

Technical Information

HAW568

Surge Protective Device



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

Application

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

HAW568 devices 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.

Compact device for the protection of signal/communication cables or for the simultaneous protection of signal, communication and power supply cables.

Your benefits

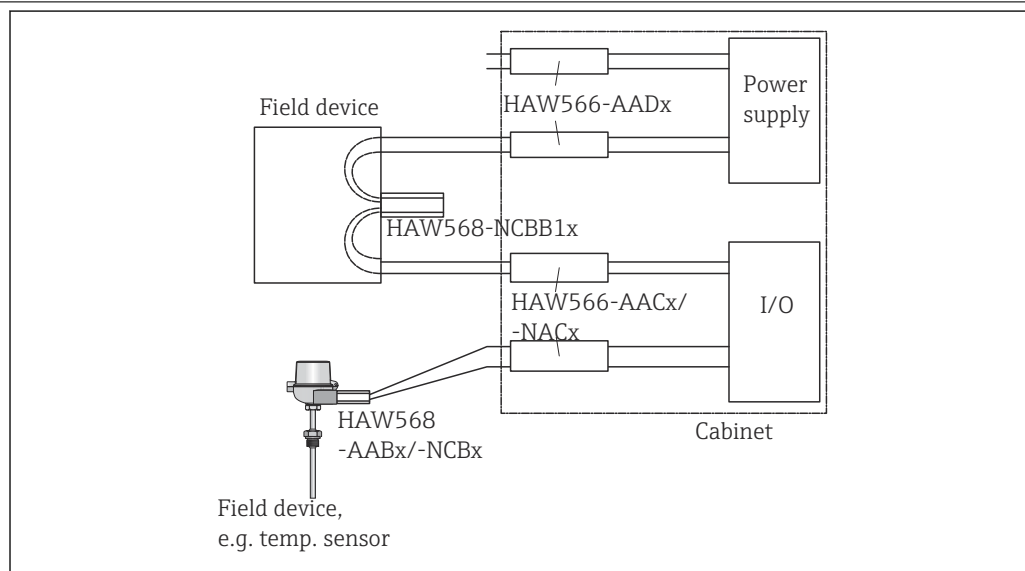
- Increased plant availability in the field of process automation, as the electronic components are protected.
- Easy and space-saving direct mounting for installation in field devices.
- Optional available with SIL3
- Parallel connection reduces resistance in the loop (screw-in version).
- No additional cable entry required for lead-through version.

Function and system design

Operating principle

Surge protective device HAW568 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 diverted safely to ground. 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.

