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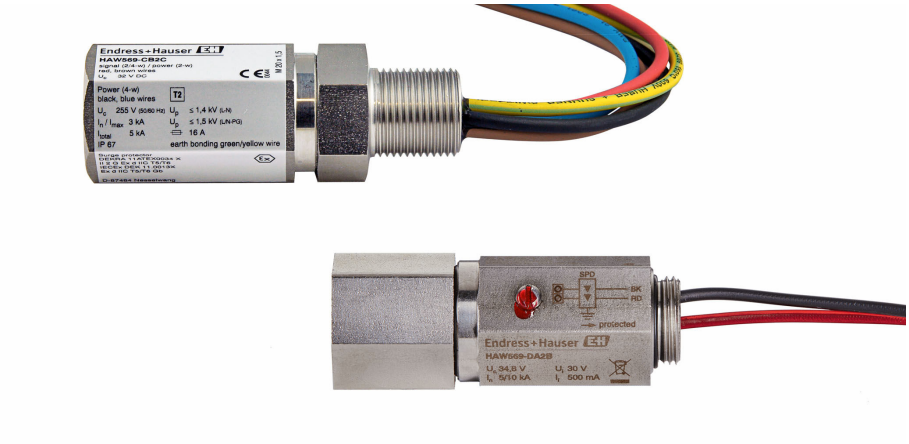
Technical Information
HAW569

Surge arrester



Surge arrester for installation in field device for power supply and communication signals with optional SIL and Ex approval

Fields of application

The HAW569 surge arrester is suitable for protecting the electronics of field devices against damage caused by overvoltage. Surges occurring on signal lines (e.g. 4 to 20 mA), fieldbus communication lines (HART, PA, FF) and power supply lines are safely limited or discharged to earth.

The functionality of the transmitter or the electronics to be protected is unaffected, since no problematic voltage drop occurs due to the impedance-free connection of the protective devices.

Typical applications for the HAW569 are found in process automation in the chemical, pharmaceutical, oil & gas industries as well as in water and wastewater treatment.

Benefits

- Compact surge arrester for signal, communication and power supply cables - also available for hazardous areas
- Increased plant availability through reliable protection of measuring instruments – direct mounting in the field transmitter for simple and rapid integration
- Hazardous area versions (Ex ia/Ex d)
- For safety-related applications up to SIL 2 (optional)

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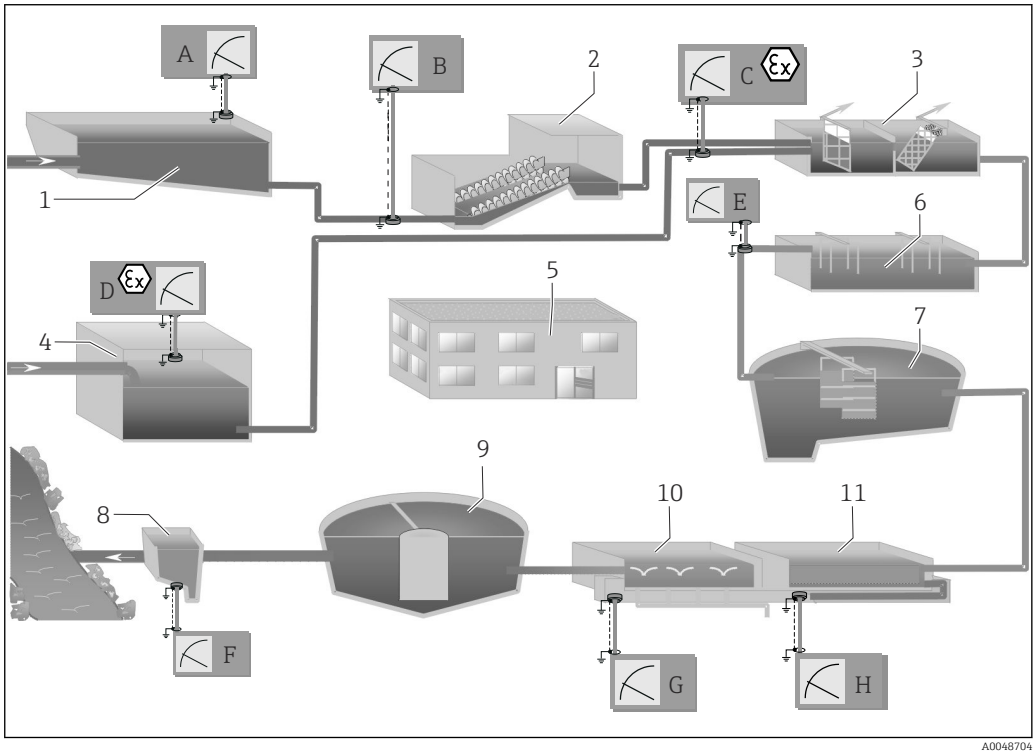
Function and system design

