



### PC T5 COMBO Ip, 220 – 240 V 50/60 Hz

Linear fluorescent lamps

#### Product description

- Combination of electronic ballast and emergency lighting unit
- For T5 fluorescent lamps
- Low-profile casing (21 x 30 mm cross-section)
- For manual testing of the emergency lighting function
- 5-year guarantee

#### Properties

- Lightweight one-part emergency lighting unit
- Simple wiring
- No compatibility problems
- 1 or 3 h rated duration
- Selectable operating time (jumper)
- Lamp warm start in normal operation
- Cathode heating in emergency mode
- AC operation of all lamps
- Automatic restart after relamping in normal operation
- Green charge status display LED
- Intelligent Voltage Guard (overvoltage indication and undervoltage shutdown)
- Optional test switch
- Checking the emergency lighting function by interrupting the unswitched phase
- IDC (insulation displacement connection)
- 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, Cs or LA cells
- Blade terminals for simple connection
- 4-year design life
- 1-year guarantee
- For battery compatibility refer to chapter „Ballast-Lumen-Factor (BLF)“



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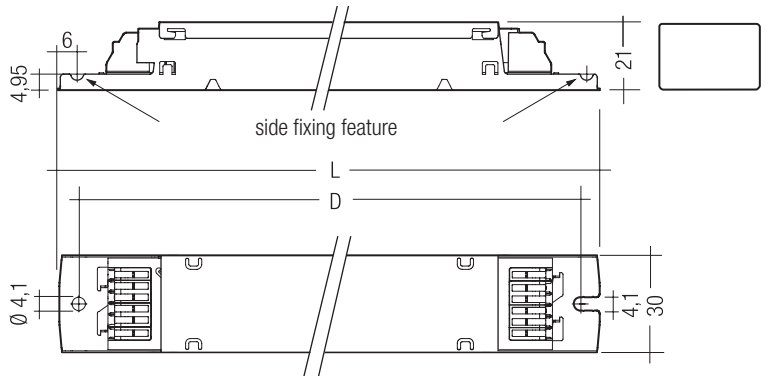
**Wiring diagrams and installation examples**, page 10



