

General Specifications

FN110 Field Wireless Communication Module



GS 01W03B01-01EN

■ GENERAL

This General Specification (GS) describes the specifications for Field Wireless Communication Module. 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). Wireless functions defined by ISA100.11a are equipped with this product. This product supports 2 device role; a field wireless device and a field wireless gateway. When utilizing with "Field Wireless Multi-Protocol Module FN310" or "Field Wireless Multi-Function Module FN510", this product is connectable with a field wireless network as a field wireless device. When utilizing with "Interface Adapter LN90", this product acts as a field wireless gateway. For more details, refer to the General Specifications of "Field Wireless Multi-Protocol Module FN310", "Field Wireless Multi-Function Module FN510" or "Interface Adapter LN90".

■ FEATURES

● Built-in high-performance wireless communication function

The high-performance built-in wireless communication module has excellent radio sensitivity and low power consumption, provides a stable wireless communication platform with excellent power saving capabilities.

● Compact and light weight

This product has been made compact and extremely lightweight as an explosion proof antenna with a built-in wireless communication module. As a result, flexible installation in the industrial environment is possible.

● ISA100 Wireless protocol stack

Inter module communication code -A1 is specified, this product is supplied with an ISA100 Wireless certified protocol stack with excellent reliability and scalability. ISA100 Wireless is an international, industrial wireless networking standard engineered to serve the needs of process industries.

● Built-in wireless gateway

Inter module communication code -R1 is specified, this product acts as system manager, security manager, gateway, and backbone router based on ISA100.11a. Easy to construct small scale field wireless network with combining Remote Terminal Unit (RTU) or other controller.



■ STANDARD SPECIFICATIONS

□ WIRELESS SPECIFICATIONS

Communication protocol:

ISA100 Wireless (IEEE802.15.4)

Data rate:

250 kbps

Frequency:

2400 – 2483.5 MHz license free ISM band

Radio security:

AES 128 bit

RF Transmitter power:

12 dBm (eirp)

Antenna:

2 dBi (Omni directional)

□ POWER SUPPLY SPECIFICATIONS

Power Supply Voltage:

2.9 - 4.8 V

See also "OPTIONAL SPECIFICATIONS
(For Explosion Protected Types)"

Consumption current:

Max. 60 mA

□ **PERFORMANCE SPECIFICATIONS**

[Inter module communication code: -A1]

Update Period:

1 to 3600 s*

* Depends on module to connect this product. Refer to the general specifications of the products that are connected to this product.

Digital Communication for FN series

Communication Mode: Half-duplex communication (RS485 compliant)

Communication Speed: 9600 bps

Communication Distance: Max 20 m (dedicated cable)

Diagnostic Functions:

Power failures, wired communication failures, firmware internal errors, memory errors, abnormal temperature

Software Download Function:

Software download function permits to update wireless field device software via ISA100 Wireless communication.

[Inter module communication code: -R1]

Field Wireless Subnet:

1 subnet

Field Wireless Device:

Max. 20 devices (update rate: 2 to 3600 s)

Max. 10 devices (update rate: 1 s)

Modbus communication for PLC/RTU:

Communication Mode: Half-duplex communication (RS485 compliant)

Communication Speed: Max. 38400 bps

Communication Distance: Max. 20 m (dedicated cable)

Diagnostic Functions:

Power failures, wired communication failures, firmware internal errors, memory errors, abnormal temperature

□ **INSTALLATION ENVIRONMENT**

Ambient Temperature Limits:

Operating: -40 to 85°C (altitude up to 3000 m)

Storage: -40 to 85°C

Ambient Humidity Limits:

Operating: 0 to 100%RH (non-condensation)

Storage: 0 to 100%RH (non-condensation)

■ **MODEL AND SUFFIX CODES**

Ambient Temperature Gradient:

Operating: ±10°C/h or less

Storage: ±20°C/h or less

Vibration Resistance:

0.21 mm P-P (10 – 60 Hz), 3 G (60 - 2 kHz)

Shock Resistance:

50 G 11 ms

Grounding:

Ground through the mating of the metal shell. Please ensure that the ground terminal is connected to an appropriate ground.

□ **REGULATORY COMPLIANCE STATEMENTS**

This device satisfies the following standards.

