

PC CFL COMBO, 220 – 240 V 50/60 Hz

Compact fluorescent lamps

Product description

- Combination of electronic ballast and emergency lighting unit
- For 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 for TC-DD lamp variants
- 1 and 3 h rated duration for TC-D/T lamp variants
- Selectable operating time (jumper)
- Lamp warm start in normal operation
- Filament heating in emergency operation for TC-D/T lamps
- 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
- Small dimensions
- IDC (insulation displacement connection)
- Electronically controlled battery charging
- Deep discharge protection
- Short-circuit-proof battery connection
- Polarity reversal protection for battery

Batteries

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



Standards, page 9

For wiring diagrams and installation examples, page 13

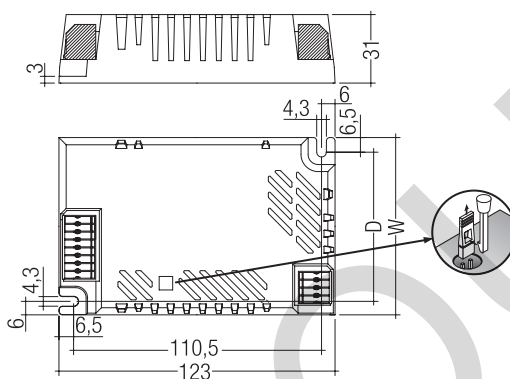


PC CFL COMBO, 220 – 240 V 50/60 Hz

Compact 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
Lamp starting time (normal operation)	1.6 s
tc point max.	75 °C
Ambient temperature ta	0 ... 55 °C
Operating frequency (normal operation)	> 42 kHz
Operating frequency (emergency mode)	typ. 17 kHz
Overvoltage protection	320 V (for 1 h)
Battery charging time	24 h
Battery charging current 4 Ah NiCd / 4 Ah NiMH (3 h application)	200 mA
Battery charging current 1.6 Ah NiCd / 2 Ah NiMH (1 h application)	100 mA
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 / 1 h					
PC 1x18-3 TC COMBO	89899990	3	25 pc(s).	700 pc(s).	0.159 kg
PC 1x18-4 TC COMBO	89899927	4	25 pc(s).	700 pc(s).	0.220 kg
PC 2x18-3 TC COMBO	89899982	3	25 pc(s).	450 pc(s).	0.245 kg
PC 2x18-4 TC COMBO	89899928	4	25 pc(s).	450 pc(s).	0.208 kg
PC 1x26-3 TC COMBO	89899983	3	25 pc(s).	700 pc(s).	0.220 kg
PC 1x26-4 TC COMBO	89899976	4	25 pc(s).	700 pc(s).	0.220 kg
PC 1x26/32-5 TC COMBO	89899929	5	25 pc(s).	700 pc(s).	0.220 kg
PC 1x26/32/42-6 TC COMBO	89899931	6	25 pc(s).	700 pc(s).	0.220 kg
PC 2x26-3 TC COMBO	89899984	3	25 pc(s).	450 pc(s).	0.245 kg
PC 2x26-4 TC COMBO	89899930	4	25 pc(s).	450 pc(s).	0.245 kg
PC 2x26/32-5 TC COMBO	89899998	5	25 pc(s).	450 pc(s).	0.245 kg
PC 2x26/32/42-6 TC COMBO	89899989	6	25 pc(s).	450 pc(s).	0.245 kg
Rated operating time 3 h, Low Output BLF					
PC 1x28-33 LO DD COMBO	89899943	3	25 pc(s).	700 pc(s).	0.220 kg
PC 1x28-34 LO DD COMBO	89899955	4	25 pc(s).	700 pc(s).	0.220 kg
PC 1x38-34 LO DD COMBO	89899981	4	25 pc(s).	700 pc(s).	0.220 kg
Rated operating time 3 h, High Output BLF					
PC 1x16-33 HO DD COMBO	89899926	3	25 pc(s).	700 pc(s).	0.220 kg
PC 1x28-33 HO DD COMBO	89899957	3	25 pc(s).	700 pc(s).	0.220 kg
PC 1x28-34 HO DD COMBO	89899958	4	25 pc(s).	700 pc(s).	0.220 kg
PC 1x38-34 HO DD COMBO	89899933	4	25 pc(s).	700 pc(s).	0.220 kg
PC 1x38-35 HO DD COMBO	89899975	5	25 pc(s).	700 pc(s).	0.220 kg

