EH-Standard electronic ballasts for CDM 35, 2x35 and 70W lamps

Lamp control gear

EH-S 035/S CDM, EH-S 2x035/S CDM or EH-S 070/S CDM

EH-S 035/P CDM
EH-S 070/P CDM
EH-S 2x035/P CDM

EH-S 035/I CDM
EH-S 070/I CDM
EH-S 2x035/I CDM

EH-S 035/F CDM
EH-S 070/F CDM
EH-S 2x035/F CDM

Definition

Compact, one-piece, electronic ballast for applications with low wattage ceramic metal halide lamps.

Description

Lamp advantages

- In practical applications EH-S ballasts increase life of CDM lamps up to 30%, resulting from:
  (1) Elimination of influence of mains voltage variations
  (2) Faster and controlled lamp ignition
- Electronic low frequency operation (typical 130 Hz), eliminates all visible lamp flicker
- More stable operation and faster run up time
- Optimal end of lamp life protection (EH-S is recommended for CDM-TC 35 W and mandatory for CDM-TC 70 W)

Ballast

- EH-S 2x035 W, for operation of 2x CDM 35 W in parallel. Identical housings as EH-S 035 W, only 25 mm longer. Twin ballasts include independent lamp operation: when one lamp fails, the other lamp remains to be operated optimally.
- Fully aluminium housing for 35 and 70W compact versions, including bottom and side fixation possibility.

Applications

EH-S 35W and 70W

- Shops, retail premises, offices, public buildings, lobbies, theatre/stage, architectural
- Suitable for indoor applications where relative humidity is limited
- Suitable for outdoor applications, recommended luminaire classification > IP 54

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 HID electronic ballast comply with all relevant international rules and regulations.

Compliances and approvals

- RFI < 30 HMz: EN 55015
- RFI > 30 MHz: EN 55022B (150 W: EN 55022A)
- Harmonics: EN 61000-3-2
- Immunity: EN 61547
- Safety: EN 60926/ EN 60928 VDE 0712/ 14, 22
- Performance: EN 60927/ EN 60929
- Vibration & bump tests: IEC 68-2-6-FC IEC 68-229-Eb
- Approval marks: KEMA
- Quality standard: ISO 9001
- Environmental standard: ISO 14001
- CE marking.

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Technical data

	For lamps	System power (W)	Efficacy lm/W	Lamp power W	Efficacy lm/W	Lumen* lm	T_{case} life °C	T_{case} max °C	$T_{ambient}$ range** °C
EH-S 035/S	CDM 35W	42	79	38	87	3300	70	80	-20..65
EH-S 2x035/S	2x CDM 35W	85	78	38	87	3300	70	80	-20..55
EH-S 070/S	CDM 70W	78.5	84	73	90	6600	70	80	-20..55
EH-S 035/I	CDM 35W	42	79	38	87	3300	70	85	-20..55
EH-S 2x035/I	2x CDM 35W	85	78	38	87	3300	70	85	-20..55
EH-S 070/I	CDM 70W	78.5	84	73	90	6600	75	85	-20..45

** Typical values for CDM/830 colour*

*** More information on thermal behaviour can be found on www.hid-primavision.philips.com*

Technical data for installation

Mains operation

Rated mains voltage	220 – 240 V
With tolerances for performance: +6% -8%	206 – 254 V
With tolerances for safety:	180 – 264 V
Mains frequency	50/60 Hz
Operation frequency (typical)	130 Hz
Power factor	>0.95
Ignition voltage	3-5 kV

Air and creepage distance from any (metal) part that may become live, to earthed environment (class I) or test finger (class II): >5 mm

Earth leakage current: <0.5 mA per ballast

Cable capacity

EH-S 035	Max. 120 pF
EH-S 070	Max. 120 pF
EH-S 2x035	Max. 120 pF / per lamp

Notes:

With three-phase mains supply, neutral should never be disconnected; otherwise circuitry could be damaged.

For proper EMC, wiring inside luminaire should be as straight and as short as possible; mains wires should not run parallel to lamp wires.

Thermo-protected circuit incorporates self-resetting facility; ignition attempts stop after 18 min.; mains supply must be switched off and on to reset ballast.

Overvoltage protection: 48 hrs at 320 Vac; 2 hrs at 350 Vac; 5 min. at 380 Vac

Automatic restart after lamp replacement or voltage dip, lamp may take up to 18 min. to restart.

Insulation resistance test: 500 Vdc 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 230V*

Ballast	Nominal current
EH-S 035	0.21
EH-S 2x035	0.38
EH-S 070	0.34

** For electronic EH-S gear run-up current < nominal current*

Inrush current

Ballast	Max. quantity of ballast per Miniature Circuit Breaker Type B 16 A	Inrush current 1/2value time at typical mains impedance
EH-S 035	24	t.b.d.
EH-S 2x035	24	t.b.d.
EH-S 070	14	50A/450 µs

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	16A	170%
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%

Notes:

1. Data is based on a mains supply with an impedance of 400 mΩ (equal to 15 m cable of 2.5 m^2 and other 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 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 30 mA is 30.