Measuring principle

Surge arrester HAW569 is suitable for protecting the electronics against destruction caused by surges. Surges occurring in signal cables (e.g. 4 to 20 mA), communication cables (fieldbus systems) and power supply cables are discharged safely to earth. The functionality of the transmitter or the electronics to be protected is unaffected, since no problematic voltage drop occurs due to the impedance-free connection of the protective devices.

Field of application

Surge protection equipment used in various measuring points, based on the example of a wastewater treatment plant.



1 Application example: wastewater treatment plant (schematic diagram)

Position	Measuring point	Position	Measured variable
1	Storm water overflow tank	A	Level and quantity
2	Pumping station	B	Quantity
3	Coarse/fine bar screens	C	Pressure
4	Fecal intake	D	Level
5	Wastewater treatment plant control room		
6	Grit / grease trap	E	pH value and temperature
7	Primary clarifier		
8	Outflow shaft	F	pH value and temperature
9	Secondary clarifier		
10	Aeration basin	G	O_2 value
11	Denitrification	H	Quantity

Available versions

HAW569-AA2B and HAW569-DA2B

Lead-through version, with optional Ex ia approval
- Used exclusively for the protection of signal and communication cables
- HAW569-DA2B version for applications with Ex ia requirement (HAW569 -EA2B for KC Ex ia)
- No additional cable gland required

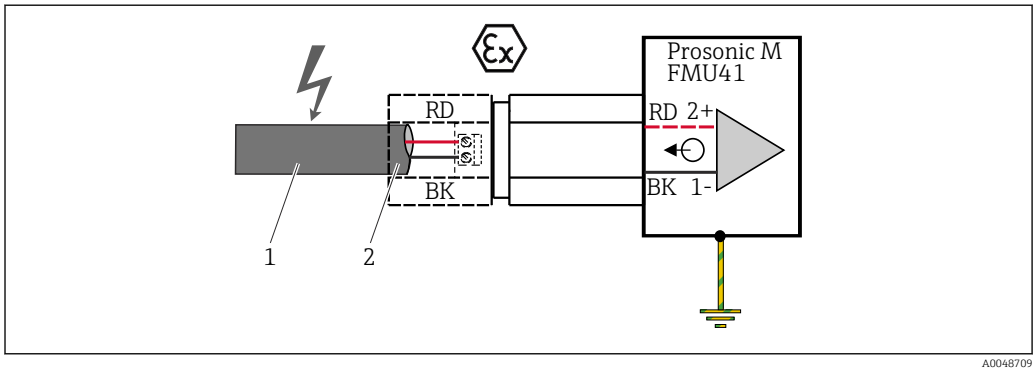
HAW569 -CB2C for ATEX, IECEx, CSA C/US (HAW569-FB2C for KC Ex d)

Screw-in version for use in Zone 1 (Ex d)
- Installation by screwing into an unused cable entry
- Simultaneous protection of signal cable/communication cable and power supply cable (for 4-wire devices) is possible.
- Suitable for use with external surge protection in hazardous areas (Ex d)
- Can also be used when only the signal cable/communication cable or only the power supply cable requires protection.

Measuring point equipment

In addition to the following recommendations regarding cable shield connections and their connection to the housing and earth, the applicable guidelines and operating instructions of the plant operator must be observed. Recommendations issued by fieldbus user organisations, e.g. PI, must also be taken into account.

