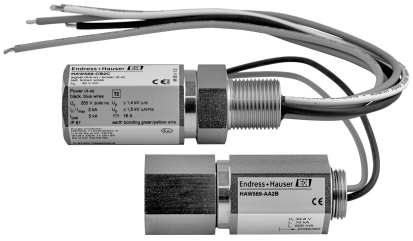
Technical Information
HAW569

Overvoltage protection



Overvoltage protection for field mounting

Application

Surge arresters are used to weaken residual currents from upstream lightning protection steps and to limit system-induced or system-generated overvoltage surges.

HAW569 units are primarily used in process-related instrumentation within the chemicals, pharmaceuticals, and oil and gas industries as well as in the water and wastewater sectors.

Your benefits

- Compact transmitter to protect signal/communication cables (optionally available with Ex ia approval) or for the simultaneous protection of signal, communication and power supply cables (optionally available with Ex d approval)
- SIL2
- Increased plant availability as the electronic components involved in process automation are protected
- Easy and space-saving direct mounting for installation in field transmitter
- Intrinsically safe or flameproof in accordance with ATEX & IEC
- Fieldbus-compatible
- Parallel connection avoids introduction of any resistance into the loop (screw-in version)
- No additional cable entry required for lead-through version

Endress+Hauser
People for Process Automation

Function and system design

Operating principle

The HAW569 surge arrester is used to protect electronic components from being destroyed. It ensures that overvoltage surges which occur in signal cables (e.g. 4 to 20 mA), in communication lines (Field buses) and in power lines are safely passed into the ground. The functionality of the transmitter or the electronic component to be protected is not affected as, using the impedance-free connection of the protection unit, interference voltage drops cannot be introduced.

Available versions

HAW569-AA2B and HAW569-DA2B

Lead-through version, optionally available with Ex ia approval

- For the protection of signal cables and communication lines exclusively.
- The HAW569-DA2B version is used when Ex ia is required.
- An additional cable gland is not required.

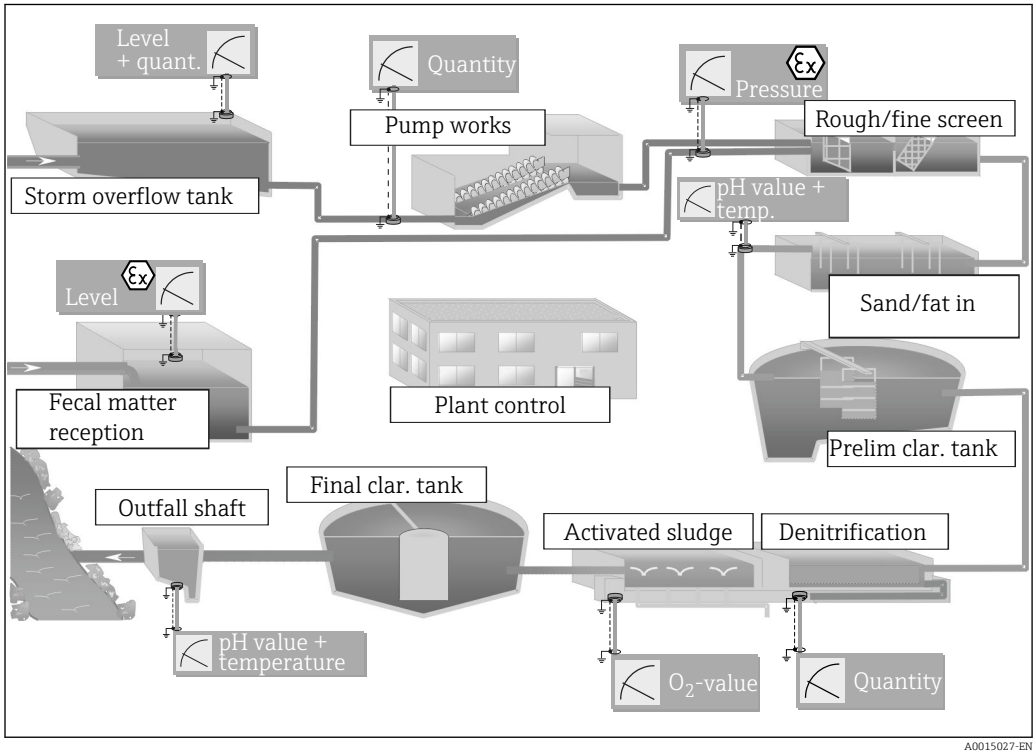
HAW569-CB2C

Screw-in version for use in Ex d area

- Screwed into a free cable entry.
- Simultaneous protection of signal cable/communication line and power line possible (in the case of 4-wire devices).
- Used where Ex d overvoltage protection is required.
- Can also be used where either only the signal cable/communication line, or the power line needs to be protected.

