

FN110
Field Wireless
Communication Module

IM 01W03B01-01EN

7th Edition: June 2014
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7th Edition

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1. Introduction

This manual describes how to use the FN110 Field Wireless Communication Module (hereafter simply referred to as FN110). FN110 enables various sensors with digital communication interface to be operated in field wireless network by converting input/output of sensor to wireless transmission based on the wireless communication standard ISA100.11a.

Your FN110 was precisely calibrated at the factory before shipment. To ensure both safety and efficiency, please read this manual carefully before you operate the FN110.

■ Regarding This Manual

- This manual should be provided to the end user.
- This manual and the identification tag attached on packing box are essential parts of the product; keep them in a safe place for future reference.
- The contents of this manual are subject to change without prior notice.
- All rights reserved. No part of this manual may be reproduced in any form without Yokogawa's written permission.
- Yokogawa makes no warranty of any kind with regard to this manual, including, but not limited to, implied warranty of merchantability and fitness for a particular purpose.
- If any question arises or errors are found, or if any information is missing from this manual, please inform the nearest Yokogawa sales office.
- The specifications covered by this manual are limited to those for the standard type under the specified model number break-down and do not cover custom-made instruments. When products whose suffix code or optional codes contain code "Z" and an exclusive document is attached, please read it along with this manual.
- Please note that changes in the specifications, construction, or component parts of the instrument may not immediately be reflected in this manual at the time of change, provided that postponement of revisions will not cause difficulty to the user from a functional or performance standpoint.

■ Safety, Protection, and Modification of this Product

- This product is designed to be used by a person with specialized knowledge.
- In order to protect the operator, product, and system controlled by the product, observe the safety precautions described in this manual. If users handle contrary to these instructions, we cannot guarantee the safety.
- Modification of the product is strictly prohibited.
- The following safety symbols are used in this manual:

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or physical damage. It may also be used to alert against unsafe practices.

IMPORTANT

Indicates that operating the hardware or software in this manner may damage it or lead to system failure.

NOTE

Draws attention to information essential for understanding the operation and features.

1.1 Safe Use of This Product

- Users of explosion protected instruments should refer first to "6. Explosion Protected Instrument".
- The use of this instrument is restricted to those who have received appropriate training in the device.
- Take care not to create sparks when accessing the instrument or peripheral devices in a hazardous location.
- Repair or modification to this instrument by customer will cause malfunction of explosion protect function and hazardous situation. If you need to repair or modification, please contact the nearest Yokogawa office.

1.2 Radio Wave

IMPORTANT

- This product is equipped with a wireless module which is designated as a certification of construction type as a wireless facility for 2.4 GHz band low-power data communication system of the Radio Act. Refer to "5.2 Regulatory Compliance Statements" for detail.
- Due to the designated certification of construction type, users may be subject to legal punishment in case of disassembling or modifying this product.
- RF Transmitter power (eirp)
The factory default settings of RF transmitter power is 12dBm (current consumption 50mA or less). The maximum settings of RF transmitter power is 14dBm (current consumption 60mA or less).
- Microwave ovens and other industrial, scientific and medical equipment, as well as local wireless stations (license required) and specific low-power wireless stations (license not required) for identifying mobile objects used in the production line of a factory, use the same frequency band as this product. Prevent interference with other wireless stations.
- Check that local wireless stations and specific low-power wireless stations are not being used in the vicinity before using this product.
- If this product causes radio interference in a local wireless station used for identifying mobile objects, change the working frequency or stop the emission of radio waves immediately. For details on how to prevent radio interference, contact our service office.
- Although this product has been designed to resist high frequency electrical noise, if a radio transceiver is used near this product or its external wiring, this product may be affected by high frequency noise pickup. To test this, start out from a distance of several meters and slowly approach this product with the transceiver while observing the measurement loop for noise effects. Thereafter use the transceiver outside the range where the noise effects were first observed.

1.3 Warranty

- The warranty shall cover the period noted on the quotation presented to the purchaser at the time of purchase. Problems occurring during the warranty period shall basically be repaired free of charge.
- If any problems are experienced with this product, the customer should contact the Yokogawa representative from which this product was purchased or the nearest Yokogawa office.
- If a problem arises with this product, please inform us of the nature of the problem and the circumstances under which it developed, including the model specification and serial number. Any diagrams, data and other information you can include in your communication will also be helpful.
- The party responsible for the cost of fixing the problem shall be determined by Yokogawa following an investigation conducted by Yokogawa.

