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Technical Information
FieldGate SWG50

Functional WirelessHART Gateway



Field of application

FieldGate SWG50 is a gateway for WirelessHART networks. It enables WirelessHART field devices to communicate with each another and manages network security and connectivity.

Your benefits

- Easy commissioning and diagnosis of a self-organized WirelessHART network with up to 100 WirelessHART devices.
- Ideal for operations with limited space in the cabinet, since it is compact and can be mounted on DIN rails.
- Flexible use of FieldGate in the hazardous areas of a plant.
- Seamless integration of field device information into higher-level system applications using standardized protocols such as Modbus TCP or HART-IP.

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About this document

Symbols

Safety symbols

DANGER
This symbol alerts you to a dangerous situation. Failure to avoid this situation will result in serious or fatal injury.

WARNING
This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in serious or fatal injury.

CAUTION
This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or medium injury.

NOTICE
This symbol contains information on procedures and other facts which do not result in personal injury.

Symbols for certain types of information

Symbol	Meaning
	**Permitted** Procedures, processes or actions that are permitted.
	**Preferred** Procedures, processes or actions that are preferred.
	**Forbidden** Procedures, processes or actions that are forbidden.
	**Tip** Indicates additional information.
	Reference to documentation
	Reference to page
	Reference to graphic
	Visual inspection

Electrical symbols

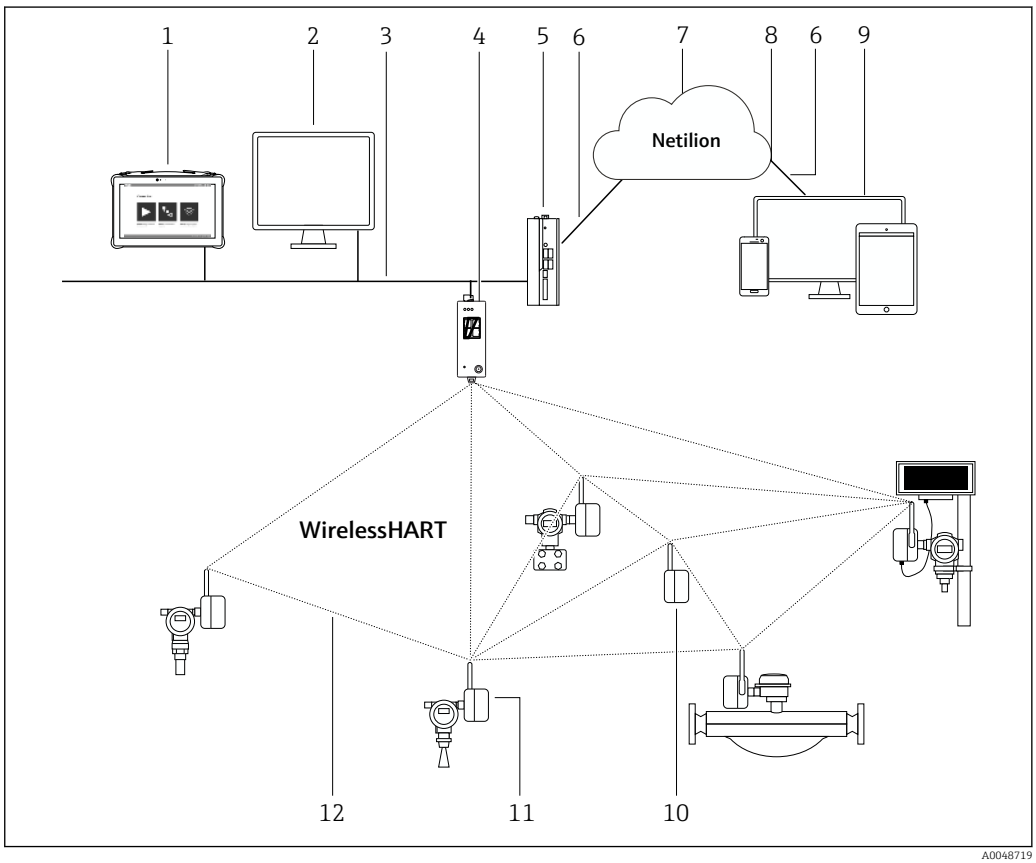
Symbol	Meaning
	Direct current
	Alternating current
	Direct and alternating current
	**Ground connection** A grounded terminal which, as far as the operator is concerned, is grounded via a grounding system.
	**Protective earth (PE)** Ground terminals that must be connected to ground prior to establishing any other connections. The ground terminals are located on the interior and exterior of the device: ▪ Interior ground terminal: protective earth is connected to the mains supply. ▪ Exterior ground terminal: device is connected to the plant grounding system.

