

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

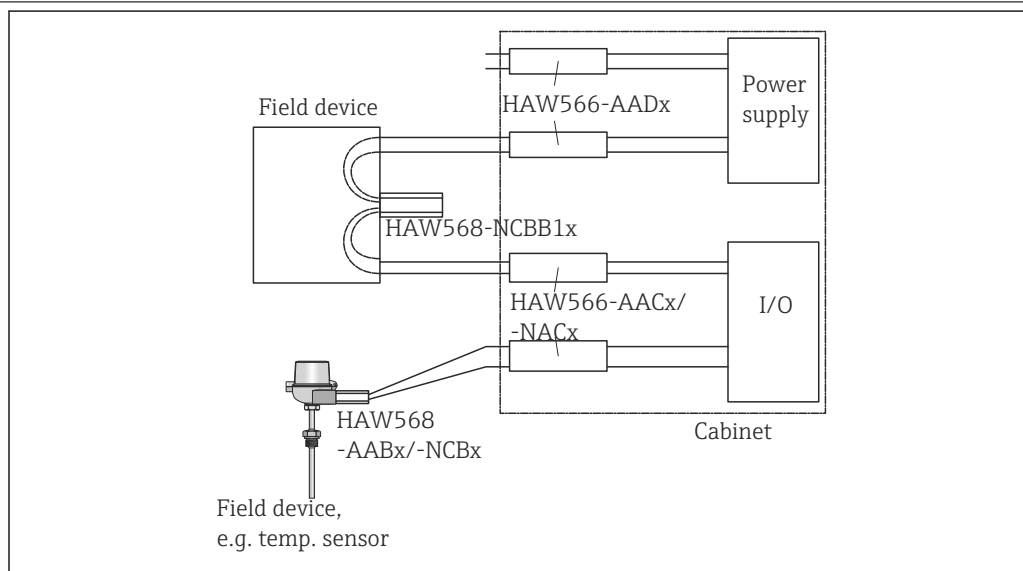
- Increased plant availability in the field of process automation, as the electronic components are protected.
- Easy and space-saving direct mounting for installation in field devices.
- Optional available with SIL3
- Parallel connection reduces resistance in the loop (screw-in version).
- No additional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

