
<th>Lamp type</th>
<th>Article number</th>
<th>Dimensions L x W x H</th>
<th>Hole spacing D</th>
<th>Lamp power</th>
<th>Circuit power</th>
<th>EEI Current at 50 Hz 230 V</th>
<th>λ at 50 Hz 230 V</th>
<th>tc point max</th>
<th>Ambient temperature ta</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>For luminaires with 1 lamp</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 x 18 W T8</td>
<td>PCA 1x18 T8 BASIC lp xe tec II</td>
<td>22185241</td>
<td>360 x 30 x 21 mm</td>
<td>350 mm</td>
<td>16 W</td>
<td>18.5 W</td>
<td>A1 BAT</td>
<td>0.08 A</td>
<td>0.96</td>
<td>80 °C</td>
</tr>
<tr>
<td>1 x 36 W T8</td>
<td>PCA 1x36 T8 BASIC lp xe tec II</td>
<td>28000042</td>
<td>360 x 30 x 21 mm</td>
<td>350 mm</td>
<td>32 W</td>
<td>35.0 W</td>
<td>A1 BAT</td>
<td>0.16 A</td>
<td>0.98</td>
<td>85 °C</td>
</tr>
<tr>
<td>1 x 58 W T8</td>
<td>PCA 1x58 T8 BASIC lp xe tec II</td>
<td>28000043</td>
<td>360 x 30 x 21 mm</td>
<td>350 mm</td>
<td>50 W</td>
<td>54.0 W</td>
<td>A1 BAT</td>
<td>0.24 A</td>
<td>0.98</td>
<td>85 °C</td>
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<tr>
<td>For luminaires with 2 lamps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 x 18 W T8</td>
<td>PCA 2x18 T8 BASIC lp xe tec II</td>
<td>22185244</td>
<td>360 x 30 x 21 mm</td>
<td>350 mm</td>
<td>32 W</td>
<td>37.5 W</td>
<td>A1 BAT</td>
<td>0.16 A</td>
<td>0.98</td>
<td>75 °C</td>
</tr>
<tr>
<td>2 x 36 W T8</td>
<td>PCA 2x36 T8 BASIC lp xe tec II</td>
<td>28000044</td>
<td>360 x 30 x 21 mm</td>
<td>350 mm</td>
<td>64 W</td>
<td>70.0 W</td>
<td>A1 BAT</td>
<td>0.31 A</td>
<td>0.97</td>
<td>80 °C</td>
</tr>
<tr>
<td>2 x 58 W T8</td>
<td>PCA 2x58 T8 BASIC lp xe tec II</td>
<td>28000045</td>
<td>425 x 30 x 21 mm</td>
<td>415 mm</td>
<td>100 W</td>
<td>107.5 W</td>
<td>A1 BAT</td>
<td>0.48 A</td>
<td>0.99</td>
<td>80 °C</td>
</tr>
</tbody>
</table>

1 According to the EU directives on ecodesign requirements (EC) No. 245/2009 and (EC) No. 347/2010.
2 Valid at 100 % dimming level.
3 +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 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 (+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 lp xtec 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 ta 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)

<table>
<thead>
<tr>
<th>Type</th>
<th>Lamp type</th>
<th>Wattage</th>
<th>Mains current at U = 220 Vc</th>
<th>Mains current at U = 275 Vc</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCA 1x18 T8 BASIC lp xtec II</td>
<td>T8 1x18 W</td>
<td>0.04 A</td>
<td>0.03 A</td>
<td></td>
</tr>
<tr>
<td>PCA 1x36 T8 BASIC lp xtec II</td>
<td>T8 1x36 W</td>
<td>0.06 A</td>
<td>0.05 A</td>
<td></td>
</tr>
<tr>
<td>PCA 1x58 T8 BASIC lp xtec II</td>
<td>T8 1x58 W</td>
<td>0.06 A</td>
<td>0.07 A</td>
<td></td>
</tr>
<tr>
<td>PCA 2x18 T8 BASIC lp xtec II</td>
<td>T8 2x18 W</td>
<td>0.07 A</td>
<td>0.06 A</td>
<td></td>
</tr>
<tr>
<td>PCA 2x36 T8 BASIC lp xtec II</td>
<td>T8 2x36 W</td>
<td>0.11 A</td>
<td>0.09 A</td>
<td></td>
</tr>
<tr>
<td>PCA 2x58 T8 BASIC lp xtec II</td>
<td>T8 2x58 W</td>
<td>0.16 A</td>
<td>0.13 A</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Type</th>
<th>Lamp type</th>
<th>Wattage</th>
<th>AC-BLF at U = 230 Vc</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCA 1x18 T8 BASIC lp xtec II</td>
<td>T8 1x18 W</td>
<td>0.99</td>
<td></td>
</tr>
<tr>
<td>PCA 1x36 T8 BASIC lp xtec II</td>
<td>T8 1x36 W</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>PCA 1x58 T8 BASIC lp xtec II</td>
<td>T8 1x58 W</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>PCA 2x18 T8 BASIC lp xtec II</td>
<td>T8 2x18 W</td>
<td>0.99</td>
<td></td>
</tr>
<tr>
<td>PCA 2x36 T8 BASIC lp xtec II</td>
<td>T8 2x36 W</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>PCA 2x58 T8 BASIC lp xtec II</td>
<td>T8 2x58 W</td>
<td>1.00</td>
<td></td>
</tr>
</tbody>
</table>

The ballast lumen factor for AC operation (AC-BLF) does not alter from Un = 198 Vac to Un = 254 Vac.

