

Electronics (Dimming)

HF-Regulator PL-T/C

New



HF-REGULATOR PL-T/C

1-10V

Description

Compact, lightweight, high-frequency electronic regulating ballast for PL-T and PL-C compact fluorescent lamps.

Features and benefits

- The lamp power can be regulated down to 3% (10-100% for HF-R 257 PL-T).
- Quick programmed start: 0.5 sec, flicker-free warm start, preheating the lamp electrodes; This enables the lamps to be switched on and off without reducing useful life. Ideal for areas with a high switching frequency.
- Stable lamp operation, striation-free operation.
- 1-10V control input (European standard).
- Up to 50% longer lamp life than with conventional ballasts.
- Up to 75% reduction in energy consumption can be achieved by using automatic lighting control systems.
- Smart power: constant light output independent of mains voltage fluctuations.
- Unit is protected against excessive mains voltages and incorrect connections.
- 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.

All Philips HF-Regulator electronic ballasts are equipped with -control. This is a dedicated integrated circuit that ensures independent control of each electrode and, in doing so, takes care that:

- a. lamp life is unaffected by dimming position
- b. lamp burning is stable in every dimming position; and
- c. energy savings, when dimming, are maximised.

Applications

Typical areas of application include:

- Installations with daylight linking and/or movement detection (for energy savings)
- Installations with remote control systems (personal scene setting)
- Installations with emergency back-up, according to VDE 0108.

Examples:

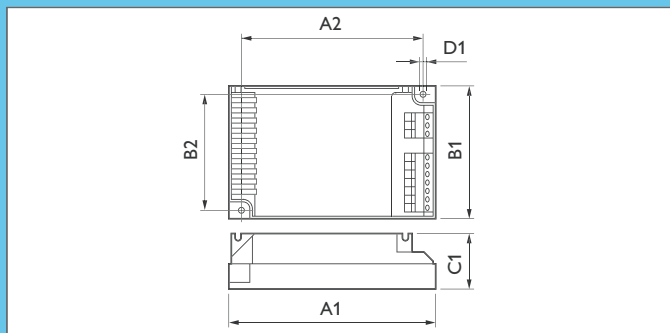
- Office buildings: insurance companies, banks, government ministries
- Cellular offices, open plan offices, corridors and lobbies
- Conference rooms, lecture theatres
- Department stores, shops, supermarkets and malls
- Hotels, restaurants and bars
- Cinemas, museums
- Hospitals
- Schools.

Philips quality

This applies optimum quality with respect to:

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


Dimensions in mm



Product ID	A1	A2	B1	B2	C1	D1
1 Lamps	123	111	79	67	33	4.5
2 Lamps	123	111	79	67	33	4.5

HF-Regulator PL-T/C

Compliances and approvals

- RFI<30 MHz: EN 55015*
- RFI>30 MHz: EN 55022 B
- Harmonics: EN 61000-3-2
- Immunity: EN 61547
- Safety: EN 61347-2-3
- Performance: EN 60929
- Vibration & bump tests: EN 60068-2-6-FC
EN 60068-2-29-Eb
- Quality standard: ISO 9001
- Environmental standard: ISO 14001
- Approval marks: ENEC
VDE-EMV
EN 61347-1 
- Temp. declared thermally protected
- CE marking

* Tested with ballast functional ground connected to earth.

Technical data for installation

Mains operation	
Rated mains voltage	220-240V
With tolerances for safety: +/- 10%	198-264V
Tolerances for performance +6%-8%	202-254V
Mains frequency	50/60 Hz
Operating frequency	> 42 kHz
Power factor	0.95 at 100% power
Power factor HF-R 118 PL-T/C	0.90 at 100% power
Smart power: with AC mains voltage fluctuations,	202V - 254V
Luminous flux varies by + 2% max.	

DC voltage operation (during emergency back-up)	
Required battery voltage for guaranteed ignition	198V - 254V
Required battery voltage for burning lamps	176V - 254V
Nominal light output is obtained at a voltage of	220V - 240V

Inrush current

Ballast	Lamp	Max. quantity of ballasts per Miniature Circuit Breaker Type B16 A	Inrush current 1/2 value time at typical mains impedance
HF-R 118 PL-T/C	PL-T/C 18W	28	27A/250µs
HF-R 218 PL-T/C	PL-T/C 18W	28	27A/250µs
HF-R 1 26-42 PL-T/C	PL-T/C 26W	28	27A/250µs
HF-R 2 26-42 PL-T/C	PL-T/C 26W	28	27A/250µs
HF-R 1 26-42 PL-T/C	PL-T 32W	28	27A/250µs
HF-R 2 26-42 PL-T/C	PL-T 32W	12	45A/400µs
HF-R 1 26-42 PL-T/C	PL-T 42W	28	27A/250µs
HF-R 2 26-42 PL-T/C	PL-T 42W	12	45A/400µs
HF-R 157 PL-T	PL-T 57W	12	45A/250µs
HF-R 257 PL-T	PL-T 57W	12	45A/250µs