Specific technical data

Lamp type ^①	Lamp wattage	Type	Article number	Dimensions L x W x H	Hole spacing D	Lamp power	Circuit power	Mains current ^②	λ ^③	Normal operation BLF	Emergency operation BLF	Emergency operation EBLF ^③	Rated duration
Rated operating time 3 / 1 h													
TC-DEL	1 x 18 W	PC 1x18-3 TC COMBO	89899990	123 x 79 x 31 mm	66.5 mm	16.5 W	22 W	0.100 A	0.96	1.00	0.110	0.090	3 / 1 h
TC-TEL	1 x 18 W	PC 1x18-3 TC COMBO	89899990	123 x 79 x 31 mm	66.5 mm	16.5 W	22 W	0.100 A	0.96	1.00	0.090	0.080	3 / 1 h
TC-DEL	1 x 18 W	PC 1x18-4 TC COMBO	89899927	123 x 79 x 31 mm	66.5 mm	16.5 W	24 W	0.110 A	0.96	1.00	0.190	0.175	3 / 1 h
TC-TEL	1 x 18 W	PC 1x18-4 TC COMBO	89899927	123 x 79 x 31 mm	66.5 mm	16.5 W	24 W	0.110 A	0.96	1.00	0.150	0.150	3 / 1 h
TC-DEL	2 x 18 W	PC 2x18-3 TC COMBO	89899982	123 x 102 x 31 mm	89.5 mm	34.0 W	40 W	0.180 A	0.97	1.00	0.110	0.090	3 / 1 h
TC-TEL	2 x 18 W	PC 2x18-3 TC COMBO	89899982	123 x 102 x 31 mm	89.5 mm	34.0 W	40 W	0.180 A	0.97	1.00	0.090	0.080	3 / 1 h
TC-DEL	2 x 18 W	PC 2x18-4 TC COMBO	89899928	123 x 102 x 31 mm	89.5 mm	33.0 W	43 W	0.190 A	0.97	1.00	0.190	0.175	3 / 1 h
TC-TEL	2 x 18 W	PC 2x18-4 TC COMBO	89899928	123 x 102 x 31 mm	89.5 mm	33.0 W	43 W	0.190 A	0.97	1.00	0.150	0.150	3 / 1 h
TC-DEL	1 x 26 W	PC 1x26-3 TC COMBO	89899983	123 x 79 x 31 mm	66.5 mm	24.0 W	28 W	0.130 A	0.95	1.00	0.095	0.080	3 / 1 h
TC-TEL	1 x 26 W	PC 1x26-3 TC COMBO	89899983	123 x 79 x 31 mm	66.5 mm	24.0 W	28 W	0.130 A	0.95	1.00	0.065	0.055	3 / 1 h
TC-DEL	1 x 26 W	PC 1x26-4 TC COMBO	89899976	123 x 79 x 31 mm	66.5 mm	24.0 W	30 W	0.140 A	0.95	1.00	0.085	0.095	3 / 1 h
TC-TEL	1 x 26 W	PC 1x26-4 TC COMBO	89899976	123 x 79 x 31 mm	66.5 mm	24.0 W	30 W	0.140 A	0.95	1.00	0.085	0.085	3 / 1 h
TC-DEL	1 x 26 W	PC 1x26/32-5 TC COMBO	89899929	123 x 79 x 31 mm	66.5 mm	24.0 W	30 W	0.140 A	0.95	1.00	0.140	0.105	3 / 1 h
TC-TEL	1 x 26 W	PC 1x26/32-5 TC COMBO	89899929	123 x 79 x 31 mm	66.5 mm	24.0 W	30 W	0.140 A	0.95	1.00	0.120	0.075	3 / 1 h
TC-TEL	1 x 32 W	PC 1x26/32-5 TC COMBO	89899929	123 x 79 x 31 mm	66.5 mm	32.0 W	38 W	0.170 A	0.97	1.00	0.070	0.035	3 / 1 h
TC-DEL	1 x 26 W	PC 1x26/32/42-6 TC COMBO	89899931	123 x 79 x 31 mm	66.5 mm	24.0 W	30 W	0.140 A	0.95	1.00	0.110	0.095	3 / 1 h
TC-TEL	1 x 26 W	PC 1x26/32/42-6 TC COMBO	89899931	123 x 79 x 31 mm	66.5 mm	24.0 W	30 W	0.140 A	0.95	1.00	0.080	0.080	3 / 1 h
TC-TEL	1 x 32 W	PC 1x26/32/42-6 TC COMBO	89899931	123 x 79 x 31 mm	66.5 mm	32.0 W	40 W	0.180 A	0.95	1.00	0.090	0.085	3 / 1 h
