



PC TC-L COMBO, 220 – 240 V 50/60 Hz Compact fluorescent lamps

Product description

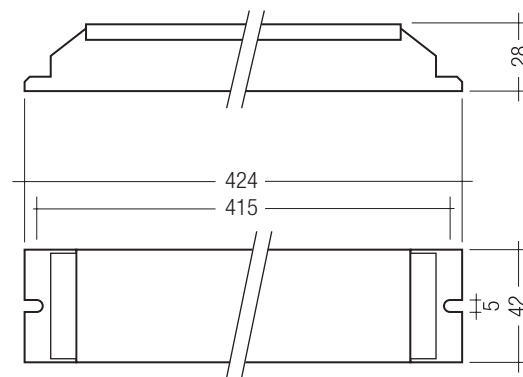
- Combination of electronic ballast and emergency lighting unit
- For TC-L compact fluorescent lamps
- For manual testing of the emergency lighting function

Properties

- Lightweight one-part emergency lighting unit
- Simple wiring
- No compatibility problems
- 3 h rated duration
- Lamp warm start in normal operation
- 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
- IDC terminals for automatic and manual wiring
- Optional test switch
- Electronically controlled battery charging
- Deep discharge protection
- Short-circuit-proof battery connection
- Polarity reversal protection for battery

Batteries

- High-temperature cells
- NiCd or NiMH batteries
- D or Cs cells
- Blade terminals for simple connection



Technical data

| | |
|---|----------------------------|
| Rated supply voltage | 220 – 240 V |
| Mains frequency | 50 / 60 Hz |
| Mains voltage changeover threshold | according to EN 60598-2-22 |
| Lamp starting time (normal operation) | < 1.5 s |
| tc point max. | 70 °C |
| Ambient temperature ta | 0 ... 50 °C |
| Operating frequency (normal operation) | 40 – 50 kHz |
| Operating frequency (emergency mode) | 20 – 30 kHz |
| Overvoltage protection | 320 V (for 1 h) |
| Battery charging time | 24 h |
| Charge current 3 h | 210 mA |
| Discharge current 3 h | 1.1 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 pcs. |
|---------------------------------|----------------|-----------------|-------------------|-------------------|-----------------|
| Rated operating time 3 h | | | | | |
| PC 1x36-33 TC-L COMBO | 89899920 | 3 | 25 pieces | 475 pieces | 0.42 kg |
| PC 2x36-33 TC-L COMBO | 89899921 | 3 | 25 pieces | 475 pieces | 0.42 kg |
| PC 1x40-34 TC-L COMBO | 89899922 | 4 | 25 pieces | 475 pieces | 0.42 kg |
| PC 2x40-34 TC-L COMBO | 89899923 | 4 | 25 pieces | 475 pieces | 0.42 kg |
| PC 1x55-35 TC-L COMBO | 89899924 | 5 | 25 pieces | 475 pieces | 0.42 kg |
| PC 2x55-35 TC-L COMBO | 89899925 | 5 | 25 pieces | 475 pieces | 0.42 kg |



Standards, page 4

Wiring diagrams and installation examples, page 6

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 | λ | Normal operation BLF | Emergency operation BLF | Emergency operation EBLF [Ⓞ] |
|---------------------------------|--------------|-----------------------|----------------|----------------------|----------------|------------|---------------|---------------|-----------|----------------------|-------------------------|---------------------------------------|
| Rated operating time 3 h | | | | | | | | | | | | |
| TC-L | 1 x 36 W | PC 1x36-33 TC-L COMBO | 89899920 | 424 x 42 x 28 mm | 415 mm | 32 W | 38.5 W | 0.17 A | 0.97 | 1 | 0.051 | 0.040 |
| TC-L | 2 x 36 W | PC 2x36-33 TC-L COMBO | 89899921 | 424 x 42 x 28 mm | 415 mm | 32 W | 74.0 W | 0.33 A | 0.98 | 1 | 0.051 | 0.040 |
| TC-L | 1 x 40 W | PC 1x40-34 TC-L COMBO | 89899922 | 424 x 42 x 28 mm | 415 mm | 40 W | 46.0 W | 0.20 A | 0.97 | 1 | 0.061 | 0.040 |
| TC-L | 2 x 40 W | PC 2x40-34 TC-L COMBO | 89899923 | 424 x 42 x 28 mm | 415 mm | 40 W | 90.6 W | 0.40 A | 0.98 | 1 | 0.061 | 0.040 |
| TC-L | 1 x 55 W | PC 1x55-35 TC-L COMBO | 89899924 | 424 x 42 x 28 mm | 415 mm | 55 W | 65.0 W | 0.29 A | 0.97 | 1 | 0.085 | 0.075 |
| TC-L | 2 x 55 W | PC 2x55-35 TC-L COMBO | 89899925 | 424 x 42 x 28 mm | 415 mm | 55 W | 127.0 W | 0.56 A | 0.98 | 1 | 0.085 | 0.075 |

[Ⓞ] According to EN 61347-2-7: 2006.