	Example of measuring point	Measuring point equipment	Connection diagram
Fecal intake Intrinsically safe level Ex	Level measurement with Prosonic M FMU41 measuring instrument from Endress+Hauser PROFIBUS PA signal	1 HAW569-DA2B for PROFIBUS PA signal cable	→ 2, 4
Pipe Pump pressure monitoring, intrinsically safe Ex	Pressure measurement with Endress+Hauser Cerabar S pressure transmitter 4 to 20 mA	1 HAW569-DA2B for 4 to 20 mA remote signal	→ 3, 5
Stormwater overflow basin	Level measurement with compact Endress+Hauser Prosonic M FMU40 ultrasonic sensor 4 to 20 mA	1 HAW569-AA2B for 4 to 20 mA remote signal	→ 4, 5
Other application example: **Flow measurement**	e.g. Coriolis Proline Promass, Proline t-mass, Proline prosonic 92F or 91W, 93W	1 HAW569-CB2C for power supply and signal cable	→ 5, 5



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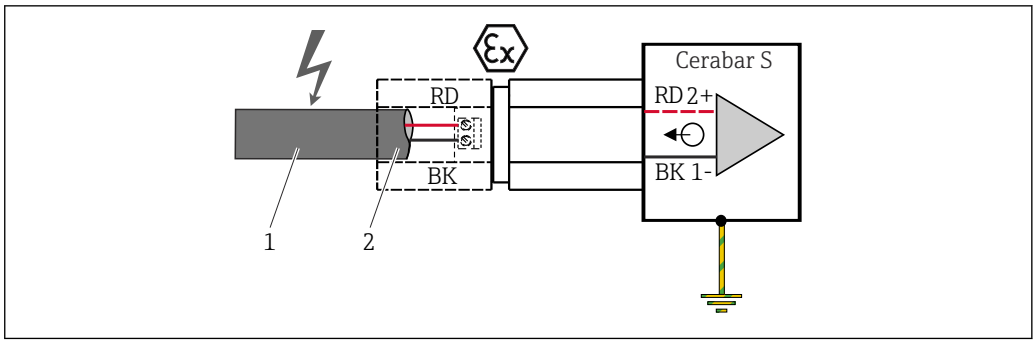
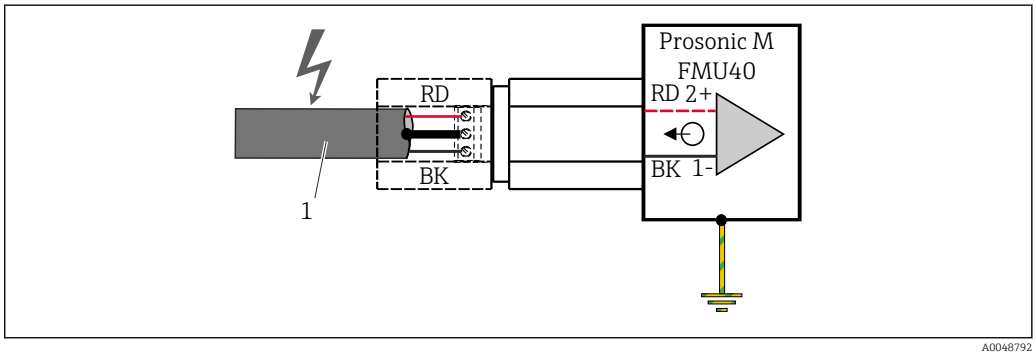
2 *Level measurement with Prosonic M FMU41*

1 *PROFIBUS PA signal cable*
2 *Direct connection of cable shield to housing by means of a suitable cable gland*



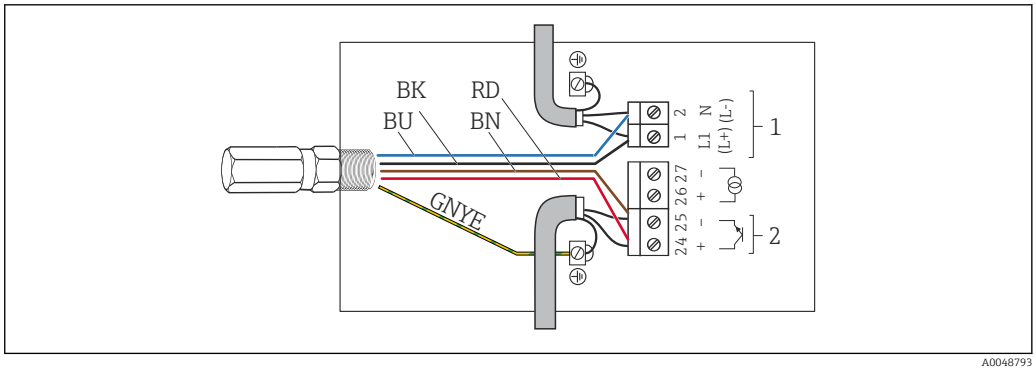
3 *Pressure measurement with Cerabar S pressure transmitter*

