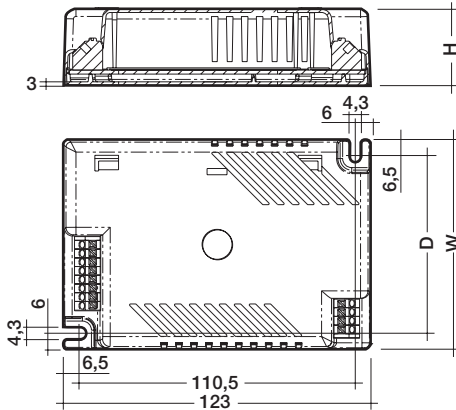


Combined electronic ballast and emergency lighting modules for compact fluorescent lamps

PC CFL COMBO 220–240 V 50/60 Hz



Description:

Warm start fixed output, combined electronic high frequency ballasts and emergency lighting modules for compact fluorescent lamps.

Features:

Operation

- Amalgam and non amalgam lamps
- Preheat start in normal operation
- Cathode heating during emergency operation with TC-D/T lamps
- AC operation of all lamps
- 3 hour and 1 hour operation
- High and standard BLF for 1 hour versions

- Deep discharge protection
- Regulated electronic charging circuit
- Standard brightness and ultra high brightness (UHB) LED's available

Easy to Use

- Lightweight one piece unit
- Small size
- Simplified wiring
- No compatibility issues
- Push wire terminals
- Emergency testing by isolating only the unswitched supply
- Remote battery pack units

Safe and Reliable

- Automated manufacture using SMD and radial insertion
- Designed and manufactured to ISO 9001
- Complies with European Standards:
 - EN 55015: 2006 + A1: 2007 (EMC/Emitted RFI)
 - EN 61547 (EMC/Immunity)
 - EN 61000.3.2 (EMC/Supply Harmonics)
 - EN 61347-2-7 (Safety)
 - EN 61347-2-3 (Safety)
 - EN 60925 (Performance)
 - EN 60929 (Performance)
- in accordance with EN 60598-2-22
- in accordance with EN 50172
- ENEC and BSI approved. CE marked

