Electronics

EB-Standard PLT/PLC

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EII TECHNOLOGY

Product description

Compact, lightweight, high-frequency electronic ballast for PL-T, PL-C compacted fluorescent lamps.

Features and benefits

- The combination of EB-Standard and PL-T/PL-C lamps offers opportunities for miniaturization and reduced cost of ownership, thanks to the limited dimensions and the high system efficacy.
- Programmed start: flicker-free warm start, preheating the lamp electrodes; this enables the lamps to be switched on and off without reducing useful life.
- Equipped with electrode heating cut-off circuit, ensuring optimal lamp operation with respect to lumen curve of the lamp and reduction in system energy losses.
- Automatic stop circuit is activated within five seconds in case of lamp failure (safety stop); once the lamp has been replaced, the ballast resets automatically.
- Up to 50% longer lamp life than with conventional ballasts.
- Up to 20% reduction in energy consumption at constant luminous flux compared with conventional gear.
- Low energy consumption due to the use of EII technology.
- Smart power: constant light independent of mains voltage fluctuations.

Applications

Typical areas of application include:

- Department stores, shops, supermarkets
- Office buildings, for example, insurance companies, banks, government ministries
- Hotels
- Airports, railway stations
- Hospitals

Philips quality

This implies optimum quality regarding:

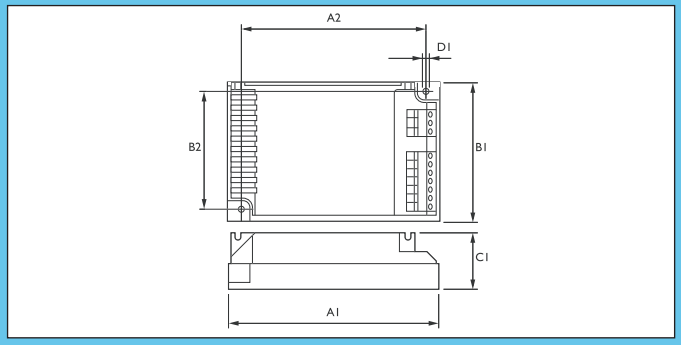
- System supplier
  As manufacturers of lamps, electronic control gear and lighting control equipment, Philips ensures that, from the earliest development stage, optimum lamp/ballast performance is maintained.
- International standards
  Philips EB-S electronic ballasts comply with all relevant international rules and regulations.

Compliances and approvals

• RFI < 30 MHz	EN 55015 (IEC) *
• Harmonics	EN 61000-3-2 (IEC)
• Immunity	EN 61547 (IEC)
• Safety	EN 61347-2-3 (IEC)
• Performance	EN 60929 (IEC)
• Vibration & bump tests	EN 60068-2-6 Fc (IEC) EN 60068-2-29 Eb (IEC)
• Quality standard	ISO 9001
• Environmental standard	ISO 14001
• Approval marks	ENEC KEMA CCC AS/NZS
• CE marking	

* Tested with ballast functional ground connected to earth

Dimensions in mm



Product ID	A1	A2	B1	B2	C1	D1
113/118/126 PLT/C	104	93.5	68	57.5	30	4.0
213/218/226 PLT/C	123	111	79	67	33	4.2

EB-Standard PLT/PLC

Technical data: (all typical values at Vmains = 230V)

Lamp	Qty. of lamps	Ballast	System Power W	Lamp Power W	Ballast Losses W	NOMINAL Lamp Lumen Lm	EEI
PL-T 13 W	1	EB-S 113 PLT/C	14.5	12.5	2.0	900	A3
PL-T 13 W	2	EB-S 213 PLT/C	28	12.5	3.0	900	A2
PL-T 18 W	1	EB-S 118 PLT/C	19	16.5	2.5	1200	A2
PL-T 18 W	2	EB-S 218 PLT/C	38	16.5	5	1200	A2
PL-T 36 W	1	EB-S 126 PLT/C	27	24	3	1800	A2
PL-T 36 W	2	EB-S 226 PLT/C	54	24	6	1800	A2
PL-C 13 W	1	EB-S 113 PLT/C	14.5	12.5	2.0	900	A3
PL-C 13 W	2	EB-S 213 PLT/C	28	12.5	3.0	900	A2
PL-C 18 W	1	EB-S 118 PLT/C	19	16.5	2.5	1200	A2
PL-C 18 W	2	EB-S 218 PLT/C	38	16.5	5	1200	A2
PL-C 36 W	1	EB-S 126 PLT/C	27	24	3	1800	A2
PL-C 36 W	2	EB-S 226 PLT/C	54	24	6	1800	A2