1 *4 to 20 mA analog signal cable*
2 *Direct connection of cable shield to housing by means of a suitable cable gland*



4 *Level measurement with Prosonic M FMU40 compact ultrasonic sensor*

1 *4 to 20 mA analog signal cable*



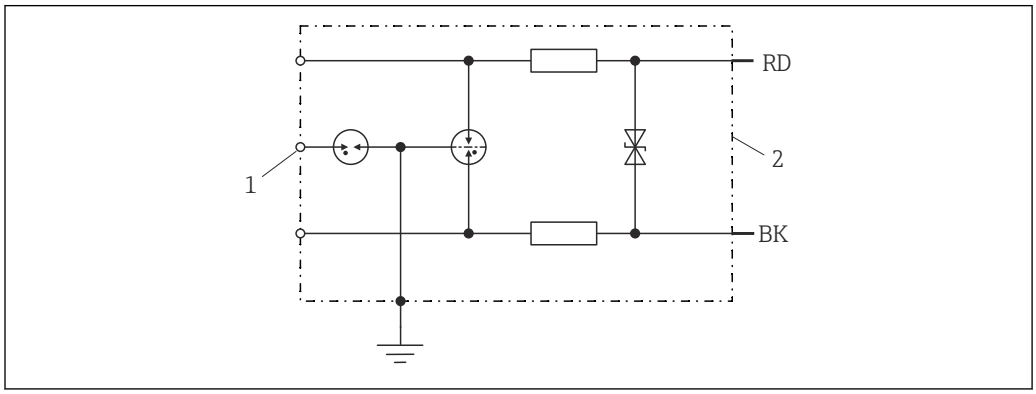
5 *Flow measurement*

1 *Power supply line*
2 *Pulse output*

Power supply

Electrical connection

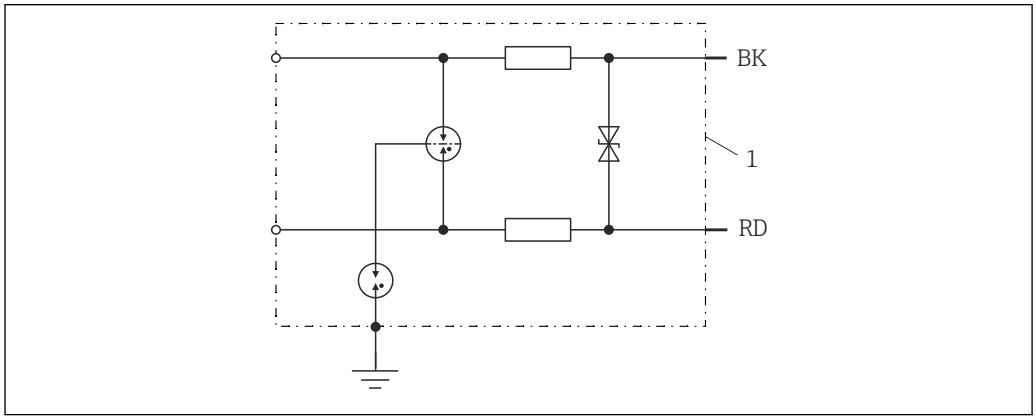
HAW569-AA2B non-Ex lead-through version



6 *Internal circuitry HAW569-AA2B*

1 Shield
2 Protected

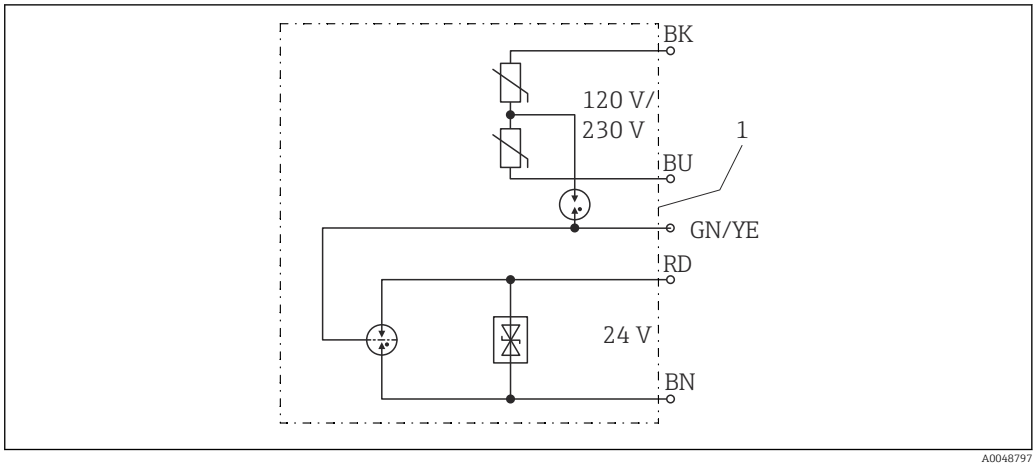
HAW569 -DA2B Ex ia lead-through version (HAW569-FA2B KC Ex ia lead-through version)



7 *Internal circuitry HAW569-DA2B/FA2B*

1 Protected

HAW569-CB2C Ex d screw-in version (HAW569-EB2C KC Ex d screw-in version)



8 Internal circuitry HAW569-CB2C/EB2C

1 Protected

SPD class

HAW569-xA2B	HAW569-xB2C
Type 2	Type 2

Supply voltage

Nominal voltage

HAW569-xA2B	HAW569-xB2C
24 V	24 V signal 120 V / 230 V power supply

Maximum continuous voltage

	HAW569-xA2B	HAW569-xB2C
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/FA2B	HAW569-xB2C