Function and system design

Measuring system

The FieldGate SWG50 is a functional WirelessHART gateway. It comprises a network manager application, a WirelessHART (access point) interface module and a gateway application. Up to 100 wireless or corded devices can be connected to the FieldGate SWG50. The application supplies data from the WirelessHART network via Modbus TCP or HART-IP. A CommDTM makes it possible to attach DTMs to connected devices.

System architecture



1 *Example of WirelessHART network architecture with FieldGate SWG50*

1 *Endress+Hauser Field Xpert, e.g. SMTxx*
2 *Host application / FieldCare SFE500*
3 *Ethernet communication*
4 *FieldGate SWG50*
5 *FieldEdge SGC500*
6 *https Internet connection*
7 *Netilion Cloud*
8 *Application Programming Interface (API)*
9 *Internet browser-based Netilion Service app or user application*
10 *WirelessHART adapter SWA70 used as a repeater*
11 *HART field device with WirelessHART adapter SWA70*
12 *Encrypted wireless connection via WirelessHART*

Network connection

The configuration of the FieldGate SWG50 is performed entirely via an embedded web server. The web server is password-protected and uses only secure (HTTPS) connections.

It is possible to save the configuration settings of the gateway as a password-protected file on a PC.

It is also possible to upload the file to a device for easy commissioning of a replacement gateway.

The gateway firmware can be updated via the web server.

It is possible to restore the factory settings via the web server (or the button on the front of the gateway).

Communication and data processing

HART IP

The gateway supports HART IP via TCP and UDP. Up to 10 socket connections can be established at the same time.

Modbus TCP

The gateway supports Modbus TCP via Ethernet.

Input

Measuring range

Up to 250 m outdoors.

Up to 50 m indoors.

Depending on the type of antenna to be connected and the environment.

Type of input

WirelessHART communication interface (IEC 62591)

Input signal

Up to 100 WirelessHART-based devices can be connected. Process variables and device status according to HART standard are transmitted by the field devices to the gateway in burst modes.

Operating frequency

2.4 GHz ISM band

Transmission power

10 dBm

Output

Output and input variants

Ethernet interface in RJ45 format, to which only twisted-pair cables with an impedance of 100 Ω can be connected.

The maximum distance between units is based on Ethernet standards and is determined by the environment and the networks' compliance with these standards.

Output signal

HART-IP and MODBUS TCP communication interface

Transmission behavior

The transmission rate is 10, 100 or 1000 Mbps.

Power supply

Supply voltage

DC power input range: 10.8 to 30.5 V_{DC}

Current outputs P1 and P2 are redundant and have reverse polarity protection.

Power consumption

<7 W

Current consumption

290 mA at 24 V_{DC}.

Electrical connection

Reference	Label	Plug type	Signal	Use
J1	1	RJ-45	10/100/1000-T	Ethernet connection
J2	2	RJ-45	10/100/1000-T	Ethernet connection
J3	3	RJ-45	10/100/1000-T	Ethernet connection

Reference	Label	Plug type	Signal	Use
J4	4	RJ-45	10/100/1000-T	Ethernet connection
J5	ANT	RSMA	2.4 GHz	Antenna connection
J6	⏚	Philips screw		Grounding of device
J7	Plug	8-pin Combicon	DC voltage	Power supply

Plug	Signal	Marking
1	DC+	+P1-
2	DC-	
3	DC+	+P2-
4	DC-	
5	N/A	NC
6	N/A	NC
7	N/A	NC
8	N/A	NC

The holding force of the plug-in connector must be at least 15 N.

Terminals

Ground ring or spade/fork tongue crimp connection to M3 cap screw and lockwasher on top surface of device housing.

Cable entries

Screw terminals: 0.2 to 4 mm^2 (solid wire), 0.2 to 2.5 mm^2(stranded wire (AWG 24-14))

Performance characteristics

Hardware

- Marvel Dual Core ARM-7 with 1.2 GHz, supplemented by 1 GB DDR4-RAM and 4 GB MMC flash memory
- Supervisor processor
- 4-port Ethernet switch
- WirelessHART interface transceiver module
- WirelessHART AP interface module (model M2140)
  - FCC-ID: SJC-M2140
  - IC-ID: 5863-M2140

Software

The gateway application includes an embedded web server, a Modbus TCP interface, a HART-IP interface and logic functions for managing the device.

