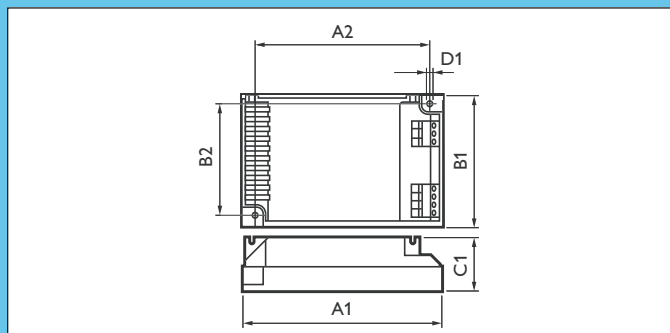




HF-P PL-T/C/Q

Dimensions in mm



Product description

Compact, lightweight, high-frequency electronic ballasts for PL-T, PL-C and PL-Q compact fluorescent lamps

Features and benefits

- Programmed start: flicker-free warm start, ideal for areas with high switching frequency
- up to 50% longer lamp life than with conventional ballasts
- Up to 25% reduction in energy consumption at constant luminous flux compared with conventional gear
- Smart power: constant light independent of mains voltage fluctuations.

Applications

Typical areas of application include:

- Department stores, shops, supermarkets
- Installations with infrared remote control systems
- Airports, railway stations
- Office buildings of, for example, insurance companies, banks, government ministries
- Hospitals
- Hotels

Philips quality

This implies optimum quality regarding:

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

Compliances and approvals

- RFI < 30 MHz EN 55015*
- Harmonics EN 61000-3-2
- Immunity EN 61547
- Safety EN 61347-2-3
- Performance EN 60929-1E
- Vibration & bump tests IEC 68-2-6 FC
IEC 68-2-29 Eb
- Quality standard ISO 9000-2000
- Environmental standard ISO 14001
- Approval marks ENEC-VDE-EMV
- CE marking
- Temperature declared thermally protected IEC 61347-1

* Tested with ballast functional ground connected to earth

Product ID	A1	A2	B1	B2	C1	D1
113/118/138/157	103	93.5	67	57.5	30	4.5
1 26-42	103	93.5	67	57.5	30	4.5
213/218/257	123	111	79	67	33	4.5
2 26-40	123	111	79	67	33	4.5

Technical data: (all typical values at $V_{mains} = 230V$)

Lamp	Qty. of lamps	Ballast	System power W	Lamp Power W	Ballast losses W	NOMINAL Lamp Lumen lm	EEI
PL-T 13 W	1	HF-P 113 PL-T/C	14	12.0	2.0	900	A3
PL-T 13 W	2	HF-P 213 PL-T/C	28	12.0	4.0	900	A3
PL-T 18 W	1	HF-P 118 PL-T/C	18	16.5	1.5	1200	A2
PL-T 18 W	2	HF-P 218 PL-T/C	38	16.5	3.0	1200	A2
PL-T 26 W	1	HF-P 1 26-42 PL-T/C	26	24.0	2.0	1800	A2
PL-T 26 W	2	HF-P 2 26-42 PL-T/C	54	25.5	3.0	1800	A2
PL-T 32 W	1	HF-P 1 26-42 PL-T/C	35	32.0	3.0	2400	A2
PL-T 32 W	2	HF-P 2 26-42 PL-T/C	70	33.0	4.0	2400	A2
PL-T 42 W	1	HF-P 1 26-42 PL-T/C	46	43.0	3.0	3200	A2
PL-T 42 W	2	HF-P 2 26-42 PL-T/C	92	43.0	6.0	3200	A2
PL-T 57 W	1	HF-P 157 PL-T	62	57.0	5.0	4300	A2
PL-T 57 W	2	HF-P 257 PL-T	121	56.0	9.0	4300	A2
PL-C 10 W	1	HF-P 113 PL-T/C	12	9.5	2.0	600	A2
PL-C 10 W	2	HF-P 213 PL-T/C	23	9.5	4.0	600	A2
PL-C 13 W	1	HF-P 113 PL-T/C	14	12.0	2.0	900	A3
PL-C 13 W	2	HF-P 213 PL-T/C	28	12.0	4.0	900	A3
PL-C 18 W	1	HF-P 118 PL-T/C	18	16.5	1.5	1200	A2
PL-C 18 W	2	HF-P 218 PL-T/C	38	16.5	3.0	1200	A2
PL-C 26 W	1	HF-P 1 26-42 PL-T/C	26	24.0	2.0	1800	A2
PL-C 26 W	2	HF-P 2 26-42 PL-T/C	54	25.5	3.0	1800	A2
PL-Q 38 W	1	HF-P 138 PL-Q	38	35.0	3.0	2800	A2

