



HF-PERFORMER II (flat) TL5

Product Description

- Flat, slim, lightweight High Frequency electronic gear for TL5 fluorescent lamps, based on EII technology

Features and Benefits

- Unique benefits of the new Philips EII technology:
 - Optimised system efficiency, minimised gear power losses
 - Miniaturised dimensions for total HF-Performer II TL5 range
 - Simplified portfolio allowing flexible, modular luminaire design
 - Cooler product allows more compact luminaire design
 - Fast preheat for short ignition time (0.5 s)
- Programmed start: flicker-free, warm start circuit preheats (0.5 s) the lamp electrodes; lamps can be switched on and off without reducing useful life
- 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 5 seconds in case of lamp failure (safety stop); gear resets automatically after lamp replacement
- Universal connector for both manual and automatic wiring

Applications

- Ideal for applications with high switching frequency, for example:
 - Use with infrared remote control systems (e.g. movement detection)
 - Department stores, shops, supermarkets, hotels, hospitals, office buildings, industrial premises
 - Airports, railway stations
 - Outdoor lighting; in general suitable for Class I applications
 - Installations with emergency back-up according to VDE 0108-100 / EN 60598-2-22 with re-ignition <0.5 s

Quality

Philips Quality assures optimum quality regarding:

- System supplier: As manufacturer of lamps, electronic control gear and lighting control equipment, Philips ensures that, from the earliest development stage, optimum lamp/gear performance is maintained.
- International standards: Philips HF electronic regulating gear's 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 600-68-2-6 Fc IEC 600-68-2-29 Eb
Quality standard	ISO 9000-2000

Environmental standard
Approval marks

ISO 14001
ENEC
EMV-VDE

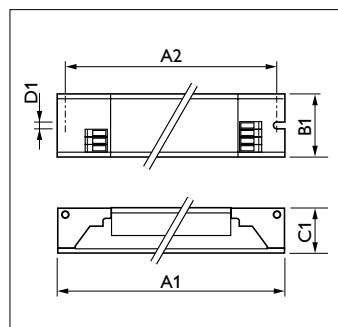
Recommended lamp page 8.202

CE marking

www.philips.com/OEM

Temperature declared thermally protected

IEC 61347-1



HF-P 1/2/3/4

Type	A1Nom	A2Nom	B1Nom	C1Nom	D1Nom
HF-Performer 1	360.0	350.0	30.0	22.0	4.2
HF-Performer 1 95-120 TL5 EII 220-240V 50/60Hz	359.0	350.0	30.0	28.0	4.2
HF-Performer 2	360.0	350.0	30.0	22.0	4.2
HF-Performer 280 TL5/PL-L EII 220-240V 50/60Hz	425.0	415.0	30.0	21.0	4.2
HF-Performer 2 95-120 TL5 EII 220-240V 50/60Hz	425.0	415.0	39.0	28.0	4.2
HF-Performer 3	360.0	350.0	30.0	22.0	4.2

Inrush current

Type	Maximum gear number on MCB (x)	Inrush current Peak (A)	Inrush current Width (ms)
HF-Performer 1/2 14-35 TL5 HE EII 220-240V 50/60Hz	28	18	0.25
HF-Performer 180/3/424 TL5/PL-L EII 220-240V 50/60Hz	12	45	0.40
HF-Performer 1 95-120 TL5 EII 220-240V 50/60Hz	12	31	0.34
HF-Performer 2 24-39/249/254 TL5 HO EII 220-240V 50/60Hz	12	31	0.35
HF-Performer 280 TL5/PL-L EII 220-240V 50/60Hz	12	40	0.40
HF-Performer 2 95-120 TL5 EII 220-240V 50/60Hz	6	55	0.508
HF-Performer 149/154 TL5 EII 220-240V 50/60Hz	28	18	0.25
HF-Performer 3/414 TL5 EII 220-240V 50/60Hz	28	24	0.25
HF-Performer 3/424 TL5/PL-L EII 220-240V 50/60Hz	12	45	0.4