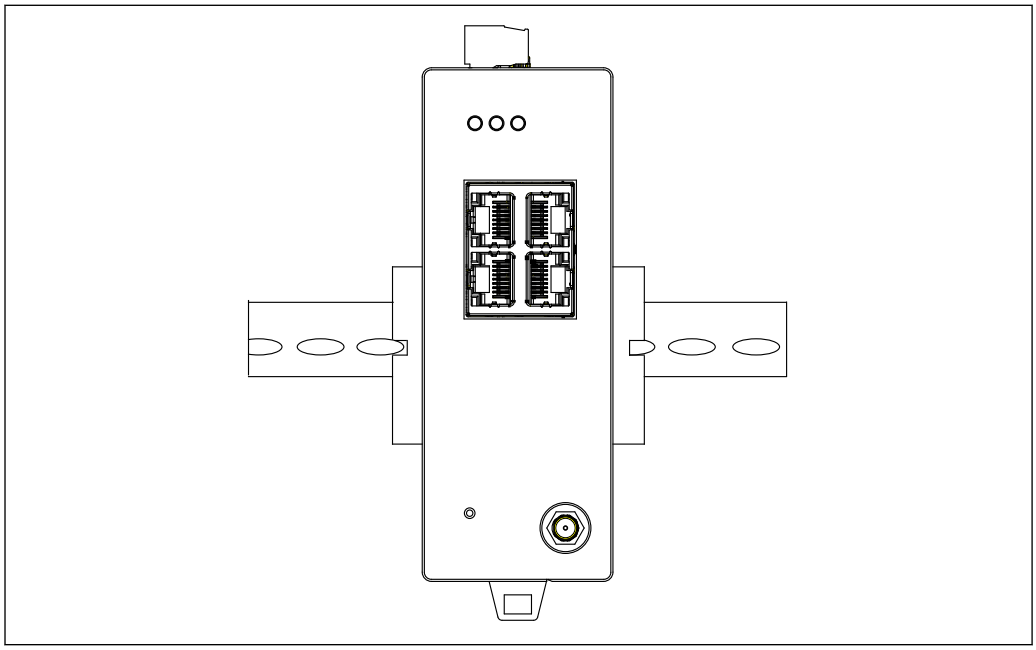
Installation

Mounting location

The device must be installed in a housing that has a minimum protection rating of IP54 as per EN/IEC 60079-15. The device must be used only in areas with a maximum pollution degree of 2 as defined in EN/IEC 60664-1. The device can be installed in Zone 2 hazardous areas. Routing and remote installation of the antenna must comply with the relevant site regulations when installed in unclassified Zone 2 or Class I, Division 2 hazardous areas. Otherwise, the antenna must be installed within the end-use housing .

Installation instructions

The FieldGate SWG50 is mounted on an NS 35 mounting rail. To prevent the device from slipping, end clamps must be mounted on both sides. The device can be mounted either horizontally or vertically. The modules are mounted on the mounting rail from left to right.