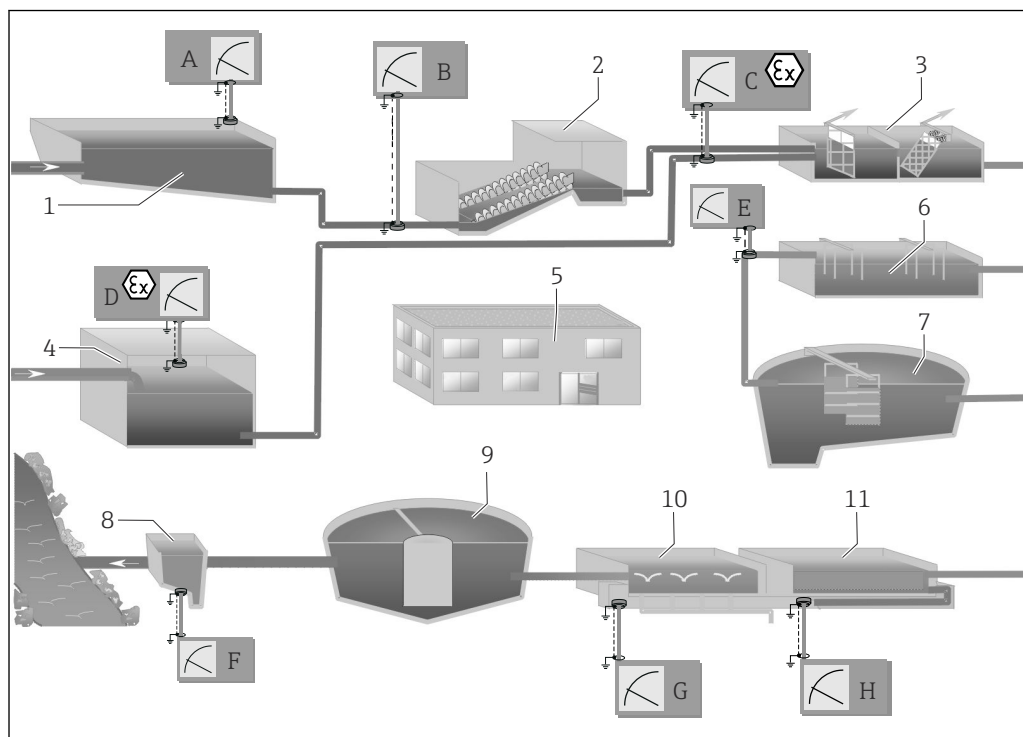


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1 Overview of system construction, HAW566 and HAW568

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:

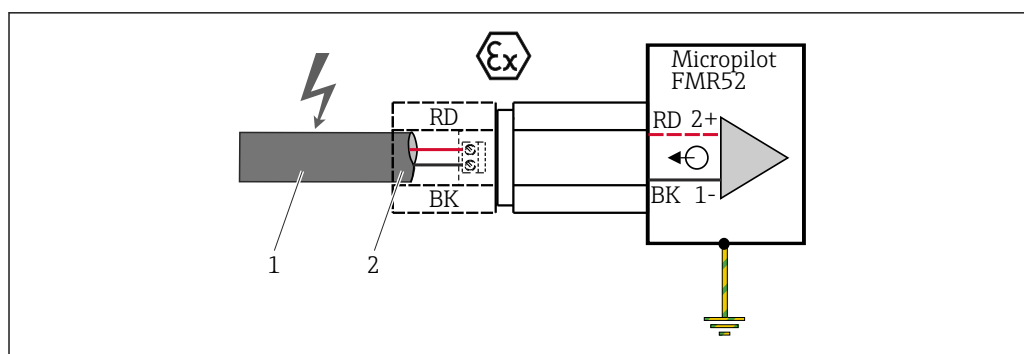
- For screwing into a free cable entry.
- Simultaneous protection of signal cable/communication cable and power supply cable (for 3 or 4-wire devices) is possible.
- This version could be used in both gas and dust explosion atmosphere.
- Can also be used if either just the signal cable/communication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

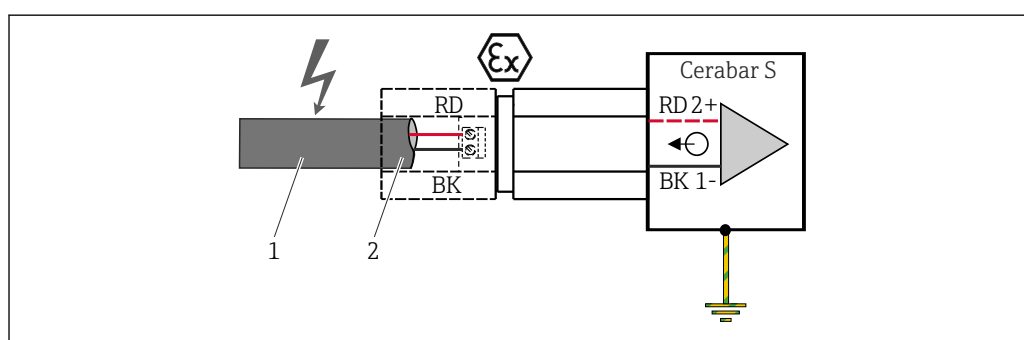
Application	Example for measuring point	Measuring point equipment	Connection diagram
Fecal intake Intrinsically safe level 	Level measurement with Micropilot FMR52 measuring device from Endress+Hauser PROFIBUS PA signal	1 HAW568-NCAB22C for PROFIBUS PA signal cable	→ 3, 4
Pipe Pump pressure monitoring, 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