### PC T5 COMBO Ip, 220 – 240 V 50/60 Hz Linear fluorescent lamps

#### Technical data

|                                                   |                            |
|---------------------------------------------------|----------------------------|
| Rated supply voltage                              | 220 – 240 V                |
| Mains frequency                                   | 50 / 60 Hz                 |
| Mains voltage changeover threshold                | according to EN 60598-2-22 |
| Start time                                        | ~ 1.6 s                    |
| tc point max.                                     | 70 °C                      |
| tc point (PC 2x54-6 T5 COMBO Ip)                  | 75 °C                      |
| Ambient temperature ta                            | 0 ... 55 °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 1 h                                | 105 mA                     |
| Charge current 3 h                                | 210 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. |
|-------------------------------------|----------------|-----------------|-------------------|-------------------|----------------|
| <b>Rated operating time 3 / 1 h</b> |                |                 |                   |                   |                |
| PC 1x14-3 T5 COMBO Ip               | 89899875       | 3               | 25 pc(s).         | 475 pc(s).        | 0.229 kg       |
| PC 2x14-3 T5 COMBO Ip               | 89899876       | 3               | 25 pc(s).         | 475 pc(s).        | 0.229 kg       |
| PC 1x21/28-5 T5 COMBO Ip            | 89899881       | 5               | 25 pc(s).         | 475 pc(s).        | 0.229 kg       |
| PC 2x21/28-5 T5 COMBO Ip            | 89899882       | 5               | 25 pc(s).         | 475 pc(s).        | 0.229 kg       |
| PC 1x24-4 T5 COMBO Ip               | 89899879       | 4               | 25 pc(s).         | 475 pc(s).        | 0.229 kg       |
| PC 2x24-4 T5 COMBO Ip               | 89899880       | 4               | 25 pc(s).         | 475 pc(s).        | 0.229 kg       |
| PC 1x35-6 T5 COMBO Ip               | 89899885       | 6               | 25 pc(s).         | 475 pc(s).        | 0.229 kg       |
| PC 2x35-6 T5 COMBO Ip               | 89899886       | 6               | 25 pc(s).         | 475 pc(s).        | 0.229 kg       |
| PC 1x39-5 T5 COMBO Ip               | 89899883       | 5               | 25 pc(s).         | 475 pc(s).        | 0.229 kg       |
| PC 2x39-5 T5 COMBO Ip               | 89899884       | 5               | 25 pc(s).         | 475 pc(s).        | 0.229 kg       |
| PC 1x49-5 T5 COMBO Ip               | 89899887       | 5               | 25 pc(s).         | 475 pc(s).        | 0.229 kg       |
| PC 2x49-5 T5 COMBO Ip               | 89899888       | 5               | 25 pc(s).         | 475 pc(s).        | 0.340 kg       |
| PC 1x54-6 T5 COMBO Ip               | 89899889       | 6               | 25 pc(s).         | 475 pc(s).        | 0.229 kg       |
| PC 2x54-6 T5 COMBO Ip               | 89899890       | 6               | 25 pc(s).         | 475 pc(s).        | 0.334 kg       |
| PC 1x80-6 T5 COMBO Ip               | 89899891       | 6               | 25 pc(s).         | 475 pc(s).        | 0.229 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 | λ    | Normal operation BLF | Emergency operation BLF | Emergency operation EBLF <sup>①</sup> | Rated duration |
|-------------------------------------|--------------|--------------------------|----------------|----------------------|----------------|------------|---------------|---------------|------|----------------------|-------------------------|---------------------------------------|----------------|
| <b>Rated operating time 3 / 1 h</b> |              |                          |                |                      |                |            |               |               |      |                      |                         |                                       |                |
| T5                                  | 1 x 14 W     | PC 1x14-3 T5 COMBO Ip    | 89899875       | 425 x 30 x 21 mm     | 415 mm         | 14.4 W     | 19.4 W        | 0.090 A       | 0.96 | 1                    | 0.170                   | 0.170                                 | 3 / 1 h        |
| T5                                  | 2 x 14 W     | PC 2x14-3 T5 COMBO Ip    | 89899876       | 425 x 30 x 21 mm     | 415 mm         | 28.8 W     | 35.0 W        | 0.160 A       | 0.95 | 1                    | 0.170                   | 0.170                                 | 3 / 1 h        |
| T5                                  | 1 x 21 W     | PC 1x21/28-5 T5 COMBO Ip | 89899881       | 425 x 30 x 21 mm     | 415 mm         | 20.5 W     | 28.8 W        | 0.130 A       | 0.95 | 1                    | 0.120                   | 0.115                                 | 3 / 1 h        |
| T5                                  | 1 x 28 W     | PC 1x21/28-5 T5 COMBO Ip | 89899881       | 425 x 30 x 21 mm     | 415 mm         | 27.9 W     | 35.9 W        | 0.160 A       | 0.97 | 1                    | 0.120                   | 0.095                                 | 3 / 1 h        |
| T5                                  | 2 x 21 W     | PC 2x21/28-5 T5 COMBO Ip | 89899882       | 425 x 30 x 21 mm     | 415 mm         | 40.9 W     | 50.0 W        | 0.225 A       | 0.97 | 1                    | 0.120                   | 0.110                                 | 3 / 1 h        |
| T5                                  | 2 x 28 W     | PC 2x21/28-5 T5 COMBO Ip | 89899882       | 425 x 30 x 21 mm     | 415 mm         | 55.8 W     | 66.5 W        | 0.295 A       | 0.98 | 1                    | 0.120                   | 0.095                                 | 3 / 1 h        |
| T5                                  | 1 x 24 W     | PC 1x24-4 T5 COMBO Ip    | 89899879       | 425 x 30 x 21 mm     | 415 mm         | 22.2 W     | 29.9 W        | 0.135 A       | 0.95 | 1                    | 0.130                   | 0.127                                 | 3 / 1 h        |
| T5                                  | 2 x 24 W     | PC 2x24-4 T5 COMBO Ip    | 89899880       | 425 x 30 x 21 mm     | 415 mm         | 43.0 W     | 54.7 W        | 0.245 A       | 0.97 | 1                    | 0.130                   | 0.127                                 | 3 / 1 h        |
| T5                                  | 1 x 35 W     | PC 1x35-6 T5 COMBO Ip    | 89899885       | 425 x 30 x 21 mm     | 415 mm         | 35.7 W     | 44.5 W        | 0.200 A       | 0.98 | 1                    | 0.130                   | 0.075                                 | 3 / 1 h        |
| T5                                  | 2 x 35 W     | PC 2x35-6 T5 COMBO Ip    | 89899886       | 425 x 30 x 21 mm     | 415 mm         | 71.4 W     | 84.4 W        | 0.370 A       | 0.98 | 1                    | 0.130                   | 0.075                                 | 3 / 1 h        |
| T5                                  | 1 x 39 W     | PC 1x39-5 T5 COMBO Ip    | 89899883       | 425 x 30 x 21 mm     | 415 mm         | 40.0 W     | 47.0 W        | 0.210 A       | 0.97 | 1                    | 0.070                   | 0.065                                 | 3 / 1 h        |
| T5                                  | 2 x 39 W     | PC 2x39-5 T5 COMBO Ip    | 89899884       | 425 x 30 x 21 mm     | 415 mm         | 77.0 W     | 88.0 W        | 0.390 A       | 0.98 | 1                    | 0.070                   | 0.065                                 | 3 / 1 h        |
| T5                                  | 1 x 49 W     | PC 1x49-5 T5 COMBO Ip    | 89899887       | 425 x 30 x 21 mm     | 415 mm         | 50.0 W     | 58.2 W        | 0.260 A       | 0.98 | 1                    | 0.060                   | 0.050                                 | 3 / 1 h        |
| T5                                  | 2 x 49 W     | PC 2x49-5 T5 COMBO Ip    | 89899888       | 425 x 30 x 21 mm     | 415 mm         | 101.4 W    | 112.0 W       | 0.500 A       | 0.99 | 1                    | 0.070                   | 0.050                                 | 3 / 1 h        |
| T5                                  | 1 x 54 W     | PC 1x54-6 T5 COMBO Ip    | 89899889       | 425 x 30 x 21 mm     | 415 mm         | 54.8 W     | 66.9 W        | 0.300 A       | 0.97 | 1                    | 0.060                   | 0.040                                 | 3 / 1 h        |
| T5                                  | 2 x 54 W     | PC 2x54-6 T5 COMBO Ip    | 89899890       | 425 x 30 x 21 mm     | 415 mm         | 105.0 W    | 120.3 W       | 0.530 A       | 0.99 | 1                    | 0.060                   | 0.040                                 | 3 / 1 h        |
| T5                                  | 1 x 80 W     | PC 1x80-6 T5 COMBO Ip    | 89899891       | 425 x 30 x 21 mm     | 415 mm         | 79.5 W     | 87.3 W        | 0.385 A       | 0.98 | 1                    | 0.048                   | 0.043                                 | 3 / 1 h        |