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

Telecommunication Compliance:

MIC Identification (Japan), FCC Approval (United States), IC Approval (Canada), RE Directive (EU Countries)

CE Conformity:

RoHS Directive:

EN50581

ATEX Directive:

See "OPTIONAL SPECIFICATIONS (For Explosion Protected Types)"

RE Directive:

Safety: EN61010-1 (Indoor/Outdoor use), EN62479

EMC: EN 301 489-1, EN 301 489-17,

EN61326-1 Class A Table 2, EN55011 Class A

Radio Spectrum: EN 300 328

Canadian Safety Standards:

CAN/CSA-C22.2 No.61010-1

CAN/CSA-C22.2 No.94.1, CAN/CSA-C22.2 No.94.2

IEC 60529

Degrees of Protection:

IP66, IP67 and Type 4X apply when the connector is properly tightened.

□ **PHYSICAL SPECIFICATIONS**

Connector:

5-pin round connector dedicated

Housing Material:

Brass

Weight:

100 g

Model	Suffix Codes		Description
FN110			Field Wireless Communication Module
General Specifications	Inter module communication	-A1	Digital communication for FN series
		-R1	Modbus communication for PLC/RTU
		-L	ISA100 Wireless
	Output signal	0	Brass
	Housing Material	0	Integral antenna 2 dBi (2.4 GHz)
	Antenna	A	Always A
	---	-A	Always A
---	A	Always A	
Option codes			/□ Optional specifications

■ OPTIONAL SPECIFICATIONS (For Explosion Protected Types)

Item	Description	Code
Factory Mutual (FM)*1*2	United States FM Intrinsically safe Approval (United States) Applicable Standards: FM Class 3600:2011, FM Class 3610:2010, FM Class 3810:2005, ANSI/ISA 60079-0:2013, ANSI/ISA 60079-11:2014, ANSI/IEC 60529:2004, NEMA 250:2003 Certificate No: FM17US0107X Intrinsically safe for Class I, II, III, Division 1, Groups A, B, C, D, E, F & G, Class I, Zone 0, in Hazardous Locations, AEx ia IIC Enclosure: IP66 and Type 4X, Temperature Class: T4, Amb. Temp.: -40 to 70 °C (-40 to 158°F) Electrical Parameters: Ui = 5.88 V, li = 0.62 A, Pi = 0.92 W, Ci = 5.8 µF, Li = 7µH Dielectric Strength: 500 V a.c. r.m.s., 1 minute	FS17
	Canada FM Intrinsically safe Approval (Canada) Applicable Standards: CSA-C22.2 No. 60079-0:2011, CSA-C22.2 No. 60079-11:2014, CSA-C22.2 No. 61010-1:2012, CSA-C22.2 No. 94.1:2007, CSA-C22.2 No. 94.2:2007, CSA-C22.2 No. 60529:2005 Certificate No: FM17CA0054X Ex ia IIC T4 Ga Intrinsically safe for Class I, II, III, Division 1, Groups A, B, C, D, E, F & G Enclosure: IP66 and Type 4X, Temperature Class: T4, Amb. Temp.: -40 to 70 °C (-40 to 158°F) Electrical Parameters: Ui = 5.88 V, li = 0.62 A, Pi = 0.92 W, Ci = 5.8 µF, Li = 7µH Dielectric Strength: 500 V a.c. r.m.s., 1 minute	CS17
ATEX*1*2	ATEX Intrinsically safe Approval Applicable Standards: EN 60079-0: 2012+A11: 2013, EN 60079-11: 2012 Certificate: Presafe 15ATEX6309X II 1 G Ex ia IIC T4 Ga Degree of protection: IP66 according to EN 60529:1991+A1:2000+A2:2013 Amb. Temp. (Tamb): -40 to 70°C (-40 to 158°F) Electrical Parameters: Ui = 5.88 V, li = 0.62 A, Pi = 0.92 W, Ci = 5.8 µF, Li = 7µH Dielectric Strength: 500 V a.c. r.m.s., 1 minute	KS27
IECEx	IECEx Intrinsically safe Approval*1*2 Applicable Standards: IEC 60079-0: 2011, IEC 60079-11: 2011 Certificate: IECEx PRE 15.0015X Ex ia IIC T4 Ga Degree of protection: IP66 according to IEC 60529: 2013 Amb. Temp. (Tamb): -40 to 70°C (-40 to 158°F) Electrical Parameters: Ui = 5.88 V, li = 0.62 A, Pi = 0.92 W, Ci = 5.8 µF, Li = 7µH Dielectric Strength: 500 V a.c. r.m.s., 1 minute	SS27
	IECEx Type n Approval*3 Applicable Standards: IEC 60079-0:2011, IEC 60079-15:2010 Certificate: IECEx PRE 16.0052X Ex nA IIC T4 Gc, Degree of protection: IP66/IP67 according to IEC 60079-15 Amb. Temp. (Tamb): -40 to 70°C (-40 to 158°F) Power supply: 2.9 to 4.3 V	SN27

*1: Remote antenna cables of F9092ED, F9092EE, F9092EG and F9092EH are available when the item is specified.