Electronics (Dimming)

Notes:

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

Earth leakage current	< 0.5 mA per ballast
Maximum number of ballasts which can be connected to one Residual Current Detector of 30 mA	30
Overvoltage protection	48 hrs at 320V AC 2 hrs at 350V AC
Automatic restart after lamp replacement or voltage dip	Yes

Mains current at 230V

Ballast	Lamp A	Input current
HF-R 118 PL-T/C	PL-T/C 18W	0.09
HF-R 218 PL-T/C	PL-T/C 18W	0.17
HF-R 1 26-42 PL-T/C	PL-T/C 26W	0.13
HF-R 1 26-42 PL-T/C	PL-T 32W	0.17
HF-R 1 26-42 PL-T/C	PL-T 42W	0.21
HF-R 2 26-42 PL-T/C	PL-T/C 26W	0.25
HF-R 2 26-42 PL-T/C	PL-T 32W	0.33
HF-R 2 26-42 PL-T/C	PL-T 42W	0.41
HF-R 157 PL-T	PL-T 57W	0.27
HF-R 257 PL-T	PL-T 57W	0.53

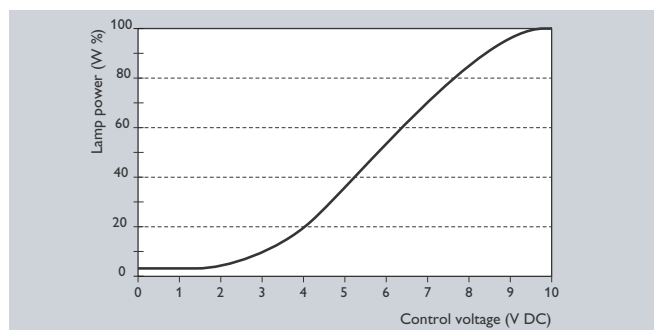
Conversion table for max. quantities of ballasts on other types of Miniature Circuit Breakers

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

Electronics (Dimming)

HF-Regulator PL-T/C

Insulation resistance test	500V DC from Line/Neutral to Earth (not between Line and Neutral) Note: Ensure that the neutral is reconnected again after the above mentioned test is carried out and before the installation is put into operation.
Lamp wiring	The use of 500V rated components and wiring is advised for PL-T 32W, 42W and 57W types.
Ignition time	Typical 0.5 sec.
Advised maximum cable capacity for optimum performance and EMI Suppression	Max. 30 pF: between two sets of lamp wires (each set of lamp wires is connected to one electrode of the lamp) Max. 75 pF: between one set of lamp wires (connected to one electrode of the lamp) and earth. Care has to be taken for symmetrical wiring



Relationship between lamp power and control voltage

Control input

Control voltage	1 – 10V DC
Protected against accidental mains voltage connection	Yes
Regulating level (lamp power) The control input complies with EN 60929 (Amendment 1, Annex E) and is compatible with Philips lighting control equipment.	3 to 100%

Technical data for design and mounting in fixtures

Temperatures	
Temperature range to ignite lamp	+10°C to +50°C
With ignition aid	
Stable lamp operation assured	> 15°C
Striation possible	< 15°C
Max t case	75°C
Earthing	
Class II luminaires	Earthing of the HF ballast in a luminaire is necessary for EMC (electromagnetic compatibility)
Hum and noise level	Inaudible
Permitted humidity is tested according to EN 61347 par:11. Note that no moisture or condensation may enter the ballast.	

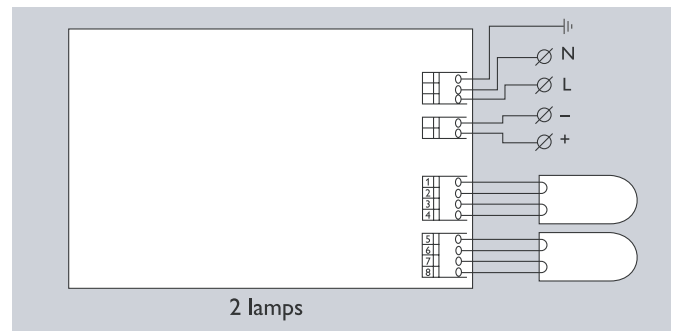
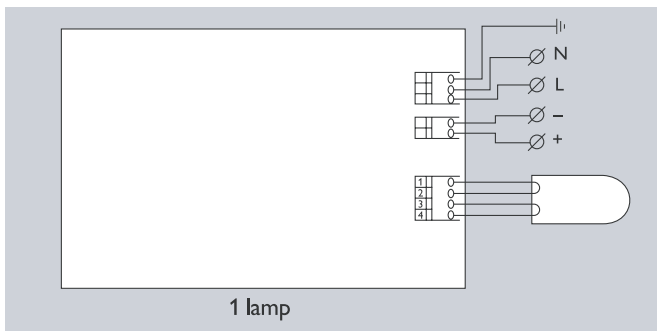
Technical data in relation to energy saving

