



HF-REGULATOR TL5 Circular

Product Description

- Compact, lightweight High-Frequency electronic regulating gear for TL5C fluorescent lamps

Features and Benefits

- Lamp power can be regulated down to 3%
- Striation-free operation
- 1-10V control input (European standard)
- Programmed, flicker-free warm start; ideal for areas with high switching frequency
- Up to 60% reduction in energy consumption can be achieved by using automatic lighting control systems
- Dedicated α -control circuit for independent control of each electrode, ensuring that:
 - lamp life is unaffected by dimming setting
 - lamp burning is stable at all dimming settings
 - energy savings are maximized when using dimming

Applications

- Installations with daylight linking and/or movement detection
- Installations with remote control systems
- Installations with emergency back-up according to EN 60598-2-22

Quality

Philips Quality applies optimum quality with respect to:

- System supplier: As manufacturer 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 gear's comply with all relevant international rules and regulations.

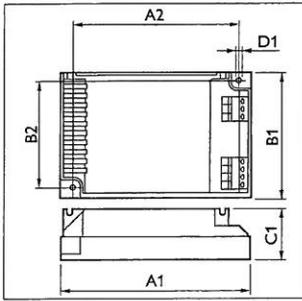
Compliances and approvals

RFI 9kHz..30 MHz	EN 55015*
Harmonics	EN 61000-3-2
Immunity	EN 61547
Safety	EN 61347-2-3
Performance	EN60929-1E
Quality standard	ISO 9001
Environmental standard	ISO 14001
Approval marks	ENEC VDE-EMV
Temperature declared thermally protected	EN 61347-1
CE marking	

*Tested with gear functional ground connected to earth.

Recommended lamp page 8.202

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HF-R

Type	A1Nom	A2Nom	B1Nom	B2Nom	C1Nom	D1Nom
HF-Regulator 122/140	103.0	93.5	67.0	57.5	30.0	4.5
HF-Regulator 155/160	123.0	111.0	79.0	67.0	33.0	4.5

Inrush current

Type	Maximum gear number on MCB (x)	Inrush current Peak (A)	Inrush current Width (ms)
HF-Regulator 122	28	19	0.25
HF-Regulator 140	28	25	0.25
HF-Regulator 155	12	19	0.40
HF-Regulator 160	12	25	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 122 TL5C 220-240V 50/60Hz	1	22	5.0	A1	150	75
HF-Regulator 140 TL5C 220-240V 50/60Hz	1	40	6.0	A1	150	75
HF-Regulator 155 TL5C 220-240V 50/60Hz	1	55	6.0	A1	150	75
HF-Regulator 160 TL5C 220-240V 50/60Hz	1	60	6.0	A1	150	75

Ordering and packing data

Type	Weight	Qty bulk packing	Dimensions bulk packing	EAN code bulk packing	EOC 8711500
HF-Regulator 122 TL5C 220-240V 50/60Hz	0.145 kg	12	21 cm x 14 cm x 10 cm	8711500058874	058867 30
HF-Regulator 140 TL5C 220-240V 50/60Hz	0.145 kg	12	21 cm x 14 cm x 10 cm	8711500535719	058928 30
HF-Regulator 155 TL5C 220-240V 50/60Hz	0.2 kg	12	25 cm x 16.2 cm x 10 cm	8711500059185	058942 30
HF-Regulator 160 TL5C 220-240V 50/60Hz	0.2 kg	12	25 cm x 16.2 cm x 10 cm	8711500059574	059567 30

Electrical installation notes

Mains operation	
Rated mains voltage	220 - 240 V
With tolerances for safety +/- 10%	198 - 264 V
Performance tolerances +6%-8%	202 - 254 V
Mains frequency	50/60 Hz
Operating frequency	> 40 kHz
Power factor	0.95 at 100% power
Earth leakage current	< 0.5 mA per gear
Maximum number of gear's which can be connected to one Residual Current Detector of 30 mA	30
Oversvoltage protection	48 hrs at 320V AC 2 hrs at 350V AC

Automatic restart after lamp replacement or voltage dip
Dual fixture; master slave operation
Insulation resistance test

Lamp wiring

Yes
not advisable
500V DC from Line/Neutral to Earth
(not between Line and Neutral)
Note: Ensure that the neutral is econnected again after above mentioned test is carried out and before the installation is put in operation
The use of 500 V rated components and wiring is advised for TL5C 60W type.

Ignition time Typical 1.7 sec.
 Advised maximum cable capacity Max. 75 pF: between two sets
 for optimum performance and EMI of lamp wires (each set of lamp
 Suppression wires is connected to one
 electrode of the lamp)
 Max. 150 pF: between one set of
 lamp wires (connected to one
 electrode of the lamp) and earth
 Care has to be taken for
 symmetrical wiring

DC/Emergency operation

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

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
 Control voltage 1 - 10V DC
 Protected against accidental mains voltage connection Yes
 Regulating level (lamp power) 3 to 100%
 The control input complies with EN 60929 (Amendment 1, Annex E) and is compatible with Philips lighting control equipment.
 Control input insulation, basic insulation < 1500V

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 +10° to +50 °C
 with ignition aid 3..100%
 Stable lamp operation assured > 15°C
 Striation possible < 15°C
 Max Tcase 1x22W and 1x40W 75°C
 Max Tcase 1x55W and 1x60W 70°C

Earthing

Earthing of the HF gear in a luminaire is necessary for EMC (electromagnetic compatibility)

Class II luminaires

This application is not advisable; only with extensive tests on luminaires can the correct operation be verified

Hum and noise level

inaudible

Permitted humidity is tested according to EN 61347 par. I.1. Note that no moisture or condensation may enter the gear.

Notes:

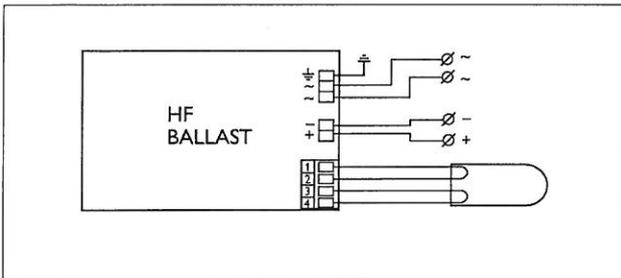
1. For optimum performance, note that wires from connector 1 and 2 should be kept short and equal in length.
2. Keep lamp wiring as short as possible; do not bunch wires from terminals 1&2 with those from 3&4.
3. Ip-Ip between lamp wires
 Typical capacitance 1m wires close together (spacing 0.5 mm) 46pF
 Typical capacitance 0.5m wires close together (spacing 0.5mm) 23pF
4. Ip-Ig between lamp wires and ground
 Typical capacitance 1m wires close together (spacing 0.5 mm) 72pF

Typical capacitance 0.5m wires close together (spacing 0.5mm) 38pF
 Connector type:

Connection wiring is greatly simplified through use of insert contacts; earth connection can be made via the terminal block.

Wire cross-section:

Mains connector	0.5...1.5mm ²
Control connector	0.5...1.5mm ²
Lamp(s) connector	0.5...1.5mm ²
Strip length	9.0 mm



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