3 h duration – NiCd 4.0Ah D cells

Lamp		Ballast													
type	watt-age W	type	article number	LxWxH mm	fixing centres D mm	weight kg	circuit power W	lamp power W	current A	power factor (approx.)	max. case temperature tc	emergency BLF	normal BLF	number of accu cells NiCd 4.0 Ah	
TC-DEL	10	PC 1x10/13-33 TC COMBO	89899648	123x79x31	66.5	0.15	15	10	0.08	0.90	70	0.13	>0.95	3	
TC-DEL	2x10	PC 2x10/13-33 TC COMBO	89899649	123x102x31	89.5	0.22	27	2x10	0.13	0.95	70	0.13	>0.95	3	
TC-DEL/TEL	13	PC 1x10/13-33 TC COMBO	89899648	123x79x31	66.5	0.15	19	13	0.09	0.90	70	0.12/0.08	>0.95	3	
TC-DEL/TEL	2x13	PC 2x10/13-33 TC COMBO	89899649	123x102x31	89.5	0.22	36	2x13	0.16	0.95	70	0.12/0.08	>0.95	3	
TC-DEL/TEL	18	PC 1x18-34 TC COMBO	89899650	123x79x31	66.5	0.15	24	18	0.11	0.95	70	0.15/0.18	>0.95	4	
TC-DEL/TEL	2x18	PC 2x18-34 TC COMBO	89899651	123x102x31	89.5	0.22	44	2x18	0.21	0.95	70	0.15/0.18	>0.95	4	
TC-DEL/TEL	26	PC 1x26/32-35 TC COMBO	89899641	123x79x31	66.5	0.15	32	26	0.15	0.95	70	0.11/0.10	>0.95	5	
TC-DEL/TEL	2x26	PC 2x26-35 TC COMBO	89899642	123x102x31	89.5	0.22	60	2x26	0.28	0.95	70	0.11/0.14	>0.95	5	
TC-TEL	32	PC 1x26/32-35 TC COMBO	89899641	123x79x31	66.5	0.15	38	32	0.18	0.95	70	0.095	>0.95	5	
TC-TEL	2x32	PC 2x32-35 TC COMBO	89899652	123x102x31	89.5	0.22	75	2x32	0.35	0.95	80	0.095	>0.95	5	
TC-TEL	42	PC 1x26/32/42-36 TC COMBO	89899745	123x79x31	66.5	0.15	50	42	0.24	0.95	70	0.075	>0.95	6	
TC-TEL	2x42	PC 2x32/42-36 TC COMBO	89899746	123x102x31	89.5	0.22	100	2x42	0.47	0.95	80	0.075	>0.95	6	
TC-TEL	57	PC 1x57-36 TC COMBO	89899653	123x102x31	89.5	0.22	66	57	0.30	0.95	75	0.05	>0.95	6	
TC-DD	16	PC 1x16-33 DD COMBO	89899816	123x79x31	66.5	0.15	20	15	0.10	0.91	70	0.18	>0.95	3	
TC-DD	28	PC 1x28-34 DD COMBO	89899633	123x79x31	66.5	0.15	26	17	0.12	0.95	75	0.12	0.75	4	
TC-DD	28	PC 1x28-34 HO DD COMBO	89899654	123x79x31	66.5	0.15	34	25	0.16	0.95	70	0.12	>0.95	4	
TC-DD*	28	PC 1x28-33 DD COMBO	89899798	123x79x31	66.5	0.15	26	17	0.12	0.95	75	0.09	0.75	3	
TC-DD*	28	PC 1x28-33 HO DD COMBO	89899799	123x79x31	66.5	0.15	34	25	0.16	0.95	70	0.09	>0.95	3	
TC-DD*	38	PC 1x38-34 DD COMBO	89899655	123x79x31	66.5	0.15	43	35	0.20	0.95	70	0.065	>0.95	4	
TC-DD	38	PC 1x38-35 DD COMBO	89899769	123x79x31	66.5	0.15	44	35	0.20	0.95	70	0.09	>0.95	5	

* Biac non amalgam only

1 h duration high BLF – NiCd 4.0Ah D cells

Lamp		Ballast												
type	watt-age W	type	article number	LxWxH mm	fixing centres D mm	weight kg	circuit power W	lamp power W	current A	power factor (approx.)	max. case temperature tc	emergency BLF	normal BLF	number of accu cells NiCd 4.0Ah
TC-DEL	10	PC 1x10/13-13 TC COMBO	89899656	123x79x31	66.5	0.15	15	10	0.08	0.90	70	0.33	>0.95	3
TC-DEL	2x10	PC 2x10/13-13 TC COMBO	89899657	123x102x31	89.5	0.22	27	2x10	0.13	0.95	70	0.33	>0.95	3
TC-DEL/TEL	13	PC 1x10/13-13 TC COMBO	89899656	123x79x31	66.5	0.15	19	13	0.09	0.90	70	0.27/0.23	>0.95	3
TC-DEL/TEL	2x13	PC 2x10/13-13 TC COMBO	89899657	123x102x31	89.5	0.22	36	2x13	0.16	0.95	70	0.27/0.23	>0.95	3
TC-DEL/TEL	18	PC 1x18-14 TC COMBO	89899658	123x79x31	66.5	0.15	24	18	0.11	0.95	70	0.33/0.40	>0.95	4
TC-DEL/TEL	2x18	PC 2x18-14 TC COMBO	89899659	123x102x31	89.5	0.22	44	2x18	0.21	0.95	70	0.33/0.40	>0.95	4
TC-DEL/TEL	26	PC 1x26/32/42-15 TC COMBO	89899660	123x79x31	66.5	0.15	32	26	0.15	0.95	70	0.20/0.21	>0.95	5
TC-DEL/TEL	2x26	PC 2x26-15 TC COMBO	89899661	123x102x31	89.5	0.22	60	2x26	0.28	0.95	70	0.27/0.33	>0.95	5
TC-TEL	32	PC 1x26/32/42-15 TC COMBO	89899660	123x79x31	66.5	0.15	38	32	0.18	0.95	70	0.20	>0.95	5
TC-TEL	2x32	PC 2x32/42-15 TC COMBO	89899662	123x102x31	89.5	0.22	75	2x32	0.35	0.95	80	0.20	>0.95	5
TC-TEL	42	PC 1x26/32/42-15 TC COMBO	89899660	123x79x31	66.5	0.15	50	42	0.24	0.95	70	0.19	>0.95	5
TC-TEL	2x42	PC 2x32/42-15 TC COMBO	89899662	123x102x31	89.5	0.22	100	2x42	0.47	0.95	80	0.19	>0.95	5
TC-TEL	57	PC 1x57-16 TC COMBO	89899663	123x102x31	89.5	0.22	66	57	0.30	0.95	75	0.17	>0.95	6