System construction

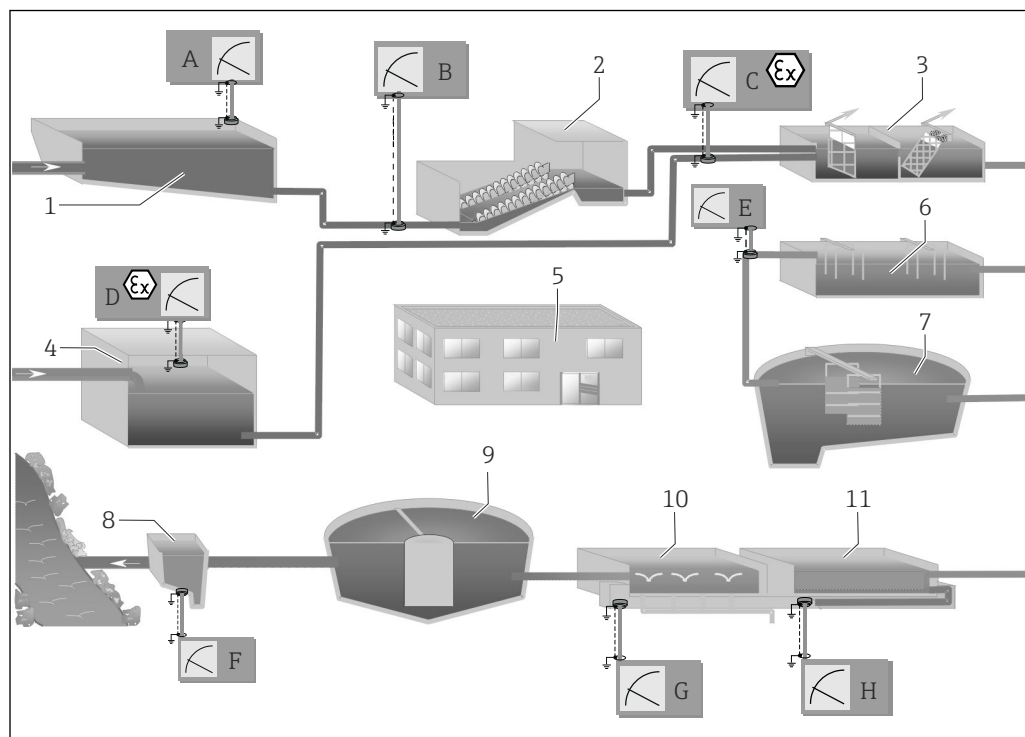


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1 Overview of system construction, HAW566 and HAW568

Application

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



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2 Application example: wastewater treatment plant (schematic diagram)

| Item | Measuring point | Item | Measured variable |
|------|---|------|--------------------------|
| 1 | Stormwater overflow basin | 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

HAW568-*A

Lead-through version, with optional Ex ia approval:

- Exclusively for the protection of signal and communication cables.
- This version could be used in both gas and dust explosion atmosphere.
- No additional cable gland is needed.

HAW568-*B

Screw-in version can be used in both Ex ia and Ex d area:

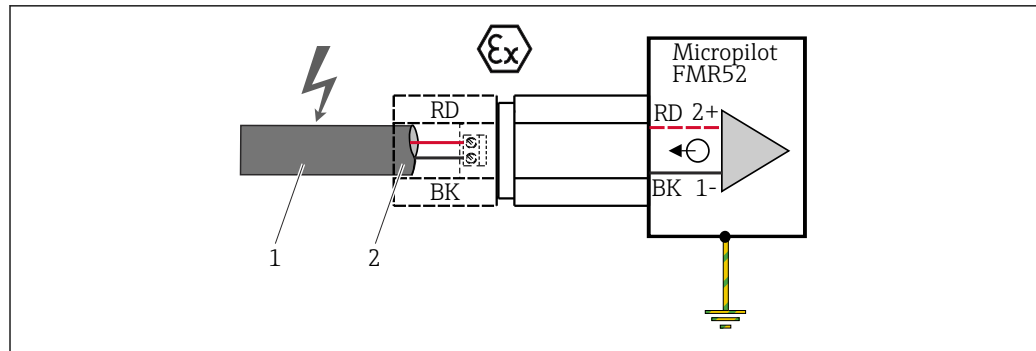
- For screwing into a free cable entry.
- Simultaneous protection of signal cable/communication cable and power supply cable (for 3 or 4-wire devices) is possible.
- This version could be used in both gas and dust explosion atmosphere.
- Can also be used if either just the signal cable/communication cable or the power supply cable is to be protected.

Measuring point equipment



In addition to the following recommendations for cable shield connections and their connections to the housing and grounding, particular attention must be paid to the relevant guidelines and operating instructions of the plant operator and the recommendations of the fieldbus user organization (e.g. PI).

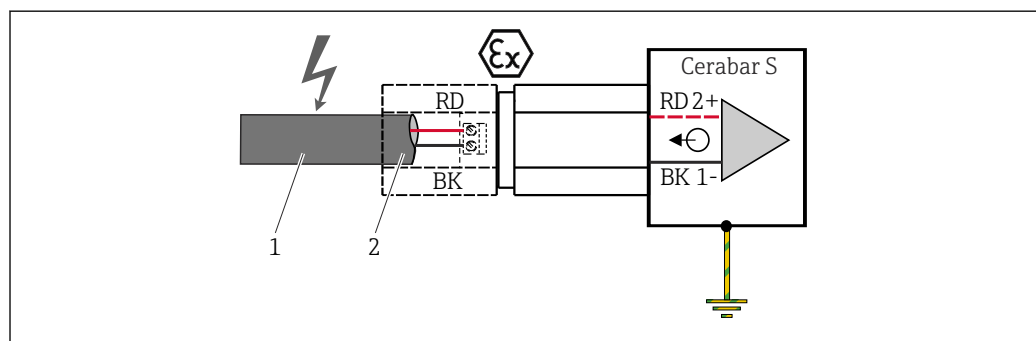
| Application | Example for measuring point | Measuring point equipment | Connection diagram |
|---|---|--|--------------------|
| Fecal intake Intrinsically safe level | Level measurement with Micropilot FMR52 measuring device from Endress+Hauser PROFIBUS PA signal | 1 HAW568-NCAB22C for PROFIBUS PA signal cable | → 3, 4 |
| Pipe Pipe pressure monitoring, intrinsically safe | Pressure measurement with Endress+Hauser Cerabar S pressure transmitter 4 to 20 mA | 1 HAW568-NCAB12C for 4 to 20 mA remote signal | → 4, 4 |
| Stormwater overflow basin | Level measurement with Endress+Hauser Prosonic M FMU40 compact ultrasonic level sensor 4 to 20 mA | 1 HAW568-AAAB12C for 4 to 20 mA remote signal | → 5, 4 |
| Other application example: Flow measurement | e.g. Coriolis Proline Promass, Proline t-mass, Proline Prosonic 92F or P 500 | 1 HAW568-NCAB24C for power supply and signal cable | , → 6, 5 |