*2: When inter module communication code -R1 is specified, this option is not available.

*3: Only available when inter module communication code -R1 is specified. When optional code SN27 is selected, specify the protection cap CP.

■ OPTIONAL SPECIFICATIONS

Item	Description	Code
Protection cap*	Metal waterproof cap	CP

*: When protection cap is not specified, dust-cap is attached.

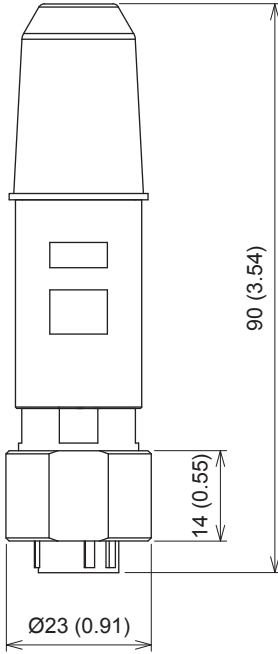
■ OPTIONAL ACCESSORIES

Item	Parts Number	Description
Remote antenna cable	F9092ED	3 m with mounting bracket and metal waterproof cap
	F9092EE	10 m with mounting bracket and metal waterproof cap
	F9092EF	20 m with mounting bracket and metal waterproof cap
	F9092EG	3 m with mounting bracket
	F9092EH	10 m with mounting bracket
	F9092EJ	20 m with mounting bracket

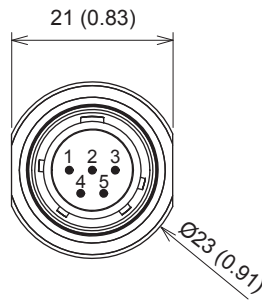
EXTERNAL DIMENSIONS

□ **Body**

Unit: mm (approx. inch)

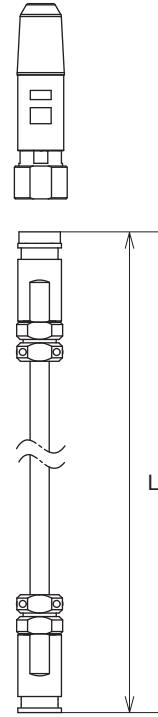


Pin	Signal
1	Not Connected
2	Signal Ground
3	Power Supply
4	Transmit/Receive Data positive
5	Transmit/Receive Data negative



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□ **Remote antenna cable**

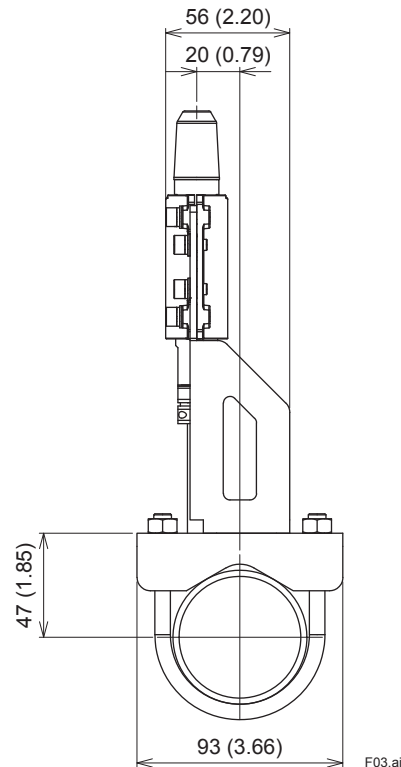
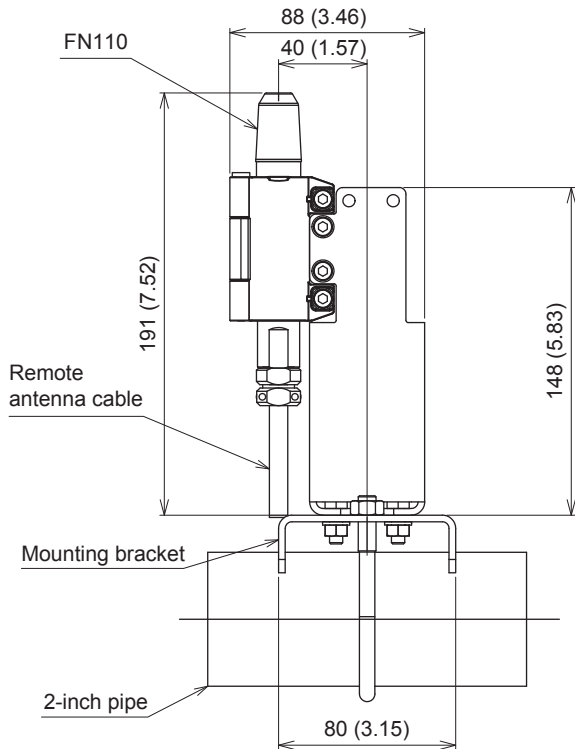


