General Specifications

YFGW520
Field Wireless Access Point

GS 01W02E02-01EN

■ GENERAL

This General Specification(GS) describes the hardware specifications for Field Wireless Access Point and specifications of attached software. This product is based on the industrial automation wireless communication standard ISA100.11a of the International Society of Automation (ISA). ISA100.11a is approved as an International Standards (IEC 62734) by International Electrotechnical Commission (IEC). This product has backbone router function based on ISA100.11a, and combining this with Field Wireless Management Station (YFGW410) and/or Field Wireless Media Converter (YFGW610) composes the field wireless system. YFGW520 is a successor to YFGW510, enabling robust and longer distance backbone network construction.

For outline of a field wireless system, and details of each product, see related product General Specifications.



■ FEATURES

●High-performance, compact industrial wireless access point

This product is an industrial wireless access point, compact and lightweight and supporting industrial automation wireless communication standard ISA100.11a. Enabling you to build a robust field wireless network, the access point provides reliable communication.

●Duocast (ISA100.11a Standard)

This product supports the “Duocast” function of ISA100.11a standard. Enabling simultaneous communication with two YFGW520s, thereby creating a redundant communication path, increasing the reliability of the field wireless network.

●Robust and plant-wide network

This product supports two types of optical fiber communication option, makes it possible to construct a noise resistant and long distance (max 5 km) backbone network by combining with YFGW610.

YOKOGAWA

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GS 01W02E02-01EN
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■ HARDWARE SPECIFICATIONS

■ Communication Interface

Item		Field Network Specifications	Field Wireless Backbone Specifications *1		
Communication Interface	Standard	IEEE802.15.4	100BASE-TX	100BASE-FX	
	Frequency	2400–2483.5 MHz	–		
	Raw data rate	250 kbps	100 Mbps	100 Mbps	
	Radio Security	AES128 bit	–		
	RF Transmitter Power	Max 12 dBm *2	–		
	Connector	N type	RJ-45	SC connector [single pole × 2] *3	
	Cable Type	coaxial	Category 5	Multimode Fiber *4	Single mode Fiber *5
	Antenna	+2 dBi	–		
	Remote Antenna	+2 dBi, +6 dBi, +9 dBi	–		
	Maximum length	500 m *6	100 m	2000 m	5000 m
	Port	1 port	1 port	1 port	
	Protection	–	Surge	–	
Communication Protocol	Field Wireless	ISA100.11a	–		
	Management, configuration, etc.	–	IEEE1588PTP v2 *7, Proprietary *8		

*1: In outdoor wiring of Field Wireless Backbone, it is recommended to use optical fiber cables with a nonmetallic tension member, combining with YFGW610.
*2: This is the maximum radio output at N-type connector for antenna connection. Radio output power depends on the region and the antenna type.
*3: 2-pole SC connector cannot be used due to the conduit hole size limitation. SC connector should use Short Boot type.
*4: Core diameter / cladding diameter 50/125 µm core or 62.5 / 125 µm can be used.
*5: ITU-T G.652 compliant products can be used.
*6: The maximum length needs perfect conditions without an obstruction for radio wave transmission, using a standard antenna (2 dBi). The maximum length changes with the environmental conditions and installation situations of a site.
*7: Installation of these multiple product and YFGW410 in one field wireless subnet requires direct connection or the connection via IEEE1588PTP basis products.
*8: TCP based custom protocol used for communication between this product and YFGW410.

■ Performance

Network Size:
Max 100 field wireless devices are connectable

Display:
LED displays the operating state of this product, and the operating state of wireless communications and cable communications.

Diagnosis Functions:
CPU failures, communication interface malfunctions, outside the range, abnormal settings.

Software Download Function:
The software inside this product and the software (communication firmware, sensor firmware) inside wireless field device can update via YFGW410.

■ Installation Environment

Temperature Range:
Operating:
-40 to +70°C (altitude: up to 3000 m)
Storage:
-40 to +85°C

Humidity Range:
Operating:
5 to 95% RH (non-condensation)
Storage:
5 to 95% RH (non-condensation)

Temperature Gradient:
Operating: ±10°C/h or less
Storage: ±20°C/h or less

Power Supply:
Rated Voltage: 24 V DC
Voltage Range*1 : 10.0-26.4 V DC
Momentary Power Failure: Instant Disconnection
DC Power Supply Ripple Ratio: 1%p-p or less

*1: The equipment shall not be operated outside the range.

