

Overview



SITRANS AW210 WirelessHART adapter

The WirelessHART adapter SITRANS AW210 is a communication component which can integrate a wide range of field devices into a WirelessHART network. On the wireless communication side, the adapter supports the WirelessHART standard. HART and 4 to 20 mA field devices are connected on the field device side.

The WirelessHART adapter SITRANS AW210

- Supports the WirelessHART standard (HART V 7.1)
- Features an extremely high degree of security for wireless data transmission.
- Integrates a 4 to 20 mA field device into a WirelessHART network
- Integrates up to eight HART field devices (in multidrop mode) into a WirelessHART network
- Can be powered with the 4 to 20 mA loop or an external power supply
- Power management can be activated to minimize energy consumption
- Easy to configure with SIMATIC PDM, AMS, Handheld 475.

Benefits

- "Intrinsically safe" or "Explosion proof"
- High quality and service life
- Extremely rugged enclosure
- No additional cabling required with loop power supply
- Subsequent integration of an installed field device with HART interface into maintenance and diagnostic systems if the control system does not feature the required communication mechanisms
- Proven HART devices can continue to be used for wireless communication without any limitations
- Field devices with a 4 to 20 mA interface (without HART) can also be connected
- Ideal addition to wired communication and to the range of system solutions in process automation
- Burst mode and event notification configuration for the adapter and connected field devices

Application

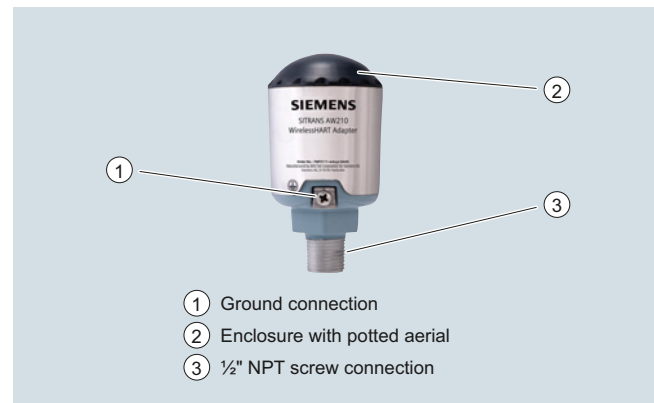
The WirelessHART adapter can be used in a number of different applications:

- Access to installed basis
Diagnostic information is obtained from existing wired HART devices thanks to the permanent electrical connection of a WirelessHART adapter and power from the 4 to 20 mA loop. This information is sent to central system-based asset management software such as SITRANS MDS.
- Status monitoring of the plant
Wireless devices are mounted at critical points in the plant which are not usually connected to the control room due to difficult access or high wiring costs. Better data flow and diagnostics increase plant reliability, transparency and safety.
- Process optimization
Temporary installation of a 4 to 20mA or standard HART device together with a SITRANS AW210 WirelessHART adapter allows easier, flexible monitoring and plant optimization at lower costs. SITRANS AW210 can also be usefully used where there is already an external power supply, or one is needed anyway.
- Process monitoring
Measured values, for example from tanks or silos, are transmitted to a higher-level system at regular intervals together with the device status. SITRANS AW210 is particularly easy to use with 4-wire devices, as they have an external power supply.

Design

SITRANS AW210 WirelessHART Adapter consists of:

- An enclosure with a fitted aerial
- Electronics



SITRANS AW210 Wireless-HART Adapter, assembly

The enclosure contains the potted electronics and the wireless module. The aerial is fitted at the top in the enclosure.

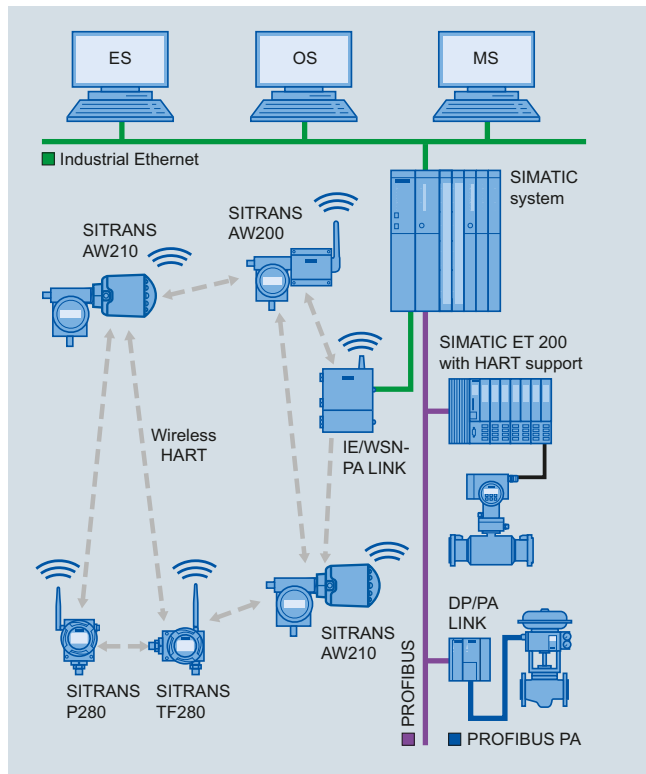
On the base of the enclosure is the connector with a 1/2" NPT female thread. Six cables run from this connector to connect the adapter.