TC-TEL	1 x 42 W	PC 1x26/32/42-6 TC COMBO	89899931	123 x 79 x 31 mm	66.5 mm	42.0 W	52 W	0.230 A	0.95	1.00	0.065	0.060	3 / 1 h
TC-DEL	2 x 26 W	PC 2x26-3 TC COMBO	89899984	123 x 102 x 31 mm	89.5 mm	48.0 W	52 W	0.230 A	0.95	1.00	0.095	0.080	3 / 1 h
TC-TEL	2 x 26 W	PC 2x26-3 TC COMBO	89899984	123 x 102 x 31 mm	89.5 mm	48.0 W	52 W	0.230 A	0.95	1.00	0.065	0.055	3 / 1 h
TC-DEL	2 x 26 W	PC 2x26-4 TC COMBO	89899930	123 x 102 x 31 mm	89.5 mm	48.0 W	56 W	0.250 A	0.95	1.00	0.085	0.095	3 / 1 h
TC-TEL	2 x 26 W	PC 2x26-4 TC COMBO	89899930	123 x 102 x 31 mm	89.5 mm	48.0 W	56 W	0.250 A	0.95	1.00	0.085	0.085	3 / 1 h
TC-DEL	2 x 26 W	PC 2x26/32-5 TC COMBO	89899998	123 x 102 x 31 mm	89.5 mm	48.0 W	56 W	0.260 A	0.97	1.00	0.140	0.105	3 / 1 h
TC-TEL	2 x 26 W	PC 2x26/32-5 TC COMBO	89899998	123 x 102 x 31 mm	89.5 mm	50.0 W	57 W	0.260 A	0.97	1.00	0.120	0.100	3 / 1 h
TC-TEL	2 x 32 W	PC 2x26/32-5 TC COMBO	89899998	123 x 102 x 31 mm	89.5 mm	62.0 W	71 W	0.330 A	0.98	1.00	0.100	0.085	3 / 1 h
TC-DEL	2 x 26 W	PC 2x26/32/42-6 TC COMBO	89899989	123 x 102 x 31 mm	89.5 mm	49.0 W	58 W	0.260 A	0.98	1.00	0.110	0.095	3 / 1 h
TC-TEL	2 x 26 W	PC 2x26/32/42-6 TC COMBO	89899989	123 x 102 x 31 mm	89.5 mm	49.0 W	58 W	0.260 A	0.98	1.00	0.080	0.080	3 / 1 h
TC-TEL	2 x 32 W	PC 2x26/32/42-6 TC COMBO	89899989	123 x 102 x 31 mm	89.5 mm	62.0 W	75 W	0.330 A	0.98	1.00	0.090	0.085	3 / 1 h
TC-TEL	2 x 42 W	PC 2x26/32/42-6 TC COMBO	89899989	123 x 102 x 31 mm	89.5 mm	82.0 W	98 W	0.440 A	0.98	1.00	0.065	0.060	3 / 1 h
Rated operating time 3 h, Low Output BLF													
TC-DD	1 x 28 W	PC 1x28-33 LO DD COMBO	89899943	123 x 79 x 31 mm	66.5 mm	17.0 W	24 W	0.110 A	0.96	0.75	0.110	0.100	3 h
TC-DD	1 x 28 W	PC 1x28-34 LO DD COMBO	89899955	123 x 79 x 31 mm	66.5 mm	17.0 W	24 W	0.110 A	0.96	0.75	0.150	0.115	3 h
TC-DD	1 x 38 W	PC 1x38-34 LO DD COMBO	89899981	123 x 79 x 31 mm	66.5 mm	26.0 W	35 W	0.160 A	0.96	0.85	0.060	0.055	3 h
Rated operating time 3 h, High Output BLF													
TC-DD	1 x 16 W	PC 1x16-33 HO DD COMBO	89899926	123 x 79 x 31 mm	66.5 mm	13.0 W	18 W	0.084 A	0.95	1.00	0.090	0.085	3 h
TC-DD	1 x 28 W	PC 1x28-33 HO DD COMBO	89899957	123 x 79 x 31 mm	66.5 mm	25.0 W	31 W	0.140 A	0.96	1.00	0.110	0.100	3 h
TC-DD	1 x 28 W	PC 1x28-34 HO DD COMBO	89899958	123 x 79 x 31 mm	66.5 mm	25.0 W	31 W	0.140 A	0.96	1.00	0.150	0.115	3 h
TC-DD	1 x 38 W	PC 1x38-34 HO DD COMBO	89899933	123 x 79 x 31 mm	66.5 mm	34.0 W	41 W	0.180 A	0.96	1.00	0.060	0.055	3 h
TC-DD	1 x 38 W	PC 1x38-35 HO DD COMBO	89899975	123 x 79 x 31 mm	66.5 mm	34.0 W	41 W	0.180 A	0.96	1.00	0.100	0.085	3 h

