



Level



Pressure



Flow



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Liquid
Analysis

Registration

Systems
Components

Services



Solutions

Technical Information

WirelessHART Adapter SWA70

Intelligent WirelessHART interface module
for connection to 4...20 mA/HART devices

WirelessHART



Application

WirelessHART Adapter SWA70 is a battery powered, interface module that connects HART and 4...20 mA devices to a WirelessHART network. The adapter is suitable for several applications, for example:

- Tank and silo monitoring/Inventory control:
Measured values together with device and battery status are transmitted at regular intervals to a higher level system
- Access to installed base:
Additional diagnosis information is extracted from existing wired HART devices and sent to a plant asset management tool, e.g. FieldCare
- Condition monitoring of equipment:
Wireless devices are added at critical points in the plant not normally connected to the control room due to accessibility or wiring costs. Improved data flow and diagnostics increase plant reliability and safety.
- Process optimization:
Temporary connection of the WirelessHART Adapter allows plant sections to be monitored and optimised at little cost and effort.

Features and Benefits

- HART devices quickly upgraded to WirelessHART technology
- 4...20 mA devices quickly integrated into the WirelessHART network
- One 4...20 mA or up to four HART devices can be connected (in multidrop mode) to one adapter
- Burst mode and event notification supported for adapter and connected devices
- Remote and difficult-to-access HART devices connected to the plant control room without expensive cables
- Tanks and silos integrated at minimal cost into e.g. SupplyCare Inventory Control software
- Endress+Hauser and 3rd party devices maintainable with open FieldCare Plant Asset Management software
- Network configuration also done within FieldCare Plant Asset Management software
- Supports configuration with FDT and DD-based network tools

Function and System Design

WirelessHART

WirelessHART is a HART Communication Foundation specification for use in process automation. It adds wireless capabilities to the HART protocol while maintaining compatibility with existing HART devices, commands, and tools.

A WirelessHART network comprises:

- Wireless field devices
- Non-wireless field devices enhanced by using a WirelessHART adapter
- Gateways that enable communication between devices and host applications
- A Network & Security Manager responsible for configuring, managing and monitoring the network

WirelessHART Adapter SWA70

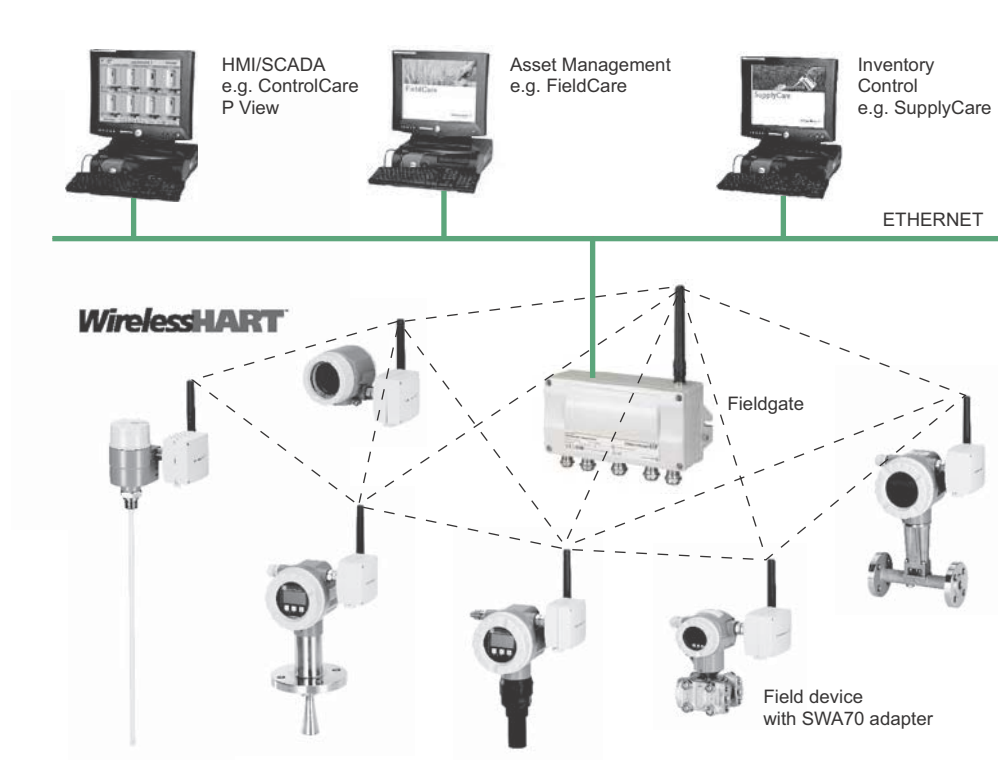
Endress+Hauser's SWA70 WirelessHART Adapter has been designed to act as an add-on interface for any HART or 4...20 mA device. It supports the following functions:

- Powering of one HART or one 4...20 mA device; alternatively, connection of up to four externally powered HART devices in multidrop mode
- Scaling of current signal supplied by a connected 4...20 mA device
- Burst mode and event notification for both itself and the connected devices.

The battery has been specially selected to give long life when used in monitoring applications.

System design

WirelessHART Adapter SWA70 transmits its information to a host application through a WirelessHART Fieldgate. The figure below shows a typical meshed WirelessHART network architecture.



Input

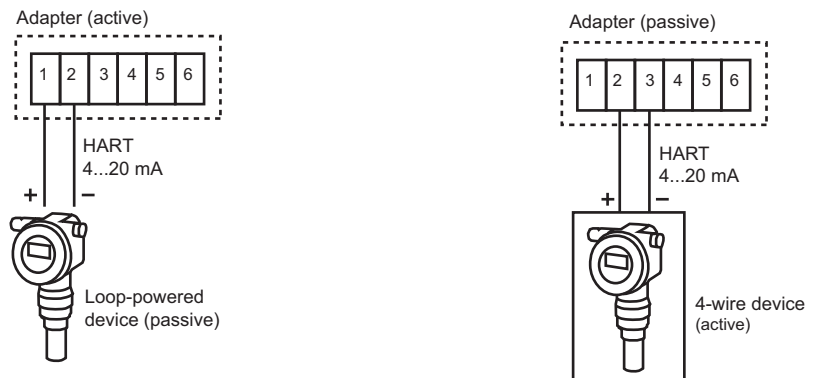
Wired interface	One device input channel for: One point-to-point with a HART device, or One point-to-point connection with a 4...20 mA device, or Up to four externally powered HART devices operating in multidrop mode
Communication type	HART communication in multidrop mode, 4...20 mA current signal in point-to-point mode
Protocol version	HART Version 7.0 (backwards compatible with previous HART versions)
Transmission rate	1200 bits/s for HART multidrop
Type of protection	Intrinsically safe and dust Ex versions available, see Ordering Information
Device loop-power	Current: 4 mA to 20mA DC (according to NAMUR recommendation NE 43) or 4 mA when operating in multidrop mode (one device only) Fault current: $I \leq 3.6 \text{ mA}$ or $I \geq 21 \text{ mA}$ Protection: Short-circuit protected, triggered for currents $> 25 \text{ mA}$ Supply voltage: 8 VDC to 23 VDC

Connection facilities 6-port terminal block, screw terminals:

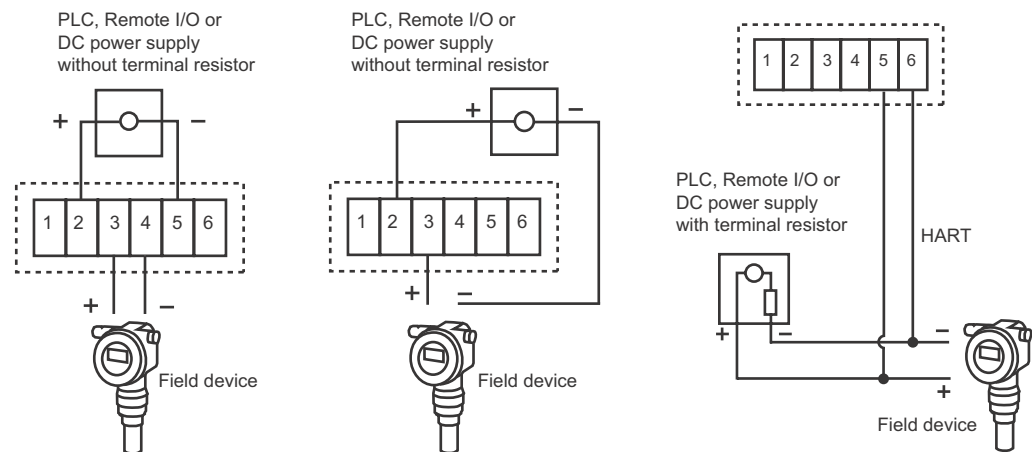
Function	Circuit	Max. terminal voltage
Device supply		Between Terminals 2 & 3 $U_1 \leq 30 \text{ VDC}$
HART/4...20 mA		
External Supply/ GND		Between Terminals 5 & 6 $U_1 \leq 30 \text{ VDC}$
HART high impedance		
HART high impedance		
High impedance GND		

Cable Adapter mounted directly on device: cables supplied
Separately mounted adapter: standard installation cable

Device connection Connection of loop-powered devices (adapter powered) and externally powered 4-wire devices



Connection of loop-powered devices with external power supply



Output

Wireless interface	WirelessHART communication interface (IEC 62591)
Transmission rate	Nominal 250 kBits/s
Operating frequency	2.4 GHz (ISM band)
Transmission range	Under reference conditions: Outdoor 250 m, indoor 50 m
RF power level	Configurable 0 dBm or 10 dBm, depending upon national regulations
Output variables	<p>Output configurable according to user requirement</p> <ul style="list-style-type: none"> ■ Adapter: loop-current and up to three other variables selectable from adapter temperature, battery voltage, energy consumed, estimated battery life-time ■ 4...20 mA device: scaled or linearized process value ■ HART device: up to four process variables (configured through Fieldgate/gateway)
Additional functions	<ul style="list-style-type: none"> ■ Burst mode, configurable for up to eight variables from adapter and/or connected device(s) ■ Event notification, configurable for up to eight variables from adapter and/or connected device(s) ■ Fault recognition and scaling or linearization of 4...20 mA signal of connected analog device ■ Monitoring of energy consumption ■ Locking/unlocking of device parameterization
Diagnosis	Diagnosis function in accordance with NAMUR NE 107, ASM and HART recommendations

Power Supply

Power supply	Special long life lithium thionylchloride battery pack
Supply voltage	5 VDC to 7.2 VDC
Battery rating	19 Ah nominal capacity at 20°C
Battery life	5-7 years, dependent upon update rate of process variables, instrument type and environmental conditions

Performance

Applies to analog current signal circuit.

Reference conditions	to IEC 61298 Part 2	
Measured error	4...20 mA circuit:	0.125% of span
Influence of ambient temperature	4...20 mA circuit:	5 µA/10K

Operating Conditions

Installation

Installation instructions	Location:	If possible, avoid mounting too near walls, pipes, heavy-duty electrical equipment etc. If possible, the adapter should be in line of sight with a neighbouring adapter or the Fieldgate Maximum separation 250 m outdoors, 50 m indoors
	Mounting:	Direct mounting on field device or separately mounted on wall (wall mounting kit available)
	Orientation:	Preferably with antenna vertical