Application

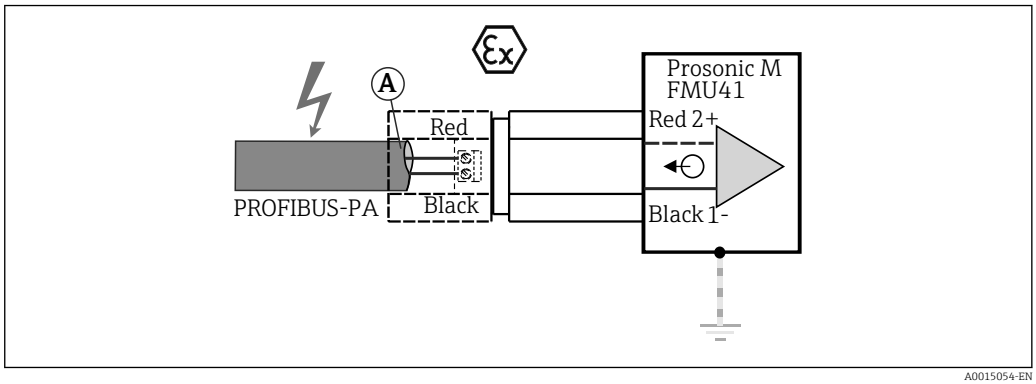
Surge protection of various measurement instrumentation seen in the example of a water treatment plant.



1 *Water treatment example (schematic diagram)*

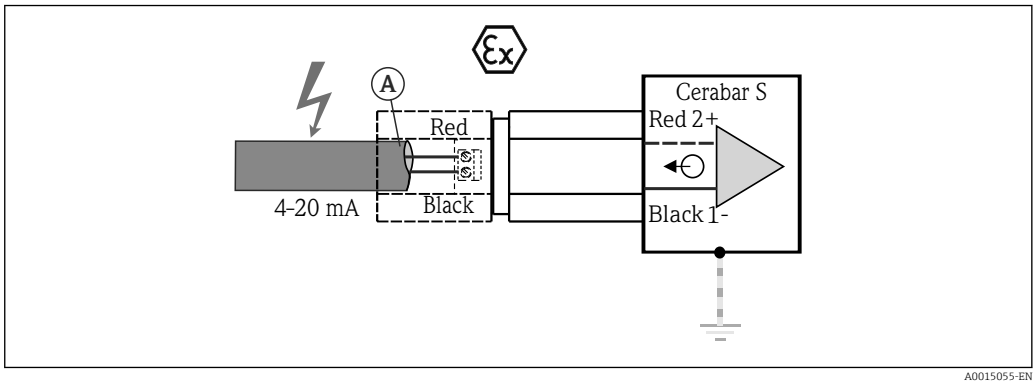
Fitting out measuring points in a water treatment plant

	Measuring points	Measuring point requirements	Connection diagram
Sewage inlet Intrinsically safe level Ⓔx	Level measurement with E+H Prosonic M FMU41 device PROFIBUS PA signal	1 HAW569-DA2B for PROFIBUS PA signal cable	Connection diagram 1, → 🖼 2, 🖹 3
Pipe Intrinsically safe pump pressure monitoring Ⓔx	Pressure measurement with E +H Cerabar S pressure transmitter 4 to 20 mA	1 HAW569-DA2B for 4 to 20 mA remote signal	Connection diagram 2, → 🖼 3, 🖹 3
Storm overflow tanks	Level measurement with E+H Prosonic M FMU40 ultrasonic transmitter with E+H Prosonic FDU80 level sensor 4 to 20 mA	1 HAW569-AA2B for 4 to 20 mA remote signal	Connection diagram 3, → 🖼 4, 🖹 4
Other application example: **Flow measurement**	E.g. Coriolis Promass 84, 83, 80; T-mass, Prosonic 92F or 91w, 93W	1 HAW569-CB2C for power supply and signal cable	Example: Proline Prosonic Flow 91W, Connection diagram 4, → 🖼 5, 🖹 4



