



PC CFL E COMBO, 230 – 240 V 50/60 Hz
Compact fluorescent lamps

Product description

- Combination of electronic ballast and emergency lighting unit
- For TC-DD compact fluorescent lamps
- For manual testing of the emergency lighting function
- 5-year guarantee

Properties

- Lightweight one-part emergency lighting unit
- Simple wiring
- No compatibility problems
- 3 h rated duration
- AC operation of the lamp
- Automatic restart after relamping in normal operation
- Green charge status display LED
- Intelligent Voltage Guard (overvoltage indication and undervoltage shutdown)
- Checking the emergency lighting function by interrupting the unswitched phase
- Small dimensions
- Push-in terminals
- Deep discharge protection
- Short-circuit-proof battery connection
- Polarity reversal protection for battery

Batteries

- Separate battery pack
- High-temperature cells
- NiCd batteries
- D cells
- 4-year design life
- 1-year guarantee
- For battery compatibility refer to chapter „Ballast-Lumen-Factor (BLF)*“



Standards, page 5

For wiring diagrams and installation examples, page 8

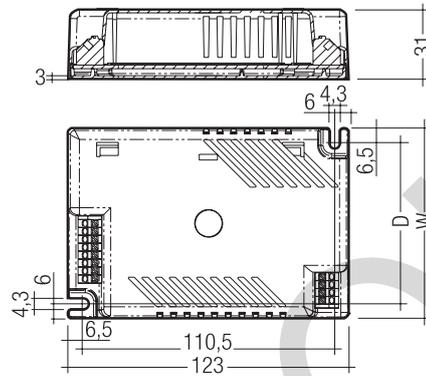




PC CFL E COMBO, 230 – 240 V 50/60 Hz Compact fluorescent lamps

Technical data

Rated supply voltage	230 – 240 V
Mains frequency	50 / 60 Hz
Mains voltage changeover threshold	according to EN 60598-2-22
tc point max.	75 °C
Ambient temperature ta	0 ... 55 °C
Operating frequency (normal operation)	> 42 kHz
Operating frequency (emergency mode)	typ. 17 kHz
Lamp warm start	1.6 s
Battery charging time	24 h
Charge current	200 mA
Discharge current	11 A
Leakage current (PE)	< 0.5 mA
Min. lamp starting temperature (normal operation)	-15 °C
Min. lamp starting temperature (emergency mode)	0 °C
Type of protection	IP20



Ordering data

Type	Article number	Number of cells	Packaging, carton	Packaging, pallet	Weight per pc.
Rated operating time 3 h, Low Output BLF					
PC 1x28-33 LO E DD COMBO	89899980	3	25 pc(s).	700 pc(s).	0.220 kg
PC 1x28-34 LO E DD COMBO	89800028	4	25 pc(s).	700 pc(s).	0.245 kg

Specific technical data

Lamp type	Lamp wattage	Type	Article number	Dimensions L x W x H	Hole spacing D	Lamp power	Circuit power	Mains current ^①	λ ^①	Normal operation BLF	Emergency operation BLF	Emergency operation EBLF ^②	Rated duration
Rated operating time 3 h, Low Output BLF													
TC-DD	1 x 28 W	PC 1x28-33 LO E DD COMBO	89899980	123 x 79 x 31 mm	66.5 mm	16 W	23.4 W	0.16 A	0.63	0.7	0.105	0.090	3 h
TC-DD	1 x 28 W	PC 1x28-34 LO E DD COMBO	89800028	123 x 79 x 31 mm	66.5 mm	16 W	25.0 W	0.17 A	0.64	0.7	0.145	0.135	3 h

^① For 230 V, 50 Hz.

^② According to EN 61347-2-7: 2006.