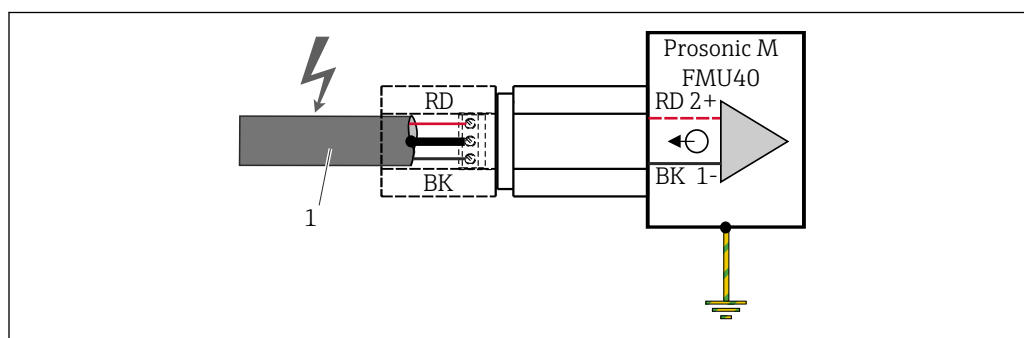
- 1 PROFIBUS PA signal cable
- 2 Direct connection of cable shield to housing by means of a suitable cable gland



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4 Pressure measurement with Cerabar S pressure transmitter

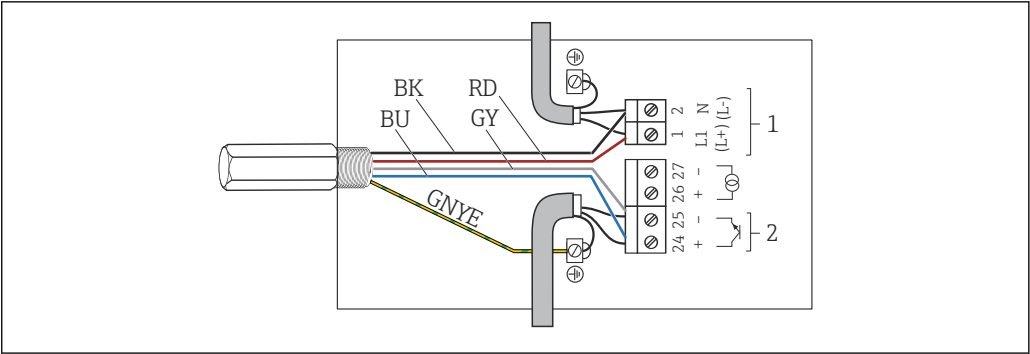
- 1 4 to 20 mA analog signal cable
- A Direct connection of cable shield to housing by means of a suitable cable gland



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5 Level measurement with Prosonic M FMU40 compact ultrasonic level sensor

- 1 4 to 20 mA analog signal cable



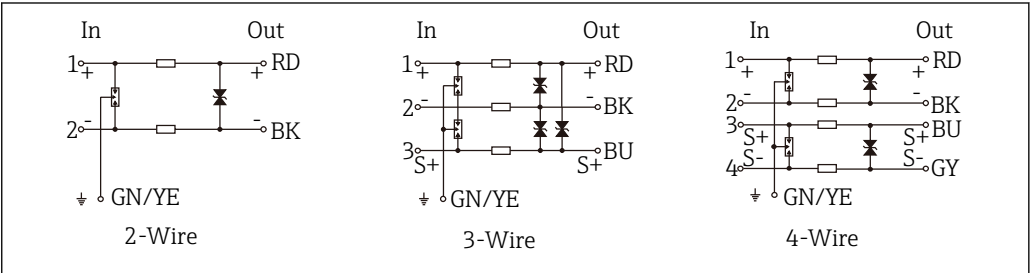
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6 Flow measurement, e.g. Coriolis Proline Promass; Proline t-mass, Proline Prosonic 92F or F500
1 Power supply line
2 Pulse output