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3 Level measurement with Micropilot FMR52

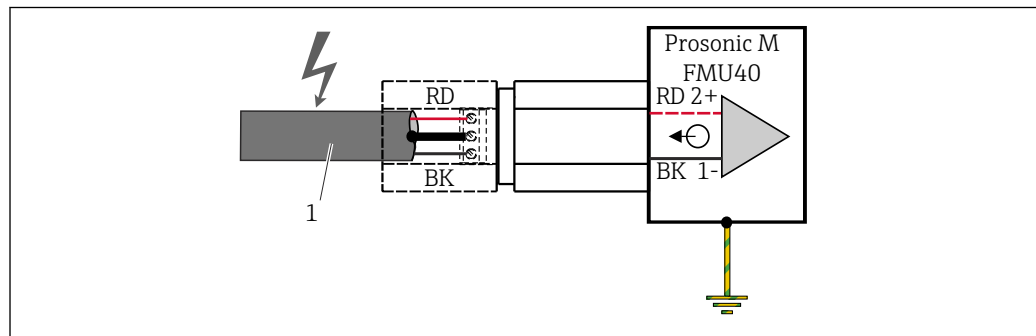
- 1 PROFIBUS PA signal cable
- 2 Direct connection of cable shield to housing by means of a suitable cable gland



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4 Pressure measurement with Cerabar S pressure transmitter

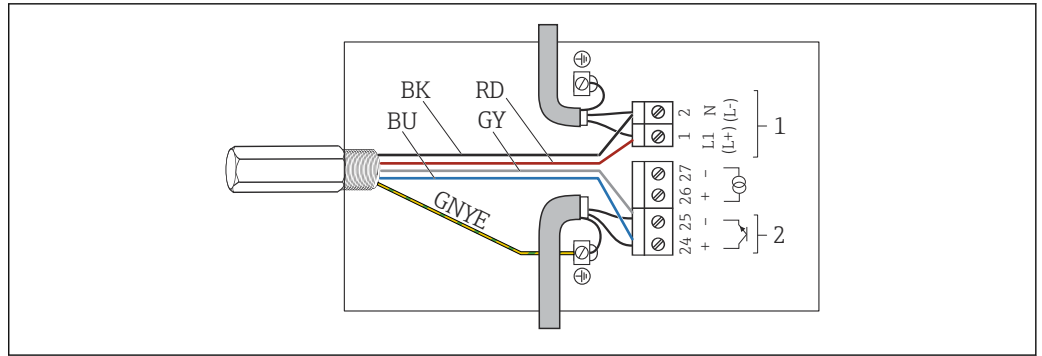
- 1 4 to 20 mA analog signal cable
- A Direct connection of cable shield to housing by means of a suitable cable gland



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5 Level measurement with Prosonic M FMU40 compact ultrasonic level sensor

