

Safety Instructions

WirelessHART adapter SWA70

4-20 mA HART

ATEX, IECEx: Ex ia IIC Gb
Ex tb [ia] IIIC Db



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4-20 mA HART

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About this document



This document has been translated into several languages. Legally determined is solely the English source text.

The document translated into EU languages is available:

- In the download area of the Endress+Hauser website:
www.endress.com -> Downloads -> Manuals and Datasheets ->
 Type: Ex Safety Instruction (XA) -> Text Search: ...
- In the Device Viewer: www.endress.com -> Product tools ->
 Access device specific information -> Check device features



If not yet available, the document can be ordered.

Associated documentation

This document is an integral part of the following Operating Instructions:
 BA00061S/04

Supplementary documentation

Explosion-protection brochure: CP00021Z/11

The Explosion-protection brochure is available:

- In the download area of the Endress+Hauser website:
www.endress.com -> Downloads -> Brochures and Catalogs ->
 Text Search: CP00021Z
- On the CD for devices with CD-based documentation

Manufacturer's certificates

EU Declaration of Conformity

Declaration Number:
 EC_00089

The EU Declaration of Conformity is available:

In the download area of the Endress+Hauser website:
www.endress.com -> Downloads -> Declaration ->
 Type: EU Declaration -> Product Code: ...

EU type-examination certificate

Certificate number:
 BVS 15 ATEX E 128

List of applied standards: See EU Declaration of Conformity.

IEC Declaration of Conformity

Certificate number:
 IECEx BVS 15.0105

Affixing the certificate number certifies conformity with the following standards (depending on the device version):

- IEC 60079-0 : 2017
- IEC 60079-11 : 2011
- IEC 60079-31 : 2013

Manufacturer address

Endress+Hauser SE+Co. KG
Hauptstraße 1
79689 Maulburg, Germany

Address of the manufacturing plant: See nameplate.

Other standards

Among other things, the following standards shall be observed in their current version for proper installation:

- IEC/EN 60079-14: "Explosive atmospheres - Part 14: Electrical installations design, selection and erection"
- EN 1127-1: "Explosive atmospheres - Explosion prevention and protection - Part 1: Basic concepts and methodology"

Extended order code

The extended order code is indicated on the nameplate, which is affixed to the device in such a way that it is clearly visible. Additional information about the nameplate is provided in the associated Operating Instructions.

Structure of the extended order code

SWA70	–	*****	+	A*B*C*D*E*F*G*..
<i>(Device type)</i>		<i>(Basic specifications)</i>		<i>(Optional specifications)</i>

* = Placeholder

At this position, an option (number or letter) selected from the specification is displayed instead of the placeholders.

Basic specifications

The features that are absolutely essential for the device (mandatory features) are specified in the basic specifications. The number of positions depends on the number of features available.

The selected option of a feature can consist of several positions.

Optional specifications

The optional specifications describe additional features for the device (optional features). The number of positions depends on the number of features available. The features have a 2-digit structure to aid identification (e.g. JA). The first digit (ID) stands for the feature group and consists of a number or a letter (e.g. J = Test, Certificate). The second digit constitutes the value that stands for the feature within the group (e.g. A = 3.1 material (wetted parts), inspection certificate).

More detailed information about the device is provided in the following tables. These tables describe the individual positions and IDs in the extended order code which are relevant to hazardous locations.

Extended order code: WirelessHART adapter



The following specifications reproduce an extract from the product structure and are used to assign:

- This documentation to the device (using the extended order code on the nameplate).
- The device options cited in the document.

Device type

SWA70

Basic specifications

Position 1, 2 (Approval)		
Selected option		Description
SWA70	BE	ATEX II 2 G Ex ia IIC T3/T4 Gb
	B1	ATEX II 2 G Ex ia IIC T3/T4 Gb ATEX II 2 D Ex tb [ia] IIIC T70°C Db
	IE	IECEx Ex ia IIC T3/T4 Gb
	I1	IECEx Ex ia IIC T3/T4 Gb IECEx Ex tb [ia] IIIC T70°C Db

Position 3 (Output)		
Selected option		Description
SWA70	2	4-20 mA HART (U0 = 28 V)

Position 4 (Housing)		
Selected option		Description
SWA70	A	F32, Polyester, IP66, NEMA Type 4X Encl.
	B	F33, Aluminium, IP66/67 NEMA Type 4X Encl.
	C	F39, 316L, IP66/67, NEMA Type 4X Encl.

Position 5 (Power Supply)		
Selected option		Description
SWA70	1	Battery BU191, Lithium metal, built-in, transport class 9/2, UN3091
	5	Prepared for battery

Optional specifications

No options specific to hazardous locations are available.