<sup>①</sup> According to EN 61347-2-7

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).        | 0.017 kg       |
| LED EM green, ultra high brightness | 89899756       | 25 pc(s).      | 200 pc(s).        | 0.012 kg       |

RoHS

ACCES-  
SORIES

## Test switch EM3

### 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 pc. |
|------------------|----------------|----------------|-------------------|----------------|
| Test switch EM 3 | 89899956       | 25 pc(s).      | 200 pc(s).        | 0.013 kg       |

## Ballast lumen factor (BLF) in %

## PC T5 COMBO Ip for T5 fluorescent lamps, 3 or 1 h

|           | Duration    | 3 h or 1 h                                                   |                            |                               |                               |                            |                            |
|-----------|-------------|--------------------------------------------------------------|----------------------------|-------------------------------|-------------------------------|----------------------------|----------------------------|
|           | Cells       | 3 cells                                                      | 3 cells                    | 5 cells                       | 5 cells                       | 4 cells                    | 4 cells                    |
|           | Type        | PC 1x14 – 3<br>T5 COMBO Ip                                   | PC 2x14 – 3<br>T5 COMBO Ip | PC 1x21/28 – 5<br>T5 COMBO Ip | PC 2x21/28 – 5<br>T5 COMBO Ip | PC 1x24 – 4<br>T5 COMBO Ip | PC 2x24 – 4<br>T5 COMBO Ip |
|           | Article no. | 89899875                                                     | 89899876                   | 89899881                      | 89899882                      | 89899879                   | 89899880                   |
| Lamp type | Wattage     | BLF in emergency lighting mode in % for rated operating time |                            |                               |                               |                            |                            |
| T5        | 14 W        | 17                                                           | 17                         |                               |                               |                            |                            |
|           | 21 W        |                                                              |                            | 12                            | 12                            |                            |                            |
|           | 24 W        |                                                              |                            |                               |                               | 13                         | 13                         |
|           | 28 W        |                                                              |                            | 12                            | 12                            |                            |                            |
|           | 35 W        |                                                              |                            |                               |                               |                            |                            |
|           | 39 W        |                                                              |                            |                               |                               |                            |                            |
|           | 49 W        |                                                              |                            |                               |                               |                            |                            |
|           | 54 W        |                                                              |                            |                               |                               |                            |                            |
|           | 80 W        |                                                              |                            |                               |                               |                            |                            |