RoHS

ACCESSORIES

Test switch EM2

Product description

- For connection to the emergency lighting unit
- For checking the device function



Ordering data

| Type | Article number | Packaging, bag | Packaging, carton | Weight per pcs. |
|------------------|----------------|----------------|-------------------|-----------------|
| Test switch EM 2 | 89805277 | 25 pieces | 200 pieces | 0.013 kg |

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 pcs. |
|-------------------------------------|----------------|----------------|-------------------|-----------------|
| LED EM green | 89899605 | 25 pieces | 200 pieces | 0.017 kg |
| LED EM green, ultra high brightness | 89899756 | 25 pieces | 200 pieces | 0.012 kg |

Ballast lumen factor (BLF) in %

PC TC-L COMBO for compact fluorescent lamps, 3 h

| Duration | 3 h | | | | | |
|-------------|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | 3 cells | 3 cells | 4 cells | 4 cells | 5 cells | 5 cells |
| Type | PC 1x36-33 TC-L COMBO | PC 2x36-33 TC-L COMBO | PC 1x40-34 TC-L COMBO | PC 2x40-34 TC-L COMBO | PC 1x55-35 TC-L COMBO | PC 2x55-35 TC-L COMBO |
| Article no. | 89899920 | 89899921 | 89899922 | 89899923 | 89899924 | 89899925 |
| Lamp type | Wattage BLF in emergency lighting mode in % for rated operating time | | | | | |
| TC-L | 36 W | 5.1 | 5.1 | | | |
| | 40 W | | | 6.1 | 6.1 | |
| | 55 W | | | | | 8.5 8.5 |

| Technology and capacity | Design | Number of cells | Type | Article number | Assignable batteries | | | | | |
|---------------------------------|---------------|-----------------|---------------------|----------------|----------------------|---|---|---|---|---|
| NiCd 4 Ah D-cells | Stick | 3 | Accu-NiCd 3A | 89895960 | • | • | | | | |
| | Stick | 4 | Accu-NiCd 4A 55 | 89800089 | | | • | • | | |
| | Stick | 5 | Accu-NiCd 5A | 89895973 | | | | | • | • |
| | Stick + Stick | 3 + 2 | Accu-NiCd 5B | 89895962 | | | | | • | • |
| NiCd 4 Ah Cs-cells [®] | Stick | 3 | Accu-NiMH 4 Ah C 3A | 89899854 | • | • | | | | |
| | Stick | 4 | Accu-NiMH 4 Ah C 4A | 89899850 | | | • | • | | |
| | Stick | 5 | Accu-NiMH 4 Ah C 5A | 89899851 | | | | | • | • |

Note: 50 °C batteries are also available (see separate data sheet at www.tridonic.com).

[®] Maximum battery housing temperature 45 °C.

Standards

- according to EN 50172
- according to EN 60598-2-22
- EN 601347-2-3
- EN 601347-2-7
- EN 60929
- EN 55015
- EN 61000-3-2
- EN 61000-3-3
- EN 61547
- EN 60068-2-64
- EN 60068-2-29
- EN 60068-2-30
- Mains ballast complies with end of lamp life (EOL) test 2



Note:

The PC T5 COMBO Ip is not intended to be used for high risk task area lighting.

Insulation testing (no flashover or breakdown must occur)

Up to 500 V DC between the phase and neutral conductors connected together and the earth.

High voltage insulation testing (1500 V AC) not recommended

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.