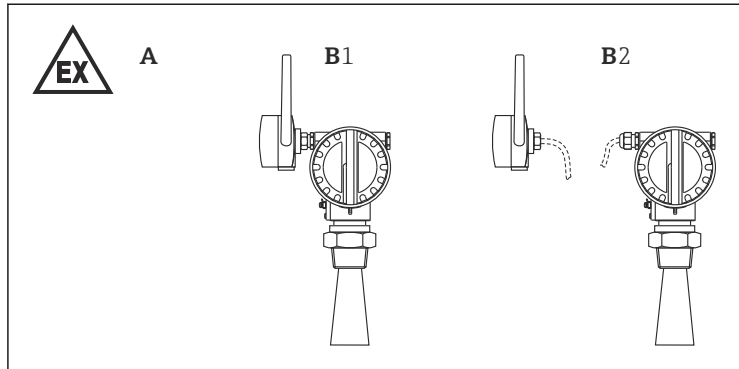
Safety instructions: General

- Staff must meet the following conditions for mounting, electrical installation, commissioning and maintenance of the device:
 - Be suitably qualified for their role and the tasks they perform
 - Be trained in explosion protection
 - Be familiar with national regulations
- Install the device according to the manufacturer's instructions and national regulations.
- Avoid electrostatic charging:
 - Of plastic surfaces (e.g. enclosure, sensor element, special varnishing, attached additional plates, ..)
 - Of isolated capacities (e.g. isolated metallic plates)
- Dispose of used battery packs in an environmentally compatible manner.
- Observe national regulations on waste disposal.

Safety instructions: Special conditions

- In the event of additional or alternative special varnishing on the enclosure or other metal parts:
- Observe the danger of electrostatic charging and discharge.
 - Do not rub surfaces with a dry cloth.

Safety instructions: Installation



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- A** Zone 1, Zone 21
B1 Direct mounting at field device
B2 Separate mounting with cable connection

- Avoid electrostatic charging (e.g. do not rub dry):
 - Of enclosure and antenna
 - Of the connecting cable
 - Of the "push button" special version (if available)
- The WirelessHART adapter is suitable for use in gases of Groups IIC and IIB if electrostatic charging (e.g. through friction, cleaning, maintenance, strong medium flow) is avoided.
- WirelessHART adapter: Indicated by the warning sign "Avoid Electrostatic Charge".
- Observe the pertinent guidelines when interconnecting intrinsically safe circuits.
- To maintain the ingress protection of the enclosure:
 - Screw the cover tight.
 - Mount the cable entry correctly.
 - After aligning (rotating) the enclosure, retighten the fixing screw.
 - Protect the connecting cable between the WirelessHART adapter and the field device from tension and friction (e.g. due to electrostatic charge from medium flow).

Basic specification, Position 4 = A

Torque must be observed:

- Cover screws: 0.7 Nm \pm 10 %
- Cable glands: 3.25 Nm \pm 10 %
- Sealing plug: 3.25 Nm \pm 10 %

Basic specification, Position 4 = B, C

Torque must be observed:

- Cover screws: 0.7 Nm \pm 10 %
- Cable glands: 6.25 Nm \pm 10 %
- Sealing plug: 6.25 Nm \pm 10 %



Potential equalization

Integrate the device into the local potential equalization.

Safety instructions: Zone 1

- Configuring the device: The electronics compartment can be opened when energized.
- To replace the battery, the WirelessHART adapter may be opened in hazardous locations.
- Seal unused entry glands with approved sealing plugs that correspond to the type of protection.

Basic specification, Position 4 = A with "push button" special version

When connecting the device, make sure that the the push-button is still connected (\rightarrow  3,  11, Terminals 2 and 5).

Safety instructions: Zone 21

- Do not open in a potentially explosive dust atmosphere.
- The battery pack must not be exchanged in dust explosion-hazardous areas.
- Cable glands with ATEX-Ex e approval and metallic glands: Only use with an ingress protection of at least IP65. Lay connecting cable and secure.
- Seal unused entry glands with approved sealing plugs that correspond to the type of protection.

Basic specification, Position 4 = A

Only suitable for use in Zone 1!

