

安定器

TLD 專用調光式安定器 HF-R II I-10V 系列



產品說明

- 扁平、質輕的高頻電子安定器，採用 I-10V 協定，適用於 TL-D 螢光燈管。HF-REGULATOR II 安定器結合了最新的飛利浦 EII 科技。

產品特色

- 燈管功率可在 100% 至 1% 之間調較。
- 扁平的安定器設計，高 22 mm。
- 使用燈光控制系統可減少耗電量達 60%。
- 預設無閃爍、快速暖啓動，只需 0.5 秒，可預熱燈管電極，讓燈管在開啓及關閉時，不減使用壽命。適合切換頻率高的操作。
- 符合業界 I-10V 標準的類比控制輸入。
- 智慧型供電，光線輸出穩定，不受主電壓波動的影響。
- 配備主電壓過流保護、錯誤接線保護，也可避免燈管誤用。
- 運作時並無條紋或頻閃效應。
- 燈管失效時，可在 5 內秒自動停止電路（安全止動）；更換燈管以後，安定器會自動重設。
- 設有連接器，適用於自動接線的機器。

飛利浦 HF-REGULATOR II 安定器配備 Extended Cable Flexibility (ECF) 技術。

ECF 技術以專用整合式電路為基礎，確保下列事項：

- 燈管壽命不受調光設定影響。
- 在所有調光設定下，燈管都能提供穩定照明。
- 使用調光功能時，可發揮最大節能功效。

適用場所

- 百貨公司、商場、超市、機場、火車站、辦公大樓（如保險公司、銀行、政府部門）、醫院、飯店、工業場所、戶外照明、適合搭配紅外線遙控系統使用。



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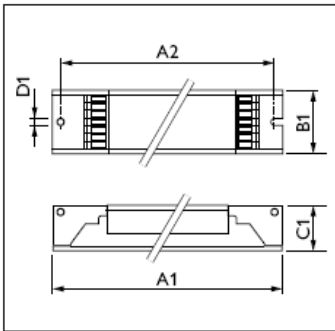
Compliances and approvals

RFI 9kHz..30MHz	EN 55015
RFI 30MHz..1000MHz	EN 55022 Limit B
Harmonics	IEC 61000-3-2
Immunity	IEC 61547
Safety	IEC 61347-2-3
Performance	IEC 60929
Vibration & bump tests	IEC 60068-2-6-FC IEC 60068-2-29-Eb
Quality standard	ISO 9001

Environmental standard	ISO 14001
Approval marks	ENEC VDE-EMV
Temperature declared thermally protected	IEC 61347-1
CE marking	

Recommended lamp page 8.204

www.philips.com/OEM



HF-R

Type	A1Nom	A2Nom	BNom	CINom	DINom
HF-Regulator 118/136/158/218/236/258	360	350	30	22	4.2
HF-Regulator 318/418	359	350	39	22	4.2

Inrush current

Type	Maximum gear number on MCB (x)	Inrush current Peak (A)	Inrush current Width (ms)
HF-Regulator 118	28	27	0.30
HF-Regulator 136/158/318	28	27	0.25
HF-Regulator 218/236/258/418	12	45	0.40

Electrical data

Type	Number of Lamps (x)	Rated Gear-Lamp Power	Power losses gear (W)	Energy Efficiency Index	Cable-Cap outputwires to earth (pF)	Cable-Cap outputwires mutual (pF)
HF-Regulator 118 TL-D EII 220-240V 50/60Hz	1	18	4.4	A1	75	100
HF-Regulator 136 TL-D EII 220-240V 50/60Hz	1	36	5.5	A1	75	100
HF-Regulator 158 TL-D EII 220-240V 50/60Hz	1	58	6.3	A1	75	100
HF-Regulator 218 TL-D EII 220-240V 50/60Hz	2	18	7.8	A1	75	100
HF-Regulator 236 TL-D EII 220-240V 50/60Hz	2	36	7.3	A1	75	100
HF-Regulator 258 TL-D EII 220-240V 50/60Hz	2	58	11.2	A1	75	100
HF-Regulator 318 TL-D EII 220-240V 50/60Hz	3	18	9.7	A1	75	100
HF-Regulator 418 TL-D EII 220-240V 50/60Hz	4	18	13.4	A1	75	100