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Power Consumption:
Max. 3.5 W

Degrees of Protection:
IP66/IP67, Type 4X

Vibration Resistance:
0.21 mm P-P (10-60 Hz), 3 G (60-2000 Hz)

Shock Resistance:
50 G 11 ms (de-energized, with half-sine wave pulse in three directions)

Noise Resistance:
Electric Field: 3 V/m or less (80 MHz-1 GHz)
Electrostatic Discharges: 4 kV or less (contact discharge), 8 kV or less(air discharge)

Grounding:
Class D grounding with the grounding resistance of 100 Ω or less is necessary. (no sharing ground with others)

Cooling:
Natural Air Cooling

■ Regulatory Compliance Statements

This device satisfies the following standards.

* Please confirm that this product fulfills an applicable standard in the installation region. If additional regulatory information and approvals are required, contact a Yokogawa representative.

Telecommunication Compliance:
MIC Identification (Japan), FCC Approval (United States), ISED Approval (Canada), RE Directive (EU Countries)

CE Conformity:
- RoHS Directive: EN IEC 63000
- ATEX Directive: See “OPTIONAL SPECIFICATION (For Explosion Protected type)”
- RE Directive:
  Safety: EN 61010-1, EN 62479, EN 60825-1 *1
  *1: This standard is only applied to the product whose suffix of Communication Interface code is 6.
  EMC: EN 301 489-1, EN 301 489-17, EN 61326-1, EN 55011 Class A Group 1, EN 61000-6-2
  Radio Spectrum: EN 300 328

EMC Requirement:
NAMUR NE21 Compliance *1
*1: This standard is only applied to the product whose suffix of Comunication Interface code is 1.

Safety Requirements:
CAN/CSA-C22.2 No.61010-1
CSA-C22.2 No.94.2
IEC 60529

■ Physical Specifications

Connections:
Refer to “MODEL AND SUFFIX CODES.”

Housing:
Low copper cast aluminum alloy

Coating of housing:
Urethane curing type polyester resin powder coating
Mint-green paint (Munsell 5.6BG 3.3/2.9 or its equivalent)
[for option code /X2]
Epoxy and polyurethane resin solvent coating

Name Plate and Tag:
316 SST

Weight:
3.0 kg (without mounting bracket, and process connector.)

■ SOFTWARE SPECIFICATIONS

■ Field Wireless Access Point Setting Tool

This software is used for a setup and maintenance of this product. PC on which this software program installed is connected with this product via infrared communication.

* The software is published on the Yokogawa member site, Customer Portal (https://myportal.yokogawa.com/).
Refer the User Manual IM 01W02E02-01EN for download and installation.
Before installing the software, FieldMate R3.02 or later should be installed.

■ Specifications and System Requirements

Language:
Software (GUI): English
Manual: Japanese or English

Hardware Operating Environment:

Item	Recommended System Requirement
Processor	Intel Core i5-2520 M or equivalent, or higher
Memory	2 GB or more
Hard Disk	8 GB or more
Display	Color: High Color (16 bits or more) Resolution:1024 x 768 or higher
Communication Device	Ethernet Network Card USB 2.0 port

Software Operating Environment *1,*2:

OS
Windows 11 Pro/Home
Windows 10 Pro/Home 32/64 bit

*1: Japanese version and English version are supported.
*2: Microsoft .NET Framework 4.6.1 is required.

