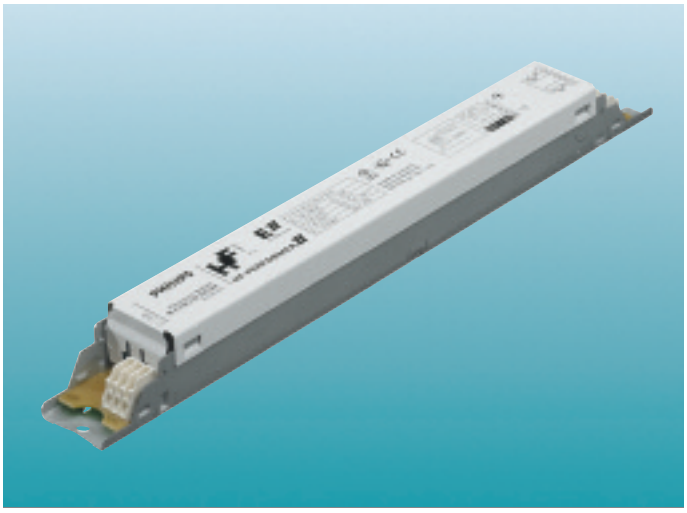
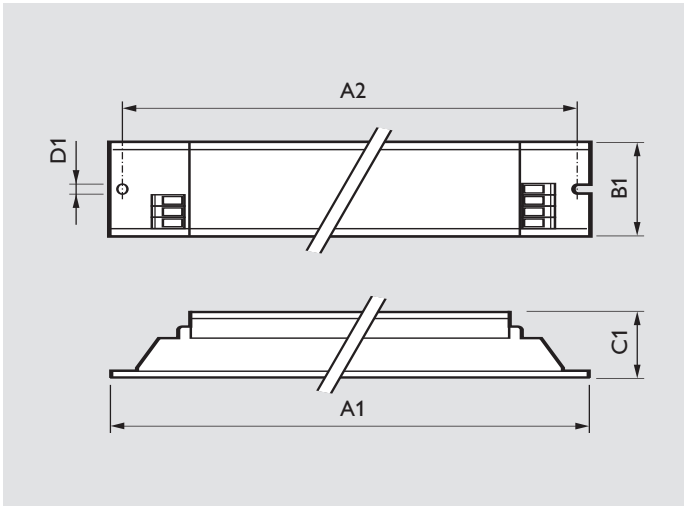
HF-PERFORMER II
Electronic ballasts for PL-L lamps

EII TECHNOLOGY





Dimensions in mm

	A1	A2	B1	C1	D1
HF-P 136 PL-L EII	280	265	30	28	4,2
HF-P 236 PL-L EII	280	265	30	28	4,2
HF-P 140 PL-L EII	280	265	30	28	4,2
HF-P 240 PL-L EII	280	265	30	28	4,2
HF-P 155 PL-L EII	280	265	30	28	4,2
HF-P 255 PL-L EII	280	265	30	28	4,2

Definition
Slim, lightweight high-frequency electronic ballast for PL-L fluorescent lamps, based on *EII* technology.

Description
- Programmed start: warm start circuit preheating the lamp electrodes; this enables the lamps to be switched on and off without reducing useful life
- 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
- 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
- Equipped with connectors suitable for automatic wiring machines.

Applications
Typical areas of application include:
- Department stores, shops, supermarkets
- Suitable for use with infrared remote control systems
- Airports, railway stations
- Outdoor lighting
- Office buildings, for example, insurance companies, banks, government ministries
- Hospitals
- Hotels
- Industrial premises
- Emergency installations with VDE 0108 with re-ignition < 0.5 s.

Philips quality
This assures 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
- European standards
  Philips HF electronic ballast complies with all relevant international rules and regulations.

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 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 IEC61347-1 110

PHILIPS

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TECHNOLOGY

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-L 36 W	1	HF-P 136 PL-L EII	37	32.6	3.9	2900	A2
PL-L 36 W	2	HF-P 236 PL-L EII	70	32.3	4.7	2900	A2
PL-L 40 W	1	HF-P 140 PL-L EII	44	40.2	3.2	3500	A2
PL-L 40 W	2	HF-P 240 PL-L EII	84	40.0	3.6	3500	A2
PL-L 55 W	1	HF-P 155 PL-L EII	58	53.8	4.4	4800	A2
PL-L 55 W	2	HF-P 255 PL-L EII	113	53.0	6.3	4800	A2

Technical date for installation

Mains operation		
Rated mains voltage		220 – 240V
With tolerances for performance:	+6%-8	202 – 254V
With tolerances for safety	+/- 10%	198 – 264V
Mains frequency		50/60Hz
Operation frequency (typical)		> 42 kHz (45 kHz)
Power factor		> 0.96

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

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

Earth leakage current	< 0,5 mA per ballast
Ignition time	< 0.5 s
Constant light operation	In case of mains voltage fluctuations within 202 - 254 V, the luminous flux changes by a maximum of ± 2%
Overvoltage protection	48 hrs at 320 V AC 2 hrs at 350V AC
Dual fixture; master-slave operation	Possible, in general a maximum of 3m of lamp wires between ballast and lamp is allowed
Cable capacity	Max. 200 pF between lamp wires, max. 200 pF between lamp wires and earth EMI precautions have to be taken
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 both mains inputs 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 230V

