

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.

■ 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.

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 50581
- 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

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.

■ **Specifications and System Requirements**

Software License:

1 license

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 (16bits or more) Resolution:1024 x 768 or higher
Communication Device	Ethernet Network Card USB 2.0 port

Software Operating Environment *1:*2:

OS	Type
Windows 10 Pro / Home	32/64 bit
Windows 7 Professional / Home Premium SP1	32/64 bit

*1: Japanese version and English version are supported.

*2: Microsoft .NET Framework 4.6.1 is required.

■ 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	0	Provided with DVD-ROM
	1	None
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.

■ OPTIONAL SPECIFICATIONS (For Explosion Protected Types)

Item		Description	Code
Factory Mutual (FM) *1*2*3	United States	FM Nonincendive Approval (United States) Certificate: FM17US0294X Applicable standard: FM Class 3600:2018, FM Class 3611:2018, FM Class 3810:2018, NEMA 250:2014 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. 94-2:2015, C22.2 No. 213:2017, CAN/CSA-C22.2 No. 60079-0:2015, CAN/CSA-C22.2 No. 60079-11:2014, CAN/CSA-C22.2 No. 60079-15:2016, CAN/CSA-C22.2 No. 60529:2016, CAN/CSA-C22.2 No. 61010-1-12:R2017 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 Type n declaration Applicable standard: EN 60079-0: 2012+A11:2013, EN 60079-11:2012, EN 60079-15:2010 II 3 G Ex nA [ic] IIC T4 Gc X Enclosure: IP66 according to EN 60079-15 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 60079-0:2012+A11:2013, EN 60079-1:2014, EN 60079-11:2012 II 2 G Ex db [ib] IIC T4 Gb Um: 250 V Amb. Temp.(Tamb): -40 to 70°C (-40 to 158°F)	KF27
IECEX *1*2*3		IECEX Type n Approval Certificate: IECEX DEK 14.0028X Applicable standard: IEC 60079-0:2011, IEC 60079-11:2011, IEC 60079-15:2010 Ex nA [ic] IIC T4 Gc Enclosure: IP66 according to IEC 60079-15 Amb. Temp.(Tamb): -30 to 70°C (-22 to 158°F)	SN27
		IECEX Flameproof Approval Certificate: IECEX DEK 15.0021X Applicable Standard: IEC 60079-0:2011, IEC 60079-1:2014, IEC 60079-11:2011 Ex db [ib] IIC T4 Gb Um: 250 V Amb. Temp.(Tamb): -40 to 70°C (-40 to 158°F)	SF27

*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.