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■ MODEL AND SUFFIX CODES

Model	Suffix Codes	Description
YFGW520	·····	Field Wireless Access Point
Output signal	**-A** ·····	ISA100.11a
Communication interface	**1** ·····	100 BASE-TX
	2 ·····	100 BASE-FX (Multimode Fiber)
	6 ·····	100 BASE-FX (Single mode Fiber)
Housing	**1** ·····	Low copper cast aluminum alloy
Electrical Connection	**0** ·····	G1/2 female, two electrical connections, without blind plugs
	2 ·····	1/2 NPT female, two electrical connections, without blind plugs
	4 ·····	M20 female, two electrical connections, without blind plugs
---	**A** ·····	Always A
License	**-S** ·····	Software license
Manual language	**0** ·····	Japanese
	1 ·····	English
Software media	**1** ·····	None*4
Mounting bracket	**B** ·····	304 SST 2-inch pipe mounting (for horizontal piping) *1
	D ·····	304 SST 2-inch pipe mounting (for vertical piping) *1
	J ·····	316 SST 2-inch pipe mounting (for horizontal piping) *1
	K ·····	316 SST 2-inch pipe mounting (for vertical piping) *1
	N ·····	None
ISA100.11a antenna	**1** ·····	Detachable antenna 2 dBi (2.4 GHz)
	A ·····	Antenna adaptor: N-type connector *2 *3
---	**N** ·····	Always N
---	**N** ·····	Always N
---	**A** ·····	Always A
---	**A** ·	Always A
Option codes		/□Optional specifications

*1: A bolt is required for wall attachment.
*2: Select an antenna and a remote antenna cable. For details, refer to the accessory.
*3: In order for the wireless output of an antenna to get the maximum which the area permits, adjustment by service of Yokogawa is required.
*4: The software is published on the Yokogawa member site, Customer Portal (https://myportal.yokogawa.com/).

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■ OPTIONAL SPECIFICATIONS (For Explosion Protected Types)

Please select appropriate equipment in accordance with the laws and regulations of the relevant country/region, when it is used in a location where explosive atmospheres may be present.

Item		Description	Code
Factory Mutual (FM) *1*2*3	United States	FM Nonincendive Approval (United States) Certificate: FM17US0294X Applicable standard: FM3600, FM3611, FM3810, NEMA 250 Nonincendive for Class I, Division 2, Groups A, B, C and D. Class I, Zone 2, Group IIC. Suitable for Class II, Division 2, Groups F and G, and Class III, Division 1 Enclosure: Type 4X Amb. Temp.(Tamb): –40 to 70°C (–40 to 158°F), Altitude: Up to 3000 m	**FN17**
	Canada	FM Non-Incendive and Type n Approval (Canada) Certificate: FM17CA0150X Applicable standard: C22.2 No. 94-2, C22.2 No. 213, CAN/CSA-C22.2 No. 60079-0, CAN/CSA-C22.2 No. 60079-11, CAN/CSA-C22.2 No. 60079-15, CAN/CSA-C22.2 No. 60529, CAN/CSA-C22.2 No. 61010-1 Non-incendive for Class I, Division 2, Groups A, B, C, D Suitable for Class II, Division 2, Groups F, G; Class III, Division 1 Ex nA [ic] IIC T4 Gc Enclosure: Type 4X, IP66 Amb. Temp(Tamb): –30 to 70°C (–22 to 158°F), Altitude: Up to 3000 m	**CN17**
ATEX *1*2		ATEX Increased safety declaration Applicable standard: EN IEC 60079-0, EN IEC 60079-7, EN 60079-11 II 3 G Ex ec [ic Gc] IIC T4 Gc X Enclosure: IP66 in according with EN IEC 60079-0 Amb. Temp.(Tamb): –30 to 70°C (–22 to 158°F) Atmospheric pressure: 70 kPa to 110 kPa (Altitude: Up to 3000 m)	**KN27**
		ATEX Flameproof Approval Certificate: DEKRA 15ATEX0042 X Applicable Standard: EN IEC 60079-0, EN 60079-1, EN 60079-11 II 2 G Ex db [ib Gb] IIC T4 Gb Um: 250 V Amb. Temp.(Tamb): –40 to 70°C (–40 to 158°F), Altitude: Up to 2000 m	**KF27**
IECEx *1*2*3		IECEx Increased safety Approval Certificate: IECEx DEK 14.0028X Applicable standard: IEC 60079-0, IEC 60079-7, IEC 60079-11 Ex ec [ic Gc] IIC T4 Gc Enclosure: IP66 in accordance with IEC 60079-0 Amb. Temp.(Tamb): –30 to 70°C (–22 to 158°F) Atmospheric pressure: 70 kPa to 110 kPa (Altitude: Up to 3000 m)	**SN27**
		IECEx Flameproof Approval Certificate: IECEx DEK 15.0021X Applicable Standard: IEC 60079-0, IEC 60079-1, IEC 60079-11 Ex db [ib Gb] IIC T4 Gb Um: 250 V Amb. Temp.(Tamb): –40 to 70°C (–40 to 158°F), Altitude: Up to 2000 m	**SF27**
Ex-CCC *1*2*3*4 (NEPSI)		CCC Certification Certification No: 2020322310000119 Applicable Standard: GB/T3836.1, GB/T3836.3, GB/T3836.4 Ex ec [ic] IIC T4 Gc NEPSI Increased Safety Approval Certification No: GYJ22.3619X Applicable Standard: GB/T3836.1, GB/T3836.3, GB/T3836.4 Ex ec [ic] IIC T4 Gc Enclosure: IP66 Amb. Temp.(Tamb): –30 to 70°C (–22 to 158°F), Altitude: Up to 2000 m	**NN27**
Korea *1*2*3		Korean Flameproof Approval Certificate: 20-KA4BO-0701X Applicable Standard: Notice of Ministry of Labor No. 2020-33 Harmonized with IEC 60079-0, IEC 60079-1, IEC 60079-11 Ex d [ib] IIC T4 Amb. Temp.(Tamb): –40 to 70°C (–40 to 158°F), Altitude: Up to 2000 m Um: 250 V	**PF27**
EAC *1*2*3*4		EAC Type n Approval Certificate: ЕАЭС RU C-JP.AA87.B.00195/19 Applicable Standard: ГОСТ 31610.0, ГОСТ 31610.11, ГОСТ 31610.15 2Ex nA [ic] IIC T4 Gc Enclosure: IP66 Amb. Temp.(Tamb): –30 to 70°C (–22 to 158°F), Altitude: Up to 2000 m	**GN17**