| Technology and capacity | Design        | Number of cells | Type                  | Article number | Assignable batteries |   |   |   |   |  |
|-------------------------|---------------|-----------------|-----------------------|----------------|----------------------|---|---|---|---|--|
| NiCd 1.6 Ah Cs cells    | Stick         | 3               | Accu-NiCd C 3A        | 89899743       | •                    | • |   |   |   |  |
|                         | Stick         | 4               | Accu-NiCd C 4A        | 89899692       |                      |   |   | • | • |  |
|                         | Stick         | 5               | Accu-NiCd C 5A        | 89899695       |                      |   | • | • |   |  |
|                         | Stick         | 6               | Accu-NiCd C 6A        | 89899698       |                      |   |   |   |   |  |
|                         | Stick + Stick | 3 + 3           | Accu-NiCd C 6C        | 89899699       |                      |   |   |   |   |  |
| 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 | 2 + 3           | Accu-NiCd 5C 55       | 89800090       |                      |   | • | • |   |  |
|                         | Stick + Stick | 3 + 3           | Accu-NiCd 6C 55       | 89800388       |                      |   |   |   |   |  |
| NiMH 2 Ah Cs cells      | Stick         | 3               | Accu-NiMH C 3A        | 89899744       | •                    | • |   |   |   |  |
|                         | Stick         | 4               | Accu-NiMH C 4A        | 89899700       |                      |   |   | • | • |  |
|                         | Stick         | 5               | Accu-NiMH C 5A        | 89899703       |                      |   | • | • |   |  |
|                         | Stick         | 6               | Accu-NiMH C 6A        | 89899706       |                      |   |   |   |   |  |
|                         | Stick + Stick | 3 + 3           | Accu-NiMH C 6C        | 89899707       |                      |   |   |   |   |  |
| NiMH 4 Ah LA cells      | Stick         | 3               | Accu-NiMH 4Ah 3A CON  | 89800441       | •                    | • |   |   |   |  |
|                         | Stick         | 4               | Accu-NiMH 4Ah 4A CON  | 89800442       |                      |   |   | • | • |  |
|                         | Stick + Stick | 2 + 2           | Accu-NiMH 4Ah 4C CON  | 89800438       |                      |   |   | • | • |  |
|                         | Stick + Stick | 2 + 3           | Accu-NiMH 4Ah 5C CON  | 89800439       |                      |   | • | • |   |  |
|                         | Stick + Stick | 3 + 3           | Accu-NiMH 4Ah 6C CON  | 89800440       |                      |   |   |   |   |  |
| NiMH 2.2 Ah Cs cells    | remote box    | 1 x 3           | Pack-NiMH 2.2Ah 3 CON | 28001898       | •                    | • |   |   |   |  |
|                         | remote box    | 1 x 4           | Pack-NiMH 2.2Ah 4 CON | 28001899       |                      |   |   | • | • |  |
| NiMH 4 Ah LAL cells     | remote box    | 1 x 3           | Pack-NiMH 4Ah 3 CON   | 28001896       | •                    | • |   |   |   |  |
|                         | remote box    | 1 x 4           | Pack-NiMH 4Ah 4 CON   | 28001897       |                      |   |   | • | • |  |

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

For 3-hour operation: 4 Ah D cells NiCd or 4 Ah LA cells NiMH.

For 1-hour operation: 1.6 Ah Cs cells NiCd or 2 Ah Cs cells NiMH.

**Ballast lumen factor (BLF) in %****PC T5 COMBO Ip for T5 fluorescent lamps, 3 or 1 h**

|           | Duration    | 3 h or 1 h                                                   |                            |                            |                            |                            |
|-----------|-------------|--------------------------------------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
|           | Cells       | 6 cells                                                      | 6 cells                    | 5 cells                    | 5 cells                    | 5 cells                    |
|           | Type        | PC 1x35 – 6<br>T5 COMBO Ip                                   | PC 2x35 – 6<br>T5 COMBO Ip | PC 1x39 – 5<br>T5 COMBO Ip | PC 2x39 – 5<br>T5 COMBO Ip | PC 1x49 – 5<br>T5 COMBO Ip |
|           | Article no. | 89899885                                                     | 89899886                   | 89899883                   | 89899884                   | 89899887                   |
| Lamp type | Wattage     | BLF in emergency lighting mode in % for rated operating time |                            |                            |                            |                            |
| T5        | 14 W        |                                                              |                            |                            |                            |                            |
|           | 21 W        |                                                              |                            |                            |                            |                            |
|           | 24 W        |                                                              |                            |                            |                            |                            |
|           | 28 W        |                                                              |                            |                            |                            |                            |
|           | 35 W        | 13                                                           | 13                         |                            |                            |                            |
|           | 39 W        |                                                              |                            | 7                          | 7                          |                            |
|           | 49 W        |                                                              |                            |                            |                            | 6                          |
|           | 54 W        |                                                              |                            |                            |                            |                            |
|           | 80 W        |                                                              |                            |                            |                            |                            |