Ballast	Lamp	Qty. of lamps	Power factor	Max. cable cap[1]) lp-lp/lp-gnd pF	Tc max °C	Oper[2]) Freq. kHz
EB-S 113 PL/C	PL-T 13 W	1	0.95	120/60	65	45
EB-S 213 PL/C	PL-T 13 W	2	0.95	60/60	65	45
EB-S 118 PL/C	PL-T 18 W	1	0.95	120/60	65	45
EB-S 218 PL/C	PL-T 18 W	2	0.95	60/60	65	45
EB-S 126 PL/C	PL-T 26 W	1	0.95	120/60	65	45
EB-S 226 PL/C	PL-T 26 W	2	0.95	60/60	65	45
EB-S 113 PL/C	PL-C 13 W	1	0.95	120/60	65	45
EB-S 213 PL/C	PL-C 13 W	2	0.95	60/60	65	45
EB-S 118 PL/C	PL-C 18 W	1	0.95	120/60	65	45
EB-S 218 PL/C	PL-C 18 W	2	0.95	60/60	65	45
EB-S 126 PL/C	PL-C 26 W	1	0.95	120/60	65	45
EB-S 226 PL/C	PL-C 26 W	2	0.95	60/60	65	45

[1]) lp-lp = between lamp wires — Typical wire capacitance 50 pF/m (spacing between wires 0.5 mm)

lp-lgnd = between lamp wires and ground — Typical wire capacitance 72 pF/m (spacing between wires 0.5 mm)

[2]) Tolerance ± 3 kHz

Technical data for installation

Mains operation		
Rated mains voltage		220 - 240 V
with tolerances for safety:	+10%, -15%	187 - 264 V
with tolerances for performance:	+6% -8%	202 - 254 V
Mains frequency		50/60 Hz
Operating frequency (typical)		> 42K Hz (45K Hz)
Power factor		> 0.95
Smart power: with AC mains voltage fluctuations, Luminous flux varies by +/-2% max		202-254V
DC voltage operation (during emergency back-up)		
Yes for limited time (48hrs) only		
Required battery voltage for guaranteed ignition		198 - 254V DC
Required battery voltage for burning lamps		176 - 254V DC
Nominal light output is obtained at DC voltage of		220 - 240V DC

Notes:

1. For a continuous DC application, an external fuse should be used in the luminaire.
2. Continuous low DC voltages (< 198 V) can influence the lifetime of the ballast.

Ignition time	< 2.0 s
Earth leakage current	< 0.7 mA (peak) per ballast
Overvoltage protection	48 hrs at 276 V AC 2 hrs at 320 V AC
Dual fixture; master-slave operation	not advisable
Automatic restart after lamp replacement or voltage dip	yes: tested with a dip down to 30% with a duration of 10 mains cycles
Insulation resistance test	500 V DC from Line/Neutral to Earth (not between Line and Neutral) Note: Ensure that the Neutral is reconnected again after above mentioned test is carried out and before the installation is put into operation.

Mains current at 230V

Ballast	QTY Lamp	Input current A
EB-S 113 PLT/C	1	0.07
EB-S 213 PLT/C	2	0.12
EB-S 118 PLT/C	1	0.08
EB-S 218 PLT/C	2	0.17
EB-S 126 PLT/C	1	0.11
EB-S 226 PLT/C	2	0.25

Inrush current

Ballast	Max. quantity of ballasts per Miniature Circuit Breaker Type B 16 A	Inrush current value time at typical mains impedance
EB-S 113 PLT/C	28	18A/250 µs
EB-S 213 PLT/C	28	18A/250 µs
EB-S 118 PLT/C	28	18A/250 µs
EB-S 218 PLT/C	28	18A/250 µs
EB-S 126 PLT/C	28	18A/250 µs
EB-S 216 PLT/C	28	18A/250 µs