*1: G1/2 electrical connection (Electrical connection code: 0) cannot be selected.
*2: Applies only English manual language (Manual language code: 1).
*3: CE marking is omitted from the product when this option is selected.
*4: Contact YOKOGAWA for availability.

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■ OTHER OPTIONAL SPECIFICATIONS

Item		Description	Code
Painting	Coating change	Anti-corrosion coating	**X2**

■ ACCESSORY

Item	Parts Number	Description
Remote antenna cable	F9915KU	3 m with mounting bracket
	F9915KV	13 m (3 m+10 m) with surge protective device and mounting bracket
Antenna	F9915KW	2 dBi Standard Antenna (2.4 GHz)
	F9915KY	6 dBi High gain antenna (2.4 GHz) *1
	F9195VG	9 dBi High gain antenna (2.4 GHz) *1

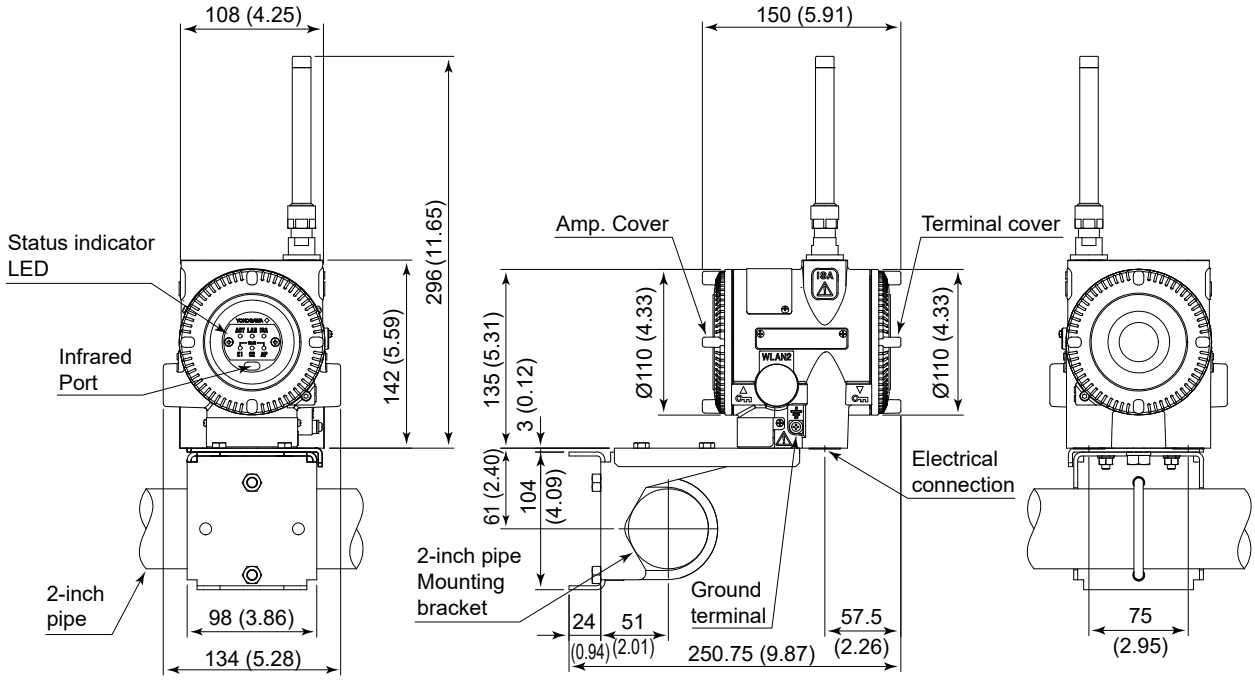
*1: High gain antenna cannot perform direct connection to this product.