| Technology and capacity | Design        | Number of cells | Type                  | Article number | Assignable batteries |   |   |   |   |
|-------------------------|---------------|-----------------|-----------------------|----------------|----------------------|---|---|---|---|
| NiCd 1.6 Ah Cs cells    | Stick         | 3               | Accu-NiCd C 3A        | 89899743       |                      |   |   |   |   |
|                         | Stick         | 4               | Accu-NiCd C 4A        | 89899692       |                      |   |   |   |   |
|                         | Stick         | 5               | Accu-NiCd C 5A        | 89899695       |                      |   | • | • | • |
|                         | Stick         | 6               | Accu-NiCd C 6A        | 89899698       | •                    | • |   |   |   |
|                         | Stick + Stick | 3 + 3           | Accu-NiCd C 6C        | 89899699       | •                    | • |   |   |   |
| 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 5C 55       | 89800090       |                      |   | • | • | • |
|                         | Stick + Stick | 3 + 3           | Accu-NiCd 6C 55       | 89800388       | •                    | • |   |   |   |
| NiMH 2 Ah Cs cells      | Stick         | 3               | Accu-NiMH C 3A        | 89899744       |                      |   |   |   |   |
|                         | Stick         | 4               | Accu-NiMH C 4A        | 89899700       |                      |   |   |   |   |
|                         | Stick         | 5               | Accu-NiMH C 5A        | 89899703       |                      |   | • | • | • |
|                         | Stick         | 6               | Accu-NiMH C 6A        | 89899706       | •                    | • |   |   |   |
|                         | Stick + Stick | 3 + 3           | Accu-NiMH C 6C        | 89899707       | •                    | • |   |   |   |
| NiMH 4 Ah LA cells      | Stick         | 3               | Accu-NiMH 4Ah 3A CON  | 89800441       |                      |   |   |   |   |
|                         | Stick         | 4               | Accu-NiMH 4Ah 4A CON  | 89800442       |                      |   |   |   |   |
|                         | Stick + Stick | 2 + 2           | Accu-NiMH 4Ah 4C CON  | 89800438       |                      |   |   |   |   |
|                         | Stick + Stick | 2 + 3           | Accu-NiMH 4Ah 5C CON  | 89800439       |                      |   | • | • | • |
|                         | Stick + Stick | 3 + 3           | Accu-NiMH 4Ah 6C CON  | 89800440       | •                    | • |   |   |   |
| NiMH 2.2 Ah Cs cells    | remote box    | 1 x 3           | Pack-NiMH 2.2Ah 3 CON | 28001898       |                      |   |   |   |   |
|                         | remote box    | 1 x 4           | Pack-NiMH 2.2Ah 4 CON | 28001899       |                      |   |   |   |   |
| NiMH 4 Ah LAL cells     | remote box    | 1 x 3           | Pack-NiMH 4Ah 3 CON   | 28001896       |                      |   |   |   |   |
|                         | remote box    | 1 x 4           | Pack-NiMH 4Ah 4 CON   | 28001897       |                      |   |   |   |   |

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

For 3-hour operation: 4 Ah D cells NiCd or 4 Ah LA cells NiMH.

For 1-hour operation: 1.6 Ah Cs cells NiCd or 2 Ah Cs cells NiMH.

## Ballast lumen factor (BLF) in %

PC T5 COMBO Ip for T5 fluorescent lamps, 3 or 1 h

|           | Duration    | 3 h or 1 h                                                   |                            |                            |                            |
|-----------|-------------|--------------------------------------------------------------|----------------------------|----------------------------|----------------------------|
|           | Cells       | 5 cells                                                      | 6 cells                    | 6 cells                    | 6 cells                    |
|           | Type        | PC 2x49 – 5<br>T5 COMBO Ip                                   | PC 1x54 – 6<br>T5 COMBO Ip | PC 2x54 – 6<br>T5 COMBO Ip | PC 1x80 – 6<br>T5 COMBO Ip |
|           | Article no. | 89899888                                                     | 89899889                   | 89899890                   | 89899891                   |
| Lamp type | Wattage     | BLF in emergency lighting mode in % for rated operating time |                            |                            |                            |
| T5        | 14 W        |                                                              |                            |                            |                            |
|           | 21 W        |                                                              |                            |                            |                            |
|           | 24 W        |                                                              |                            |                            |                            |
|           | 28 W        |                                                              |                            |                            |                            |
|           | 35 W        |                                                              |                            |                            |                            |
|           | 39 W        |                                                              |                            |                            |                            |
|           | 49 W        | 7                                                            |                            |                            |                            |
|           | 54 W        |                                                              | 6                          | 6                          |                            |
|           | 80 W        |                                                              |                            |                            | 4.8                        |