Environment

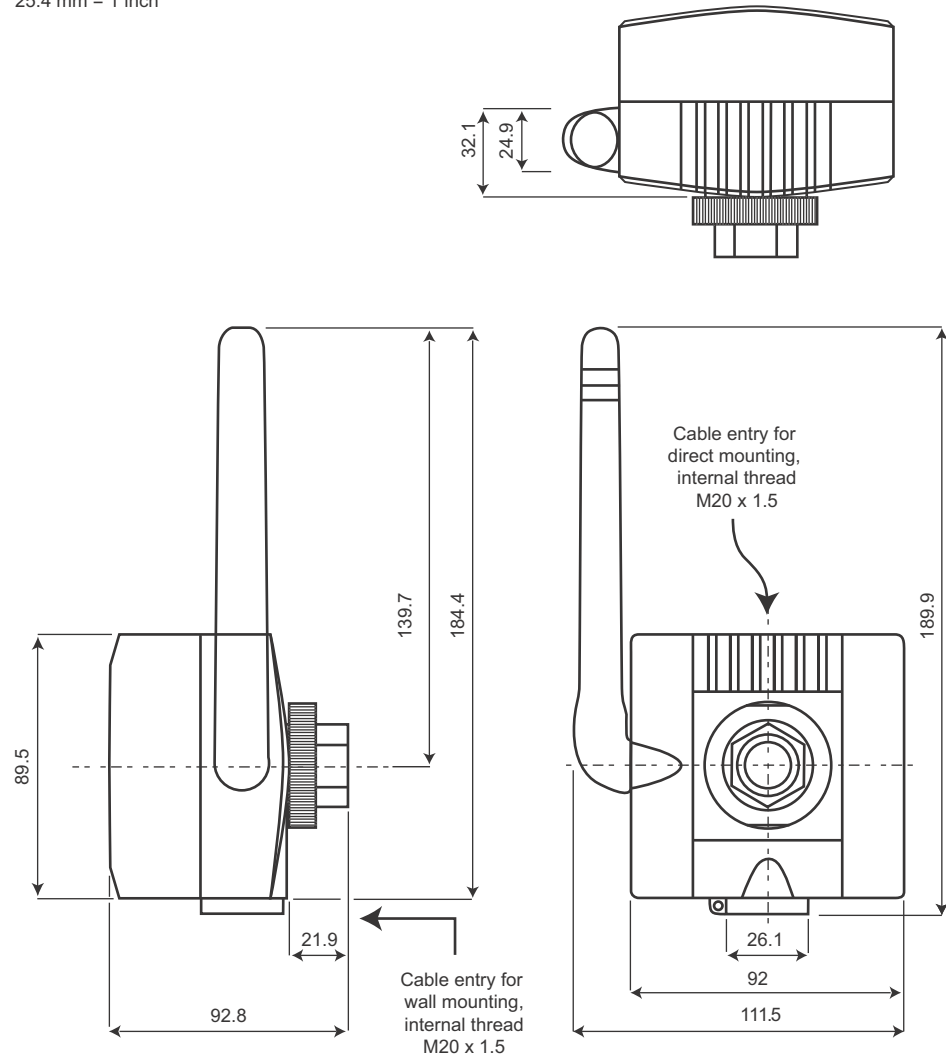
Climate Class	EN 60721-3-4:	4K4H, suitable for stationary use in unprotected outdoor locations
Ambient temperature range	-40°C to +80°C, -40°F to 176°F At temperatures below -30°C/-22°F the battery pack capacity decreases rapidly	
Storage temperature	-40°C to +85°C/-40°F to +185°F without battery pack <21°C/+70°F with battery pack - recommended to minimize self discharging	
Vibration resistance	EN 60068-2-64:	20 Hz ≤ f ≤ 2000 Hz: 0.01g ² /Hz
Shock resistance	EN 60068-2-27:	15 g, 11 ms
Electromagnetic compatibility	This device complies with the requirements of the EC Directive 2004/108/EG "Electromagnetic Compatibility". <ul style="list-style-type: none"> ■ IEC 61326 / EN 61326: <ul style="list-style-type: none"> - Immunity: EN 61326-1: 2006, Table 2 (industrial locations) - Emission: EN 61326-1: 2006, Class B ■ NAMUR recommendation EMC (NE 21), ESD behaviour "B" 	
Telecommunication compliance	Complies with the requirements of the EC Telecommunications Directive 99/5/EG <ul style="list-style-type: none"> ■ ETSI EN 300 328: V1.7.1 (2006-10) ■ ETSI EN 301 489-17: V1.2.1 (2002-08) ■ EN 60950: 2001 	