Supplementary Components

WirelessHART products

SITRANS AW210 - WirelessHART adapter

Function



SITRANS AW210 WirelessHART Adapter, functional diagram

The measured values and diagnostic information from the connected field devices with HART communication are transmitted to the WirelessHART adapter over wired connections. The adapter transmits this information as wireless signals to the IE/WSN-PA link, the Siemens WirelessHART gateway. The measured values, all parameters and diagnostic information about the plant network can be accessed from this gateway.

If a field device with a 4 to 20 mA output signal is connected to the adapter, the current will be converted to a digital measured value and transmitted on the basis of a measuring range specified in SITRANS AW210.

Following configuration and integration into a WirelessHART network, each WirelessHART adapter is able to recognize its neighbors. It notes the strength of the wireless signal, synchronizes itself, receives network information and then establishes connections to its neighbors in the wireless network. A WirelessHART network organizes itself. Manual settings for organization are not required.

Two-wire and four-wire field devices can be connected to a WirelessHART adapter. Either up to 2 or up to 8 HART field devices can be connected to the adapter, depending on the selected product version. The adapter either has an external voltage supply or is loop-powered. The WirelessHART adapter can therefore also be connected in parallel to an existing installation consisting of a voltage supply and a HART field device.

Parameter assignment

SITRANS AW210 is configured via HART. Configuration can be carried out using handheld communicator 475 or, more conveniently, with a HART modem and the SIMATIC PDM configuration software.

Initial startup of the adapter is usually carried out via SIMATIC PDM and a HART modem or a handheld communicator. During initial startup, the network ID and join key are set in the adapter. These parameters are used to integrate the adapter into an existing WirelessHART network.

Following integration into the network, the adapter and HART devices connected can be conveniently operated via the WirelessHART network or locally, as detailed above.

Siemens HART field devices for the adapter

In principle, all HART devices certified by the HART Communication Foundation (HCF) can be operated with the SITRANS AW210 WirelessHART adapter. See <http://www.siemens.com/automation/service&support> for FAQ with the latest information on connectivity for Siemens field devices.

Note:

Siemens has only approved the Siemens HART field devices listed there for the adapter, and will only provide technical support for these devices.

Based on HART specifications, it is generally possible to connect devices that are not listed, however with the following restrictions:

- All warranties and liability will be excluded
- No technical support

Technical specifications

Input

Point-to-point connection to a HART field device or
Point-to-point connection to a 4 ... 20 mA field device or
Up to eight HART field devices with an external voltage supply integrated using multidrop

Communication

- HART communication with multidrop, as primary or secondary HART master (can be specified)
- 4 ... 20 mA current signal with a point-to-point connection scaling in user-defined measuring range in SITRANS AW210
 - Linear
 - User-defined scaling with up to 32 points

Protocol

HART V7 (compatible with previous HART versions)