■ OTHER OPTIONAL SPECIFICATIONS

Item	Description	Code
Painting	Coating change Anti-corrosion coating	X2

■ ACCESSORY

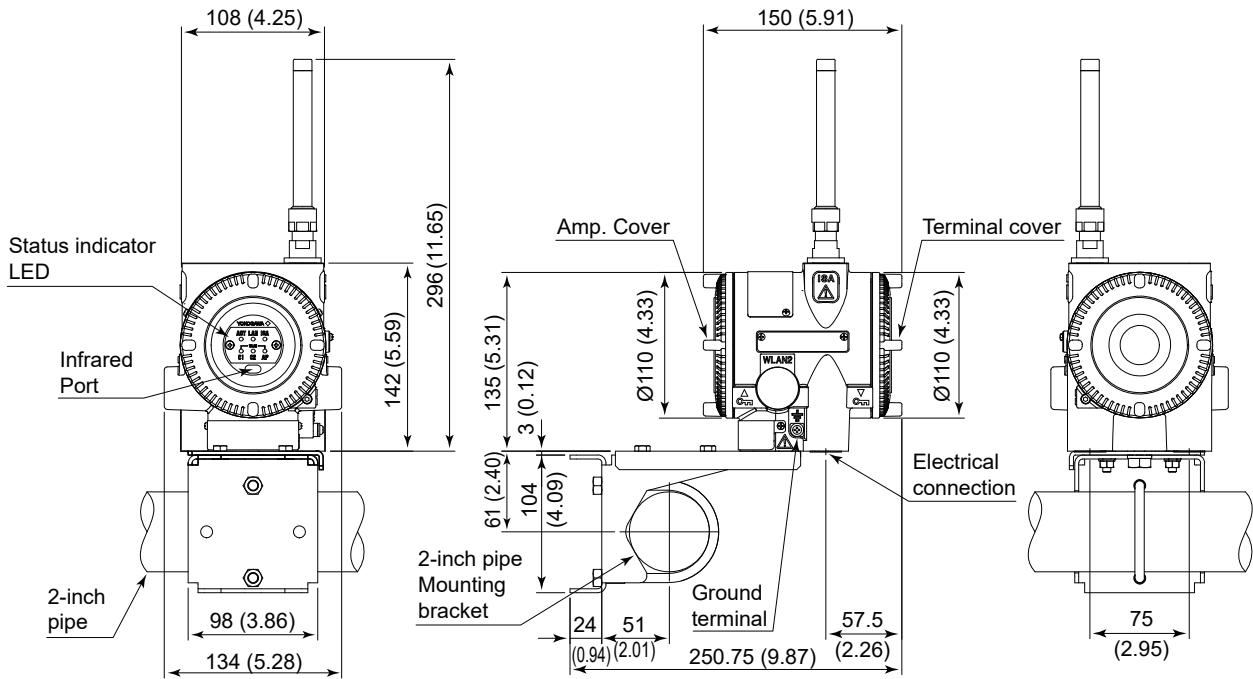
Item	Parts Number	Description
Remote antenna cable	F9915KU	3 m with mounting bracket
	F9915KV	13 m (3 m+10 m) with surge protective device and mounting bracket
Antenna	F9915KW	2 dBi Standard Antenna (2.4 GHz)
	F9915KY	6 dBi High gain antenna (2.4 GHz) *1
	F9195VG	9 dBi High gain antenna (2.4 GHz) *1

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

EXTERNAL DIMENSIONS

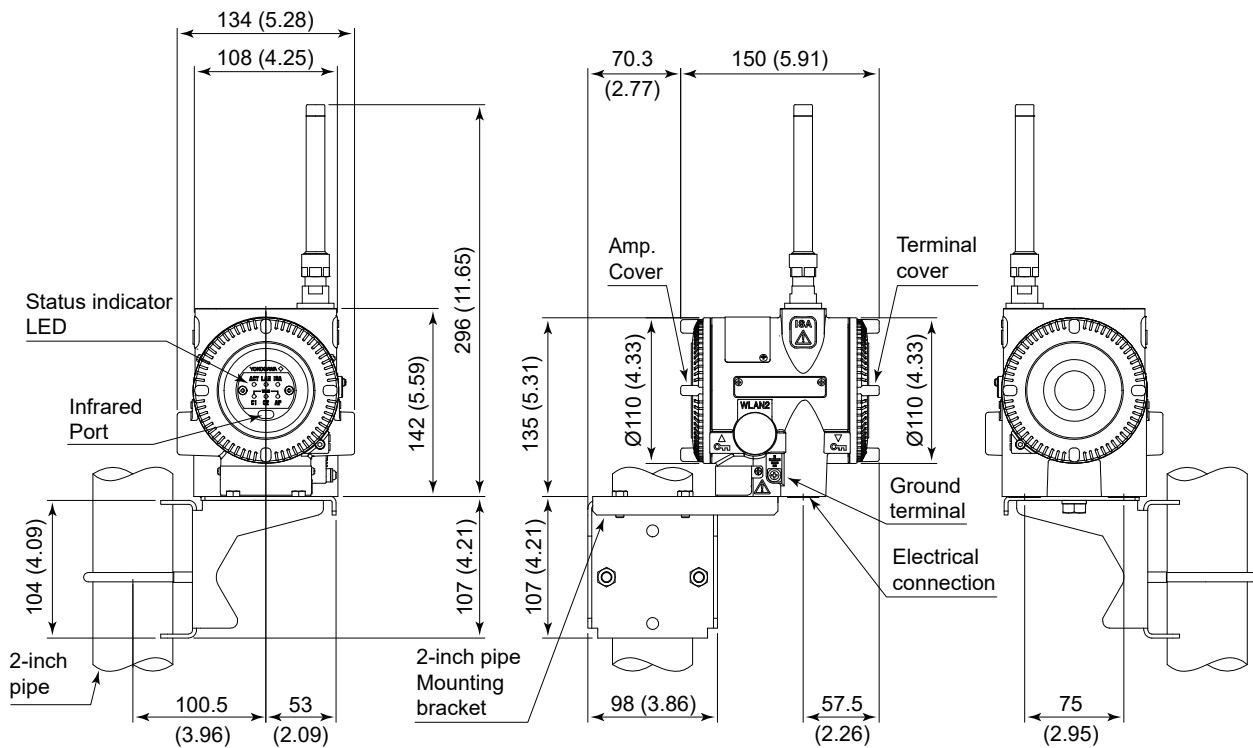
Unit: mm (approx. inch)