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 or corridorFUNCTION plugs. Application and functionality see corridorFUNCTION user manual.
SMART-Sensor 5D 19f 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 lp 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.

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 release 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 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 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.

Dimming characteristics
PCA T8 BASIC lp xtec II

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

Energy saving
PCA T8 BASIC lp 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 %)

Dimmable ballasts from Tridonic have to be earthed.

Subject to change without notice.
Intelligent Temperature Guard

The intelligent temperature guard protects the PCA T8 BASIC lp xtc 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 rms (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)

<table>
<thead>
<tr>
<th>Type</th>
<th>Lamp type</th>
<th>Voltage</th>
<th>THD</th>
<th>3</th>
<th>5</th>
<th>7</th>
<th>9</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCA 1x18 T8</td>
<td>T8 1x18 W</td>
<td>410 V</td>
<td>9</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<td>PCA 1x36 T8</td>
<td>T8 1x36 W</td>
<td>430 V</td>
<td>8</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
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<tr>
<td>PCA 1x58 T8</td>
<td>T8 1x58 W</td>
<td>430 V</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>PCA 2x18 T8</td>
<td>T8 2x18 W</td>
<td>430 V</td>
<td>8</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>PCA 2x36 T8</td>
<td>T8 2x36 W</td>
<td>430 V</td>
<td>7</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>PCA 2x58 T8</td>
<td>T8 2x58 W</td>
<td>430 V</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>1</td>
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<td>1</td>
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</tbody>
</table>

Operating voltage

<table>
<thead>
<tr>
<th>Type</th>
<th>Lamp type</th>
<th>Voltage</th>
<th>Uout</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCA 1x18 T8</td>
<td>T8 1x18 W</td>
<td>430 V</td>
<td>430 V</td>
</tr>
<tr>
<td>PCA 1x36 T8</td>
<td>T8 1x36 W</td>
<td>430 V</td>
<td>430 V</td>
</tr>
<tr>
<td>PCA 1x58 T8</td>
<td>T8 1x58 W</td>
<td>430 V</td>
<td>430 V</td>
</tr>
<tr>
<td>PCA 2x18 T8</td>
<td>T8 2x18 W</td>
<td>430 V</td>
<td>430 V</td>
</tr>
<tr>
<td>PCA 2x36 T8</td>
<td>T8 2x36 W</td>
<td>430 V</td>
<td>430 V</td>
</tr>
<tr>
<td>PCA 2x58 T8</td>
<td>T8 2x58 W</td>
<td>430 V</td>
<td>430 V</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Type</th>
<th>Lamp type</th>
<th>Wattage</th>
<th>ta = 40 °C</th>
<th>ta = 50 °C</th>
<th>ta = 60 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCA 1x18 T8</td>
<td>T8 1x18 W</td>
<td>1 x 18 W</td>
<td>Life-time</td>
<td>≥ 100,000 h</td>
<td>≥ 100,000 h</td>
</tr>
<tr>
<td>PCA 1x36 T8</td>
<td>T8 1x36 W</td>
<td>1 x 36 W</td>
<td>Life-time</td>
<td>≥ 100,000 h</td>
<td>≥ 100,000 h</td>
</tr>
<tr>
<td>PCA 1x58 T8</td>
<td>T8 1x58 W</td>
<td>1 x 58 W</td>
<td>Life-time</td>
<td>≥ 100,000 h</td>
<td>≥ 100,000 h</td>
</tr>
<tr>
<td>PCA 2x18 T8</td>
<td>T8 2x18 W</td>
<td>2 x 18 W</td>
<td>Life-time</td>
<td>≥ 100,000 h</td>
<td>≥ 100,000 h</td>
</tr>
<tr>
<td>PCA 2x36 T8</td>
<td>T8 2x36 W</td>
<td>2 x 36 W</td>
<td>Life-time</td>
<td>≥ 100,000 h</td>
<td>≥ 100,000 h</td>
</tr>
<tr>
<td>PCA 2x58 T8</td>
<td>T8 2x58 W</td>
<td>2 x 58 W</td>
<td>Life-time</td>
<td>≥ 100,000 h</td>
<td>≥ 50,000 h</td>
</tr>
</tbody>
</table>

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 mm². For the push-wire connection you have to strip the insulation (8–9 mm).

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.

<table>
<thead>
<tr>
<th>Ballast</th>
<th>Terminal</th>
<th>Maximum capacitance allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCA 1xx T8 BASIC lp xtetr II</td>
<td>13, 14</td>
<td>200 pF</td>
</tr>
<tr>
<td>PCA 2xx T8 BASIC lp xtetr II</td>
<td>12, 13, 14</td>
<td>100 pF</td>
</tr>
</tbody>
</table>

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. 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.

Sensor wires
Sensor wires must be routed separately from the lamp wires and mains cables; otherwise the lighting control system may malfunction. If separate routing is not possible (for reasons of space) shielded lamp wires and mains cables must be used.

Dimmable ballasts from Tridonic have to be earthed.

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, louvers, etc.).

Operation on DC voltage
Our ballasts are construed 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.

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.