- 1 4 to 20 mA analog signal cable



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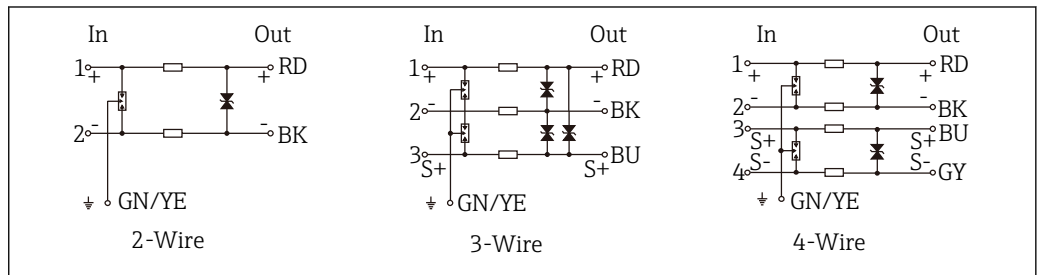
6 Flow measurement, e.g. Coriolis Proline Promass; Proline t-mass, Proline Prosonic 92F or F500

- 1 Power supply line
- 2 Pulse output

Power supply

Electrical connection

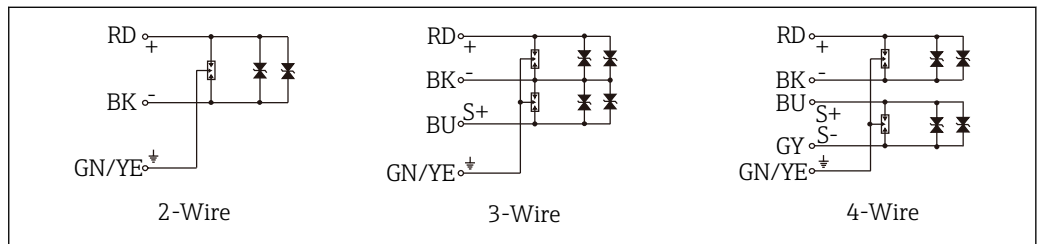
HAW568-*A (Lead-through version)



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7 Internal circuitry HAW568-*A (Lead-through version)

HAW568-*B (Screw-in version)



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8 Internal circuitry HAW568-*B (Screw-in version)

SPD class

| HAW568-*A | HAW568-*B |
|-----------|-----------|
| D1, C2 | D1, C2 |

Supply voltage

Nominal voltage Un

| HAW568-*A | HAW568-*B |
|-----------|-----------|
| 24 V | 24 V |

Maximum continuous voltage U_c

| | HAW568-*A | HAW568-*B |
|-----|-----------|-----------|
| DC: | 48 V | 48 V |

Current consumption

| | HAW568-*A & HAW568-*B |
|---|----------------------------|
| Nominal current I _L | 0.5 A, Ex 0.8 A, Non-Ex |
| C2 nominal discharge current [I _n] (8/20) per line | 10 kA |
| C2 nominal discharge current [I _{max}] (8/20) total | 20 kA |
| D1 lightning surge current [I _{imp}] (10/350) line - PG | 3.5 kA |

Voltage protection level U_p

| | HAW568-*A & HAW568-*B |
|--|-----------------------|
| Voltage protection level, line - line at I _n C2 | 85 V |
| Voltage protection level, line - PG at I _n D1 | 600 V |

Terminals**Input/output connection**

| HAW568-*A | HAW568-*B |
|--|--|
| 2, 3 or 4x connecting cables + 1x GND, 1.3 mm ² (16 AWG) Cable length min. 200 mm (7.87 in) | 2, 3 or 4x connecting cables + 1x GND, 1.3 mm ² (16 AWG) Cable length min. 200 mm (7.87 in) |

Connection cross-section

| | HAW568-*A | HAW568-*B |
|---------------|--|--------------------|
| Single strand | 0.08 to 2.5 mm ² (28 to 14 AWG) | No input terminals |
| Multi strand | 0.08 to 1.5 mm ² (28 to 16 AWG) | No input terminals |