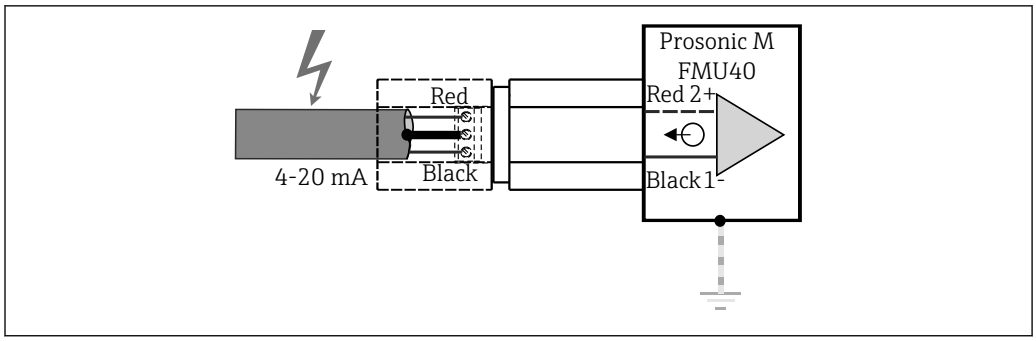
🖼 2 *Connection diagram 1: Level measurement with Prosonic M FMU41 and PROFIBUS signal*

A The cable shield must be connected directly to the housing using a suitable cable gland (see 'Accessories',).



🖼 3 *Connection diagram 2: Pressure measurement with Cerabar S pressure transmitter*

A The cable shield must be connected directly to the housing using a suitable cable gland (see 'Accessories',).



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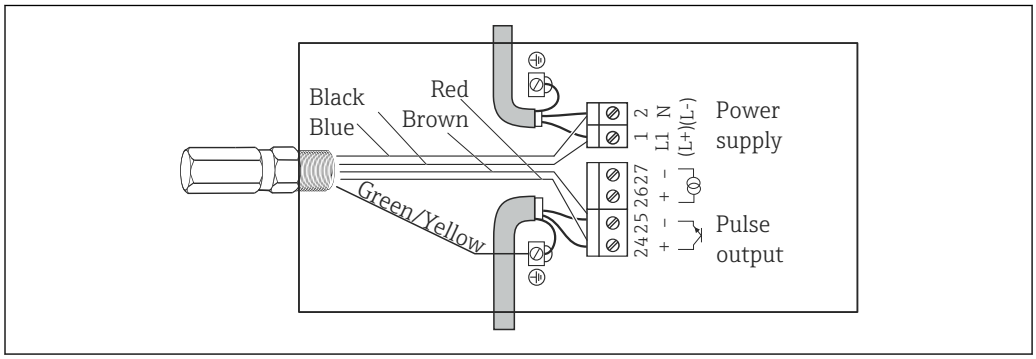
4 Connection diagram 3: Flow measurement, e.g. Coriolis Promass 84, 83, 80; T-mass, Prosonic 92F or 91w, 93W



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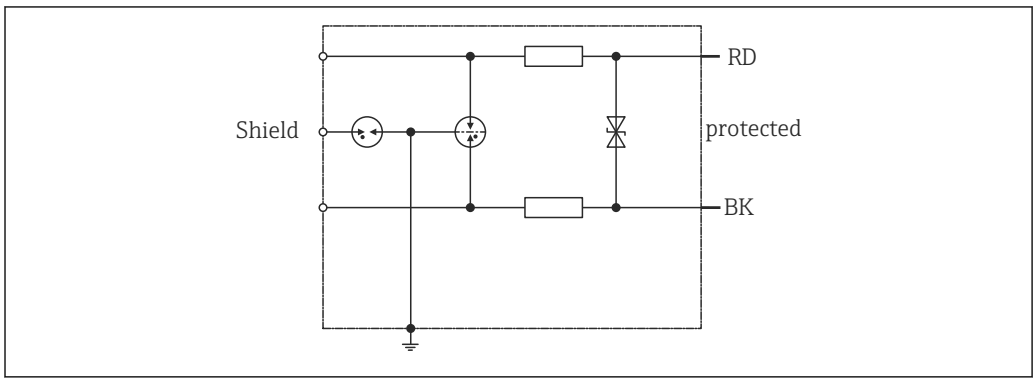
5 Connection diagram 4: Flow measurement, e.g. Coriolis Promass 84, 83, 80; T-mass, Prosonic 92F or 91w, 93W