2-inch pipe mounting (for horizontal piping)



F01.ai

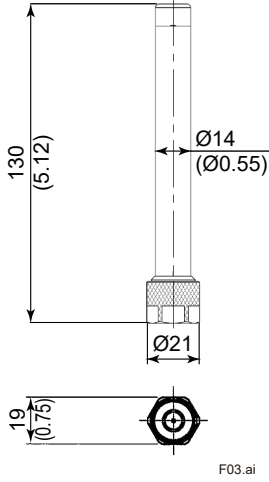
2-inch pipe mounting (for vertical piping)



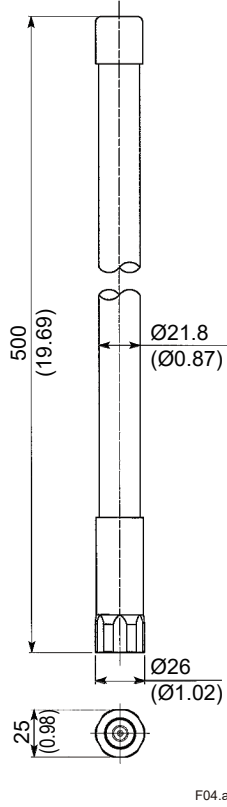
F02.ai

■ Antenna

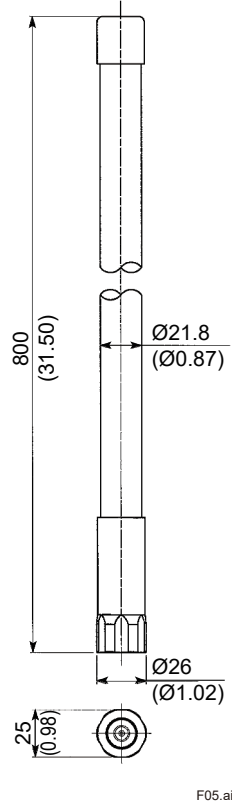
- Standard Antenna (F9915KW)
Directional: Non-directional
Gain: 2 dBi