Performance characteristics**Limit frequency**

| | HAW568-*A | HAW568-*B |
|--|-----------|-----------|
| | 10 MHz | 2 MHz |

Series impedance per line

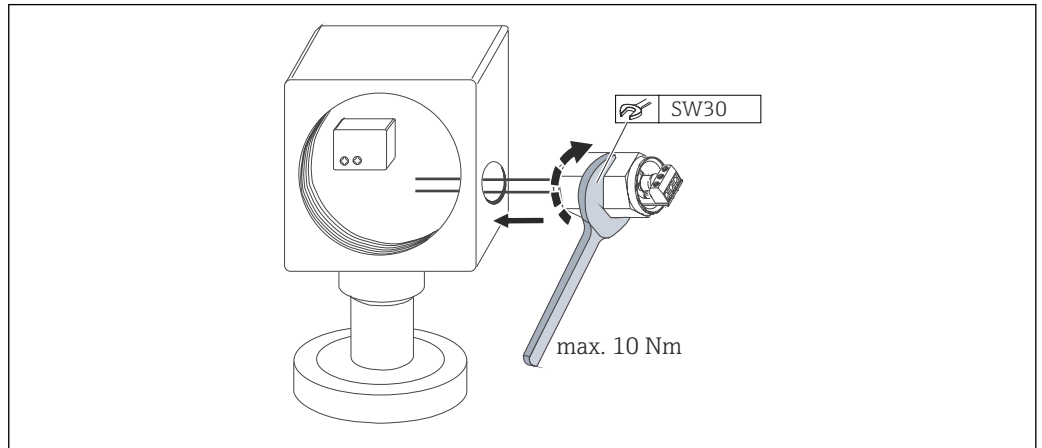
| | HAW568-*A | HAW568-DA2B |
|--|-----------|-------------|
| | - | 1.0 Ohm |

Capacitance

| | HAW568-*A & HAW568-*B |
|-----------|-----------------------|
| Line/line | ~ 0 pF |
| Line/PG | ≤ 15 pF |

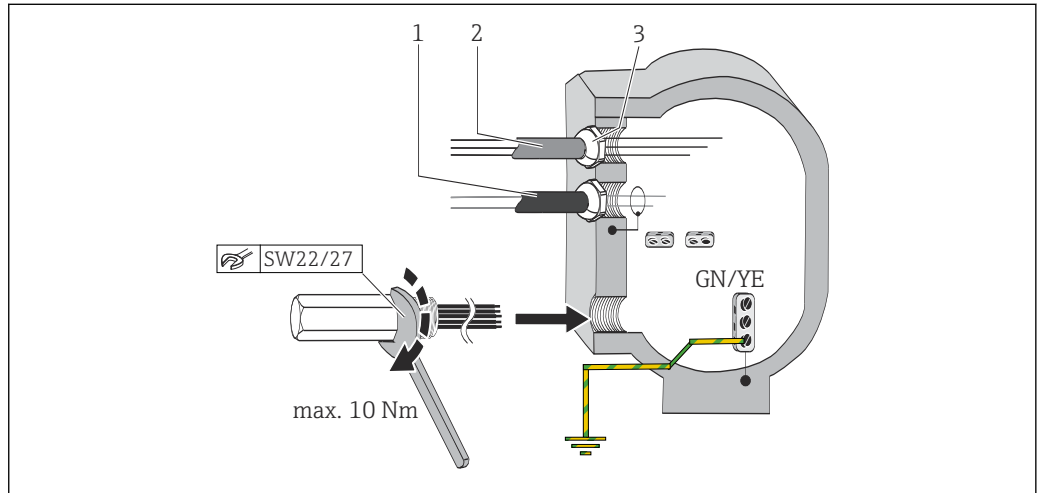
Installation

Mounting location



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9 Lead-through version HAW568-*A



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10 Screw-in version HAW568-*B

- 1 Signal cable
- 2 Power supply
- 3 Ex cable gland

Orientation

No restrictions

Installation instructions

Mounting on field device side: M20 x 1.5, ½" NPT or ¾" NPT. Internal threads for HAW568-*A are identical.

Other threads on request.

Environment

Ambient temperature range

-40 to +85 °C (-40 to +185 °F)

Storage temperature

-40 to +85 °C (-40 to +185 °F)