Power supply

Electrical connection

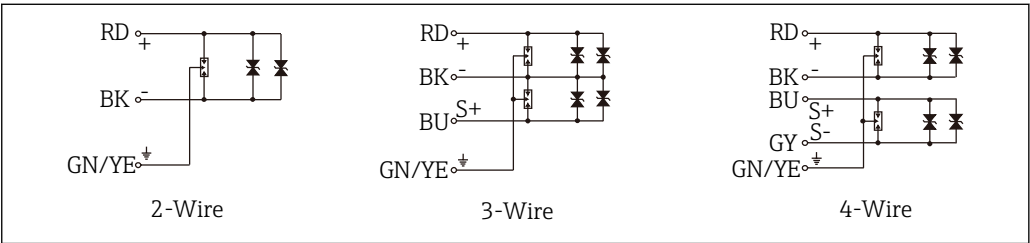
HAW568- *A (Lead-through version)



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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 Up

	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
	2 MHz	2 MHz

Series impedance per line	HAW568-*A	HAW568-*B
	1.0 Ohm	-

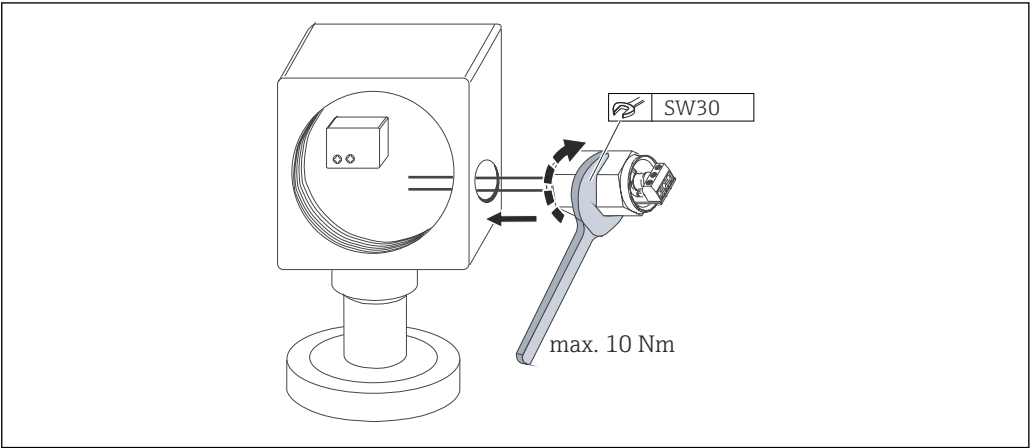
Leakage current	HAW568-*A	HAW568-*B
	$\leq 1 \mu A$	$\leq 1 \mu A$

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

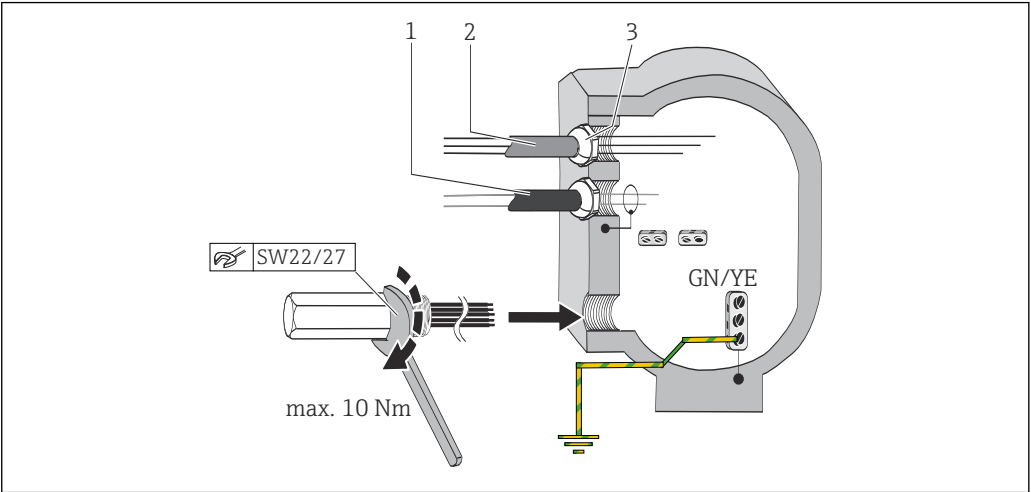
Response time		HAW568-*A	HAW568-*B
	Line/line:	≤ 1 ns	≤ 1 ns
	Line/ground:	≤ 200 ns	≤ 200 ns
Ground insulation		HAW568-*A	HAW568-*B
		-	> 500 V