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/FA2B	HAW569-xB2C
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	≤ 1100 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	≤ 1000 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/FA2B	HAW569-xB2C
14 MHz	7 MHz	-

Series impedance per line

HAW569-AA2B	HAW569-DA2B/FA2B	HAW569-xB2C
2.2 Ohm	1.8 Ohm	-

Capacitance

	HAW569-AA2B	HAW569-DA2B/FA2B	HAW569-xB2C
Line/line	≤ 400 pF	≤ 850 pF	≤ 25 pF
Line/PG	≤ 20 pF	≤ 15 pF	≤ 15 pF

Maximum line side overcurrent protection

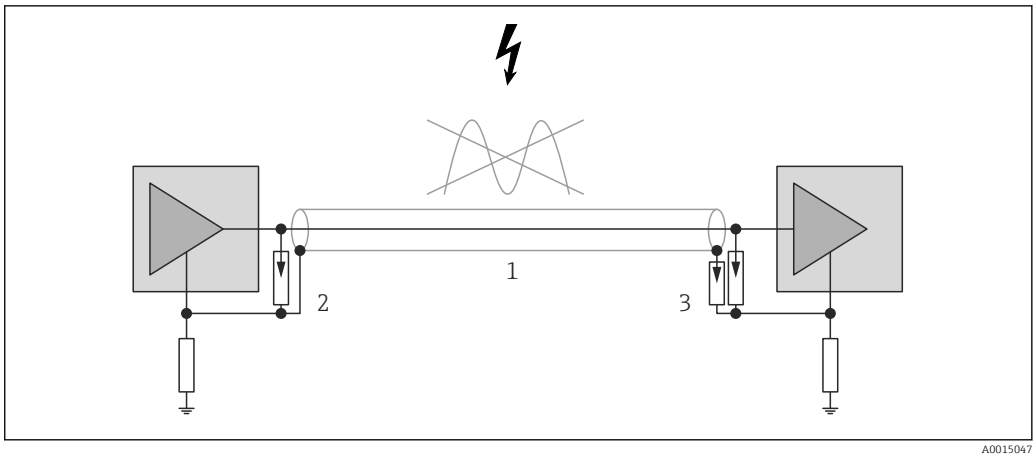
Only for device type HAW569-xB2C:

16 A gL/gG or B 16 A

Shield grounding, only HAW569-AA2B non-Ex

The cable shield must be grounded continuously along the entire cable length. The shield 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 not desired, for example, to avoid low-frequency equalizing currents, the shield is grounded indirectly at one end. This arrangement prevents equalizing currents while maintaining compliance with the EMC requirements.