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■ EXTERNAL DIMENSIONS

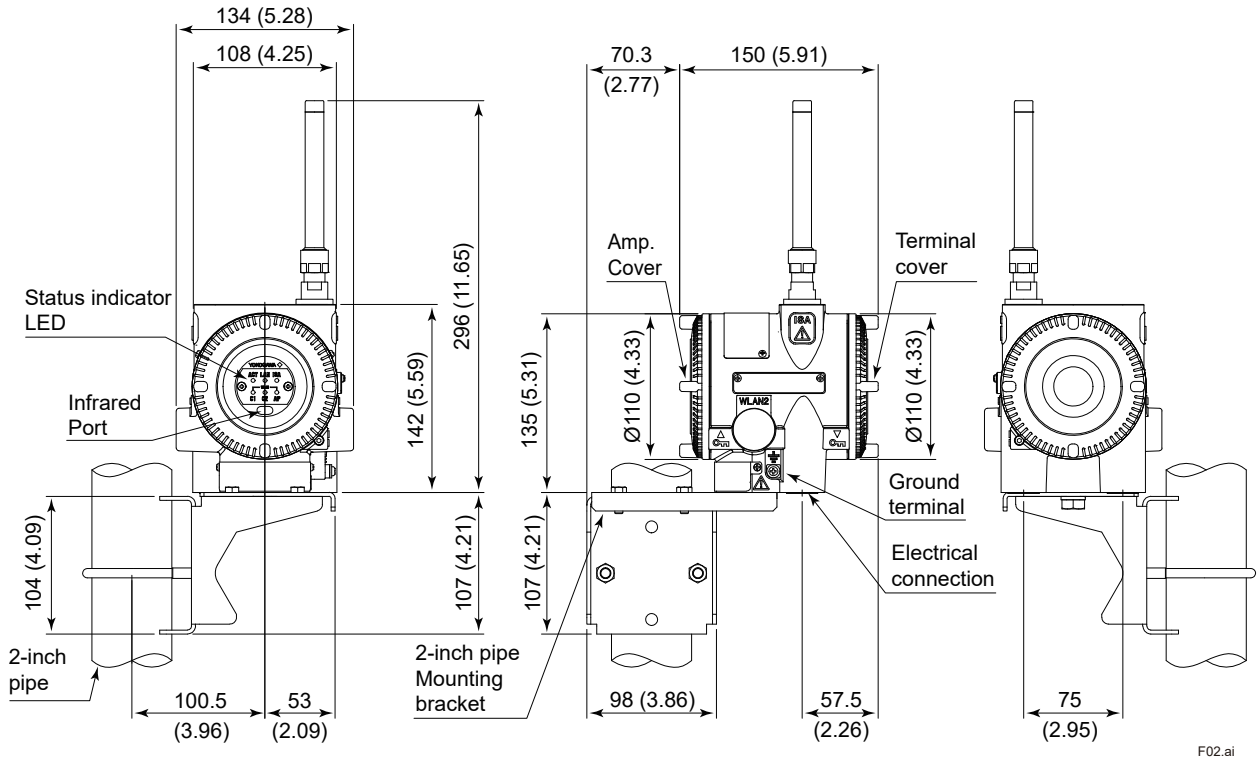
Unit: mm (approx. inch)