1 h duration standard BLF – NiCd 1.5 Ah Cs cells / NIMH 2.0Ah Cs cells

Lamp		Ballast												
type	watt-age W	type	article number	LxWxH mm	fixing centres D mm	weight kg	circuit power W	lamp power W	current A	power factor (approx.)	max. case temperature tc	emergency BLF	normal BLF	number of accu cells NiCd 1.5Ah NiMH 2.0Ah
TC-DEL	10	PC 1x10/13-13C TC COMBO	89899664	123x79x31	66.5	0.15	15	10	0.08	0.90	70	0.13	>0.95	3
TC-DEL	2x10	PC 2x10/13-13C TC COMBO	89899665	123x102x31	89.5	0.22	27	2x10	0.13	0.95	70	0.13	>0.95	3
TC-DEL/TEL	13	PC 1x10/13-13C TC COMBO	89899664	123x79x31	66.5	0.15	19	13	0.09	0.90	70	0.12/0.08	>0.95	3
TC-DEL/TEL	2x13	PC 2x10/13-13C TC COMBO	89899665	123x102x31	89.5	0.22	36	2x13	0.16	0.95	70	0.12/0.08	>0.95	3
TC-DEL/TEL	18	PC 1x18-14C TC COMBO	89899666	123x79x31	66.5	0.15	23	18	0.11	0.95	70	0.15/0.18	>0.95	4
TC-DEL/TEL	2x18	PC 2x18-14C TC COMBO	89899667	123x102x31	89.5	0.22	43	2x18	0.20	0.95	70	0.15/0.18	>0.95	4
TC-DEL/TEL	26	PC 1x26/32-15C TC COMBO	89899668	123x79x31	66.5	0.15	31	26	0.15	0.95	70	0.11/0.10	>0.95	5
TC-DEL/TEL	2x26	PC 2x26-15C TC COMBO	89899669	123x102x31	89.5	0.22	59	2x26	0.28	0.95	70	0.11/0.14	>0.95	5
TC-TEL	32	PC 1x26/32-15C TC COMBO	89899668	123x79x31	66.5	0.15	37	32	0.17	0.95	70	0.095	>0.95	5
TC-TEL	2x32	PC 2x32-15C TC COMBO	89899670	123x102x31	89.5	0.22	75	2x32	0.35	0.95	80	0.095	>0.95	5
TC-TEL	42	PC 1x26/32/42-16C TC COMBO	89899747	123x79x31	66.5	0.15	49	42	0.23	0.95	70	0.075	>0.95	6
TC-TEL	2x42	PC 2x32/42-16C TC COMBO	89899748	123x102x31	89.5	0.22	100	2x42	0.47	0.95	80	0.075	>0.95	6
TC-TEL	57	PC 1x57-16C TC COMBO	89899671	123x102x31	89.5	0.22	66	57	0.30	0.95	75	0.05	>0.95	6

type	article number
LED EM green	89899605
LED EM green UHB	89899756

Technical data:

Ambient temperature range 0 °C to +50 °C
Maximum case temperature see tables.

Ingress Protection IP20
Vibration test IEC 60068-2-64 Fh
Bump test IEC 60068-2-29 Eb
Humidity IEC 60068-2-30
Flash Testing not recommended

High Voltage Insulation Testing (no flashover or breakdown must occur):
Up to 500VDC between the phase and neutral conductors connected together and the earth.