In addition to the following recommendations regarding cable shield connections and their connection to the housing and earth, the applicable guidelines and operating instructions of the plant operator as well as the recommendations of the fieldbus user organizations (e.g. PI) must be observed.

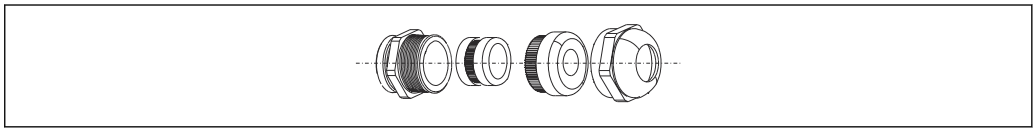


9 *Direct and indirect shield grounding*

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.

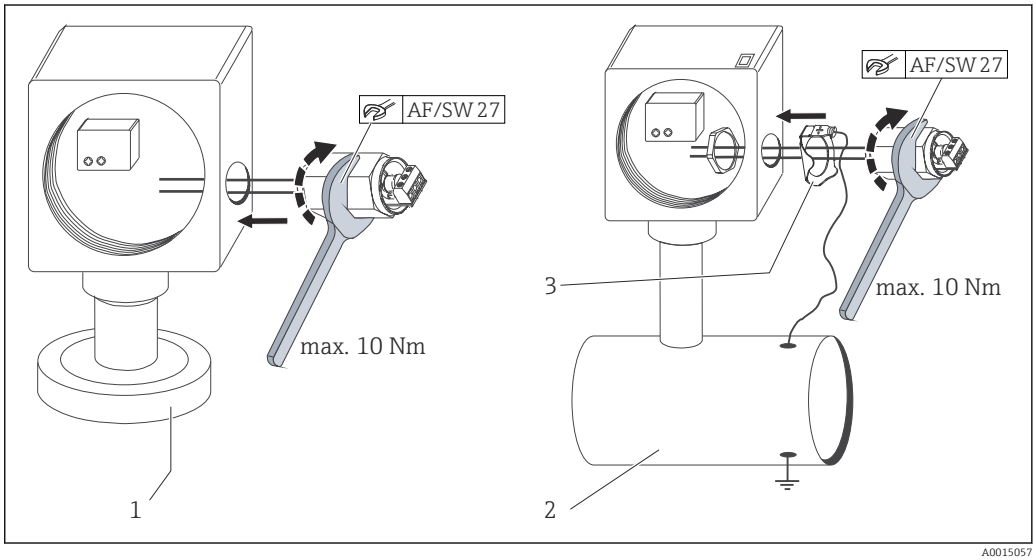
The EMC cable gland, which is available as an accessory, enables direct shield grounding.



10 *Cable gland with shield grounding for HAW569*

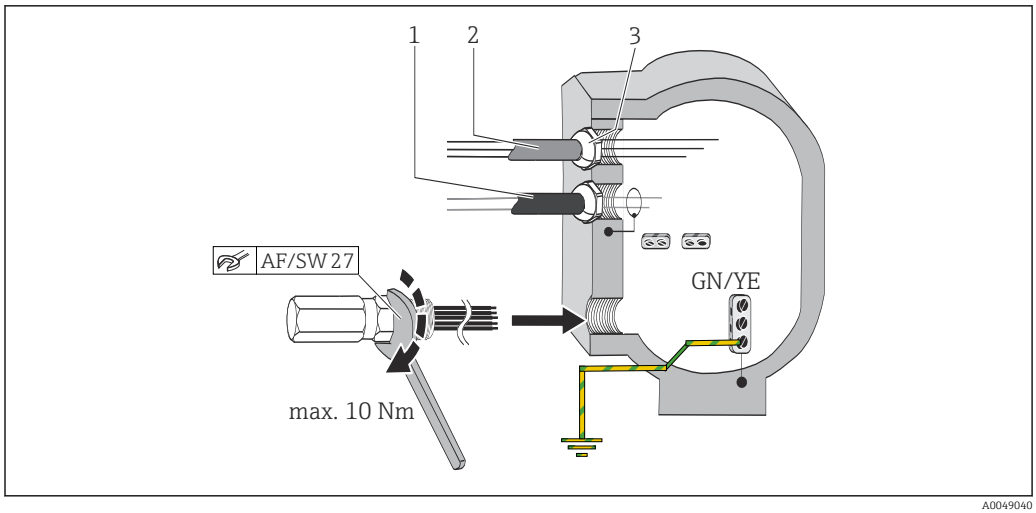
Installation

Installation location



11 *Lead-though version HAW569-xA2B*

1 Mounting in field housing (metal housing) without grounding ring - grounding via metal housing
2 Mounting in field housing (non-metal housing) with grounding ring
3 Grounding ring (available as accessory)