RoHS

ACCES-
SORIES

Status indication green LED

Product description

- A green LED indicates that charging current is flowing into the battery



Ordering data

Type	Article number	Packaging, bag	Packaging, carton	Weight per pc.
LED EM green	89899605	25 pc(s).	200 pc(s).	0.011 kg
LED EM green, ultra high brightness	89899756	25 pc(s).	800 pc(s).	0.012 kg

Ballast lumen factor (BLF) in %**PC CFL E COMBO for TC-DD compact lamps, 3 h**

Duration	3 h	
	3 cells	4 cells
Cells	3 cells	4 cells
Type	PC 1x28-33 LO E DD COMBO	PC 1x28-34 LO E DD COMBO
Article no.	89899980	89800028

Lamp type	Wattage	BLF in emergency lighting mode in % for rated operating time	
TC-DD	28 W	10.5	14.5

Technology and capacity	Design	Number of cells	Type	Article number	Assignable batteries	
NiCd 4 Ah	Stick	3	Accu-NiCd 3A 55	28002773	•	
D-cells	Stick	4	Accu-NiCd 4A 55	89800089		•
Accupack NiCd (high temperature)	Accupack 4 Ah	3	Pack-NiCd 3D CON	89800389	•	
	Accupack 4 Ah	4	Pack-NiCd 4D CON	89800390		•

Standards

- EN 61347-2-3
- EN 61347-2-7
- EN 60929
- EN 55015
- EN 61000-3-2
- EN 61000-3-3
- EN 61547
- EN 60068-2-29
- EN 60068-2-30
- EN 60068-2-64
- according to EN 50172
- according to EN 60598-2-22
- Mains ballast complies with end of lamp life (EOL) test 2



Note:

The PC CFL E COMBO is not intended to be used for high risk task area lighting.

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 VDC 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 1,500 VAC (or 1,414 x 1,500 VDC). To avoid damage to the electronic devices this test must not be conducted.

Basic insulation between supply and battery circuit

Restarting after lamp replacement

Note: Before servicing luminaires the mains supply should always be disconnected.

If faulty lamps are changed with the mains connected they can be made to restart automatically provided an interval of 2 seconds is left after removal.

- Single lamp combined units always restart automatically.
- Twin lamp combined units that do not restart automatically will do so if the first lamp that was inserted is removed and re-inserted.

Working Voltage (Uout), lamp current

Type	Lamp type	Wattage	Uout	Lamp current [®]
PC 1x28-33 LO E DD COMBO	TC-DD	28 W	300 V	0,014 A
PC 1x28-34 LO E DD COMBO	TC-DD	28 W	300 V	0,014 A

[®] in emergency mode

Technical data batteries

Accu-NiCd

4.2 / 4.5 Ah

Battery voltage/cell	1.2 V
Cell type	D
Case temperature range	
to ensure 4 years design life	+5 °C to +55 °C
Max. short term temperature (reduced life-time)	70 °C
Max. number discharge cycles	4 cycles per year plus 4 cycles during commissioning
Max. storage time	6 months

Accupack-NiCd

4.5 Ah

Battery voltage/cell	1.2 V
Cell type	D
Case temperature range	
(to ensure a 4 years design life)	+5 °C to +55 °C
Max. short term temperature (reduced life-time)	70 °C
Max. number discharge cycles	4 cycles per year plus 4 cycles during commissioning
Max. storage time	6 months

For further information refer to corresponding battery datasheet.

Storage, installation and commissioning

Relevant information about storage conditions, installation and commissioning are provided in the battery datasheets.



Care should be taken to ensure batteries and emergency units don't exceed their maximum temperatures.

Intelligent Voltage Guard

Intelligent Voltage Guard is the name of the new electronic monitor from Tridonic. This innovative feature of the new PC COMBO family of combined electronic ballasts and emergency lighting modules from Tridonic immediately shows if the mains voltage rises above a certain threshold. 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.

New PC COMBO 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.

Ambient Temperature

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.

Life-time

PC CFL E COMBO is designed for an average life-time 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.

CE marking

The PC CFL E COMBO units are CE marked for compliance with the low voltage directive. Certificates of compliance are available to allow luminaires to be CE marked for compliance with the EMC directive.

Mechanical details**Housing**

Glow-wire test according to EN 61347-1 with increased temperature of 850 °C passed.

LED charge indicator

- Green
- Mounting hole 6,5 mm diameter, 1 – 1,6 mm thickness
- Length of LED lead 750 mm (Bezel supplied fitted to LED)
- Insulation temperature rating: 90 °C

Battery leads

- Quantity: 1 red and 1 black
- Length: 1300 mm
- Wire type: 0,5 mm² solid conductor
- Insulation temperature rating: 90 °C

Termination 1

Push on 4,8 mm receptacle to suit battery spade fitted with insulating cover

Termination 2

9 mm stripped insulation

Electrical connections

In low temperature applications an starting aid is required for the emergency lamp which is referenced to the metal case of the unit. This starting aid does not need to be earthed.