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 will restart automatically provided an interval of 2 seconds is left after removal.

Lamp starting (normal operation):

Type of start: Pre-heat
Starting time: 2 seconds
Number of starts: circa 20,000

Normal operation:

Rated mains supply voltage 220–240V
Mains frequency 50/60 Hz
Earth leakage current < 0.5 mA
Minimum lamp starting temperature -15 °C
Lamp operating frequency > 42 kHz
Ballast Lumen Factor (BLF) see table
Light output variation over rated voltage range ± 2 %
Recharge period 24 hours
Nominal charge current:
• NiCd D cell 200 mA
• NiCd Cs cell 100 mA
Can be used with high brightness charge indicators (LEDs)

Emergency operation:

Emergency light output factors (BLF) see table
Battery design voltage 1.2 V per cell
Nominal discharge current (3 hr unit) 1.1 A
Nominal discharge current (1 hr standard BLF) 1.1 A
Nominal discharge current (1 hr high BLF) 2.2 A
Minimum lamp starting temperature 0 °C

Batteries:

max. case temperature 45 °C
Storage life (in temperate conditions) 4 years

Mechanical details:

Case manufactured from polycarbonate.

LED charge indicator

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

Battery packs

- Polycarbonate case
- 1.0 m integral double insulated lead
- 1.0 mm² solid cable

To be connected to suitable strain relieved terminal block in luminaire or suitable polarised plug/socket for connection to luminaire.

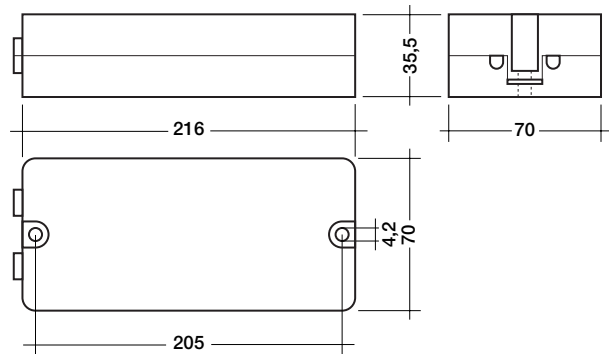
Termination

9 mm semi-stripped insulation with protective tape.

Accu (pack-NiCd):



Battery (high temperature)	type	number of cells	article number	LxWxH mm	weight g
Pack-NiCd 3D	Remote pack 4.0 Ah	3	89899672	216 x 70 x 35.5	570
Pack-NiCd 4D	Remote pack 4.0 Ah	4	89899673	216 x 70 x 35.5	700
Pack-NiCd 5D	Remote pack 4.0 Ah	5	89899674	216 x 70 x 35.5	840
Pack-NiCd 6D	Remote pack 4.0 Ah	6	89899675	216 x 70 x 35.5	980
Pack-NiCd 3C	Remote pack 1.4 Ah	3	89899676	216 x 70 x 35.5	320
Pack-NiCd 4C	Remote pack 1.4 Ah	4	89899677	216 x 70 x 35.5	370
Pack-NiCd 5C	Remote pack 1.4 Ah	5	89899678	216 x 70 x 35.5	420
Pack-NiCd 6C	Remote pack 1.4 Ah	6	89899679	216 x 70 x 35.5	470



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 %.

Type	Number of electronic ballasts					
	Type C MCB rating			Type B MCB rating		
	10 A	16 A	20 A	10 A	16 A	20 A
PC 1x10/13 ... TC COMBO	80	80	100	40	40	50
PC 2x10/13 ... TC COMBO	80	80	100	40	40	50
PC 1x18 ... TC COMBO	80	80	100	40	40	50
PC 2x18 ... TC COMBO	30	80	80	15	40	40
PC 1x26/32 ... TC COMBO	30	80	80	15	40	40
PC 2x26 ... TC COMBO	30	80	80	15	40	40
PC 2x32 ... TC COMBO	16	30	44	8	15	22
PC 1x26/32/42 ... TC COMBO	30	80	80	15	40	40
PC 2x32/42 ... TC COMBO	16	30	44	8	15	22
PC 1x57 ... TC COMBO	20	30	44	10	15	22
PC 1x16 ... DD COMBO	80	80	100	40	40	50
PC 1x28 ... DD COMBO	24	36	44	12	18	22
PC 1x28 ... HO DD COMBO	24	36	44	12	18	22
PC 1x38 ... DD COMBO	20	30	44	10	15	22

Electrical connections:

A functional earth can be connected for improved EMC performance.