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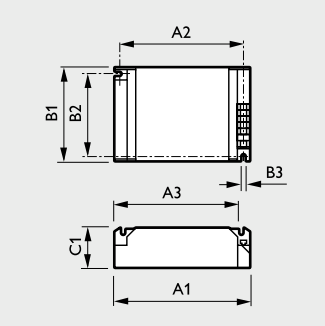
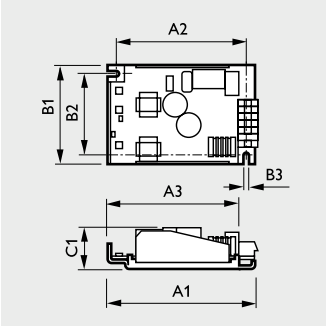
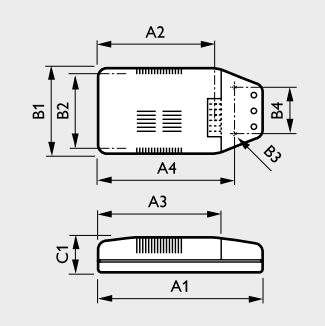
Dimensions in mm



EH-S 035/S CDM or
EH-S 070/S CDM



EH-S 035/P CDM or
EH-S 070/P CDM



EH-S 035/I CDM or
EH-S 070/I CDM

Ballast name	A1	A2	A3	A4	B1	B2	B3	B4	C1	Remark
EH-S 035/S CDM	110	98.5	98.5	-	75	63.5	4.5	-	32	New
EH-S 035/P CDM	109	98.5	95	-	72.5	63.5	4.5	-	28	New
EH-S 035/I CDM	150	98.5	113.5	126.5	79.5	63.5	4.5	49	32	New
EH-S 2X035/S CDM	135	123.5	123.5	-	75	63.5	4.5	-	32	New
EH-S 2X035/P CDM	134	123.5	120	-	72.5	63.5	4.5	-	28	New
EH-S 2X035/I CDM	175	123.5	138.5	151.5	79.5	63.5	4.5	49	32	New
EH-S 070/S CDM	110	98.5	98.5		75	63.5	4.5	-	32	New
EH-S 070/P CDM	109	98.5	95	126.5	72.5	63.5	4.5	-	28	New
EH-S 070/I CDM	150	98.5	11.35		79.5	63.5	4.5	49	32	New

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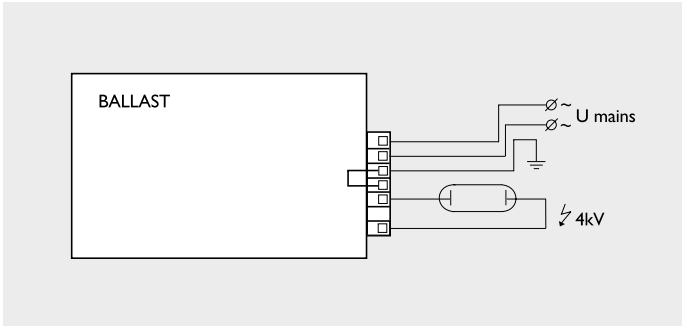
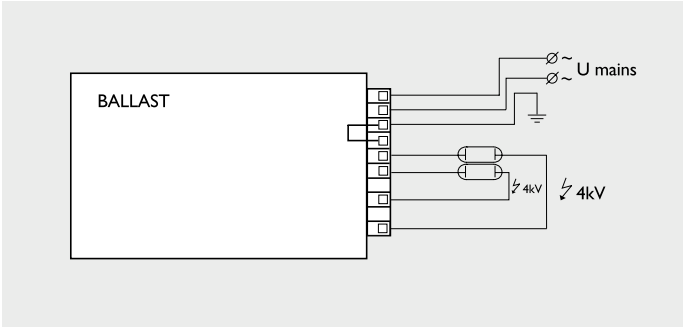
Wiring diagram



Connection wiring is greatly simplified by the use of cage-clamp contacts with push buttons.

Wire cross-section:
On the mains side: 0.75…2.5 mm²
On the lamp side: 0.75…2.5 mm²

Strip length: 8 - 10 mm



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On the mains side: 0.75…2.5 mm²
On the lamp side: 0.75…2.5 mm²

Strip length: 8 - 10 mm

Ordering and packing data

Ballast	Ordering number	Single unit Weight net kg	Carton packing Qty. pcs	Dimensions l x w x h cm	Weight gross kg	Qty.per pallet Carton/pcs
EH-S 035/S CDM	9137 100 416..	0.21	12	26.0 x 21.5 x 10.0	2.8	900
EH-S 070/S CDM	9137 100 417..	0.21	12	26.0 x 21.5 x 10.0	2.8	900
EH-S 2x035/S CDM	9137 100 419..	0.29	12	31.0 x 21.5 x 10.0	3.7	720
EH-S 035/I CDM	9137 100 436..	0.23	12	30.3 x 16.3 x 12.3	2.9	1260
EH-S 070/I CDM	9137 100 438..	0.23	12	30.3 x 16.3 x 12.3	2.9	1260
EH-S 2x035/I CDM	9137 100 440..	0.31	12	35.3 x 16.3 x 12.3	3.8	900
EH-S 035/P CDM	9137 100 437..	0.21	12	26.0 x 19.7 x 9.0	2.8	900
EH-S 070/P CDM	9137 100 439..	0.21	12	26.0 x 19.7 x 9.0	2.8	900
EH-S 2x035/P CDM	9137 100 441..	0.29	12	32.0 x 19.7 x 9.0	3.7	720
EH-S 035/F CDM	9137 120 005..	0.41	12	36.0 x 39.6 x 17.6	5.3	324
EH-S 070/F CDM	9137 120 006..	0.41	12	36.0 x 39.6 x 17.6	5.3	324
EH-S 2x035/F CDM	9137 120 007..	0.68	12	44.0 x 39.6 x 17.6	8.4	288