Ballast	Lamp	Input current A
HF-P 136 PL-L EII	PL-L 36W	0.16
HF-P 236 PL-L EII	PL-L 36W	0.30
HF-P 140 PL-L EII	PL-L 40W	0.19
HF-P 240 PL-L EII	PL-L 40W	0.36
HF-P 155 PL-L EII	PL-L 55W	0.25
HF-P 255 PL-L EII	PL-L 55W	0.49

Inrush current

Ballast	Inrush current value time at typical mains impedance	Max. quantity of ballast per Miniature Circuit Breaker	
		Type B16 A	Type C16A
HF-P 136 PL-L EII	18 A / 250 µs	28	48
HF-P 236 PL-L EII	18 A / 250 µs	28	48
HF-P 140 PL-L EII	18 A / 250 µs	28	48
HF-P 240 PL-L EII	31 A / 350 µs	12	20
HF-P 155 PL-L EII	18 A / 250 µs	28	48
HF-P 255 PL-L EII	31 A / 350 µs	12	20

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

MCB type		Relative number of ballasts
B	16A	100% (see table above)
B	10A	63%
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%

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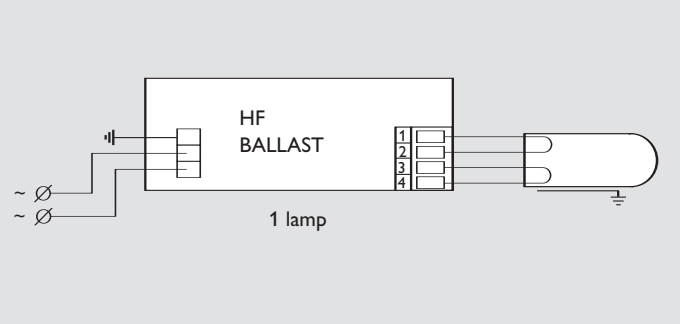

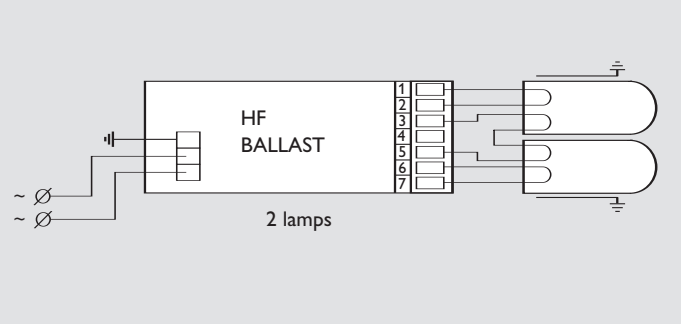

wiring diagrams

Technical data for design and mounting HF ballasts in fixtures

Temperatures

Temperature range to ignite lamp with ignition aid	-25°C to +50°C

Max. Tcase = 75°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 HF-Performer II ballast for PL-L applications has a specified lifetime of 50.000 hrs, with a maximum of 10% failures guaranteed, at a measured Tcase of 75°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:

Wago universal connector. Suitable for both automatic wiring (ALF and ADS) and manual wiring

Wiring diagram 2 lamps:

Connector 4 can be connected, but this is not necessary

Wire cross-section:

Lower connector

On the mains side: 0.5 - 1.0 mm^2
On the lamp side: 0.5 - 1.0 mm^2

Upper connector

On the mains side: 0.5 mm^2 solid wire; 0.75 mm^2 stranded wire
On the lamp side: 0.5 mm^2 solid wire; 0.75 mm^2 stranded wire

Strip length: 8 - 9 mm

Notes

1. Data is based on a main supply with an impedance of 400 mΩ (equal to 15 m cable of 2,5 mm and another 20 m 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 at 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 wich can be connected to one Residual Current Detector of 30mA is 30.

Ordering and packing data

Ballast	1 Piece		Bulk packing					
	EAN code	Weight	Qty.	Dimensions	Volume	Weight	EAN code	EOC
				l x w x h		gross		
		kg		cm	m^3	kg		
HF-P 136 PL-L EII	8711500934178	0.22	12	32.8 X 20.6 X 8.7	0.006	2.9	8711500934192	934178 30
HF-P 236 PL-L EII	8711500934253	0.25	12	32.8 X 20.6 X 8.7	0.006	3.2	8711500934260	934253 30
HF-P 140 PL-L EII	8711500934215	0.22	12	32.8 X 20.6 X 8.7	0.006	2.9	8711500934222	934215 30
HF-P 240 PL-L EII	8711500934277	0.25	12	32.8 X 20.6 X 8.7	0.006	3.2	8711500934284	934277 30
HF-P 155 PL-L EII	8711500934239	0.22	12	32.8 X 20.6 X 8.7	0.006	2.9	8711500934246	934239 30
HF-P 255 PL-L EII	8711500934291	0.25	12	32.8 X 20.6 X 8.7	0.006	3.2	8711500934307	934291 30

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Data subject to change