2 Mounting on a standard DIN rail

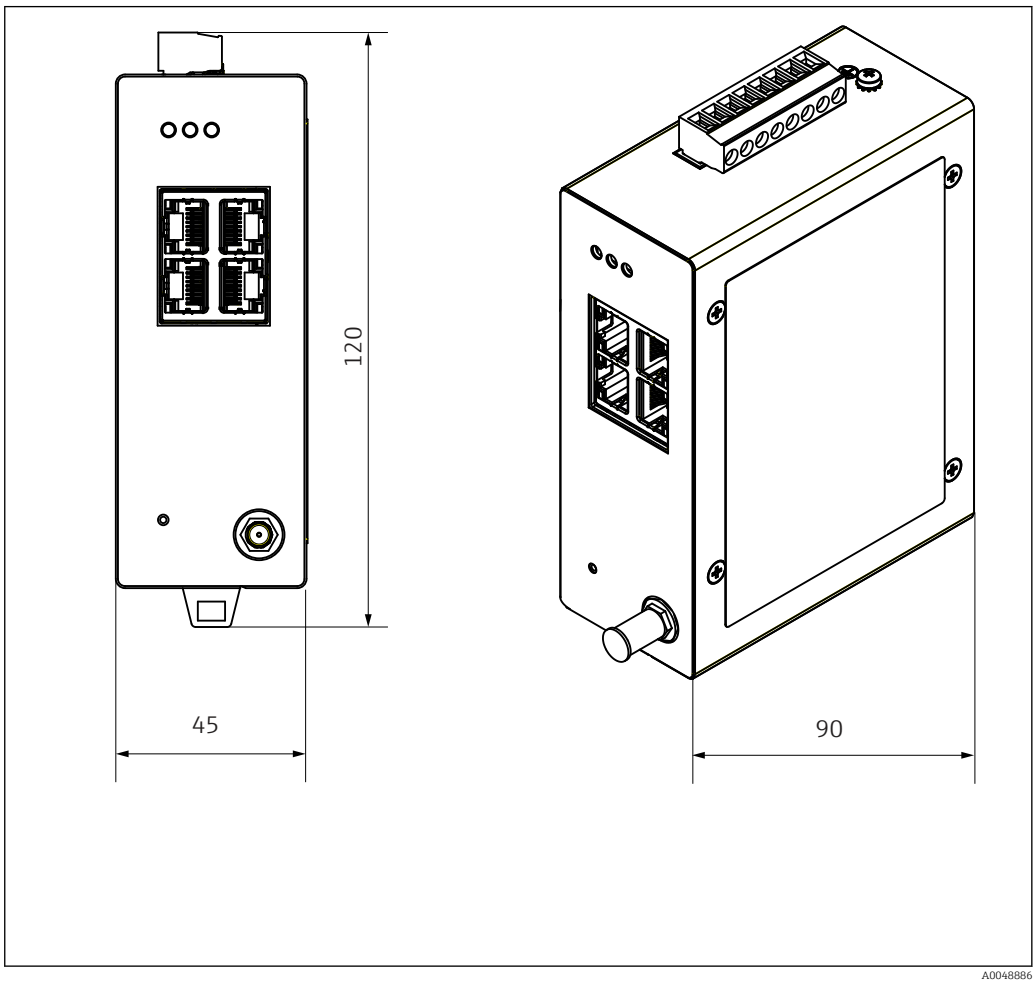
Special mounting instructions	A remote antenna can be mounted outside a cabinet. If there is a risk of lightning, install lightning/EMP protection between the gateway and the remote antenna.

Environment

Ambient temperature range	−40 to 70 °C
Storage temperature	−40 to 85 °C
Relative humidity	10 to 90 % non-condensing
Operating height	max. 3 048 m (10 000 ft)
Climate class	as per IEC 60068-2-30 Db
Degree of protection	IP20
Vibration resistance	Sinusoidal vibration as per IEC 60068-2-6 10 to 60 Hz 0.070 (p-p mm) amplitude 60 to 150 Hz60 Hz to 150 Hz 5 g acceleration 1 octave/minute
Shock resistance	Half-sinusoidal shock as per IEC 60068-2-27 15 g Shock 18 ms Pulse
Electromagnetic compatibility (EMC)	Compliance with EMC directive 2014/30/EU

Mechanical construction

Design, dimensions



3 Views in mm

Dimensions

120 mm · 90 mm · 45 mm (4.72 in · 3.54 in · 1.77 in)

Weight

Max. 500 g

Materials

Housing material: aluminum

Terminals for power supply: nylon

User interface

Web server



4 Web server

LED

LED	Description
ST (multicolored)	flashing green: device initializing flashing red: device restarting or troubleshooting lit green: power supply/device is active
MESH (green)	Device connection: ON: WirelessHART devices connected OFF: no WirelessHART devices found or not connected
ERR (red)	Error: OFF: no errors ON: internal error

Service interface

There are four Gigabit Ethernet ports with identical functionality, which act as an unmanaged switch. Each port can be used to access the web server, HART IP or Modbus interfaces.

Reset button

The reset button restores the standard IP address and resets the FieldGate SWG50 to the factory setting.

Certificates and approvals

The latest approvals for the product are available from www.endress.com:

1. Select the product using the filters and search field.
2. Open the product page.
3. Select **Downloads**.
   ↳ A list of all approvals and declarations appears.

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**.

Documentation

Standard documentation FieldGate SWG50 Operating Instructions BA02235S/04/EN

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