■ 2-inch pipe mounting (for horizontal piping)



F01.ai

■ 2-inch pipe mounting (for vertical piping)

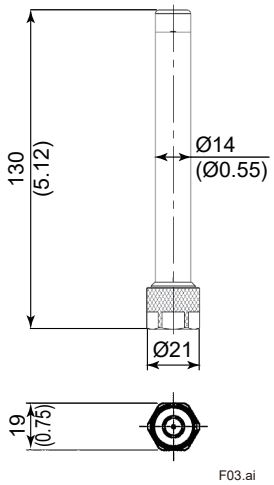


F02.ai

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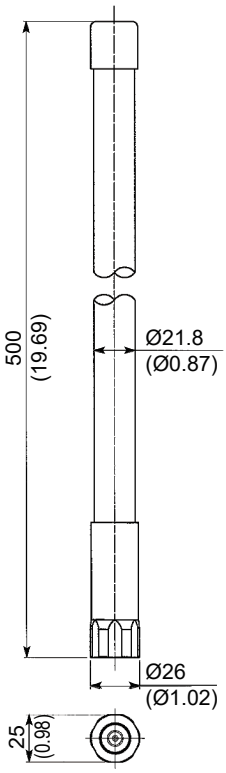
■ Antenna

- Standard Antenna (F9915KW)
  Directional: Non-directional
  Gain: 2 dBi



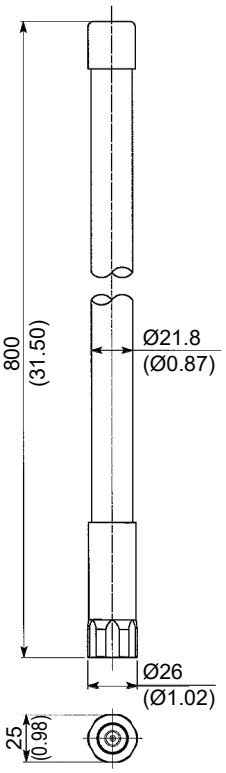
F03.ai

- High gain antenna (F9915KY)
  Directional: Non-directional
  Gain: 6 dBi



F04.ai

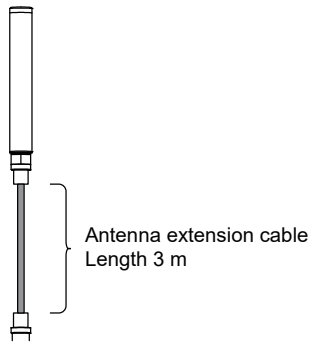
- High gain antenna (F9195VG)
  Directional: Non-directional
  Gain: 9 dBi