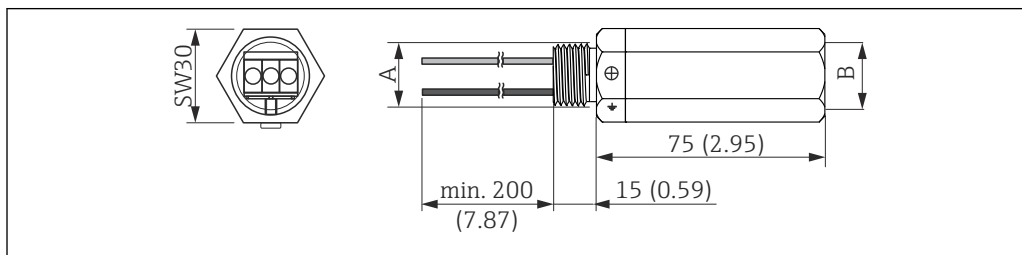
Degree of protection

Following correct mounting and electrical connection IP 67

Mechanical construction

Design, dimensions

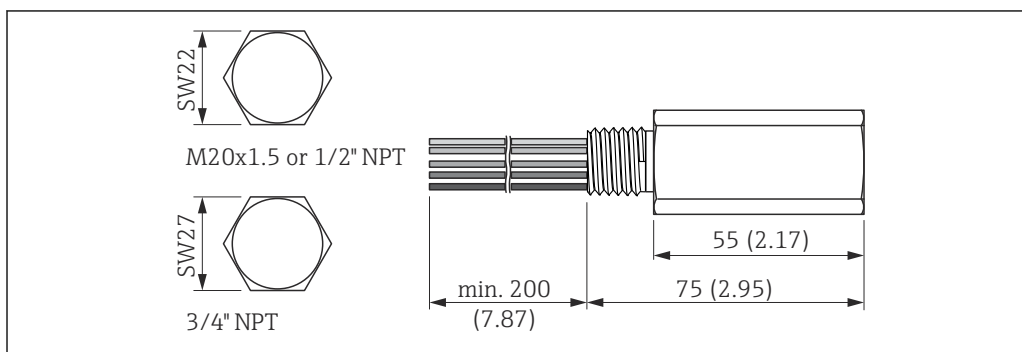
HAW568-*A (lead-through version)



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- 11 Dimensions for HAW568-*A in mm (in), surge protective device for protecting signal cables, optionally for protecting intrinsically safe measuring circuits. Threads A and B are identical: M20 x 1.5, ½" NPT or ¾" NPT (other on request).

HAW568-*B (screw-in version)



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- 12 Dimensions for HAW568-*B in mm (in), surge protective device in flameproof enclosure for use in hazardous areas as well as for protecting intrinsically safe measuring circuits.

Weight

HAW568-*A: approx. 335 g (11.82 oz.)
 HAW568-*B**C/D: approx. 175 g (6.17 oz.)
 HAW568-*B**E: approx. 300 g (10.58 oz.)

Materials

Stainless steel 1.4404 (AISI 316L)
 Other on request

Process connection

| | HAW568-*A | HAW568-*B |
|------------------------------------|---|---|
| Connection to field housing | M20 x 1.5, ½" NPT or ¾" NPT external thread | M20 x 1.5, ½" NPT or ¾" NPT external thread |
| Surge protective device input side | M20 x 1.5, ½" NPT or ¾" NPT internal thread | - |

Other process connections on request, please contact your local sales center.

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**.



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

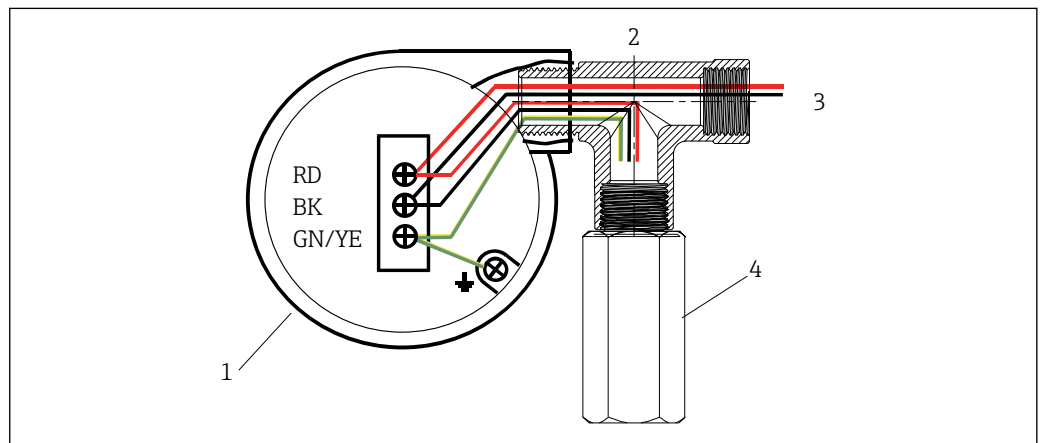
The accessories currently available for the product can be selected at www.endress.com:

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

T-adapter

When electrical entries are not enough and the lead-through version (i.e. HAW568-*A) is not allowed to be selected, a T-adapter could be used to expand the electrical entries. It could be ordered via the accessory option or order number.