Installation

Mounting location



9 Lead-through version HAW568-*A



10 Screw-in version HAW568-*B

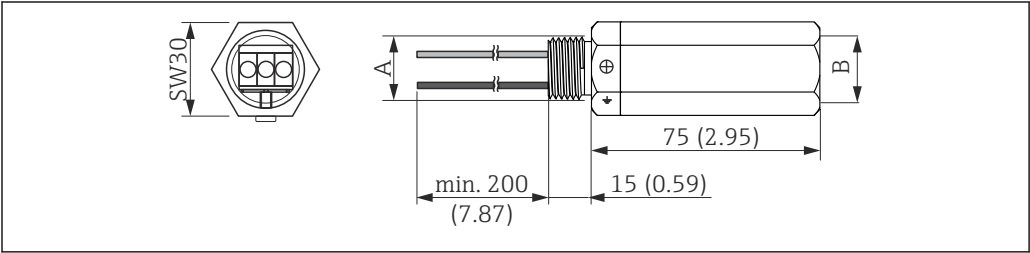
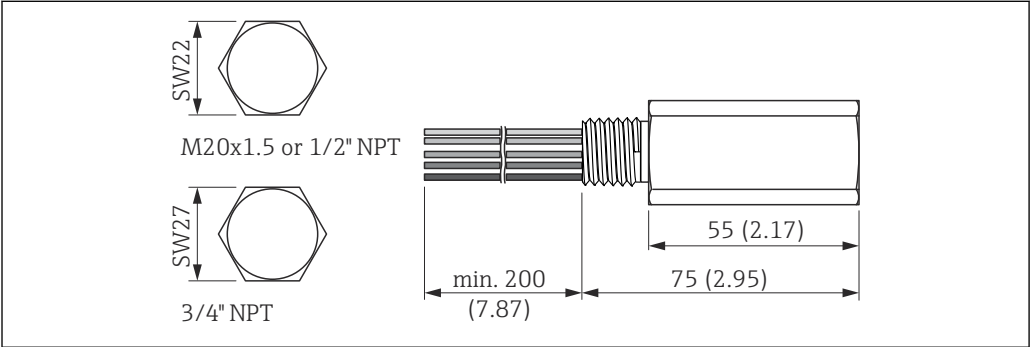
- 1 Signal cable
- 2 Power supply
- 3 Ex cable gland

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)  HAW568-*B (screw-in version) 										
	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). 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	<table><tr><th></th><th>HAW568-*A</th><th>HAW568-*B</th></tr><tr><td>Connection to field housing</td><td>M20 x 1.5, ½" NPT or ¾" NPT external thread</td><td>M20 x 1.5, ½" NPT or ¾" NPT external thread</td></tr><tr><td>Surge protective device input side</td><td>M20 x 1.5, ½" NPT or ¾" NPT internal thread</td><td>-</td></tr></table>			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	-
	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**.

Ex approval

Information about currently available Ex versions (CCC etc.) can be supplied by your Endress+Hauser Sales Center on request. All explosion protection data are given in separate documentation which is available upon request.