Accu-NiCd

case temperature range
to ensure 4 years life
storage life in temperate conditions
battery voltage per cell
capacity
max. short term temperature (reduced lifetime)
packaging

0 °C → +55 °C
4 years
1.2 V
4.2 / 4.5 Ah
70 °C
5 pieces/carton

Accu-NiMh

case temperature range
to ensure 4 years life
storage life in temperate conditions
battery voltage per cell
capacity
packaging

0 °C → +45 °C
4 years
1.2 V
4.0 Ah
5 pieces/carton

Note:

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

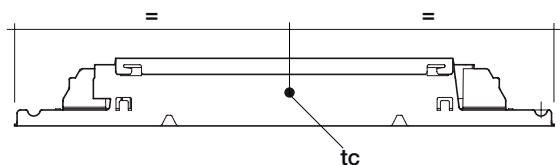
Working Voltage, lamp current

| Type | Lamp type | Wattage | Uout | Lamp current [Ⓢ] |
|---------------------|-----------|---------|-------|---------------------------|
| PC 1x36-3 TCL COMBO | T5 | 1x36 W | 300 V | 0.016 A |
| PC 2x36-3 TCL COMBO | T5 | 2x36 W | 300 V | 0.016 A |
| PC 1x40-4 TCL COMBO | T5 | 1x40 W | 300 V | 0.017 A |
| PC 2x40-4 TCL COMBO | T5 | 2x40 W | 300 V | 0.017 A |
| PC 1x55-5 TCL COMBO | T5 | 1x55 W | 300 V | 0.023 A |
| PC 2x55-5 TCL COMBO | T5 | 2x55 W | 300 V | 0.023 A |

[Ⓢ] in emergency operation

Ambient Temperature

PC TCL COMBO



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.

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.

Energy class CELMA EEI = A2

PC TCL COMBO 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.

Electrical connections

In low temperature applications a 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 fixings used to attach it to the luminaire. It may also be earthed by a wire attached to the holes positioned in the sides at each end of the case channel.

Two different 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

Smart Heating (normal operation)

Innovative heating circuit. Reduced filament heating after lamp has struck.

Service life

PC TCL COMBO is designed for an average service life 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 TCL 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.

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 TCL 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.

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

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.

Mechanical details

Channel and Cover manufactured from 0.4 mm white pre-coated steel.

LED charge indicator

- Green
- Mounting hole 6.5 mm dia
- Length of LED lead 750 mm (Bezel supplied fitted to LED)

Test switch

- Mounting hole 7 mm dia
- Length of test switch lead 550 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 (marked with *)
- 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 should be earthed.
- Mains wiring to be twisted when through wiring
- Keep the mains

Wiring advice

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

For safety reasons, the PC T5 COMBO Ip 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 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, test switch and battery wiring should be routed separately and kept as far away as possible from the high frequency lamp leads to avoid coupling.

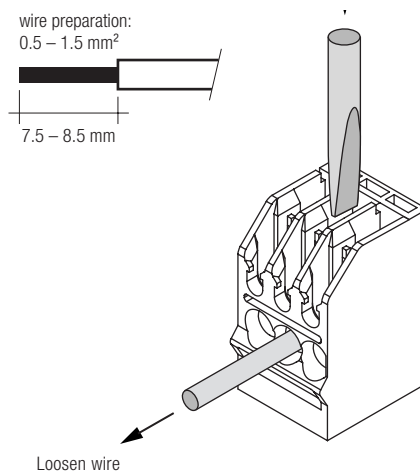
| Ballast | Terminal | | Maximum lead capacitance allowed | |
|-------------------|------------|------|----------------------------------|--------|
| | Cold | Hot | Cold | Hot |
| PC 1/xx TCL COMBO | 3, 4 | 1, 2 | 100 pF | 100 pF |
| PC 2/xx TCL COMBO | 1, 2, 5, 6 | 3, 4 | 100 pF | 100 pF |

IDC interface

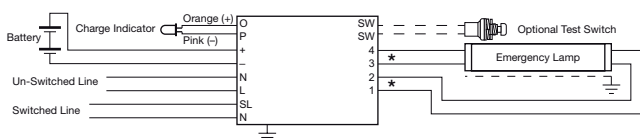
- solid wire with a cross section of 0.5 mm² according to the specification from WAGO

Horizontal interface

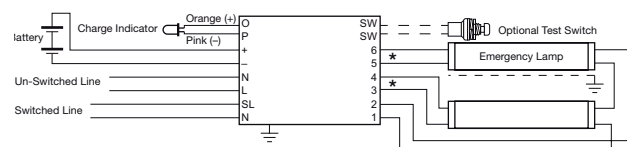
- solid wire with a cross section of 0.5–1.5 mm² according to the specification from WAGO
- strip 7.5–8.5 mm of insulation from the cables to ensure perfect operation of the terminals



PC TCL COMBO wiring diagrams



Wiring diagram PC TCL COMBO with single TC-L lamp



Wiring diagram PC TCL COMBO with twin TC-L lamp

① For further technical information please visit www.tridonic.com