① PC 1x28-33 HO DD COMBO, PC 1x38-34 HO DD COMBO, PC 1x28-33 LO DD COMBO and PC 1x38-34 LO DD COMBO only for Biax non-amalgam lamps.

② For 230 V, 50 Hz.

③ According to EN 61347-2-7

RoHS

ACCES-
SORIES

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 pc.
Test switch EM 2	89805277	25 pc(s).	600 pc(s).	0.011 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 pc.
LED EM green	89899605	25 pc(s).	200 pc(s).	0.011 kg
LED EM green, ultra high brightness	89899756	25 pc(s).	200 pc(s).	0.012 kg

Ballast lumen factor (BLF) in %

PC CFL COMBO for TC-DEL and TC-TEL fluorescent lamps, 3 / 1 h

Lamp type	Wattage	3 / 1 h							
		3 cells	3 cells	4 cells	4 cells	3 cells	4 cells	5 cells	6 cells
Type		PC 1x18-3 TC COMBO	PC 2x18-3 TC COMBO	PC 1x18-4 TC COMBO	PC 2x18-4 TC COMBO	PC 1x26-3 TC COMBO	PC 1x26-4 T5 COMBO	PC 1x26/32-5 TC COMBO	PC 1x26/32/42-6 TC COMBO
Article no.		89899990	89899982	89899927	89899928	89899983	89899976	89899929	89899931
TC-DEL	18 W	11 / 9	11 / 9	19 / 15	19 / 15				
	26 W					9.5 / 6.5	8.5	14 / 12	11 / 8
TC-TEL	18 W	11 / 9	11 / 9	19 / 15	19 / 15				
	26 W					9.5 / 6.5	8.5	14 / 12	11 / 8
	32 W							7	9
	42 W								6.5

Technology and capacity	Design	Number of cells	Type	Article number	Assignable batteries									
NiCd 4 Ah D cells	Stick	3	Accu-NiCd 3A 55	28002773	•	•			•					
	Stick	4	Accu-NiCd 4A 55	89800089			•	•		•				
	Stick	5	Accu-NiCd 5A 55	28002774								•		
	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+2	Accu-NiMH C 4C	89899702			•	•			•			
	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									•	
NiCd 1.6 Ah Accupack		3	Pack-NiCd 3C	89899676	•	•			•					
		4	Pack-NiCd 4C	89899677			•	•			•			
		5	Pack-NiCd 5C	89899678								•		
		6	Pack-NiCd 6C	89899679									•	
NiCd 4.5Ah Accupack		3	Pack-NiCd 3D CON	89800389	•	•			•					
		4	Pack-NiCd 4D CON	89800390			•	•			•			
		5	Pack-NiCd 5D CON	28001181								•		
NiMH 2.2Ah 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			•	•			•			

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 CFL COMBO for TC-DEL and TC-TEL fluorescent lamps, 3 / 1 h

	Duration	3 / 1 h			
		3 cells	4 cells	5 cells	6 cells
Cells		3 cells	4 cells	5 cells	6 cells
Type		PC 2x26-3 TC COMBO	PC 2x26-4 TC COMBO	PC 2x26/32-5 TC COMBO	PC 2x26/32/42-6 TC COMBO
Article no.		89899984	89899930	89899998	89899989
Lamp type	Wattage	BLF in emergency lighting mode in % for rated operating time			
TC-DEL	26 W	9.5 / 6.5	8.5	14 / 12	11 / 8
TC-TEL	26 W	9.5 / 6.5	8.5	14 / 12	11 / 8
	32 W			10	9
	42 W				6.5