Standards

- IEC 61643-21:
Low voltage surge protective devices
- IEC 61508:
Functional safety of electrical/electronic/programmable electronic safety-related systems
- IEC 60529:
Degree of protection provided by housing (IP code)
- IEC/EN 60079:
General requirements for construction, testing and marking of Ex Equipment and Ex Components intended for use in explosive atmospheres

Other standards and guidelines

- GB/T 18802.21: China
Low voltage surge protective devices
- GB 3836: China
General requirements for construction, testing and marking of Ex Equipment and Ex Components intended for use in explosive atmospheres
- ANSI C63.4a-2017: United States
Accredited Standards Committee C63® - Electromagnetic Compatibility

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 information specific to the measuring point, such as the 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

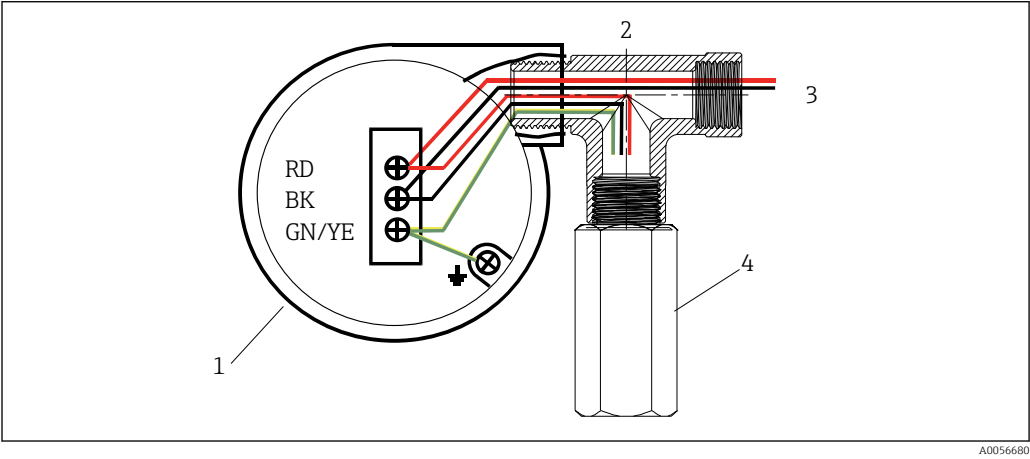
The accessories currently available for the product can be selected at www.endress.com:

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.

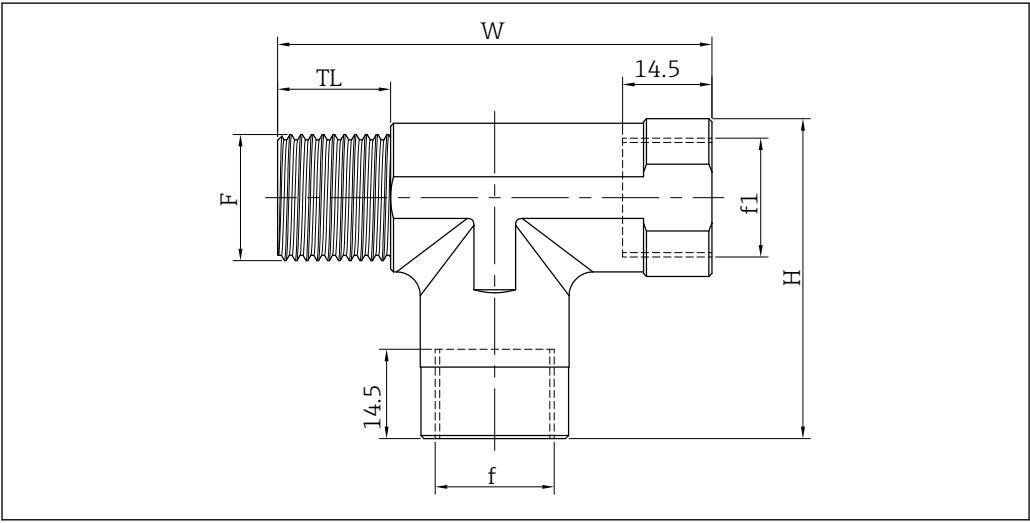
Schematic diagram



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



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.
Safety instructions (XA)	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.  The nameplate indicates which Safety Instructions (XA) apply to the device.
Supplementary device-dependent documentation (SD/FY)	Always comply strictly with the instructions in the relevant supplementary documentation. The supplementary documentation is a constituent part of the device documentation.



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