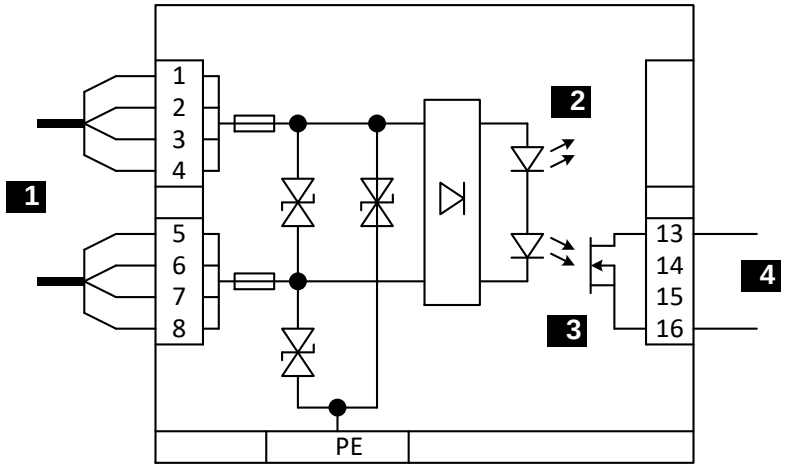
H 7035: Mains Filter

- For 48 V supply interference suppression in the HIQuad X system family.
- Surge and burst protection.



1 48 VDC connectors
2 LED
3 Optical relay
4 Signaling contact

Figure 1: Wiring Diagram

The H 7035 mains filter is used to dampen electrical fast transient interference (burst) up to 4 kV in accordance with IEC EN 61000-4-4 as well as impulse voltage (surge) up to 4 kV (common mode) and 1 kV (differential mode) in accordance with IEC EN 61000-4-5 on a 48 VDC power supply. Each common mode interference (burst and surge) is discharged to ground.

HIMA recommends installing the filter close to the 48 V supply to suppress disturbances directly at the supply point.

Signaling Contact

The device is equipped with a potential-free signaling contact. As long as the device maintains the overvoltage protection, the signaling contact is closed and low-resistance.

When the device fails, the contact opens.

Temporary voltage drops for up to a duration of 20 ms or interruptions of the 48 VDC supply due to interference pulses do not affect the state of the signaling contact.

If an overload occurs, the signaling contact opens. After the overload, the contact remains open. To reset the signaling contact, the device must be disconnected from and reconnected to the 48 V supply.

HIMA Paul Hildebrandt GmbH, P.O. Box 1261, 68777 Brühl
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Signaling the Device State

A green LED on the front side of the device indicates the filter state. The following table shows the operating states for the filter:

LED	Signaling contact	Power supply	State
Off	Open	DC voltage is not applied.	Device not in operation.
Off	Open	DC voltage is applied.	The device is faulty and must be replaced. It is no longer functional.
On	Open	DC voltage is applied.	An overload occurred, perform a reset.
On	Closed	DC voltage is applied.	Normal operation.