Lamp	Qty of lamps	Ballast	System		Lamp			CELMA class. EEI
			power*	Efficacy*	Power*	Efficacy*	Lumen*	
			W	lm/W	W	lm/W	lm	
PL-C 18W	1	HF-R 118 PL-T/C	20	60	16.5	73	1200	A1
PL-T 18W	1	HF-R 118 PL-T/C	20	60	16.5	73	1200	A1
PL-C 18W	2	HF-R 218 PL-T/C	39	62	16.5	73	1200	A1
PL-T 18W	2	HF-R 218 PL-T/C	39	62	16.5	73	1200	A1
PL-C 26W	1	HF-R 126-42 PL-T/C	30	60	24	75	1800	A1
PL-T 26W	1	HF-R 126-42 PL-T/C	30	60	24	75	1800	A1
PL-C 26W	2	HF-R 226-42 PL-T/C	56	64	24	75	1800	A1
PL-T 26W	2	HF-R 226-42 PL-T/C	56	64	24	75	1800	A1
PL-T 32W	1	HF-R 126-42 PL-T/C	39	62	32	75	2400	A1
PL-T 32W	2	HF-R 226-42 PL-T/C	72	67	32	75	2400	A1
PL-T 42W	1	HF-R 126-42 PL-T/C	48	67	43	74	3200	A1
PL-T 42W	2	HF-R 226-42 PL-T/C	93	69	43	74	3200	A1
PL-T 57W	1	HF-R 157 PL-T	63	68	56	77	4300	A1
PL-T 57W	2	HF-R 257 PL-T	119	70	56	77	4300	A1

* At 100%

HF-Regulator PL-T/C

Electronics (Dimming)



Wiring diagrams

Connecting wiring is greatly simplified through use of insert contacts:

Wire cross-section:

Mains connector	[Orange]	0.5 mm – 1.5 mm ²
Control connector	[Blue]	0.5 mm – 1.5 mm ²
Lamp(s) connector	[Gray]	0.5 mm – 1.5 mm ²

Notes

- For optimum performance, note that wires from connection 1 and 2 should be kept short and equal in length.
- Keep lamp wiring as short as possible; do not bunch wires from terminals 1 & 2 with those from terminals 3 & 4 (1-lamp ballasts), or wires from terminals 3, 4, 5 & 6 with those from terminals 1, 2, 7 & 8 (2-lamp ballasts).
- lp-lp between lamp wires
 Typical capacitance 1m wires close together (spacing 0.5 mm) 46 pF
 Typical capacitance 0.5m wires close together (spacing 0.5 mm) 23 pF
 lp-lg between lamp wires and ground
 Typical capacitance 1 m wires close to ground (spacing 0.5 mm) 72 pF
 Typical capacitance 0.5 m wires close to ground (spacing 0.5 mm) 38 pF
- Data is based on a mains supply with an impedance of 400 m (equal to 15 m cable of 2.5 mm² and another 20 m to the middle of the power distribution), under worst case conditions. With an impedance of 800 m the number of ballasts can be increased by 10%.
- Measurements will be verified in real installations, therefore data are subject to change.
- In some cases the maximum number of ballasts is not determined by the MCB, but by the maximum electrical load of the lighting installation.
- Note that the maximum number of ballasts is based on the assumption that these are all switched on the same moment, i.e. by a wall switch.
- Measurements were carried out on single-pole MCB's. For multi-pole MCB's it is recommended to reduce the number of ballasts by 20%.

Ordering and packaging data

Ballast	1 Piece		Bulk packing					EOC
	EAN code	Weight	Qty	Dimensions	Volume	Weight	EAN code	
		kg	pcs	l x w x h cm	m ³	gross kg		
HF-R 118 PL-T/C	8711 500 908674	0.195	12	25.5x24.5x8.2	0.01	3.0	8711 500 908681	908674 30
HF-R 218 PL-T/C	8711 500 908698	0.205	12	25.5x24.5x8.2	0.01	3.0	8711 500 908759	908698 30
HF-R 126-42 PL-T/C	8711 500 908666	0.195	12	25.5x24.5x8.2	0.01	3.0	8711 500 908773	908666 30
HF-R 226-42 PL-T/C	8711 500 908680	0.225	12	25.5x24.5x8.2	0.01	3.0	8711 500 908797	908680 30
HF-R 157 PL-T	8711 500 908827	0.220	12	25.5x24.5x8.2	0.01	3.0	8711 500 908810	908827 30