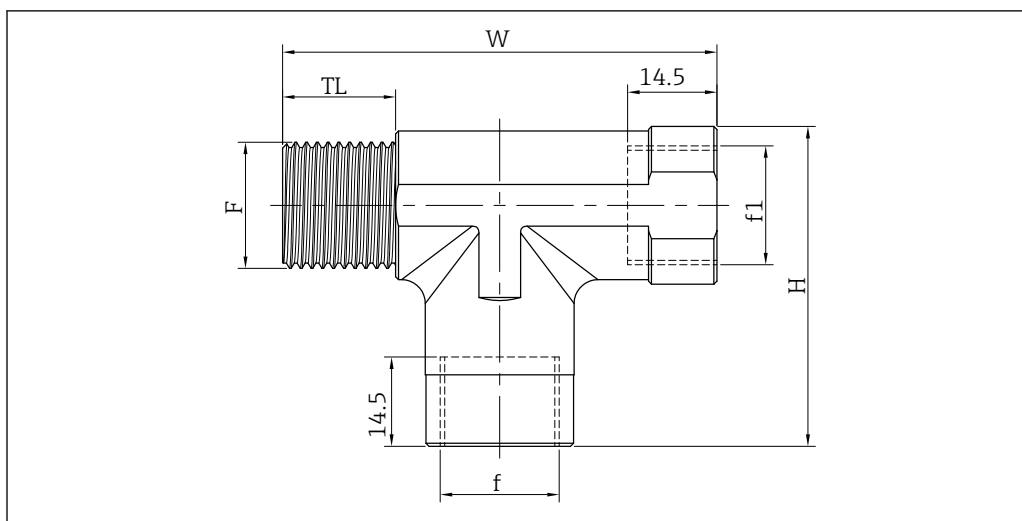
Schematic diagram



13 Schematic diagram for installing the T-adapter onto the screwed-in surge protective device.

- 1 Field instrument
- 2 T-adapter
- 3 Signal + Power line
- 4 HAW568-*B

Dimensions



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14 Dimensions (in mm) for T-adapters and the body material is 316L. Other electrical entries and materials are on request.

| Specification | F | f | f1 | SW f1 | TL | W | H |
|-----------------|---------|---------|---------|-------|----|----|------|
| M20x1.5, non-Ex | M20x1.5 | M20x1.5 | M20x1.5 | SW24 | 13 | 73 | 53.8 |
| ½" NPT, non-Ex | ½" NPT | ½" NPT | ½" NPT | SW24 | 15 | 73 | 54.8 |
| ¾" NPT, non-Ex | ¾" NPT | ¾" NPT | ¾" NPT | SW30 | 15 | 76 | 63.8 |
| M20x1.5, Ex d | M20x1.5 | M20x1.5 | M20x1.5 | SW24 | 13 | 73 | 53.8 |
| ½" NPT, Ex d | ½" NPT | ½" NPT | ½" NPT | SW24 | 15 | 73 | 54.8 |
| ¾" NPT, Ex d | ¾" NPT | ¾" NPT | ¾" NPT | SW30 | 15 | 76 | 63.8 |

Documentation

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

| Document type | Purpose and content of the document |
|---------------------------------------|---|
| Technical Information (TI) | Planning aid for your device The document contains all the technical data on the device and provides an overview of the accessories and other products that can be ordered for the device. |
| Brief Operating Instructions (KA) | Guide that takes you quickly to the 1st measured value The Brief Operating Instructions contain all the essential information from incoming acceptance to initial commissioning. |
| Operating Instructions (BA) | Your reference document The Operating Instructions contain all the information that is required in various phases of the life cycle of the device: 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 your parameters The document provides a detailed explanation of each individual parameter. The description is aimed at those who work with the device over the entire life cycle and perform specific configurations. |

| Document type | Purpose and content of the document |
|--|---|
| Safety instructions (XA) | <p>Depending on the approval, safety instructions for electrical equipment in hazardous areas are also supplied with the device. These are an integral part of the Operating Instructions.</p> <p> The nameplate indicates which Safety Instructions (XA) apply to the device.</p> |
| Supplementary device-dependent documentation (SD/FY) | <p>Always comply strictly with the instructions in the relevant supplementary documentation. The supplementary documentation is a constituent part of the device documentation.</p> |



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