Electrical data

Type	Number of Lamps (x)	Rated Gear-Lamp Power	Power losses gear (W)	Energy Efficiency Index	Line Frequency (Hz)	Line Voltage (V)	T-case life (°C)	T-case maximum (°C)	T-ambient	Cable-Cap outputwires to earth (pF)	Cable-Cap outputwires mutual (pF)
HF-Performer 1 14-35	1	14-35	3.0-4.0	A2	50/60	220-240	75	75	50	200	200
HF-Performer 1 24-39	1	24-39	4.0-5.0	A2	50/60	220-240	75	75	50	200	200
HF-Performer 149	1	49	6.0	A2	50/60	220-240	75	75	50	200	200
HF-Performer 154	1	54	6.0	A2	50/60	220-240	75	75	50	200	200
HF-Performer 180	1	80	8.0	A2	50/60	220-240	75	75	50	150	150
HF-Performer 1 95-120	1	95-120	8.0	A2	50/60	220-240	70	70	50	150	100
HF-Performer 2 14-35	2	14-35	5.0-7.0	A2	50/60	220-240	75	75	50	200	200
HF-Performer 2 24-39	2	24-39	8.0	A2	50/60	220-240	75	75	50	200	200
HF-Performer 249	2	49	10.0	A2	50/60	220-240	75	75	50	200	200
HF-Performer 254	2	54	10.0	A2	50/60	220-240	75	75	50	200	200
HF-Performer 280	2	80	12.0	A2	50/60	220-240	75	75	50	150	150
HF-Performer 2 95-120	2	95-120	16.0	A2	50/60	220-240	75	75	50	150	100
HF-Performer 3/414	3/4	14	6.0/7.0	A2	50/60	220-240	75	75	50	200	200
HF-Performer 3/424	3/4	24	8.0/9.0	A2	50/60	220-240	75	75	50	200	200

Ordering and packing data

Type	Weight	Qty bulk packing	Dimensions bulk packing	EAN code bulk packing	EOC 8711500
HF-Performer I 14-35 TL5 HE EII 220-240V 50/60Hz	0.27 kg	12	40.8 cm x 20.8 cm x 7.6 cm	8711500928566	928559 30
HF-Performer I 24-39 TL5 HO EII 220-240V 50/60Hz	0.27 kg	12	40.8 cm x 20.8 cm x 7.6 cm	8711500928580	928573 30
HF-Performer I49 TL5 HO EII 220-240V 50/60Hz	0.27 kg	12	40.8 cm x 20.8 cm x 7.6 cm	8711500928603	928597 30
HF-Performer I54 TL5 HO EII 220-240V 50/60Hz	0.27 kg	12	40.8 cm x 20.8 cm x 7.6 cm	8711500928627	928610 30
HF-Performer I80 TL5/PL-L EII 220-240V 50/60Hz	0.257 kg	12	40.8 cm x 20.8 cm x 8.7 cm	8711500002204	002198 30
HF-Performer I 95-120 TL5 EII 220-240V 50/60Hz	0.328 kg	12	40.8 cm x 20.8 cm x 8.7 cm	8711500914835	914828 30
HF-Performer 2 I4-35 TL5 HE EII 220-240V 50/60Hz	0.25 kg	12	40.8 cm x 20.8 cm x 7.6 cm	8711500910240	910233 30
HF-Performer 2 24-39 TL5 HO EII 220-240V 50/60Hz	0.26 kg	12	40.8 cm x 20.8 cm x 7.6 cm	8711500910264	910257 30
HF-Performer 249 TL5 HO EII 220-240V 50/60Hz	0.27 kg	12	40.8 cm x 20.8 cm x 7.6 cm	8711500910288	910271 30
HF-Performer 254 TL5 HO EII 220-240V 50/60Hz	0.27 kg	12	40.8 cm x 20.8 cm x 7.6 cm	8711500910301	910295 30
HF-Performer 280 TL5/PL-L EII 220-240V 50/60Hz	0.378 kg	12	46.2 cm x 20.8 cm x 8.7 cm	8711500907561	060167 30
HF-Performer 2 95-120 TL5 EII 220-240V 50/60Hz	0.511 kg	10	47.3 cm x 20.8 cm x 8.7 cm	8711500914859	914842 30
HF-Performer 3/414 TL5 EII 220-240V 50/60Hz	0.259 kg	12	40.8 cm x 20.8 cm x 8.7 cm	8711500059857	059840 30
HF-Performer 3/424 TL5/PL-L EII 220-240V 50/60Hz	0.288 kg	12	40.8 cm x 20.8 cm x 8.7 cm	8711500907769	907752 30

Electrical installation notes

Mains operation

Rated mains voltage	220 - 240 V
Tolerances for performance +6%-8%	202 - 254 V
With tolerances for safety +/- 10%	198 - 264 V
Mains frequency	50/60 Hz
Power factor	> 0.95
Earth leakage current	< 0.5 mA per gear
Ignition time	0.5 sec.
Constant light operation	In case of AC 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 350 V AC
Dual fixture: master-slave operation	Not advised
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 above mentioned test is carried out and before the installation is put in operation
Lamp wiring	The use of 500 V rated components and wiring are required with HF-PERFORMER TL5

DC/Emergency operation

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 a 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 gear.

Inrush current

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

MCB type	Rating	Relative number of gears
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 mains supply with an impedance of 400 mΩ (equal to 15 m cable of 2.5 mm² and other 20 m to the middle of the power distribution), under worst case conditions. With an impedance of 800 mΩ the number of gears 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 gears is not determined by the MCB but by the maximum electrical load of the installation.
4. Note that the maximum number of gears 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 gears by 20%.
6. The maximum number of gears which can be connected to one Residual Current Detector of 30 mA is 30.