Output Communication Transmission frequency band Range (under reference conditions) RF signal strength Output signals <ul style="list-style-type: none"> WirelessHART adapter <ul style="list-style-type: none"> 4 ... 20 mA field device HART field device 	WirelessHART V7 2.4 ... 2.4835 GHz (ISM band), 16-channel frequency hopping spread spectrum Outside up to 235 m (771 ft) 10 dBm <ul style="list-style-type: none"> HART Cmd 3 Measured current and up to 4 other dynamic variables (mea- sured values, derived values) or device variables HART Cmd 9 Up to 8 dynamic variables with status HART Cmd 48 Additional status information Scaled or linearized process values <ul style="list-style-type: none"> HART Cmd 3 Measured current and up to 4 other dynamic variables (mea- sured values, derived values) or device variables HART Cmd 9 Up to 8 dynamic variables with status HART Cmd 48 Additional status information 	Certificates and approvals Wireless communication approvals <ul style="list-style-type: none"> CE (R&TTE, EMC) FCC Part 15.247 for wireless ap- plications in the 2.4 GHz trans- mission frequency band IC 	
Update time for output signals	You can set the update times sep- arately for the adapter and the connected devices. The possible settings are: <ul style="list-style-type: none"> 1, 2, 4, 8, 16, 32 s 1, 2, 5, 10, 30, 60 min (times also depend on the gateway) 	Explosion protection Intrinsic safe "i" gases and vapors Intrinsic safe dust Non-sparking (zone 2) Explosion protection to FM for US Intrinsic safe, Non-sparking Explosion protection to FM for CA Intrinsic safe, Non-sparking	II 1G Ex ia IIC T*; IP68 T* = T5 for Ta = -40 ... +85 °C T* = T6 for Ta = -40 ... +75 °C II 1 D Ex iaD 20 IP68 T95C; Ta = -40 ... +85 °C II 3 G Ex nA nC IIC T* Gc; IP68 T* = T5 for Ta = -40 ... +85 °C T* = T6 for Ta = -40 ... +75 °C IS/I,II,III/1/ABCDEFGF/ T5 Ta = -40 ... +85 °C, T6 Ta = -40 ... +75 °C NI/I/2/ABCD/ T5 Ta = -40 ... +85 °C, T6 Ta = -40 ... +75 °C S/II,III/2/EFG/ T5 Ta = -40 ... +85 °C, T6 Ta = -40 ... +75 °C I/0/AEx ia/IIC/ T5 Ta = -40 ... +85 °C T6 Ta = -40 ... +75 °C; 20/AEx iaD/T95°C; Ta = -40 ... 85 °C I/2/AEx nA nC/IIC/ T5 Ta = -40 ... +85 °C, T6 Ta = -40 ... +75 °C; IP68 IS/I,II,III/1/ABCDEFGF/ T5 Ta = -40 ... +85 °C T6 Ta = -40 ... +75 °C; NI/I/2/ABCD/ T5 Ta = -40 ... +85 °C T6 Ta = -40 ... +75 °C; S/II,III/2/EFG/ T5 Ta = -40 ... +85 °C T6 Ta = -40 ... +75 °C; I/0/Ex ia/IIC/ T5 Ta = -40 ... +85 °C T6 Ta = -40 ... +75 °C; I/2/Ex nA nC/IIC/ T5 Ta = -40 ... +85 °C T6 Ta = -40 ... +75 °C II/1/EFG Ta = -40 ... +85 °C; IP68
Measuring accuracy Max. measuring error (4 ... 20 mA circuit)	1 % of measuring range, 40 ... 85 °C (104 ... 185 °F)	Flameproof gases and vapors	II 2 G Ex d IIC T* Gb; IP68 T* = T5 for Ta = -40 ... +85 °C T* = T6 for Ta = -40 ... +75 °C
Rated conditions Location Ambient conditions <ul style="list-style-type: none"> Ambient temperature <ul style="list-style-type: none"> Storage temperature Electromagnetic compatibility	Outside/inside -40 ... +85 °C (-40 ... +185 °F) In hazardous areas up to 75 °C (167 °F) -40 ... +85 °C (-40 ... +185 °F) To EN 301 489-17 and EN 300 328-1	Protection by enclosure dust	II 2 D Ex tb IIIC T95°C Ta = -40 ... +85 °C; IP68
Design Weight Enclosure <ul style="list-style-type: none"> Material - Enclosure - Cap <ul style="list-style-type: none"> Cable entry Degree of protection Aerial	0.46 kg (1.01 lb) Aluminum alloy, RoHS-compliant polyurethane corrosion-resistant coating Resin ½" NPT female thread IP68 Potted in enclosure	Explosion protection to FM for US Explosion proof, flameproof, gas, dust Explosion protection to FM for CA Explosion proof, flameproof, gas, dust	XP/I/1/ABCD I/1 AEx d IIC T5, T6 Gb DIP/II,III/1/EFG 21/AEx tb IIIC T95°C T5 Ta = -40 ... +85 °C, T6 Ta = -40 ... +75 °C Type 6P, IP68 XP/I/1/ABCD I/1 Ex d IIC T5, T6 Gb DIP/II,III/1/EFG T5 Ta = -40 ... +85 °C, T6 Ta = -40 ... +75 °C
Auxiliary power Power supply Loop-powered, operating current	Loop power 1 ... DC 2.5 V, can be set by user in 0.5 V DC increments DC 3.2 ... 25 mA operating cur- rent; overvoltage, surge and reverse polarity protection		