Mechanical Construction

Overall dimensions

W x H x D: 111.5 mm x 189.9 mm x 92.8 mm

Dimensions in mm
25.4 mm = 1 inch



Weight

0.5 kg, without battery pack
0.785 kg, with battery pack

Housing

Material: PBT FR or aluminium, see ordering Information
Colour: Light grey, RAL 7035 with blue logo

Degree of protection

IP 65, IP 66; NEMA Type 4

Cable entry

Two separate M20x1.5 threaded entries for direct and separate mounting

Mounting adapter

M20x1.5 to M20x1.5, M20x1.5 to G 1/2, M20x1.5 to NPT 1/2, M20x1.5 to NPT 3/4,
see Ordering Information

Antenna

Omnidirectional dipole antenna, position adjustable in vertical plane.

Operability

Configuration	<ul style="list-style-type: none"> Local with FieldCare via HART modem and DTM for SWA70 Remote with FieldCare via WirelessHART Fieldgate SWG70 and DTMs for SWA70 and SWG70 Remote with Device Description (DD) based tools and gateways
Operating elements	<ul style="list-style-type: none"> Pushbutton within housing for selecting operating mode during local configuration LED within housing for indicating current operating mode during local configuration
Device address	Configurable between 0...63 via DD or DTM, default 15

Ordering Information

Product Structure	WirelessHART Adapter SWA70	
	Approvals	
	AA	Non-hazardous area
	BE	ATEX II 2G Ex ia IIC T4
	B1	ATEX II 2G Ex ia IIC T4 Gb, ATEX II 2D Ex tb [ia] IIIC IP6x T70°C Db
	CA	CSA general purpose
	C1	CSA C/US IS Cl.I,II,III Div.1 Gp.A-G, NI Cl.I Div.2 AEx ia
	I1	IECEX Ex ia IIC T4 Gb, IECEX Ex tb [ia] IIIC T70°C Db
	IE	IECEX Ex ia IIC T4 Gb
	Transmitter Interface	
	1	4-20 mA HART
	9	Special version
	Housing	
	A	F32, Polyester IP66
	B	F33, Aluminium IP66
	Y	Special version
	Auxiliary Energy	
	1	Battery. lithium metal, built-in, transport class 9/2, UN3091
	5	Prepared for battery
	9	Special version
Version		
A	Prepared for installation on device	
B	Prepared for installation separate from device with wall/pipe mounting kit and M20 cable gland	
C	Prepared for installation as router with wall/pipe mounting kit	
Y	Special version	
Connection Adapter		
1	Thread M20	
2	Thread G 1/2	
3	Thread NPT 1/2	
4	Thread NPT 3/4	
8	Without	
9	Special version	
Services		
IK	Customized configuration	
IW	Without tooling DVD (FieldCare Setup)	
Identification		
Z1	Measuring point tag 52006326: Wired on tag plate, stainless steel 52006327: Paper sticker 52006329: Supplier label/plate	
SWA70-		Product designation

Documentation

WirelessHART Adapter SWA70

- WirelessHART Adapter SWA70
Operating Instructions BA00061S/04/en
- WirelessHART Fieldgate SWG70
Operating Instructions BA00064S/04/en
- WirelessHART Adapter and Fieldgate
Competence Brochure CP013S/04/en

Certificates and Approvals

CE Mark

In attaching the CE Mark, Endress+Hauser confirms that WirelessHART Adapter SWA70 conforms to all relevant EU directives.

Telecommunication Compliance

- ETSI (R&TTE)
- FCC Part 15.247 for wireless applications in the area of 2.4 GHz
- China: CMIIT ID (SRRC)
- Japan: Ministry of internal affairs and communication
- Additional national certificates on request

Hazardous area approvals

See Ordering Information

Instruments International

Endress+Hauser
Instruments International AG
Kaegenstrasse 2
4153 Reinach
Switzerland

Tel. +41 61 715 81 00
Fax +41 61 715 25 00
www.endress.com
info@ii.endress.com

Endress+Hauser 
People for Process Automation