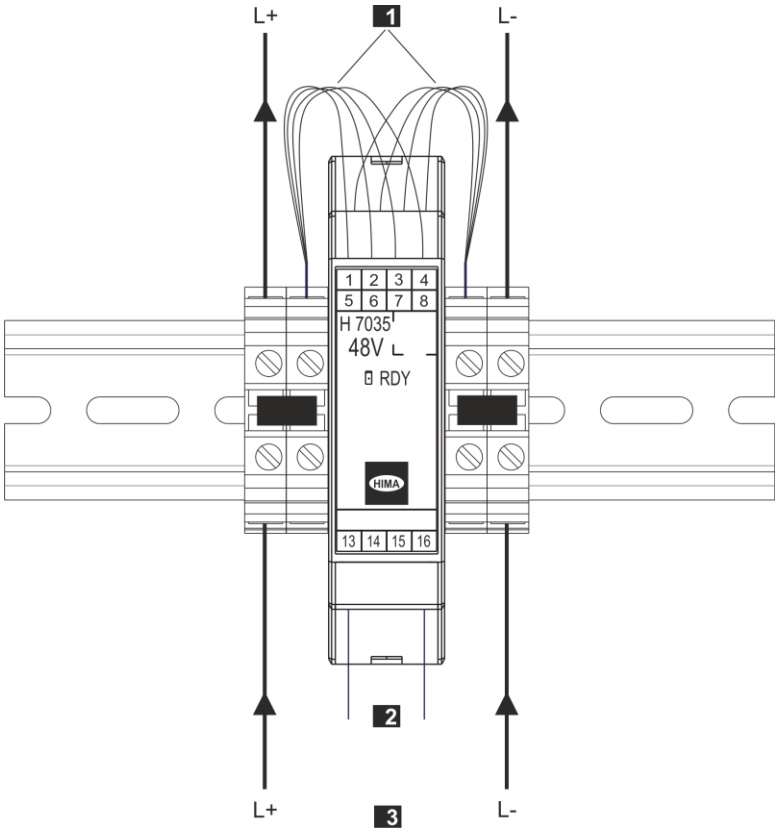
Table 1: Device States

Product Data

General	
Supply voltage	48 VDC, -15…+20 %, $r_P \leq 5$ %
Maximum supply voltage	60 VDC
Maximum permissible supply voltage in case of power supply failure	70 VDC
Current consumption in the steady-state condition	8 mA at 48 VDC
Degree of protection	IP20
Ambient temperature	-25…+70 °C
Mounting depth up to DIN rail	Approx. 86 mm
Dimensions (H x W x D) in mm	99 x 23 x 90
Weight	Approx. 150 g
Connection	2.5 mm^2 directly to the device terminals, Combined wires on terminals with a 10 mm^2 cross-section or greater, see Figure 2
Maximum length of connector cables	20 cm
Maximum inductivity of connector cables	0.4 µH
Signaling contact: Maximum operating voltage	48 VDC
Signaling contact: Maximum continuous current	30 mA
Signaling contact: Overload cut-off device	Min. 160 mA
Signaling contact: Maximum output resistor	35 Ω
Signaling contact: Insulation voltage	1500 VAC
Signaling contact: Response time ON	0.7 ms
Signaling contact: Response time OFF	0.07 ms

Table 2: Product Data

Connection Example



1 Connector cables
2 Signaling contact
3 48 VDC supply

Figure 2: Connection Example with Terminals on 35 mm DIN Rail

The connector cables are included within the scope of delivery.

Use of H 7035 in Zone 2

The H 7035 mains filter is suitable for mounting in the explosive atmospheres of zone 2. To this end, the special conditions of use must be observed.

The mains filter meets the requirements of the following directives and standards:

Conformance	Standard	Description
IECEx	IEC 60079-0:2011	Explosive atmospheres - Part 0: Equipment - General requirements
ATEX 2014/34/EU	EN 60079-0:2012 + A11:2013	
IECEx	IEC 60079-15:2010	Explosive atmospheres - Part 15: Equipment protection by degree of protection "n"
ATEX 2014/34/EU	EN 60079-15:2010	

Table 3: Standards for HIMA Components in Zone 2

The mains filter must be provided with the following Ex marking and indication of the temperature range:

 II 3G Ex nA IIC T4 Gc

-25 °C ≤ T_a ≤ +70 °C

Marking	Description
	Explosion protection marking complying with the relevant directive.
II	Equipment group, for all areas with explosive atmosphere, other than underground mines.
3G	Equipment category, for use in areas where explosive gas atmosphere is unlikely to occur or, if it does occur, will persist for a short period only.
Ex	Explosion protection marking complying with the relevant standard.
nA	Type of protection for non-sparking equipment.
IIC	Gas group for explosive gas atmospheres, typical gas is hydrogen.
T4	Temperature class T4, with a maximum surface temperature of 135 °C.
Gc	Equipment protection level, corresponds to ATEX equipment category 3G.

Table 4: Ex Marking Description

Special Conditions for Using the H 7035

1. To ensure compliance with category 3G, the specified mains filter, H 7035, must be installed in an enclosure that fulfils the requirements of the EN/IEC 60079-15 with degree of protection IP54 or better.
2. The enclosure must be provided with the following warning:

   WARNING: Work is only permitted in the de-energized state

   Exception:

   If a potentially explosive atmosphere has been precluded, work can also be performed when the device is under voltage.
3. The device is designed for operation not exceeding pollution degree 2.
4. The enclosure in use must be able to safely dissipate the generated heat.

Applicable standards:

IEC 60079-14:2013	Explosive atmospheres - Part 14: Electrical installations design, selection and erection
EN 60079-14:2014	

The requirements for type of protection "n" must be observed.