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Ordering and packing data

Type	Weight	Qty bulk packing	Dimensions bulk packing	EAN code bulk packing	EOC 8711500
HF-Regulator 118 TL-D EII 220-240V 50/60Hz	0.285 kg	12	40.8 cm x 20.8 cm x 7.6 cm	8711500911919	911902 30
HF-Regulator 136 TL-D EII 220-240V 50/60Hz	0.26 kg	12	40.8 cm x 20.8 cm x 7.6 cm	8711500910141	910134 30
HF-Regulator 158 TL-D EII 220-240V 50/60Hz	0.27 kg	12	40.8 cm x 20.8 cm x 7.6 cm	8711500910189	910172 30
HF-Regulator 218 TL-D EII 220-240V 50/60Hz	0.255 kg	12	40.8 cm x 20.8 cm x 7.6 cm	8711500911933	911926 30
HF-Regulator 236 TL-D EII 220-240V 50/60Hz	0.295 kg	12	40.8 cm x 20.8 cm x 7.6 cm	8711500910165	910158 30
HF-Regulator 258 TL-D EII 220-240V 50/60Hz	0.325 kg	12	40.8 cm x 20.8 cm x 7.6 cm	8711500910202	910196 30
HF-Regulator 318 TL-D EII 220-240V 50/60Hz	0.365 kg	10	41.1 cm x 20.6 cm x 7.6 cm	8711500913777	913760 30
HF-Regulator 418 TL-D EII 220-240V 50/60Hz	0.37 kg	10	41.1 cm x 20.6 cm x 7.6 cm	8711500913678	913661 30

Electrical installation notes

Mains operation

Rated mains voltage	220 - 240 V
With tolerances for safety +/- 10%	198 - 264 V
Performance tolerance +6%-8%	202 - 254 V
Mains frequency	50/60 Hz
Smart power	with AC mains voltage fluctuations, within 202-254 V, luminous flux varies by $\pm 2\%$ max

Earth leakage current	< 0.5 mA per gear
Maximum number of gears which can be connected to one Residual Current Detector of 30 mA	30

Overvoltage protection	48 hrs at 320 V AC 2 hrs at 350 V AC
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Automatic restart after lamp replacement or voltage dip	Yes
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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 the above mentioned test is carried out and before the installation is put into operation.
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Ignition time	Typical 0.5 sec. quick warm start.
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Ignition aid	For optimum ignition the TL-D lamps should be mounted at a maximum distance of 13 mm from a metal plate The metal plate should be electrically connected to the gear housing
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Earthing	Earthing of the HF gear in a luminaire is necessary for EMC (electromagnetic compatibility)
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DC/Emergency operation

DC voltage operation (during emergency back-up)

Required battery voltage for guaranteed ignition	198 - 254 V
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Required battery voltage for burning lamps	176 - 254 V
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Nominal light output is obtained at a voltage of	220 - 240 V
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Notes:

1. For 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.

Control characteristics

Control input

Regulating level (lamp power)	1 to 100%
The control input complies with IEC 60929 (Annex E) and is compatible with Philips lighting control equipment	

Control input insulation, basic insulation	≥ 1500 V
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Protected against accidental mains voltage connection	Yes
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Notes:

1. For optimum performance care has to be taken for symmetrical wiring.



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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)
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 in fixtures

Temperatures

Temperature range to ignite lamp

With ignition aid I...100%	0 °C to +50 °C
at a 70..100% dim input	-20 °C to +50 °C
Storage temperature range	-25 °C to +80 °C
Stable lamp operation assured	> 15 °C
Striation possible	< 10 °C
Max. Tcase	75 °C

The 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. The HF-REGULATOR II gear for TL-D applications 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.

Class II luminaires

This application is not advisable; only with extensive tests on luminaires can the correct operation be verified
EMI precautions have to be taken
IP=20

Outdoor Gear

In outdoor the luminaire has to be sufficiently IP rated
Permitted humidity is tested according to IEC 61347-1 par 11
Note that no moisture or condensation may enter the gear.
Inaudible

Hum and noise level

Connector type:

Connection wiring is greatly simplified through use of WAGO 251 universal connector. Suitable for both automatic wiring (ALF and ADS) and manual wiring.

Wire cross-section:

IDC connection	0.5...1.0 mm ²
ADS manual connection	0.5...0.75 mm ² *

* Stranded wire

Strip length

8.0 - 9.0 mm

Wiring tips:

Earth connection to be made via housing or mains connector. Wiring inside fixture should be straight and as short as possible. Lamp wires should not run parallel to mains or control wires to avoid EMC problems. For optimal performance, note that:

1. For one lamp gears wires 4 and 5 as short as possible, equal in length and a minimum of 50 mm from mains and dim wires. Keep lamp wires 6 and 7 equal in length.
2. For two lamp gears wires 3, 4 and 5 as short as possible, equal in length and a minimum of 50 mm from mains and dim wires. Keep lamp wires 6 and 7, and 1 and 2 equal in length.