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

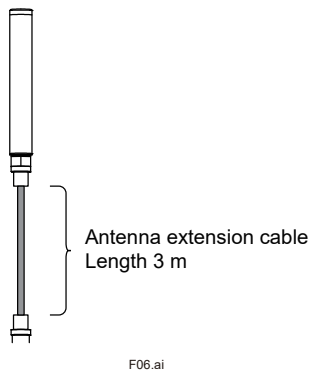


- High gain antenna (F9195VG)
Directional: Non-directional
Gain: 9 dBi

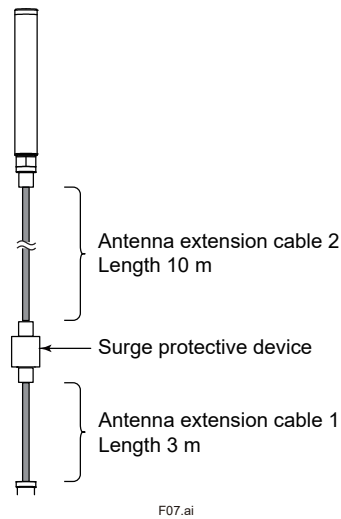


■ Remote antenna cable

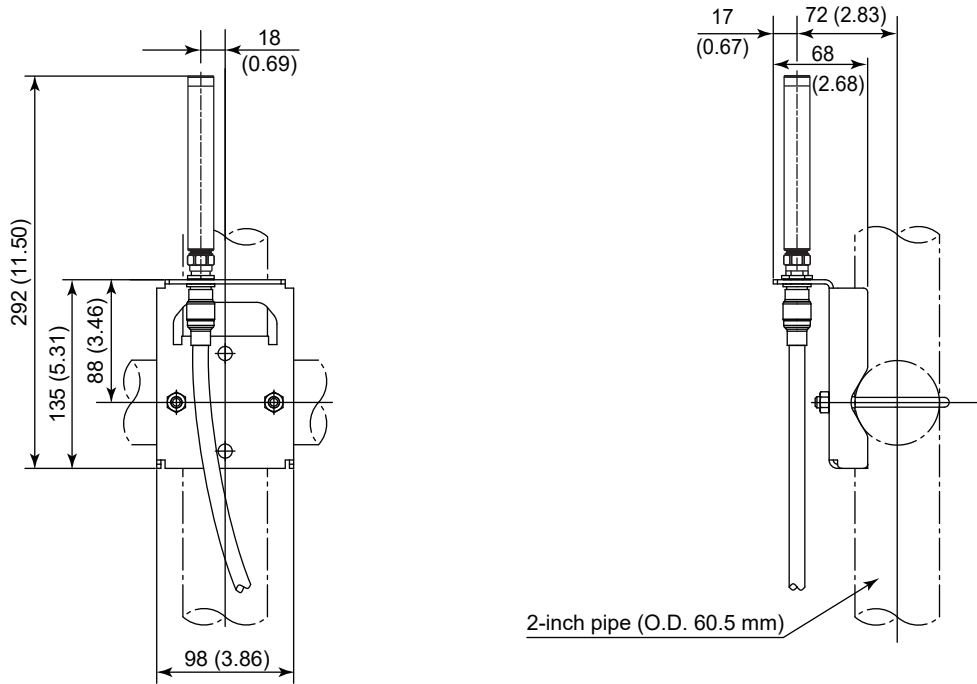
- Cable 3 m



- Cable 13 m

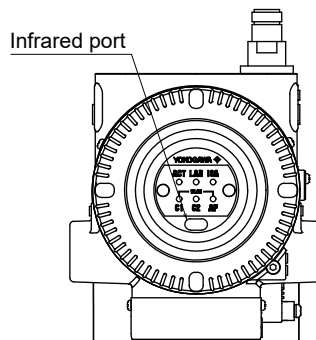


■ Antenna mounting bracket



F08.ai

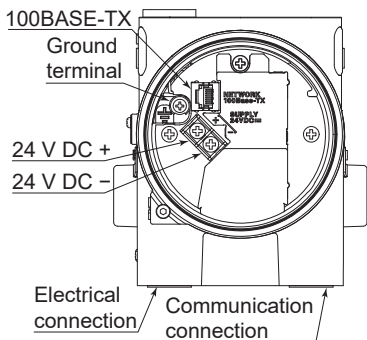
■ INFRARED CONFIGURATION



F09.ai

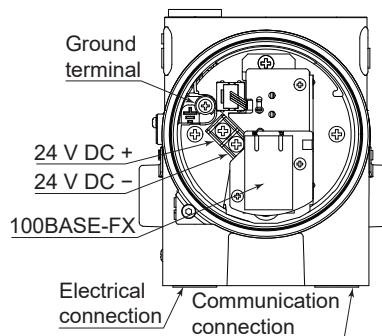
■ TERMINAL CONFIGURATIONS

■ Communication Interface Code: 1



F10.ai

■ Communication Interface Code: 2, 6



F11.ai

■ ORDERING INFORMATION

Specify the following when ordering

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

Specify Tag number (up to 16 letters) to be engraved on the tag plate. The characters can be specified using alphanumeric and the symbols, [-] and [_].

■ 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

YFGW is a registered trademark of Yokogawa Electric Corporation. Other product and company names appearing in this document are trademarks or registered trademarks of their respective holders.

■ 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.