Power supply

Electrical connection

HAW569-AA2B (non-Ex lead-through version)



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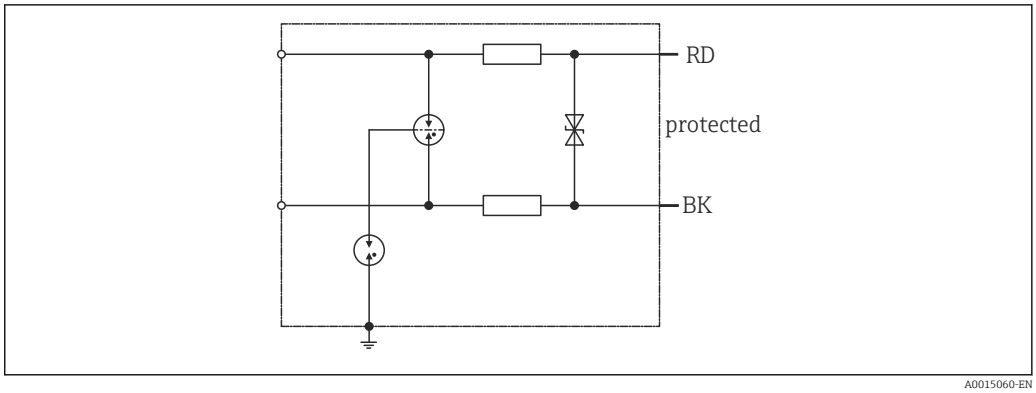
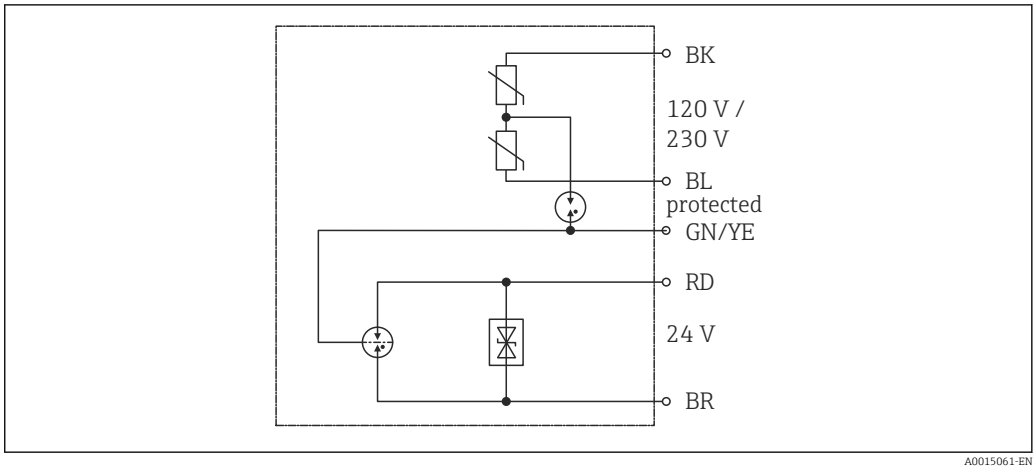
6 Internal circuitry HAW569-AA2B

HAW569-DA2B (Ex ia lead-through version)



7 Internal circuitry HAW569-DA2B

HAW569-CB2C (Ex d screw-in version)



8 Internal circuitry HAW569-CB2C

SPD class

HAW569-xA2B	HAW569-CB2C
Type 2 P1	Type 2 P2

Supply voltage

Nominal voltage

HAW569-xA2B	HAW569-CB2C
24 V	24 V Signal 120 V / 230 V Power supply

Maximum continuous voltage

	HAW569-xA2B	HAW569-CB2C
DC:	34.8 V	32 V Signal 255 V Power supply
AC:	24.5 V	22.6 V Signal 255 V Power supply