12 HAW569-xB2C screw-in version

1 Signal cable
2 Power supply
3 Ex cable gland

Orientation	No restrictions
Installation instructions	Installation on field/device side: M20 x 1.5 internal thread / M20 x 1.5 external thread

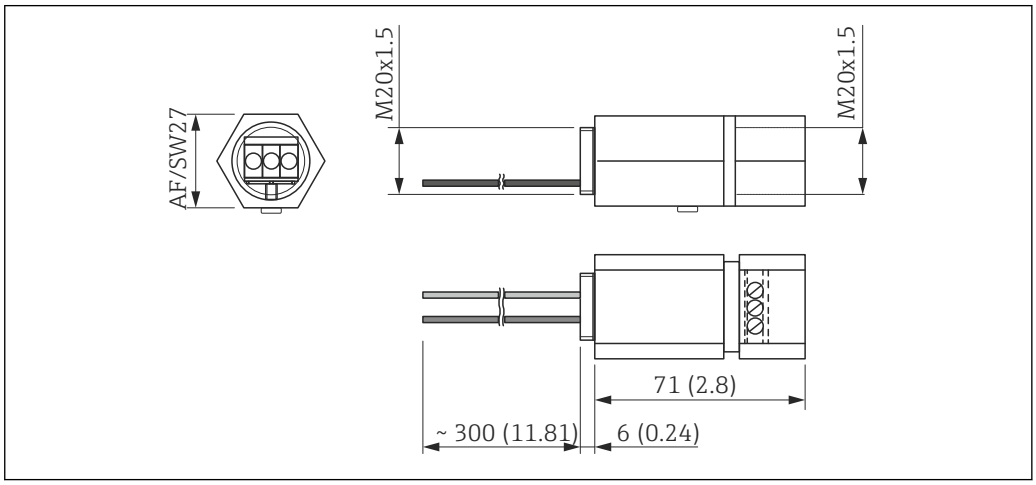
Environmental conditions

Ambient temperature	−40 to 80 °C (−40 to 176 °F)
Storage temperature	See "Ambient temperature".
Degree of protection	IP 67

Mechanical construction

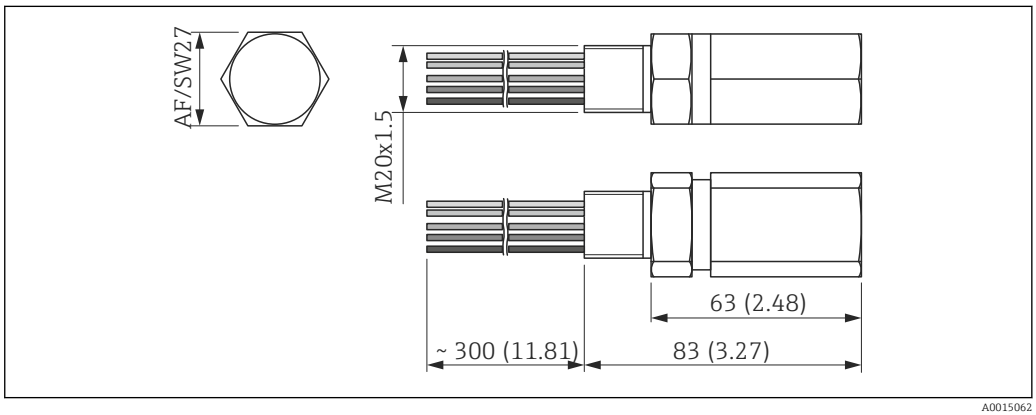
Design and dimensions

HAW569-xA2B (lead-through version)



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

HAW569-xB2C (screw-in version)



14 *Dimensions for HAW569-xB2C in mm (in), surge protector in flameproof enclosure for use in hazardous areas.*

Weight

175 g (6.17 oz.)