Technical data: (all typical values at $V_{mains} = 230V$)

Ballast	Lamp	Qty. of lamps	Power factor	Max. cable cap ¹⁾ Ip-Ip/Ip-gnd pF	Tc max °C	Oper ²⁾ Freq. kHz
HF-P 113 PL-T/C	PL-T 13 W	1	0.96	120/60	70	45
HF-P 213 PL-T/C	PL-T 13 W	2	0.97	120/60	70	45
HF-P 118 PL-T/C	PL-T 18 W	1	0.93	120/120	75	48
HF-P 218 PL-T/C	PL-T 18 W	2	0.96	68/68	75	48
HF-P 1 26-42 PL-T/C	PL-T 26 W	1	0.95	120/120	75	48
HF-P 2 26-42 PL-T/C	PL-T 26 W	2	0.96	50/50	80	48
HF-P 1 26-42 PL-T/C	PL-T 32 W	1	0.95	120/120	75	48
HF-P 2 26-42 PL-T	PL-T 32 W	2	0.97	50/50	80	48
HF-P 1 26-42 PL-T/C	PL-T 42 W	1	0.95	120/120	75	48
HF-P 2 26-42 PL-T	PL-T 42 W	2	0.98	50/50	80	48
HF-P 157 PL-T	PL-T 57 W	1	0.98	120/60	70	45
HF-P 257 PL-T	PL-T 57 W	2	0.98	50/50	75	48
HF-P 113 PL-T/C	PL-C 10 W	1	0.96	120/60	70	45
HF-P 213 PL-T/C	PL-C 10 W	2	0.95	120/60	70	45
HF-P 113 PL-T/C	PL-C 13 W	1	0.96	120/60	70	45
HF-P 213 PL-T/C	PL-C 13 W	2	0.97	120/60	70	45
HF-P 118 PL-T/C	PL-C 18 W	1	0.93	120/120	75	48
HF-P 218 PL-T/C	PL-C 18 W	2	0.96	68/68	75	48
HF-P 1 26-42 PL-T/C	PL-C 26 W	1	0.95	120/120	75	48
HF-P 2 26-42 PL-T/C	PL-C 26 W	2	0.96	50/50	80	48
HF-P 138 PL-Q	PL-Q 38 W	1	0.98	130/65	75	42

¹⁾ Ip-Ip = between lamp wires

Typical wire capacitance 50 pF/m (spacing between wires 0.5 mm)

Ip-Ignd = between lamp wires and ground

Typical wire capacitance 72 pF/m (spacing between wires 0.5 mm)

²⁾ Tolerance ± 3 kHz

Electronics

Technical data for installation

Mains operation

Rated mains voltage		220 - 240 V
With tolerances for safety:	+/- 10%	198 - 264 V
With tolerances for performance:	+6% -8%	202 - 254 V
Mains frequency		50/60 Hz

DC voltage operation (during emergency back-up)

Required battery voltage for guaranteed ignition	See table
Required battery voltage for burning lamps	See table
Nominal light output is obtained at a voltage of	220 - 240 V DC

Notes:

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

Smart power:

constant light operation	in case of mains voltage fluctuations within 202-254 V, the luminous flux changes by a maximum of $\pm 2\%$
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Earth leakage current	< 0.5 mA per ballast
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Ignition time	< 1.2 s
	< 0.5 s (HF-P 118 PL-T/C HF-P 257 PL-T) HF-P 1 26-42 PL-T/C HF-P 2 26-42 PL-T/C

Overvoltage protection	48 hrs at 320 V AC
	2 hrs at 350 V AC

Dual fixture; master-slave operation	no
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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 abovementioned test is carried out and before the installation is put into operation