Current consumption

	HAW569-AA2B	HAW569-DA2B	HAW569-CB2C
Nominal current I_L	0.5 A		0.55 A at 80 °C (176 °F)
C2 nominal discharge current [I_n] (8/20) per line	10 kA	5 kA	-
C2 nominal discharge current [I_n] (8/20) total	10 kA	10 kA	10 kA
C2 nominal discharge current [I_n] (8/20) shielding - PG	20 kA	-	-
Nominal discharge current (8/20) L - N [I_n]	-	-	3 kA
Total discharge current (8/20) L+N - PE [I_{total}]	-	-	5 kA
D1 lightning surge current [I_{imp}] (10/350) line - PG	-	-	1 kA

Voltage protection level

	HAW569-AA2B	HAW569-DA2B	HAW569-CB2C
Voltage protection level, line - line at I_n C2	≤ 65 V	≤ 55 V	≤ 58 V
Voltage protection level, line - PG at I_n C2	≤ 650 V	≤ 1 100 V	≤ 900 V
Voltage protection level, shielding - PG at I_n C2	≤ 650 V	-	-
Voltage protection level, line - line at 1 kV/µs C3	≤ 50 V	≤ 49 V	≤ 50 V
Voltage protection level, line - PG at 1 kV/µs C3	≤ 500 V	≤ 1 000 V	≤ 850 V
Voltage protection level, shield - PG at 1 kV/µs C3	≤ 600 V	-	-
Voltage protection level, L - N	-	-	≤ 1.4 kV
Voltage protection level, L/N - PE	-	-	≤ 1.5 kV

Limit frequency

HAW569-AA2B	HAW569-DA2B	HAW569-CB2C
14 MHz	7 MHz	-

Series impedance per line

HAW569-AA2B	HAW569-DA2B	HAW569-CB2C
2.2 Ohm	1.8 Ohm	-

Capacitance

	HAW569-AA2B	HAW569-DA2B	HAW569-CB2C
Line/line	≤ 400 pF	≤ 850 pF	≤ 25 pF
Line/PG	≤ 20 pF	≤ 15 pF	≤ 15 pF

Maximum line side overcurrent protection

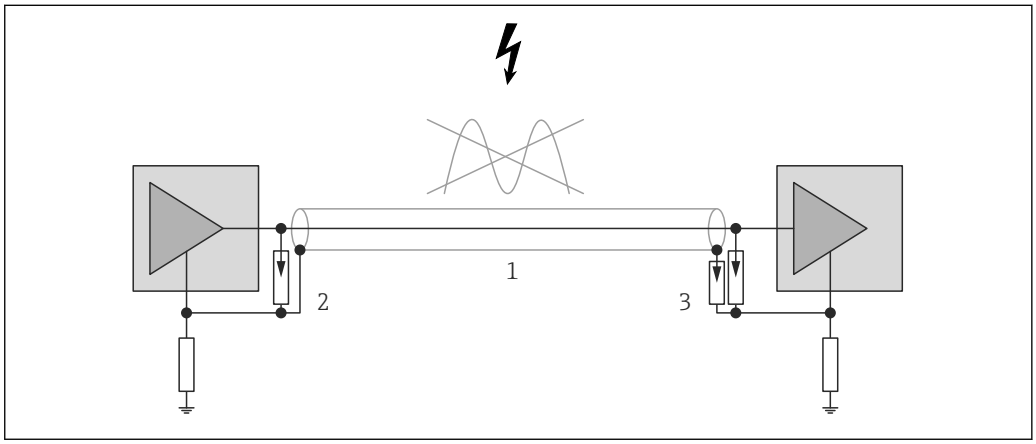
Only for unit type HAW569-CB2C:

16 A gL/gG or B 16 A

Shield grounding, only HAW569-AA2B (non-Ex)

As a rule, cable shielding must be grounded across its entire length. The shielding should be grounded by means of direct shield grounding at least at both ends of the cable.

If direct grounding of the shield at both ends is not possible or desired, e.g. to avoid low-frequency equalizing currents, indirect shield grounding should be provided at one end. Equalizing currents are thus avoided yet EMC requirements are still met.

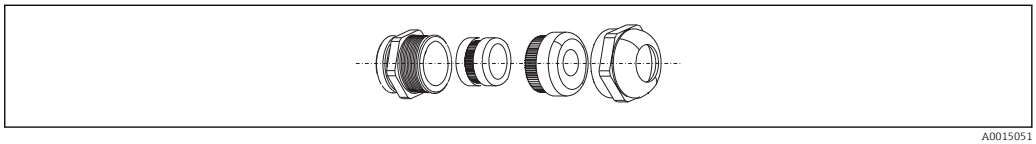


9 Direct and indirect shield grounding

1 Cable shielding
2 Direct shield grounding
3 Indirect shield grounding

For indirect shield grounding, twist the cable shielding and connect to the appropriate terminal on the surge arrester. Shield grounding is via the integrated gas discharge tube.