F05.ai

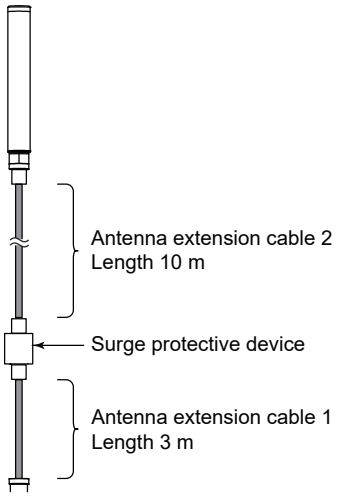
■ Remote antenna cable

- Cable 3 m



F06.ai

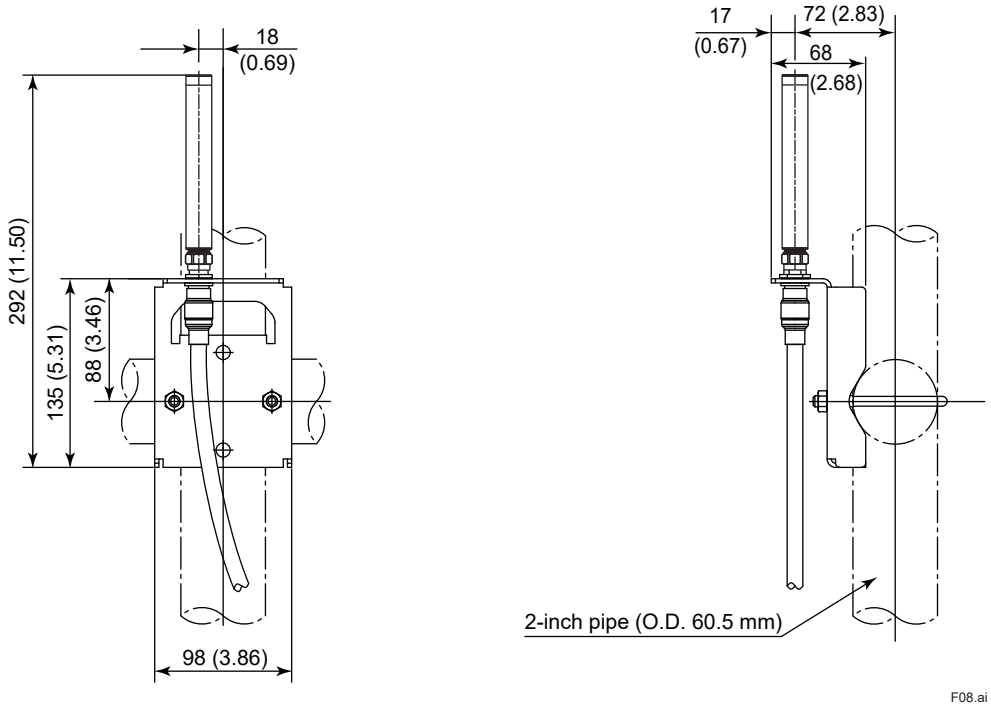
- Cable 13 m



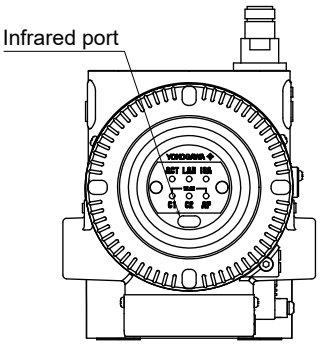
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■ Antenna mounting bracket

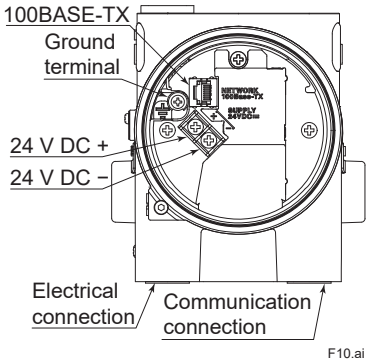


■ INFRARED CONFIGURATION

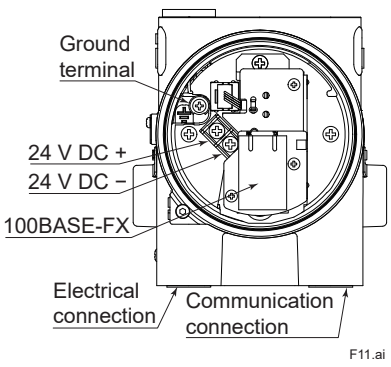


■ TERMINAL CONFIGURATIONS

■ Communication Interface Code: 1



■ Communication Interface Code: 2, 6



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■ ORDERING INFORMATION

Specify the following when ordering

1. Model, suffix codes, and option codes
2. Tag Number (if required)

   Engraving on the tag plate can be specified by a combination of uppercase letters, lowercase letters, numbers, “- (hyphen)”, “_ (underscore)”. Factory setting is blank unless otherwise specified.

■ RELATED PRODUCTS GENERAL SPECIFICATIONS

Field Wireless System Overview :
Refer to GS 01W01A01-01EN
Field Wireless Management Station YFGW410:
Refer to GS 01W02D01-01EN
Field Wireless Media Convertor YFGW610:
Refer to GS 01W02D02-01EN

■ TRADEMARK

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■ INFORMATION ON WEEE DIRECTIVE

EU WEEE (Waste Electrical and Electronic Equipment) Directive is only valid in the EU.
This instrument is intended to be sold and used only as a part of equipment which is excluded from WEEE Directive, such as large-scale stationary industrial tools, a large-scale fixed installation and so on, and, therefore, subjected to the exclusion from the scope of the WEEE Directive. The instrument should be disposed of in accordance with local and national legislation/regulations.

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