Mains current at 230 V

Ballast	Lamp	Input current A
HF-P 113 PL-T/C	PL-T/C 10W	0.05
HF-P 213 PL-T/C	PL-T/C 10W	0.11
HF-P 113 PL-T/C	PL-T/C 13W	0.06
HF-P 213 PL-T/C	PL-T/C 13W	0.12
HF-P 118 PL-T/C	PL-T/C 18W	0.09
HF-P 218 PL-T/C	PL-T/C 18W	0.18
HF-P 1 26-42 PL-T/C	PL-T/C 26W	0.13
HF-P 2 26-42 PL-T/C	PL-T/C 26W	0.22
HF-P 1 26-42 PL-T/C	PL-T 32W	0.17
HF-P 2 26-42 PL-T/C	PL-T 32W	0.30
HF-P 1 26-42 PL-T/C	PL-T 42W	0.22
HF-P 2 26-42 PL-T/C	PL-T 42W	0.45
HF-P 157 PL-T	PL-T 57W	0.27
HF-P 257 PL-T	PL-T 57W	0.50
HF-P 138 PL-Q	PL-Q 10W	0.17

DC voltage operation (during emergency back-up)

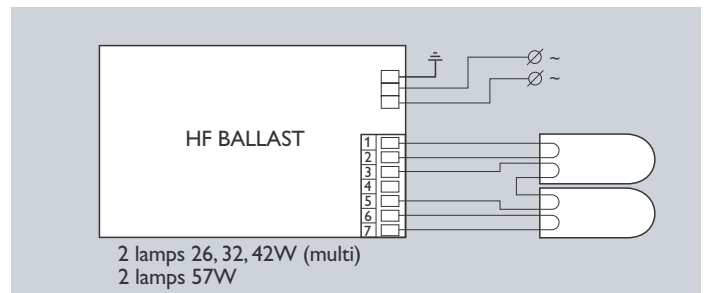
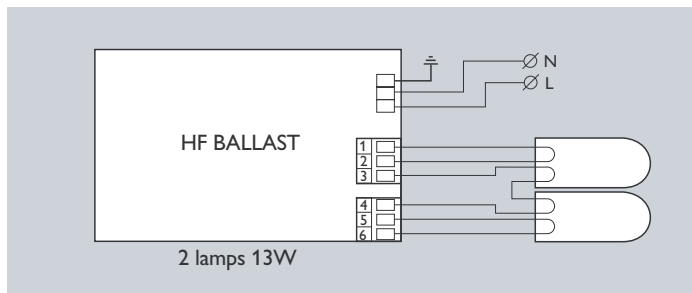
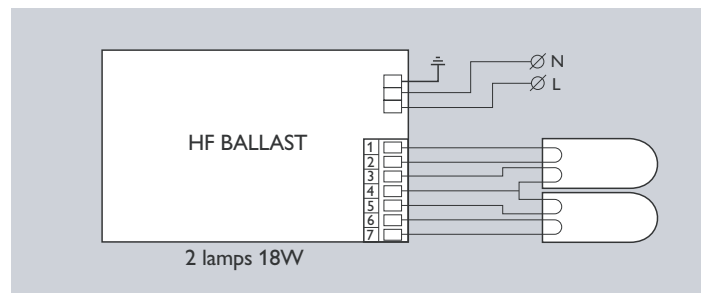
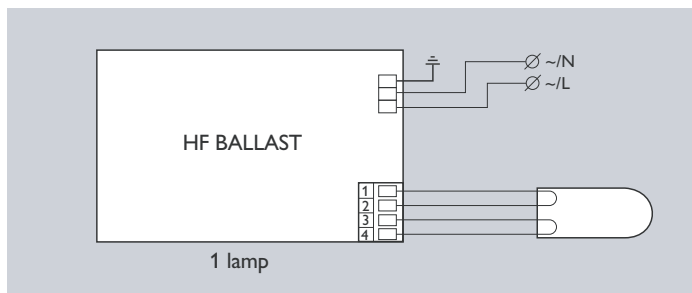
Ballast	Ignition	Normal operation
HF-P 113 PL-T/C	176 – 276 V	176 – 276 V
HF-P 213 PL-T/C	176 – 276 V	176 – 276 V
HF-P 113 PL-T/C	176 – 276 V	176 – 276 V
HF-P 213 PL-T/C	176 – 276 V	176 – 276 V
HF-P 118 PL-T/C	198 – 254 V	176 – 254 V
HF-P 218 PL-T/C	198 – 254 V	176 – 254 V
HF-P 1 26-42 PL-T/C	198 – 254 V	176 – 254 V
HF-P 2 26-42 PL-T/C	198 – 254 V	176 – 254 V
HF-P 1 26-42 PL-T/C	198 – 254 V	176 – 254 V
HF-P 2 26-42 PL-T/C	198 – 254 V	176 – 254 V
HF-P 1 26-42 PL-T/C	198 – 254 V	176 – 254 V
HF-P 2 26-42 PL-T/C	198 – 254 V	176 – 254 V
HF-P 157 PL-T	176 – 276 V	176 – 276 V
HF-P 257 PL-T	198 – 254 V	176 – 254 V
HF-P 138 PL-Q	176 – 276 V	176 – 276 V