Terminal block type:

Push wire only with release mechanism

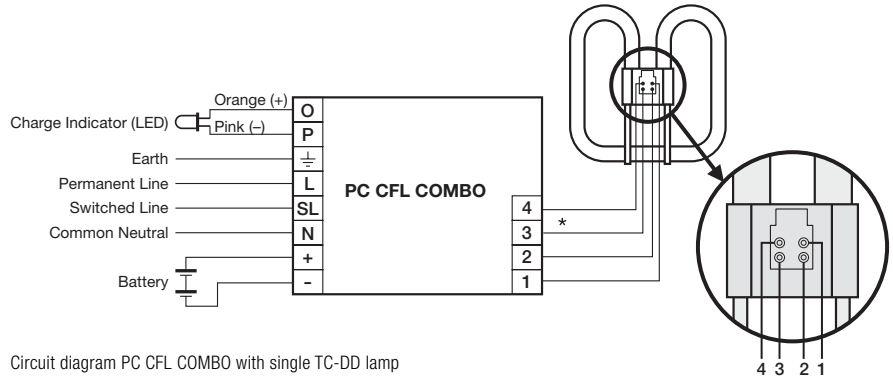
Terminal block capacity

0.5 to 1.5 mm² solid conductor

Wire strip length:

8.5 to 9.5 mm

Keep all leads as short as possible, maximum length 0.5 m



Circuit diagram PC CFL COMBO with single TC-DD lamp

Batteries:

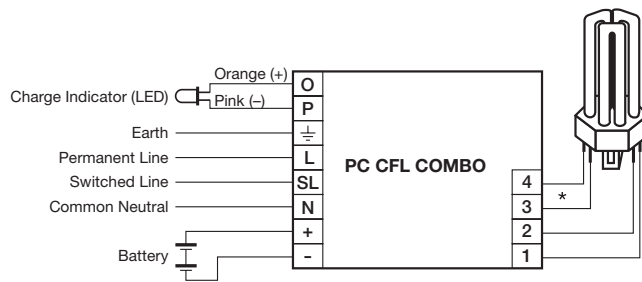
Batteries must be disconnected for servicing. Facility must be provided in the luminaire.

It is recommended that battery leads are not cut as this could result in a hazardous condition due to short circuit batteries.

If shorter leads are required great care should be taken that no shorting occurs.

Service life:

Service life at maximum case temperature (see table) measured at designated tc point: 50,000 hours.



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

CE marking:

The combined 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.

Packing quantities:

PC CFL COMBO:

25 pieces/carton

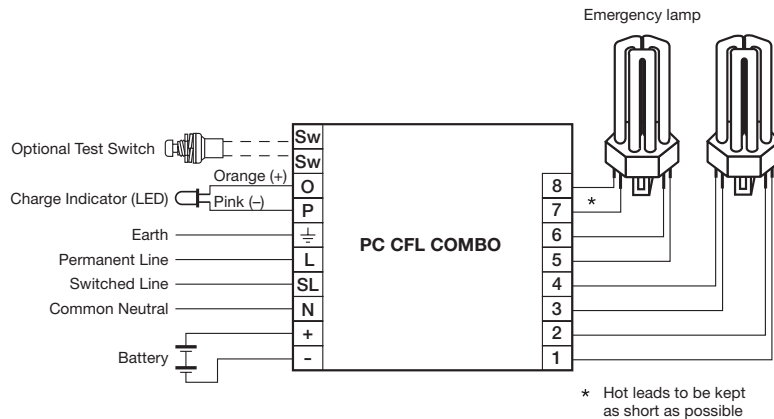
LED green:

25 pieces/bag

200 pieces/carton

Pack-NiCd:

10 pieces per carton



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