Technology and capacity	Design	Number of cells	Type	Article number	Assignable batteries				
NiCd 4 Ah D cells	Stick	3	Accu-NiCd 3A 55	28002773	•				
	Stick	4	Accu-NiCd 4A 55	89800089		•			
	Stick	5	Accu-NiCd 5A 55	28002774			•		
	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+2	Accu-NiMH C 4C	89899702		•			
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					•	
NiCd 1.6 Ah Accupack		3	Pack-NiCd 3C	89899676	•				
		4	Pack-NiCd 4C	89899677		•			
		5	Pack-NiCd 5C	89899678			•		
		6	Pack-NiCd 6C	89899679					•
NiCd 4.5 Ah Accupack		3	Pack-NiCd 3D CON	89800389	•				
		4	Pack-NiCd 4D CON	89800390		•			
		5	Pack-NiCd 5D CON	28001181			•		
	6	Pack-NiCd 6D CON	89800391					•	
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		•			

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 CFL COMBO for TC-DEL and TC-TEL fluorescent lamps, 3 h

Duration	3 h								
	3 cells	3 cells	4 cells	4 cells	5 cells	3 cells	4 cells	4 cells	
Type	PC 1x16-33 HO DD COMBO	PC 1x28-33 HO DD COMBO	PC 1x28-34 HO DD COMBO	PC 1x38-34 HO DD COMBO	PC 1x38-35 HO DD COMBO	PC 1x28-33 LO DD COMBO	PC 1x28-34 LO DD COMBO	PC 1x38-34 LO DD COMBO	
Article no.	89899926	89899957	89899958	89899933	89899975	89899943	89899955	89899981	
Lamp type	Wattage	High Output BLF in emergency lighting mode in % for rated operating time				Low Output BLF in emergency lighting mode in % for rated operating time			
TC-DD	16 W	9							
	28 W		11	15			11	15	
	38 W				6	10		6	

Technology	Design and capacity	Number of cells	Type	Article number	Assignable batteries									
NiCd 4 Ah D cells	Stick	3	Accu-NiCd 3A 55	28002773	.	.				.				
	Stick	4	Accu-NiCd 4A 55	89800089	
	Stick	5	Accu-NiCd 5A 55	28002774					.					
	Stick + Stick	3 + 2	Accu-NiCd 5C 55	89800090					.					
	Stick + Stick	3 + 3	Accu-NiCd 6C 55	89800388										
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										
NiCd 4.5 Ah Accupack		3	Pack-NiCd 3D CON	89800389	.	.				.				
		4	Pack-NiCd 4D CON	89800390			.	.			.	.	.
		5	Pack-NiCd 5D CON	28001181					.					
		6	Pack-NiCd 6D CON	89800391										
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			.	.			.	.	.

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

Emergency ballast lumen factor (EBLF) in %

PC CFL COMBO for TC-DEL and TC-TEL fluorescent lamps, 3 / 1 h

Duration		3 / 1 h							
Cells	3 cells	3 cells	4 cells	4 cells	3 cells	4 cells	5 cells	6 cells	
Type	PC 1x18-3 TC COMBO	PC 2x18-3 TC COMBO	PC 1x18-4 TC COMBO	PC 2x18-4 TC COMBO	PC 1x26-3 TC COMBO	PC 1x26-4 T5 COMBO	PC 1x26/32-5 TC COMBO	PC 1x26/32/42-6 TC COMBO	
Article no.	89899990	89899982	89899927	89899928	89899983	89899976	89899929	89899931	
Lamp type	Wattage		EBLF in emergency lighting mode in % for rated operating time						
TC-DEL	18 W	9 / 8	9 / 8	17.5 / 15	17.5 / 15				
	26 W					8 / 5.5	9.5 / 8.5	10.5 / 7.5	
TC-TEL	18 W	9 / 8	9 / 8	17.5 / 15	17.5 / 15				
	26 W					8 / 5.5	9.5 / 8.5	10.5 / 7.5	
	32 W							3.5	
	42 W							6	