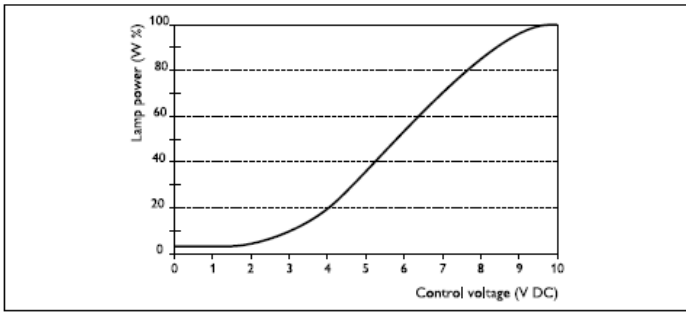
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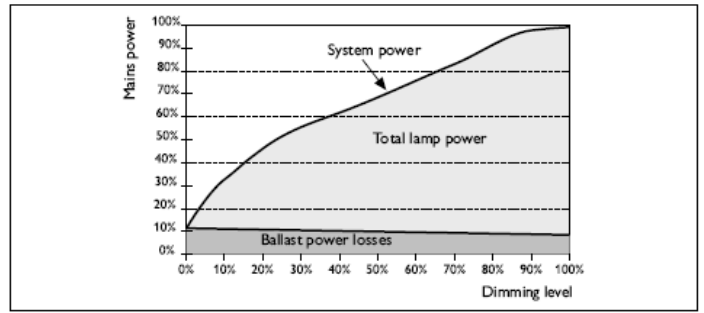
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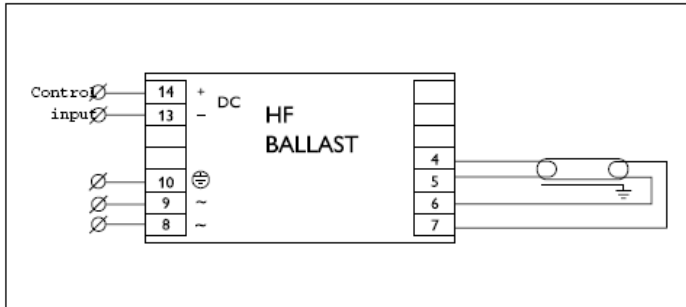
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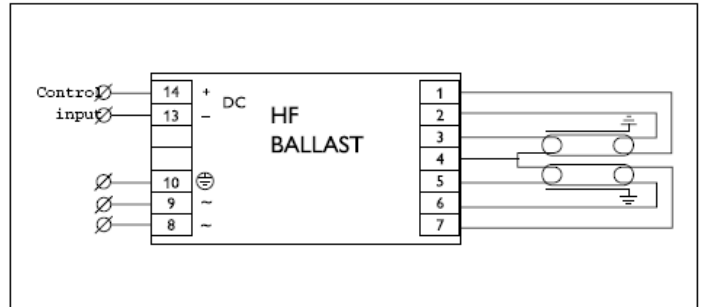
Relation between lamp power and I-10V regulation (with 1% dimming)



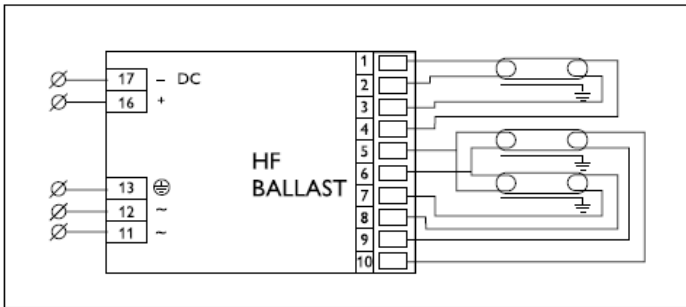
Input power vs dimlevel HR-REGULATOR II (I-10V)



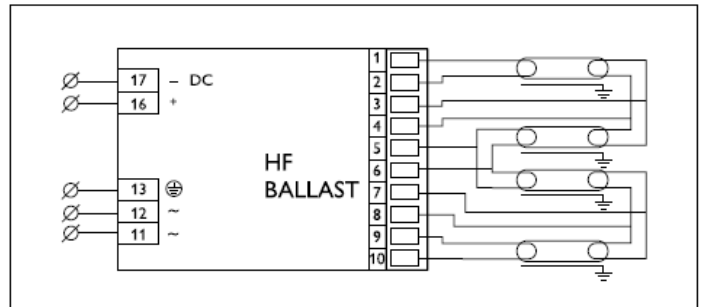
HF-R 1 TL5/TL5/PL-L/TL-D



HF-R 2 TL5/TL5/PL-L/TL-D



HF-R 3



HF-R 4



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