Safety instructions: Battery

- Only use the Endress+Hauser battery pack of type BU191 from serial number: 14/01/xxxxxxx as specified in the Operating Instructions.
- The PHR2 plug-in connector is designed in such a way that reverse polarity is not possible.
- Short-circuiting the plus and minus cable trips the irreversible, non-replaceable fuse.
- In gas explosion-hazardous areas: Only one battery pack of type BU191 is permitted.
- The safety of the device can be impaired, e.g.:
 - In case of visible damage to the battery enclosure
 - In case of improper storage
 - In case of damage during transportation


Temperature tables

Type of protection	Ambient temperature T_a (ambient)	Temperature class	Enclosure
Ex ia IIC	$-40\text{ }^\circ\text{C} \leq T_a \leq +50\text{ }^\circ\text{C}$	T4	Basic specification, Position 4 = A, B, C
	$-40\text{ }^\circ\text{C} \leq T_a \leq +60\text{ }^\circ\text{C}$	T3	

Type of protection	Ambient temperature T_a (ambient)	Max. surface temperature	Enclosure
Ex tb [ia] IIIC	$-40\text{ }^\circ\text{C} \leq T_a \leq +60\text{ }^\circ\text{C}$	+70 °C	Basic specification, Position 4 = B, C

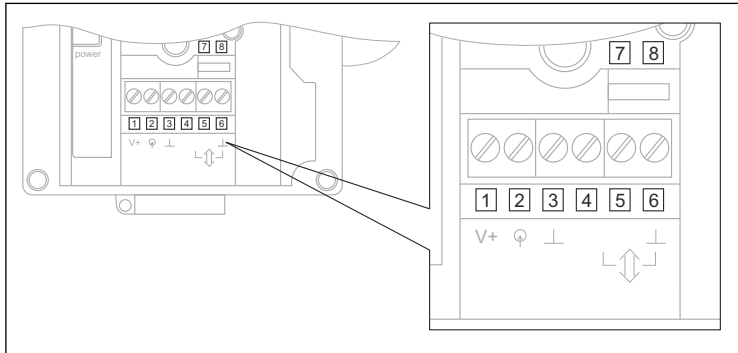
Connection data

4...20 mA + HART communication

 Connection options of the terminals: See Operating Instruction BA00061S, chapter "Electrical installation".

Adapter active (Terminals 1, 2)	Adapter passive (Terminals 2-8)
$U_o < 28\text{ V}_{DC}$ $I_o < 99\text{ mA}$ $P_o < 692\text{ mW}$ $L_o = 3,45\text{ mH}$ or $C_o = 70\text{ nF}$	$U_i = 30\text{ V}_{DC}$ $I_i = 100\text{ mA}$ $P_i = 751\text{ mW}$ $L_i = 426\text{ }\mu\text{H}$ $C_i = 24\text{ nF}$

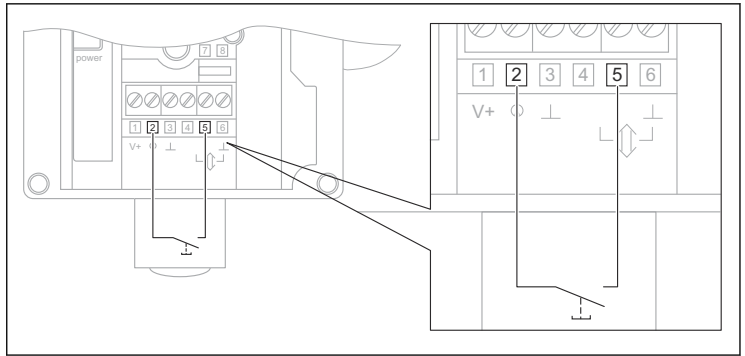
The adapter can be configured via two terminals (7 and 8, parallel to terminals 5 and 6) using a certified handheld terminal and taking into account safety-related nominal values.



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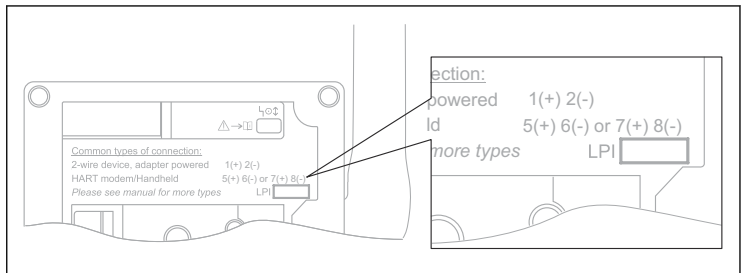
Connection of the "push button" special version (only for Basic specification, Position 4 = A)



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Connection of the LPI plug (active), optional feature



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Power supply

$U_o = 7.80 \text{ V}$
 $I_o = 1.03 \text{ A}$
 $P_o = 1.22 \text{ W}$
 $L_o = 21.51 \text{ } \mu\text{H}$ or
 $C_o = 9.18 \text{ } \mu\text{F}$



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