PC CFL COMBO for TC-DEL and TC-TEL fluorescent lamps, 3 / 1 h

Duration		3 / 1 h			
Cells	3 cells	4 cells	5 cells	6 cells	
Type	PC 2x26-3 TC COMBO	PC 2x26-4 TC COMBO	PC 2x26/32-5 TC COMBO	PC 2x26/32/42-6 TC COMBO	
Article no.	89899984	89899930	89899998	89899989	
Lamp type	Wattage		EBLF in emergency lighting mode in % for rated operating time		
TC-DEL	26 W	8 / 5.5	9.5 / 8.5	10.5 / 10	
TC-TEL	26 W	8 / 5.5	9.5 / 8.5	10.5 / 10	
	32 W			8.5	
	42 W			6	

PC CFL COMBO for TC-DEL and TC-TEL fluorescent lamps, 3 h

Duration		3 h							
Cells	3 cells	3 cells	4 cells	4 cells	5 cells	3 cells	4 cells	4 cells	
Type	PC 1x16-33 HO DD COMBO	PC 1x28-33 HO DD COMBO	PC 1x28-34 HO DD COMBO	PC 1x38-34 HO DD COMBO	PC 1x38-35 HO DD COMBO	PC 1x28-33 LO DD COMBO	PC 1x28-34 LO DD COMBO	PC 1x38-34 LO DD COMBO	
Article no.	89899926	89899957	89899958	89899933	89899975	89899943	89899955	89899981	
Lamp type	Wattage		High Output EBLF in emergency lighting mode in % for rated operating time				Low Output EBLF in emergency lighting mode in % for rated operating time		
TC-DD	16 W	8.5							
	28 W		10	11.5			10	11.5	
	38 W				5.5	8.5		5.5	

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 COMBO is not intended to be used for high risk task area lighting.

Insulation 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 insulation 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 insulation 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.

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

Accu-NiMh

2.0 Ah

Battery voltage/cell	1.2 V
Cell type	Cs
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 30 cycles during commissioning
Max. storage time	12 months

4.0 Ah

Battery voltage/cell	1.2 V
Cell type	LA
Case temperature range to ensure 4 years design life	+5 °C to +40 °C
Max. short term temperature (reduced life-time)	70 °C
Max. number discharge cycles	4 cycles per year plus 30 cycles during commissioning
Max. storage time	12 months

Accupack-NiCd

1.6 Ah

Battery voltage/cell	1.2 V
Cell type	Cs
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

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

Accupack-NiMH

2.2 Ah

Battery voltage/cell	1.2 V
Cell type	Cs
Ambient temperature range to ensure 4 years design life	+5 °C to +35 °C
tc point	+40 °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	12 months

4.0 Ah

Battery voltage/cell	1.2 V
Cell type	LAL
Ambient temperature range to ensure 4 years design life	+5 °C to +35 °C
tc point	+40 °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	12 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.

Working Voltage (Uout), lamp current

Type	Lamp type	Wattage	Uout [®]	Lamp current [®]
PC 1x18-3 TC COMBO	TC-DEL/TEL	18 W	250 / 250 V	0.025 / 0.030 A
PC 1x18-4 TC COMBO	TC-DEL/TEL	18 W	250 / 250 V	0.026 A
PC 2x18-3 TC COMBO	TC-DEL/TEL	2x18 W	250 / 250 V	0.025 / 0.030 A
PC 2x18-4 TC COMBO	TC-DEL/TEL	2x18 W	250 / 250 V	0.026 A
PC 1x26-3 TC COMBO	TC-DEL/TEL	1x26 W	250 / 250 V	0.024 A
PC 1x26-4 TC COMBO	TC-DEL/TEL	26 W	250 / 250 V	0.017 / 0.019 A
PC 1x26/32-5 TC COMBO	TC-DEL/TEL	26 / 32 W	250 / 250 V	0.023 A
PC 1x26/32/42-6 TC COMBO	TC-DEL/TEL	26 / 32 / 42W	250 / 250 V	0.018 A
PC 2x26-3 TC COMBO	TC-DEL/TEL	2x26 W	250 / 250 V	0.024 A
PC 2x26-4 TC COMBO	TC-DEL/TEL	2x26 W	250 / 250 V	0.022 / 0.024 A
PC 2x26/32-5 TC COMBO	TC-DEL/TEL	2x26 / 32 W	250 / 250 V	0.023 A
PC 2x26/32/42-6 TC COMBO	TC-DEL/TEL	2x26 / 32 / 42 W	250 / 250 V	0.018 A
PC 1x26/32/42-6 TC COMBO	TC-TEL	42 W	250 / 250 V	0.018 A
PC 1x16-33 HO DD COMBO	TC-TEL	1x16 W	250 / 250 V	0.015 A
PC 1x28-33 LO DD COMBO	TC-TEL	28 W	250 / 250 V	0.020 A
PC 1x28-33 HO DD COMBO	TC-TEL	28 W	250 / 250 V	0.020 A
PC 1x28-34 LO DD COMBO	TC-TEL	28 W	250 / 250 V	0.026 A
PC 1x28-34 HO DD COMBO	TC-TEL	28 W	250 / 250 V	0.026 A
PC 1x38-34 LO DD COMBO	TC-DD	38 W	250 / 250 V	0.013 A
PC 1x38-34 HO DD COMBO	TC-DD	38 W	250 / 250 V	0.013 A
PC 1x38-35 HO DD COMBO	TC-DD	38 W	250 / 250 V	0.020 A