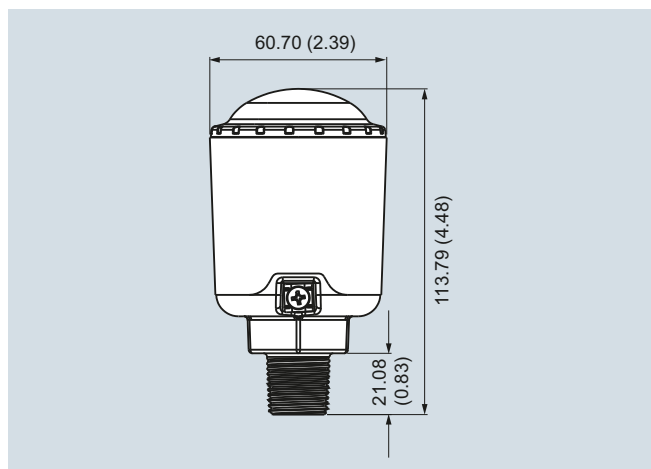
Supplementary Components

WirelessHART products

SITRANS AW210 - WirelessHART adapter

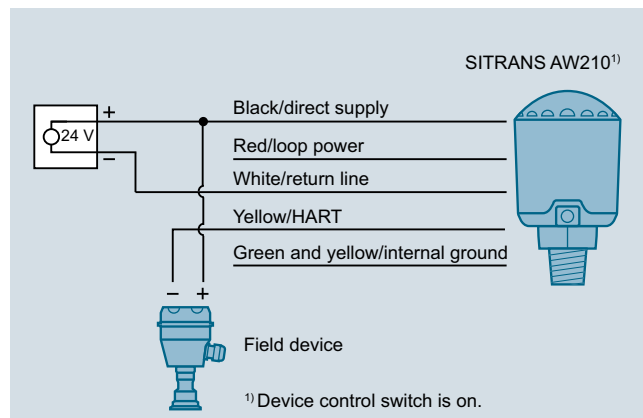
Selection and ordering data	Article No.
SITRANS AW210 Adapter for WirelessHART communication	7MP3111-0-0AA0
<p>➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>	
WirelessHART-Adapter AW210 with 4 ... 20 mA- or HART interface	
2 devices	1
8 devices	2
Auxiliary Power	A
Loop powered or 24 V DC (external)	
Certificates and approvals	B
Intrinsically safe gas, vapors and dust (ATEX) , Intrinsic Safe (FM)	
Explosion proof gas, vapour and dust (ATEX), Explosion proof (FM)	C
Enclosure	0
Aluminum	
Accessories	
Thread adapter M20 x 1.5 (male thread) on ½-14 NPT (female thread) IP65, not explosion proof	7MP1990-0BA00

Dimensional drawings

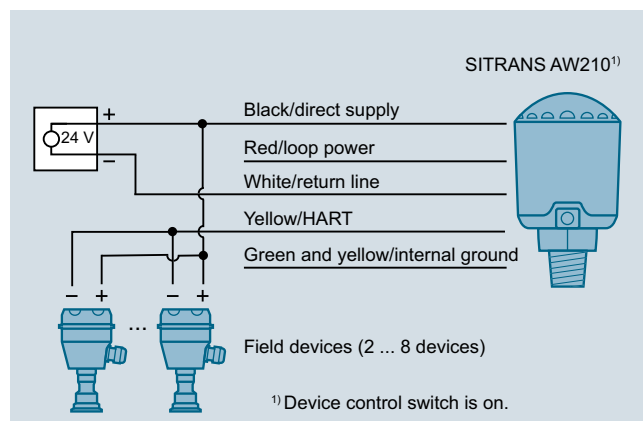


SITRANS AW210 WirelessHART adapter, dimensions in mm (inches)

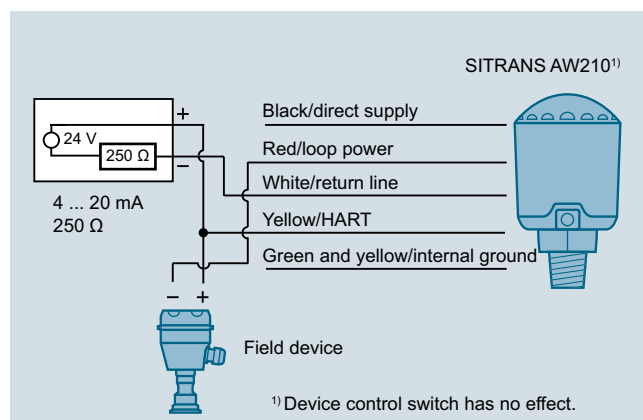
Schematics



External 24 V DC power supply, connection of one device



External 24 V DC power supply, connection of multiple devices



Loop power for connection of one 4 ... 20 mA HART device