Length 3 m, 10 m, 20 m

F02.ai

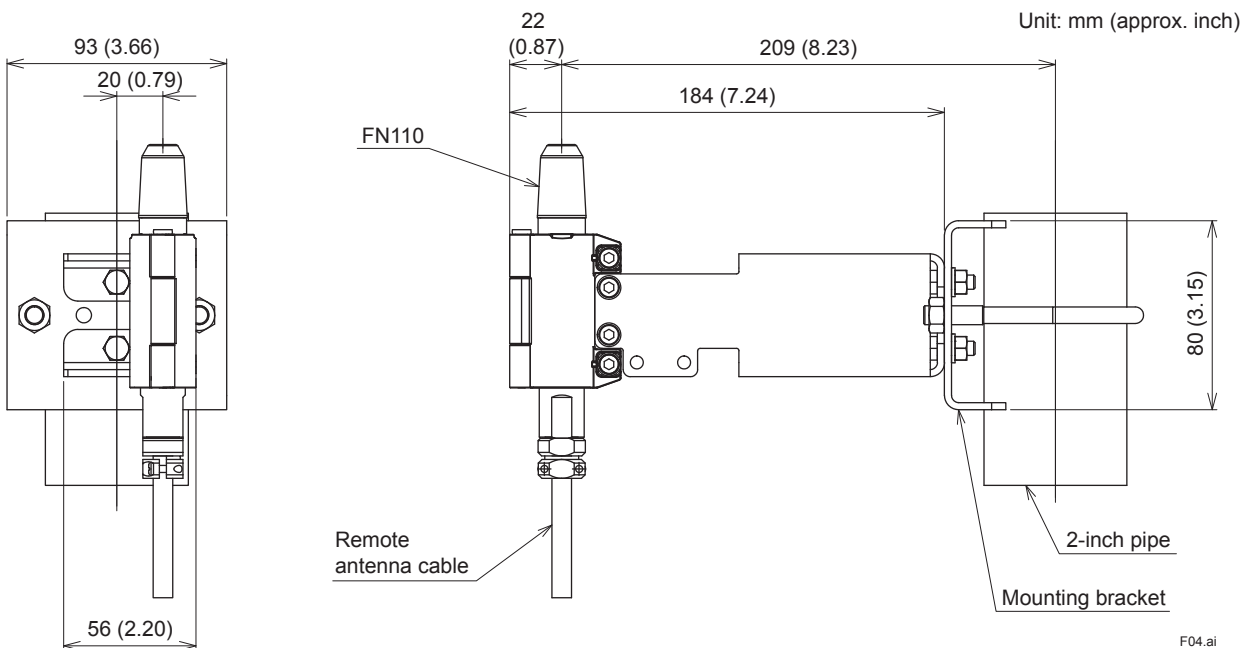
□ **2-inch pipe mounting (for horizontal piping)**

Unit: mm (approx. inch)



F03.ai

□ 2-inch pipe mounting (for vertical piping)



F04.ai

< Ordering Information >

Specify the following when ordering.

1. Model, suffix codes, and option codes.
2. Tag Number (if required)*1
Specify Tag number (up to 16 letters) to be printed on the nameplate. The characters can be specified using alphanumeric and the symbols, [-] and [_].
3. Software tag (if required)*1
Specify this software tag when tag number which is different from the tag number specified in the "TAG NUMBER" is required. The tag number specified in "SOFTWARE TAG" will be entered on "DEVICE TAG" (up to 16 letters) in the memory.
4. Network ID (if required)*1
Specify the number from 2 to 65535. When not specified, it will be 1.

*1: When the intermodule communication code is -R1, specifying Tag Number, Software tag and Network ID is not available.

< Related Products General Specifications >

Field Wireless System Overview:
Refer to GS 01W01A01-01EN
Field Wireless Multi-Protocol Module FN310:
Refer to GS 01W03D01-01EN
Field Wireless Multi-Function Module FN510:
Refer to GS 01W03E01-01EN
Interface Adapter LN90:
Refer to GS 01W03L01-01EN

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