Inrush current

Ballast	Max. quantity of ballasts per Miniature Circuit Breaker type B 16 A	Inrush current 1/2 value time at typical mains impedance
HF-P 113 PL-T/C	28	20 A/170 μ s
HF-P 213 PL-T/C	28	20 A/170 μ s
HF-P 118 PL-T/C	28	27 A/250 μ s
HF-P 218 PL-T/C	28	27 A/250 μ s
HF-P 138 PL-Q	28	20 A/170 μ s
HF-P 1 26-42 PL-T/C	28	27 A/250 μ s
HF-P 2 26-42 PL-T/C	16	35 A/350 μ s
HF-P 157 PL-T	28	20 A/170 μ s
HF-P 257 PL-T	10	40 A/400 μ s

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%



Wiring diagrams

Electronics

HF-Performer PL-T/C/Q

Technical data for design and mounting HF ballasts in fixtures:

Temperature range to ignite lamp without ignition aid -15°C .. allowed maximum ballast temperature

Max.Tcase = see table

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 HF-Performer ballast for PL-T/C applications have a specified lifetime of 50.000 hours, with a maximum of 10% failures guaranteed, at a measured maximum Tcase as given in the table on page 2.

Class II luminaires EMI precautions have to be taken

Outdoor use Ballast IP 20. In outdoor applications the luminaire has to be sufficiently IP rated. Permitted humidity is tested according to EN 60928 par. 12. 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.

Wire cross-section:

On the mains side: 0.5 - 1.5 mm²
On the lamp side: 0.5 - 1.5 mm²

Strip length: 7.5 - 8.5 mm

Extra features HF-P 118; 1 26-42; 2 26-42; 257 PL-T/C:

No L&N marking: Mains can be connected in either way
RFI >30 MHz: EN 55022 B

Extra features HF-P 2 26-42; 257 PL-T/C:

Wiring: Connector 4 can be connected, but this is not necessary

Notes

1. Data is based on a mains supply with an impedance of 400 mΩ (equal to 15 m cable of 2.5mm² and another 20m to the 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 the 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%.
6. The maximum number of ballasts which can be connected to one Residual Current Detector of 30 mA is 30.

Ordering and packing data

Ballast	1 Piece		Bulk packing					EOC
	EAN code	Weight kg	Qty. pcs	Dimensions l x w x h cm	Volume m ³	Weight gross kg	EAN code	
HF-P 113 PL-T/C	8711500 749451	0.15	36	21.5x21.0x21.5	0.01	5.5	8711500 749468	749451 30
HF-P 118 PL-T/C	8711500 060280	0.13	12	22.1x21.7x 8.8	0.01	1.8	8711500 060174	060280 30
HF-P 138 PL-Q	8711500 063656	0.12	36	21.0x20.5x19.0	0.01	4.4	8711500 063694	063656 30
HF-P 1 26-42 PL-T/C	8711500 060310	0.13	12	22.1x21.7x 8.8	0.01	1.8	8711500 060198	060310 30
HF-P 213 PL-T/C	8711500 749413	0.22	36	22.4x22.4x22.0	0.01	7.9	8711500 749420	749413 30
HF-P 218 PL-T/C	8711500 749680	0.19	36	25.5x24.5x22.5	0.01	6.8	8711500 749697	749680 30
HF-P 2 26-42 PL-T/C	8711500 933997	0.22	12	25.5x24.5x 8.2	0.01	2.9	8711500 002181	933997 30
HF-P 157 PL-T	8711500 927804	0.15	36	21.5x21.0x21.5	0.01	5.5	8711500 927811	927804 30
HF-P 257 PL-T	8711500 934017	0.23	12	25.5x24.5x 8.2	0.01	2.8	8711500 934024	934017 30