Direct shield grounding is possible using the EMC cable gland which is available as an accessory (see graphic below).



10 Cable gland with shield grounding for HAW569

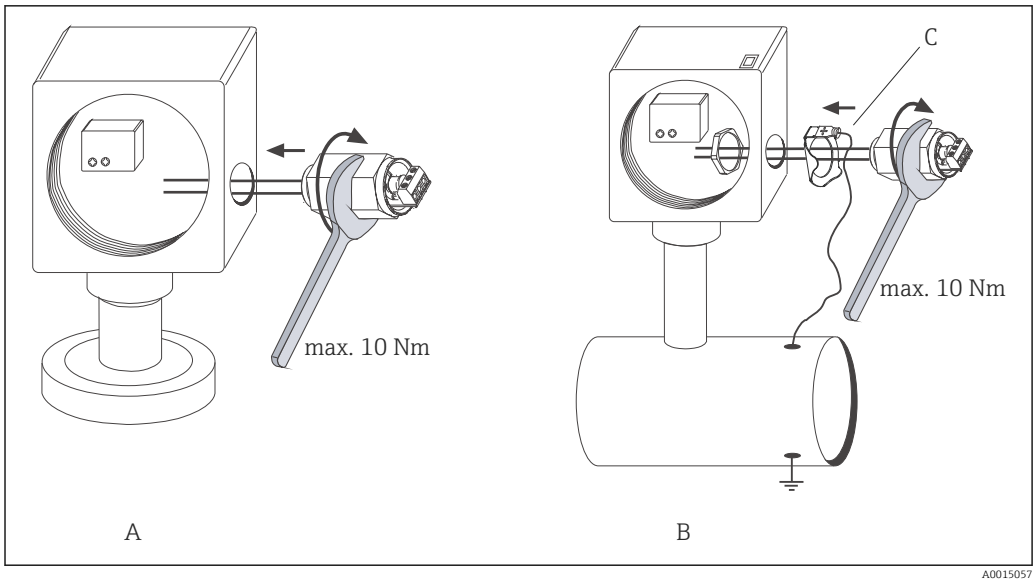
Installation

Installation instructions

Mounting field/device side: M20 x 1.5 internal thread / M20 x 1.5 external thread

Mounting location

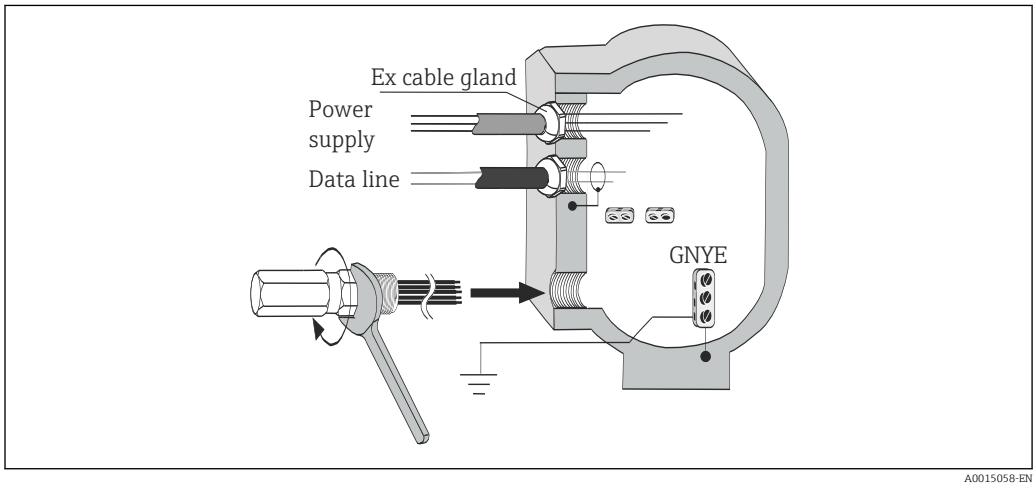
HAW569-xA2B lead-through version



11 Installation instructions for HAW569-xA2B

A Installation in the field housing (metal housing) without grounding ring - grounding via metal housing
B Installation in the field housing (non-metal housing) with grounding ring
C Grounding ring (available as accessory)