| Technology and capacity | Design        | Number of cells | Type                  | Article number | Assignable batteries |   |   |   |
|-------------------------|---------------|-----------------|-----------------------|----------------|----------------------|---|---|---|
| NiCd 1.6 Ah<br>Cs cells | Stick         | 3               | Accu-NiCd C 3A        | 89899743       |                      |   |   |   |
|                         | Stick         | 4               | Accu-NiCd C 4A        | 89899692       |                      |   |   |   |
|                         | Stick         | 5               | Accu-NiCd C 5A        | 89899695       | •                    |   |   |   |
|                         | Stick         | 6               | Accu-NiCd C 6A        | 89899698       |                      | • | • | • |
|                         | Stick + Stick | 3 + 3           | Accu-NiCd C 6C        | 89899699       |                      | • | • | • |
| NiCd 4 Ah<br>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 5C 55       | 89800090       | •                    |   |   |   |
|                         | Stick + Stick | 3 + 3           | Accu-NiCd 6C 55       | 89800388       |                      | • | • | • |
| NiMH 2 Ah<br>Cs cells   | Stick         | 3               | Accu-NiMH C 3A        | 89899744       |                      |   |   |   |
|                         | Stick         | 4               | Accu-NiMH C 4A        | 89899700       |                      |   |   |   |
|                         | Stick         | 5               | Accu-NiMH C 5A        | 89899703       | •                    |   |   |   |
|                         | Stick         | 6               | Accu-NiMH C 6A        | 89899706       |                      | • | • | • |
|                         | Stick + Stick | 3 + 3           | Accu-NiMH C 6C        | 89899707       |                      | • | • | • |
| NiMH 4 Ah<br>LA cells   | Stick         | 3               | Accu-NiMH 4Ah 3A CON  | 89800441       |                      |   |   |   |
|                         | Stick         | 4               | Accu-NiMH 4Ah 4A CON  | 89800442       |                      |   |   |   |
|                         | Stick + Stick | 2 + 2           | Accu-NiMH 4Ah 4C CON  | 89800438       |                      |   |   |   |
|                         | Stick + Stick | 2 + 3           | Accu-NiMH 4Ah 5C CON  | 89800439       | •                    |   |   |   |
|                         | Stick + Stick | 3 + 3           | Accu-NiMH 4Ah 6C CON  | 89800440       |                      | • | • | • |
| NiMH 2.2 Ah<br>Cs cells | remote box    | 1 x 3           | Pack-NiMH 2.2Ah 3 CON | 28001898       |                      |   |   |   |
|                         | remote box    | 1 x 4           | Pack-NiMH 2.2Ah 4 CON | 28001899       |                      |   |   |   |
| NiMH 4 Ah<br>LAL cells  | remote box    | 1 x 3           | Pack-NiMH 4Ah 3 CON   | 28001896       |                      |   |   |   |
|                         | remote box    | 1 x 4           | Pack-NiMH 4Ah 4 CON   | 28001897       |                      |   |   |   |

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

For 3-hour operation: 4 Ah D cells NiCd or 4 Ah LA cells NiMH.

For 1-hour operation: 1.6 Ah Cs cells NiCd or 2 Ah Cs cells NiMH.

**Standards**

- according to EN 50172
- according to 60598-2-22
- 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
- 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.

**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 (U<sub>out</sub>), THD, lamp current**

| Type                              | Lamp type | Wattage   | U <sub>out</sub> <sup>®</sup> | THD at 230 V, 50 Hz, maintained mode | Lamp current <sup>®</sup> |
|-----------------------------------|-----------|-----------|-------------------------------|--------------------------------------|---------------------------|
| <b>PC 1/14 – 3 T5 COMBO Ip</b>    | T5        | 1x14 W    | 400 / 400 V                   | ≤ 20                                 | 0.027 A                   |
| <b>PC 2/14 – 3 T5 COMBO Ip</b>    | T5        | 2x14 W    | 300 / 300 V                   | ≤ 15                                 | 0.027 A                   |
| <b>PC 1/21/28 – 5 T5 COMBO Ip</b> | T5        | 1x21/28 W | 400 / 400 V                   | ≤ 15                                 | 0.017 A                   |
| <b>PC 2/21/28 – 5 T5 COMBO Ip</b> | T5        | 2x21/28 W | 300 / 300 V                   | ≤ 15                                 | 0.017 A                   |
| <b>PC 1/24 – 4 T5 COMBO Ip</b>    | T5        | 1x24 W    | 250 / 250 V                   | ≤ 20                                 | 0.027 A                   |
| <b>PC 2/24 – 4 T5 COMBO Ip</b>    | T5        | 2x24 W    | 400 / 400 V                   | ≤ 15                                 | 0.027 A                   |
| <b>PC 1/35 – 6 T5 COMBO Ip</b>    | T5        | 1x35 W    | 400 / 400 V                   | ≤ 15                                 | 0.016 A                   |
| <b>PC 2/35 – 6 T5 COMBO Ip</b>    | T5        | 2x35 W    | 380 / 320 V                   | ≤ 15                                 | 0.016 A                   |
| <b>PC 1/39 – 5 T5 COMBO Ip</b>    | T5        | 1x39 W    | 250 / 250 V                   | ≤ 20                                 | 0.015 A                   |
| <b>PC 2/39 – 5 T5 COMBO Ip</b>    | T5        | 2x39 W    | 250 / 250 V                   | ≤ 15                                 | 0.015 A                   |
| <b>PC 1/49 – 5 T5 COMBO Ip</b>    | T5        | 1x49 W    | 390 / 350 V                   | ≤ 15                                 | 0.011 A                   |
| <b>PC 2/49 – 5 T5 COMBO Ip</b>    | T5        | 2x49 W    | 390 / 350 V                   | ≤ 10                                 | 0.013 A                   |
| <b>PC 1/54 – 6 T5 COMBO Ip</b>    | T5        | 1x54 W    | 270 / 270 V                   | ≤ 15                                 | 0.014 A                   |
| <b>PC 2/54 – 6 T5 COMBO Ip</b>    | T5        | 2x54 W    | 270 / 270 V                   | ≤ 15                                 | 0.014 A                   |
| <b>PC 1/80 – 6 T5 COMBO Ip</b>    | T5        | 1x80 W    | 340 / 320 V                   | ≤ 15                                 | 0.012 A                   |