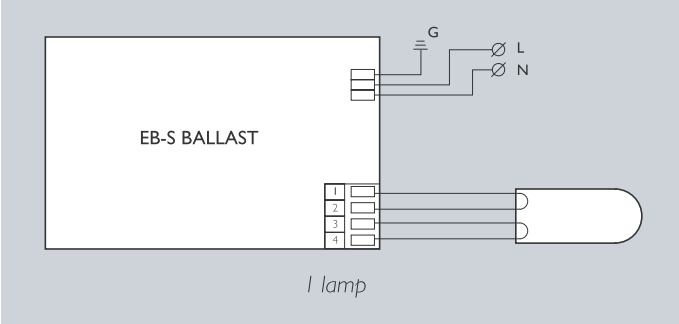
Conversion table for max. quantities of ballasts on other types of Miniature Circuit Breaker

MCB type		Relative number of ballasts
B	16 A	100% (see table above)
B	10 A	63%
C	16 A	170%
C	10 A	104%
L, I	16 A	108%
L, I	10 A	65%
G, U, II	16 A	212%
G, U, II	10 A	127%
K, III	16 A	254%
K, III	10 A	154%

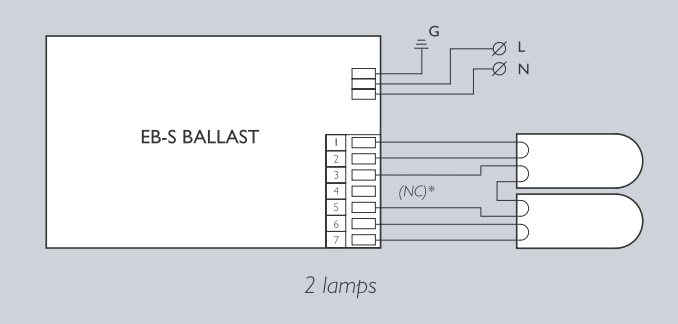
Notes

1. Data is based on a main supply with an impedance of 400 mΩ (equal to 15 m cable of 2.5mm^2 and another 20m to te middle of the power distribution), under worst-case conditions. With an impedance of 800 mΩ the number of ballasts can be increased by 10%.
2. Measurements will be verified in real installations; therefore data are subject to change.
3. In some cases the maximum number of ballasts is not determined by the MCB but by the maximum electrical load of the lighting installation.
4. Note that the maximum number of ballasts is given when these are all switched on at het same moment, i.e. by a wall switch.
5. Measurements were carried out on single-pole MCB's. For multi-pole MCB's it is advisable to reduce the number of ballasts by 20%.

Wiring diagram 1L



Wiring diagram 2L



(NC): not connected*

Technical data for design and mounting HF ballasts in fixtures

Temperatures

Temperature range to ignite lamp with ignition aid: 0° – 50°C

Max. tcase: 65°C

Lifetime of a ballast depends on the temperature of the ballast. This means there is a relation between the Tc point on the ballast and its lifetime. The EB-Standard ballast for PL-T/C applications has a specified lifetime of 50,000 hrs, with a maximum of 10% failures guaranteed, at a measured T-case of 65°C.

Hum and noise level: inaudible

Permitted humidity is tested according to EN61347-1 par. 11.
Note that no moisture or condensation may enter the ballast.

The ballasts that are thermally protected use a protective method of another type providing equivalent thermal protection.

Connector types:

Connectiion wiring is greatly specified by the use of insert contacts with push buttons

Wire cross-section:

1-lamp circuit, keep 1 & 2 lead wires short
2-lamp circuit, keep 1, 2, 3 & 5 lead wires short

On the mains side: 0.5 - 1.5 mm
On the lamp side: 0.5 - 1.5 mm

Strip length: 7.5 - 8.5 mm

Note:

For optimal performance, please ensure correct earthing and wiring before power on.

Ordering and packing data

Ballast	Ordering number	Single unit	Carton packing			Pallet unit
		Weight net kg	Qty. pcs	Dimensions l x w x h cm	Weight gross kg	Cartons/pcs
EB-S 113 PLT/C	9137 100650	0.12	12	21.9 x 21.5 x 7.8	1.6	48/576
EB-S 213 PLT/C	9137 100651	0.16	12	25.7 x 24.8 x 8.6	2.1	48/576
EB-S 118 PLT/C	9137 100652	0.12	12	21.9 x 21.5 x 7.8	1.7	48/576
EB-S 218 PLT/C	9137 100653	0.17	12	25.7 x 24.8 x 8.6	2.2	48/576
EB-S 126 PLT/C	9137 100654	0.12	12	21.9 x 21.5 x 7.8	1.7	48/576
EB-S 226 PLT/C	9137 100655	0.18	12	25.7 x 24.8 x 8.6	2.4	48/576