Mechanical installation notes

Technical data for design and mounting HF gears in fixtures

Temperatures

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

Max Tcase 75°C

Lifetime of a gear depends on the temperature of the gear. This means there is a relation between the Tc point on the gear and its lifetime.

This gear range has a specified lifetime of 50.000 hrs, with a maximum of 10% failures guaranteed, at a measured Tcase of 75°C.

For more information regarding this subject consult the Philips Application guide to fluorescent lamp control gear.

Hum and noise level inaudible

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

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

Connector type:

Connection wiring is greatly simplified through use of WAGO universal connector. Suitable for both automatic wiring (ALF and ADS) and manual wiring; earth connection can be made via the earth terminal on the mains side.

Please note: With the HF-P 3 /4 lamp gears (14,24W) earth connection must be made via the housing.

Wire lengths:

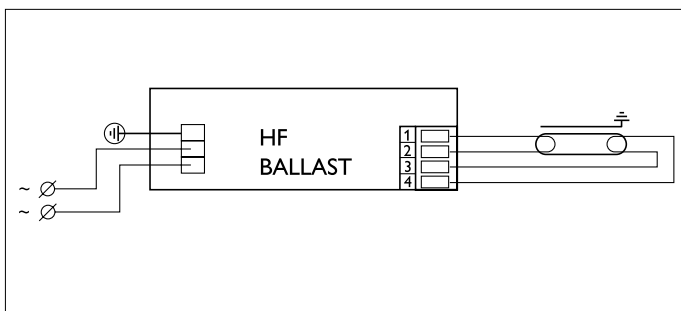
For optimal performance, note that following wires need to be kept short:

1. For one lamp circuits keep wires to terminals 1 and 2 short
2. For two lamp circuits keep wires to terminals 1, 2, 6 and 7 short
3. For triple and quad lamp circuits keep wires to terminals 1, 2, 13 and 14 short

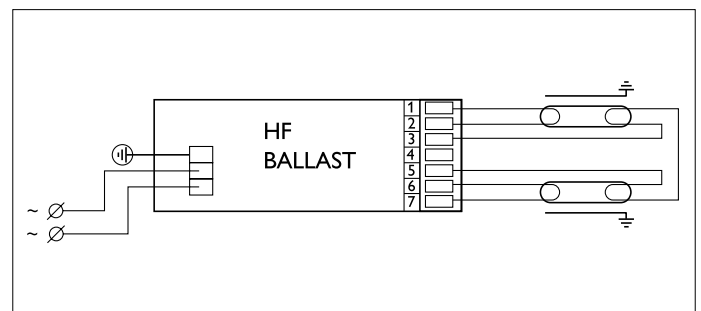
Wire cross-section:

Lower connector	
Mains	Double insert "lower connector" 0.5...1.0mm ²
Lamp(s) connector	Double insert "lower connector" 0.5...1.0mm ²
Upper connector	
Mains & Control connector	Double insert "upper connector" 0.5...0.75mm ² (*)
Lamp(s) connector	Double insert "lower connector" 0.5...0.75mm ² (*)

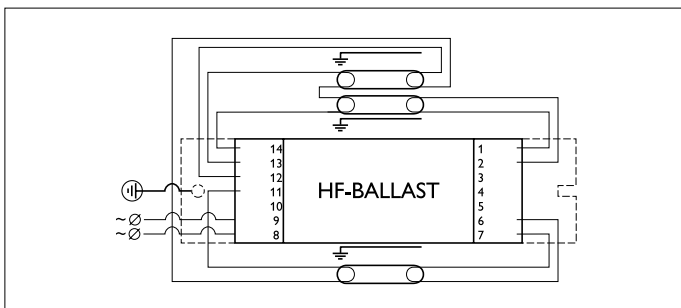
(*) Stranded wire



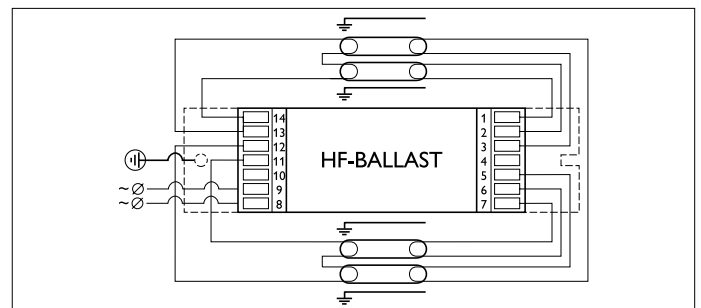
HF-P 1



HF-P 2



HF-P 3



HF-P 4