<sup>®</sup> In emergency operation

<sup>®</sup> Max. voltage between output terminals / Max. voltage between output terminal to earth

**Technical data batteries****Accu-NiCd**

|                                                      |                                                      |
|------------------------------------------------------|------------------------------------------------------|
| Case temperature range to ensure 4 years design life | +5 °C to +55 °C                                      |
| Battery voltage/cell                                 | 1.2 V                                                |
| Single cell dimensions                               |                                                      |
| 4.2 / 4.5 Ah D                                       |                                                      |
| Diameter                                             | 32.5 mm                                              |
| Height                                               | 60.5 mm                                              |
| 1.6 Ah Cs                                            |                                                      |
| Diameter                                             | 22.5 mm                                              |
| Height                                               | 42.5 mm                                              |
| Capacity D                                           | 4.2 / 4.5 Ah                                         |
| Capacity Cs                                          | 1.6 Ah                                               |
| Max. short term temperature (reduced life-time)      | 70 °C                                                |
| Max. number discharge cycles                         | 4 cycles per year plus 4 cycles during commissioning |
| Packaging                                            | 5 pieces/carton                                      |

**Accu-NiMH**

|                                                      |                                                      |
|------------------------------------------------------|------------------------------------------------------|
| Case temperature range to ensure 4 years design life | +5 °C to +55 °C                                      |
| 2.0 Ah Cs                                            | +5 °C to +40 °C                                      |
| 4.0 Ah LA                                            | 1.2 V                                                |
| Battery voltage                                      |                                                      |
| Single cell dimensions                               |                                                      |
| 2.0 Ah Cs                                            |                                                      |
| Diameter                                             | 22 mm                                                |
| Height                                               | 42.5 mm                                              |
| 4.0 Ah LA                                            |                                                      |
| Diameter                                             | 18.3 mm                                              |
| Height                                               | 90 mm                                                |
| Capacity Cs / LA                                     | 2.0 Ah / 4.0 Ah                                      |
| Max. short term temperature (reduced life-time)      | 70 °C                                                |
| Max. number discharge cycles 2.0 Ah Cs               | 4 cycles per year plus 4 cycles during commissioning |
| Max. number discharge cycles 4.0 Ah LA               | 2 cycles per year plus 4 cycles during commissioning |
| Packaging                                            | 5 pieces/carton                                      |

**Accupack-NiMH**

|                                                         |                                                      |
|---------------------------------------------------------|------------------------------------------------------|
| Ambient temperature range to ensure 4 years design life | +5 °C to +35 °C                                      |
| tc point                                                | +40 °C                                               |
| Battery voltage/cell                                    | 1.2 V                                                |
| Single cell dimensions                                  |                                                      |
| 2.2 Ah Cs                                               |                                                      |
| Diameter                                                | 22 mm                                                |
| Height                                                  | 42.5 mm                                              |
| 4.0 Ah LAL                                              |                                                      |
| Diameter                                                | 18.3 mm                                              |
| Height                                                  | 90 mm                                                |
| Capacity Cs / LAL                                       | 2.2 Ah / 4.0 Ah                                      |
| Max. short term temperature (reduced life-time)         | 70 °C                                                |
| Max. number discharge cycles                            | 4 cycles per year plus 4 cycles during commissioning |
| Packing quantity                                        | 5 pcs. per carton                                    |

**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.

### Energy class CELMA EEI = A2

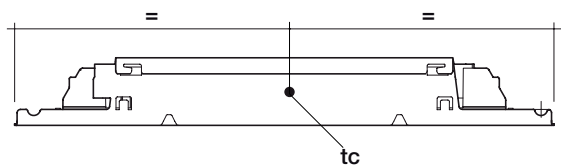
PC T5 COMBO Ip ignition technology (smart heating) optimises lamp start and ensures no energy is wasted. After the lamp has struck the filament heating is reduced automatically to a defined minimum value. This reduction in filament heating, saves energy, yet maintains the proper operating conditions for the lamp. The lamp is always operated within specification.

### Smart Heating (normal operation)

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

### Ambient Temperature

PC T5 COMBO Ip



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 T5 COMBO Ip 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 T5 COMBO Ip 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

Channel and Cover manufactured from 0.4 mm white precoated steel.