[®] in emergency mode

[®] Max. voltage between output terminals / Max. voltage between output terminal to earth

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 CFL 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.

Smart Heating (normal operation)

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

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 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 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

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

Test switch

- Mounting hole 7.0 mm diameter
- Length of test switch lead 550 mm

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

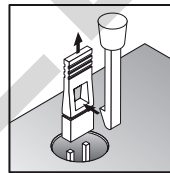
Termination 2

9 mm stripped insulation

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.

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 1x18-3 TC COMBO	42	60	72	102	21	30	36	51
PC 1x18-4 TC COMBO	42	60	72	102	21	30	36	51
PC 2x18-3 TC COMBO	34	48	58	70	17	24	29	35
PC 2x18-4 TC COMBO	34	48	58	70	17	24	29	35
PC 1x26-3 TC COMBO	36	50	60	72	18	25	30	36
PC 1x26-4 TC COMBO	36	50	60	72	18	25	30	36
PC 1x26/32-5 TC COMBO	36	50	60	72	18	25	30	36
PC 1x26/32/42-6 TC COMBO	34	46	58	70	17	23	29	35
PC 2x26-3 TC COMBO	30	42	56	68	15	21	28	34
PC 2x26-4 TC COMBO	30	42	56	68	15	21	28	34
PC 2x26/32-5 TC COMBO	8	14	18	20	4	7	9	10
PC 2x26/32/42-6 TC COMBO	8	14	18	20	4	7	9	10
PC 1x16-33 HO DD COMBO	40	70	74	94	20	35	37	47
PC 1x28-33 LO DD COMBO	42	74	78	98	21	37	39	49
PC 1x28-33 HO DD COMBO	40	70	74	94	20	35	37	47
PC 1x28-34 LO DD COMBO	42	74	78	98	21	37	39	49
PC 1x28-34 HO DD COMBO	38	68	72	92	19	34	36	46
PC 1x38-34 LO DD COMBO	34	50	60	70	17	25	30	35
PC 1x38-34 HO DD COMBO	34	50	60	70	17	25	30	35
PC 1x38-35 HO DD COMBO	34	50	60	70	17	25	30	35

Wiring advice

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

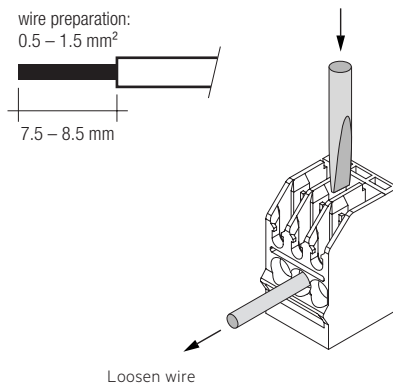
Ballast	Terminal		Maximum lead capacitance allowed	
	Cold	Hot	Cold	Hot
PC 1xx CFL COMBO	3, 4	1, 2	50 pF	50 pF
PC 2xx CFL COMBO	1, 2, 5, 6	3, 4	50 pF	50 pF

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 to 8.5 mm of insulation from the cables to ensure perfect operation of the terminals



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 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.

RFI

Tridonic ballasts are RFI protected in accordance with EN 55015.