HAW569-CB2C screw-in version



12 Installation instructions for HAW569-CB2C

Orientation

No restrictions

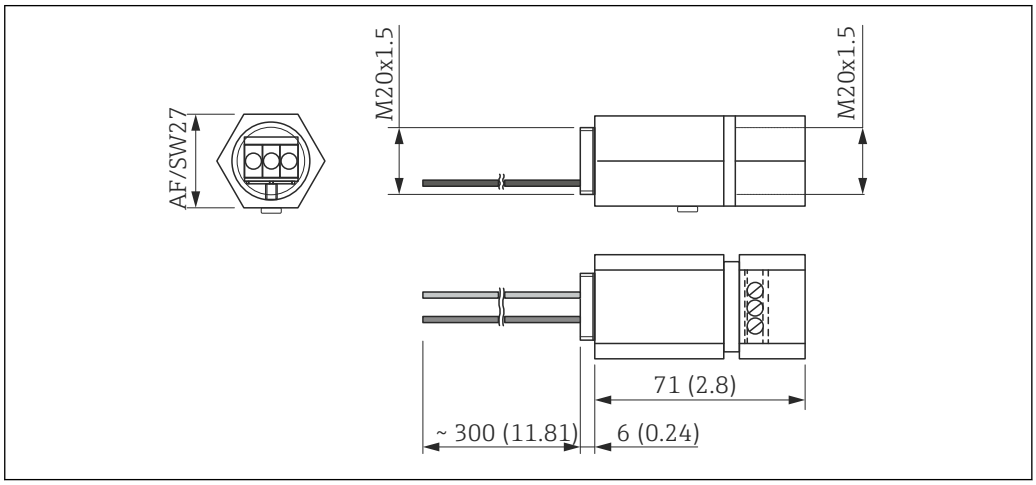
Environment

Ambient temperature range	−40 to +80 °C (−40 to +176 °F)
Storage temperature	See "Ambient temperature range"
Degree of protection	Following correct mounting and electrical connection IP 67

Mechanical construction

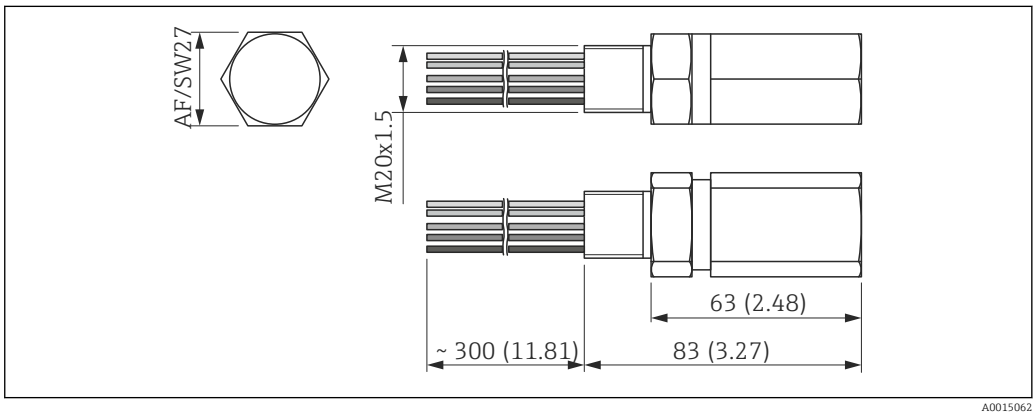
Design, dimensions

HAW569-xA2B (lead-through version)



13 *Dimensions for HAW569-xA2B in mm (in), surge arrester for protecting signal cables, optionally for protecting intrinsically safe measuring circuits.*

HAW569-CB2C (screw-in version)



14 *Dimensions for HAW569-CB2C in mm (in), surge arrester in flameproof enclosure for use in hazardous areas.*

Weight

Approx. 175 g (6.17 oz.)