Materials

HAW569-xA2B

Stainless steel 1.4301 (AISI 304)

HAW569-xB2C

Stainless steel 1.4401 (AISI 316)

Process connections

	HAW569-xA2B	HAW569-xB2C
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	-

Connection terminals

Input/output connection

HAW569-xA2B	HAW569-xB2C
Screw/connecting cables 2x 1.5 mm² (16 AWG), length 300 mm (11.81 in)	Connecting cables 5x 1.3 mm² (16 AWG), length 250 mm (9.84 in)

Connection cross-section

	HAW569-xA2B	HAW569-xB2C
Solid conductors	0.08 to 2.5 mm² (28 to 14 AWG)	No input terminals
Stranded conductors	0.08 to 1.5 mm² (28 to 16 AWG)	No input terminals

Certificates and approvals

Current certificates and approvals for the product are available at www.endress.com on the relevant product page:

1. Select the product using the filters and search field.
2. Open the product page.
3. Select **Downloads**.

Ordering information

Detailed ordering information is available from your nearest sales organization www.addresses.endress.com or in the Product Configurator at www.endress.com:

1. Select the product using the filters and search field.
2. Open the product page.
3. Select **Configuration**.

Accessories

The accessories currently available for the product can be selected at www.endress.com:

1. Select the product using the filters and search field.
2. Open the product page.
3. Select **Spare parts & Accessories**.

Device-specific accessories

Thread adapter M20/NPT½

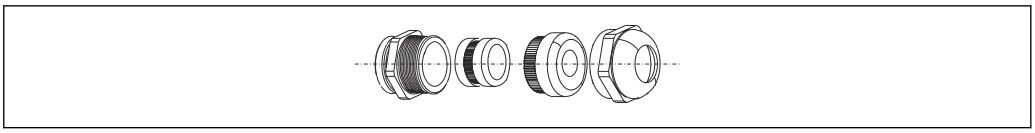
Adapter for installation in the NPT½ cable gland. Material: nickel-plated brass.

EMC cable gland

Only for HAW569-AA2B/-DA2B/-FA2B.

Set: 2x M20 x 1.5, IP68 for direct/indirect shield grouding, cable diameter 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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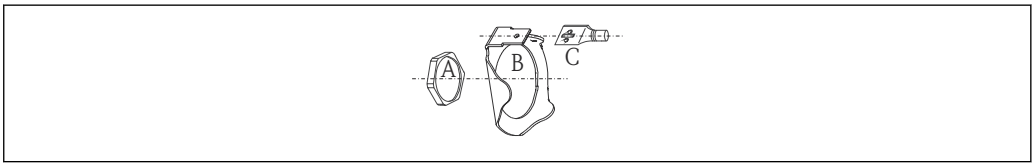
15 EMC cable gland for shield grounding

Grounding ring set

Only for HAW569-AA2B/-DA2B/-FA2B.

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

The following document types are available in the Downloads area of the Endress+Hauser website (www.endress.com/downloads), depending on the product configuration:

Document type	Purpose and content of the document
Technical Information (TI)	**Planning aid** This document contains all the technical data on the product and provides an overview of everything that can be ordered with the product.
Brief Operating Instructions (KA)	**Quick guide to obtaining the first measured value** The Operating Instructions contain all the essential information about the product from incoming acceptance to initial commissioning.
Operating Instructions (BA)	**Reference** The Operating Instructions contain the information that is required in the various phases of the life cycle of the product: From product identification, incoming acceptance and storage, to mounting, connection, operation and commissioning through to troubleshooting, maintenance and disposal.
Description of Device Parameters (GP)	**Reference for parameters** The document contains detailed explanations of readable or configurable parameters in the product. The description is aimed at those who work with the product over its entire life cycle and perform specific configurations.
Safety Instructions (XA)	Safety Instructions for electrical equipment in hazardous areas are supplied with the product depending on the approval. These are an integral part of the Operating Instructions. The nameplate indicates the Safety Instructions (XA) that are relevant to the product.
Supplementary device-dependent documentation (SD/FY)	Always comply strictly with the instructions in the relevant supplementary documentation. The supplementary documentation is an integral part of the product documentation.

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