The combined unit is intended to be earthed by the Ⓢ marked terminal connection.

Two phases can be used as switched and unswitched line.

Note:

All electrical connections to the unit must be made when both permanent and switched mains supplies are disconnected

Miniature circuit breakers (MCBs):

The maximum number of these electronic ballasts that may be used with miniature circuit breakers (MCBs). These quantities are based on single pole MCBs.

For multi-pole MCBs derate by 20 %.

Number of electronic ballasts

Type	Type C - MCB rating				Type B - MCB rating			
	10 A	13 A	16 A	20 A	10 A	13 A	16 A	20 A
PC 1x28-33 LO E DD COMBO	42	74	78	98	21	37	39	49
PC 1x28-34 LO E DD COMBO	42	74	78	98	21	37	39	49

Batteries

Connection method: 4.8 x 0.5 mm spade welded to end of cell

For the stick batteries this connection is accessible after the battery end caps have been fitted.

To inhibit inverter operation, only disconnect the batteries by removing the connector from the battery spade tags.

Note:

The battery charger of the PC CFL E Combo is short circuit protected. After a battery short circuit the protection device will be resetted after a short while.

Battery must not be connected to earth.

Storage

It is recommended to disconnect the battery before store or delivery. A long term storage in open circuit leads to battery self discharge and deactivation of chemical components. It could be required to charge and discharge the batteries a few times to recover the initial performance.

Wiring advice

The lead length is dependant on the capacitance of the cable. Connection to earth reduces radio interference

Ballast Type	Terminal		Maximum lead capacitance allowed	
	Cold	Hot	Cold	Hot
PC 1xx CFL E COMBO	1, 2	3, 4	50 pF	50 pF
PC 2xx CFL E COMBO	1, 2, 5, 6	3, 4	50 pF	50 pF

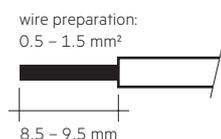
With standard solid wire 0.5/1.5 mm² the capacitance of the lead is 30–80 pF/m. This value is influenced by the way the wiring is made.

- keep lamp wires short
- lamp connection with multi-lamp ballasts should be made with symmetrical wiring
- for 1 and 2 lamp ballasts: hot leads and cold leads should be separated as much as possible
- The LED and battery wiring should be routed separately and kept as far away as possible from the high frequency lamp leads to avoid coupling.
- 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

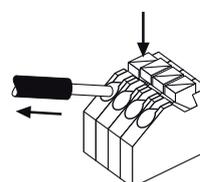
Wiring type and cross section

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 the push-wire terminals.

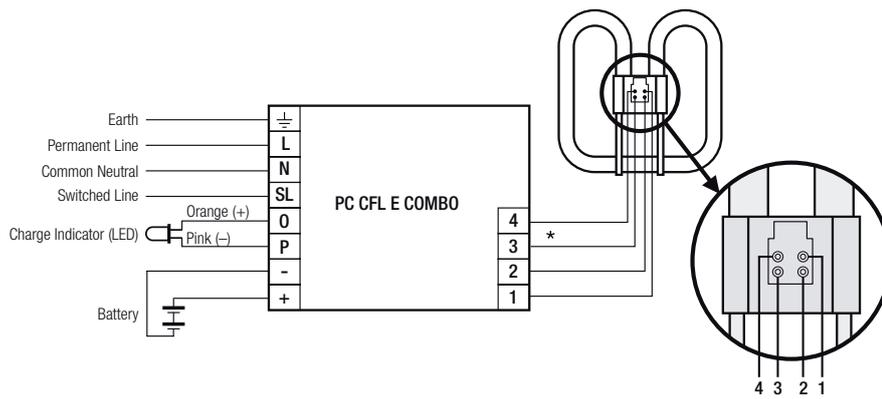


Release of the wiring

Press down the "push button" and remove the cable from front.



PC CFL E COMBO wiring diagrams



Wiring diagram PC CFL E COMBO with single TC-DD lamp

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.