Materials

HAW569-xA2B

Stainless steel 1.4301 (AISI 304)

HAW569-CB2C

Stainless steel 1.4401 (AISI 316)

Process connection

	HAW569-xA2B	HAW569-CB2C
Connection to field housing	M20 x 1.5 external thread	M20 x 1.5 external thread
Surge arrester input side	M20 x 1.5 internal thread	-

Terminals

Input/output connection

HAW569-xA2B	HAW569-CB2C
Screw/connecting cables 2 x 1.5 mm² (16 AWG), length 300 mm (11.81 in)	Connecting cables 5 x 1.3 mm² (16 AWG), length 250 mm (9.84 in)

Connection cross-section

	HAW569-xA2B	HAW569-CB2C
Single strand	0.08 to 2.5 mm² (28 to 14 AWG)	No input terminals
Multi strand	0.08 to 1.5 mm² (28 to 16 AWG)	No input terminals

Certificates and approvals

CE mark

The measuring system meets the legal requirements of the EC Directives. Endress+Hauser confirms successful testing of the device by affixing to it the CE mark.

Ex approval

Information about currently available Ex versions (ATEX, FM, CSA, etc.) can be supplied by your E+H Sales Center on request. All explosion protection data are given in separate documentation which is available upon request.

Other standards and guidelines

- IEC 60529:
  Degrees of protection provided by enclosures (IP code)
- IEC 61010:
  Safety requirements for electrical equipment for measurement, control and laboratory use
- IEC 61326:
  Electromagnetic compatibility (EMC requirements)

Ordering information

Detailed ordering information is available from the following sources:
- In the Product Configurator on the Endress+Hauser website: www.endress.com → Select your country → Products → Select measuring technology, software or components → Select the product (picklists: measurement method, product family etc.) → Device support (right-hand column): Configure the selected product → The Product Configurator for the selected product opens.
- From your Endress+Hauser Sales Center: www.addresses.endress.com

Product Configurator - the tool for individual product configuration
- Up-to-the-minute configuration data
- Depending on the device: Direct input of measuring point-specific information such as measuring range or operating language
- Automatic verification of exclusion criteria
- Automatic creation of the order code and its breakdown in PDF or Excel output format
- Ability to order directly in the Endress+Hauser Online Shop

Accessories

Threading adapter M20 -> NPT½

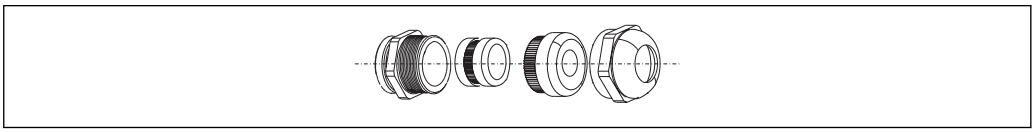
Adapter for installation into NPT½ cable gland. Material: Nickel-plated brass.

EMC cable gland

Only for HAW569-AA2B / -DA2B.

Set 2 x M20x1.5, IP68 for direct/indirect shield grounding, cable Φ 6.5 to 13 mm (0.26 to 0.51 in).

Order as an additional option in the product structure for HAW569 or separately via order code: RK01-AS



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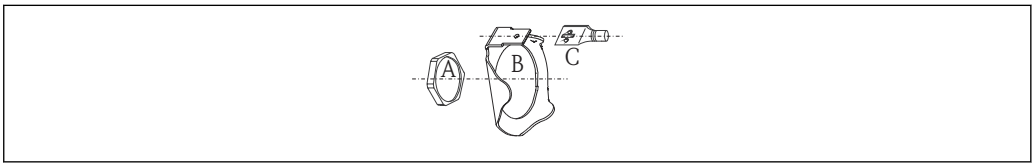
15 EMC cable gland for shield grounding

Grounding ring set

Only for HAW569-AA2B / -DA2B.

The HAW569 M20 grounding ring set is required to ground the surge arrester where the sensor housing is plastic.

Order as an additional option in the product structure for HAW569 or separately via order code: RK01-AT



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16 Grounding ring set

A Counter nut
B Grounding ring
C Flat plug

Documentation

- Brochure 'System components: Indicators with control unit for field and panel mounting, power supplies, barriers, transmitters, energy managers and surge arresters' (FA016K/09)
- Operating Instructions HAW569-AA2B, HAW569-DA2B (BA00304K/09/a2)
- Operating Instructions HAW569-CB2C (BA00305K/09/a2)
- Ex-related supplementary documentation:
  ATEX/IECEx II2(1)G Ex ia|ia Ga|IIC T6 Gb: XA01003K/09/a3
  ATEX/IECEx II2G Gb Ex d IIC T6: XA01004K/09/a3

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