LED charge indicator

- Green
- Mounting hole 6.5 mm dia
- Length of LED lead 750 mm (Bezel supplied fitted to LED)
- Insulation temperature rating: 90 °C

Test switch

- Mounting hole 7 mm dia
- Length of test switch lead 550 mm

Battery leads

- Quantity: 1 red and 1 black
- Length: 1300 mm
- Wire type: 0.5 mm<sup>2</sup> solid conductor
- Insulation temperature rating: 90 °C

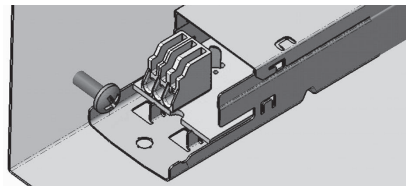
Termination 1

Push on 4.8 mm receptacle to suit battery spade fitted with insulating cover

Termination 2

9 mm stripped insulation

### Side fixing feature

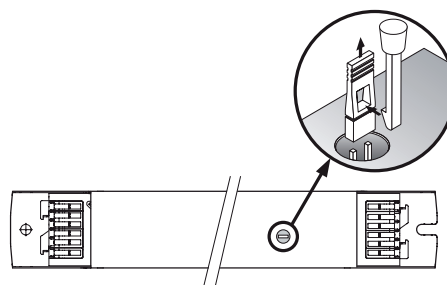


Screw M4, screw head diameter 8–10 mm

### Jumper selection:

3 hours operation as supplied for use with 4 Ah NiCd D or 4 Ah NiMH Cs cells.

Remove the jumper for 1 hour operation and use with Cs 1.5 Ah NiCd or 2.0 Ah NiMH cells.



### 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

**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 T5 Combo Ip is short circuit protected. After a battery short circuit the protection device will be reset 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.

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

| Ballast<br>Type     | Terminal   |            | Maximum lead capacitance allowed |        |
|---------------------|------------|------------|----------------------------------|--------|
|                     | Cold       | Hot        | Cold                             | Hot    |
| PC 1xx T5 COMBO Ip  | 3, 4       | 1, 2       | 200 pF                           | 100 pF |
| PC 2xx T5 COMBO Ip  | 3, 4, 5, 6 | 1, 2, 7, 8 | 200 pF                           | 100 pF |
| PC 2/35 T5 COMBO Ip | 3, 4, 5, 6 | 1, 2, 7, 8 | 100 pF                           | 50 pF  |
| PC 2/49 T5 COMBO Ip | 3, 4, 5, 6 | 1, 2, 7, 8 | 100 pF                           | 50 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 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, over the terminal.
- Mains wiring to be twisted when through wiring
- Keep the mains leads inside the luminaire as short as possible

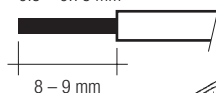
With standard solid wire 0.5/0.75 mm<sup>2</sup> the capacitance of the lead is 30–80 pF/m. This value is influenced by the way the wiring is made.

- keep lamp wires short
- lamp connection with multi-lamp ballasts should be made with symmetrical wiring
- for 1 and 2 lamp ballasts: hot leads 1,2,7,8 and cold leads 3,4,5,6 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.

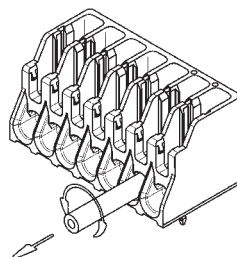
**IDC interface**

- Solid wire with a cross section of 0.5 mm<sup>2</sup> according to the specification from WAGO
- Alternatively a flexible lead with a cross section of 0.75 mm<sup>2</sup>

wire preparation:  
0.5 – 0.75 mm<sup>2</sup>

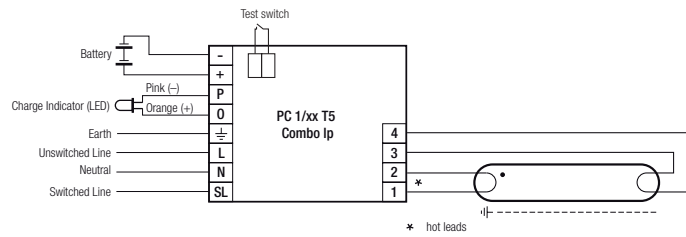
**Horizontal interface**

- Solid wire with a cross section of 0.5–0.75 mm<sup>2</sup> according to the specification from WAGO
- Solid wire with a cross section of 1.0 mm<sup>2</sup> with an insulation diameter up to 2.5 mm
- Strip 9 mm of insulation from the cables to ensure perfect operation of the terminals
- Loosen wire through twisting and pulling

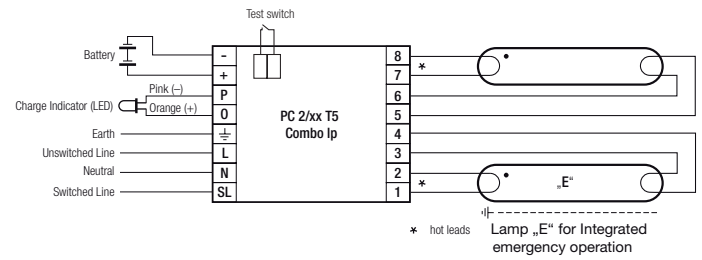


Loosen wire through  
twisting and pulling

## PC T5 COMBO Ip wiring diagrams



Wiring diagram PC T5 COMBO Ip with single T5 lamp



Wiring diagram PC T5 COMBO Ip with twin T5 lamp

## Additional information

Additional technical information at [www.tridonic.com](http://www.tridonic.com) → Technical Data

Guarantee conditions at [www.tridonic.com](http://www.tridonic.com) → Services

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