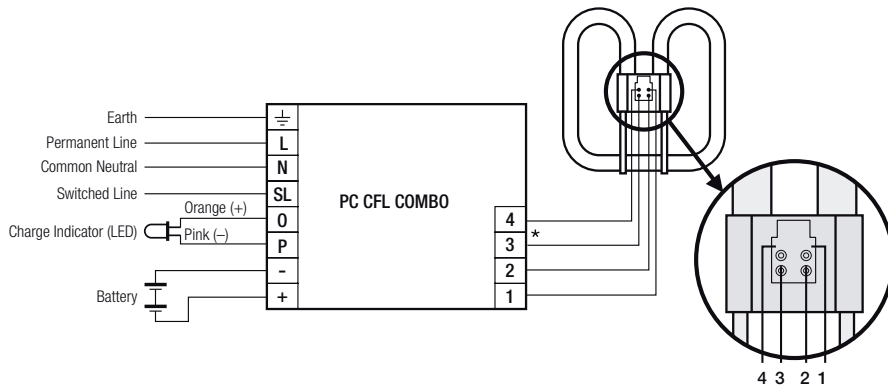
To operate the luminaire correctly and to minimise RFI we recommend the following instructions:

- 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

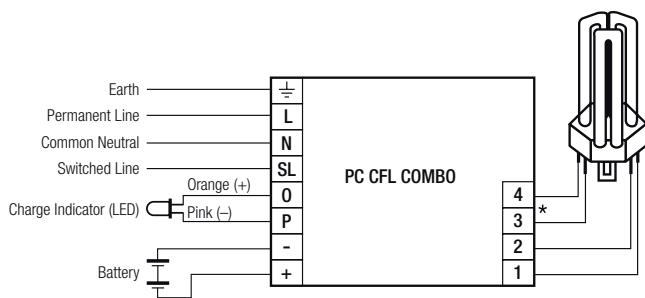
With standard solid wire 0.5/1.5 mm² the capacitance of the lead is 30–80 pF/m. This value is influenced by the way the wiring is made.

- 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, test switch and battery wiring should be routed separately and kept as far away as possible from the high frequency lamp leads to IDC interface 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.)

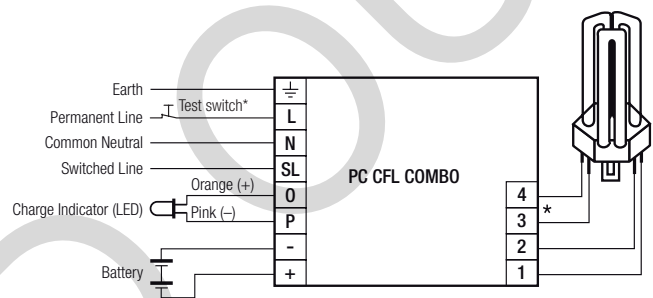
PC CFL COMBO wiring diagrams



Circuit diagram PC CFL COMBO with single TC-DD lamp

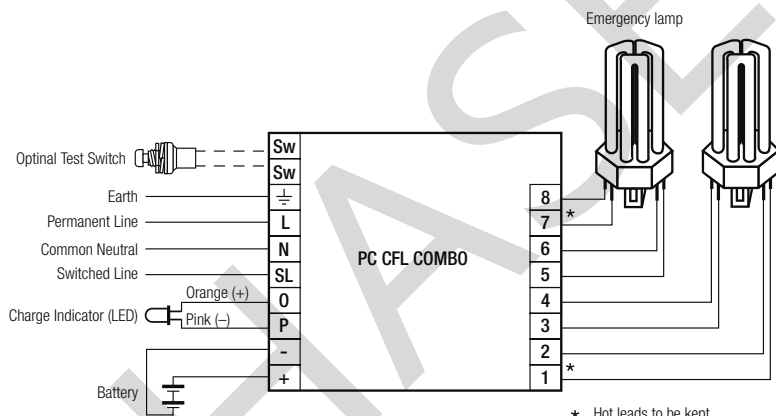


Circuit diagram PC CFL COMBO with single TC-DE/TE lamp



Circuit diagram PC CFL COMBO with single TC-DE/TE lamp with Test switch

* Use 230 V or 240 V Test switch



Circuit diagram PC CFL COMBO with twin TC-DE/TE lamps

* Hot leads to be kept as short as possible

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.