■ The purchaser shall bear the responsibility for repair costs, even during the warranty period, if the malfunction is due to:

- Improper and/or inadequate maintenance by the purchaser.
- Malfunction or damage due to a failure to handle, use, or store this product in accordance with the design specifications.
- Use of this product in question in a location not conforming to the standards specified by Yokogawa, or due to improper maintenance of the installation location.
- Failure or damage due to modification or repair by any party except Yokogawa or an approved representative of Yokogawa.
- Malfunction or damage from improper relocation of this product in question after delivery.
- Reason of force majeure such as fires, earthquakes, storms/floods, thunder/lightning, or other natural disasters, or disturbances, riots, warfare, or radioactive contamination.

1.4 Trademark and Notice

■ Trademarks

In this document, trademarks or registered trademarks are not marked with "TM" or "®". Product names and company names in this document are trademarks or registered trademarks of the respective companies.

■ Notice

NO RIGHTS OR LICENSES, EXPRESS OR IMPLIED, ARE GRANTED TO USE THIRD-PARTY DEVICES IN COMBINATION WITH THESE PRODUCTS IN A WIRELESS MESH NETWORK, OR TO USE THIRD-PARTY SERVICES TO ACCESS, MONITOR OR CONTROL THESE PRODUCTS IN A WIRELESS MESH NEWORK VIA THE INTERNET OR ANOTHER EXTERNAL WIDE AREA NETWORK.

■ Patent Marking

Covered by one or more claims of patents: <http://sipcollc.com/patent-list/> and <http://intusiq.com/patent-list/>.

2. Notes on Handling

The FN110 is fully factory-tested before shipment. When the FN110 is delivered, check the appearance for damage.

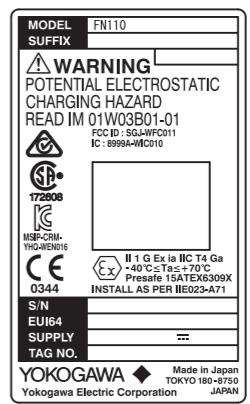
2.1 Check the Model and Specifications

The model name and specifications are written on the nameplate attached to the housing. Verify that the specification indicated in the "Model and Suffix Code" in General Specifications "GS 01W03B01-01EN" is in compliance with the specifications written on the order sheet. Manual number omitting the language code at the end is printed on the nameplate. Check the delivery by reference to the following bundled item list.

■ Bundled items

- Manual (IM 01W03B01-01EN)
- Attachment Manual (IM 01W03B01-02EN)
- Attachment (F9092EY*)
- Open Source Software license term (F9092QA)
- Protection cap (optional specifications)
- EU DECLARATION OF CONFORMITY (F9092QC), if optional specification /KS27 is specified.
- The remote antenna cable is not included.
- If you need F9092EY, please purchase F9092EX.

F9092EX is a set of F9092EY and an instruction manual.



F01.ai

Figure 2.1 Nameplate

2.2 Transport

To prevent damage while in transit, leave the FN110 in the original shipping container until it reaches the installation site.

2.3 Storage

When storing this product, observe the following precautions.

- Choose a storage location that satisfies the following requirements.
 - A location that is not exposed to rain or water.
 - A location subject to a minimum of vibration or impact.
 - The temperature and humidity limits refer to "5.1 Specifications".
- If at all possible, store the FN110 in factory-shipped condition, that is, in the original shipping container.

2.4 Selecting the Installation Location

The FN110 is designed to withstand severe environmental conditions. However, to ensure that it will provide years of stable and accurate performance, take the following precautions when selecting the installation location.

NOTE

The installation location of this product must meet the following conditions:

- Adjust the direction of this product a to be in the upright position.
- Install this product at least 1.5m above the ground or floor.
- Ensure that there are no obstacles such as walls or pipes within a 30-cm radius of this product.
- Confirm that each field wireless equipment compliant with ISA100.11a can see the antenna of other devices which locate within its own communication range.

- IP66, IP67 and Type 4X apply when the connector is properly tightened.
- For additional information on the ambient conditions allowed at the installation location, refer to "5.1 Specifications".

3. Installation

3.1 Precautions

- Before installing, refer to the User's Manual of the device to be connected to the FN110.

3.2 Mounting

The installation procedure is as follows.

1. Check the orientation of the pins, insert FN110 into the connector on the device.
2. Tighten the lock nut to a torque of 1.2 N·m.

Removal is the reverse of the above.

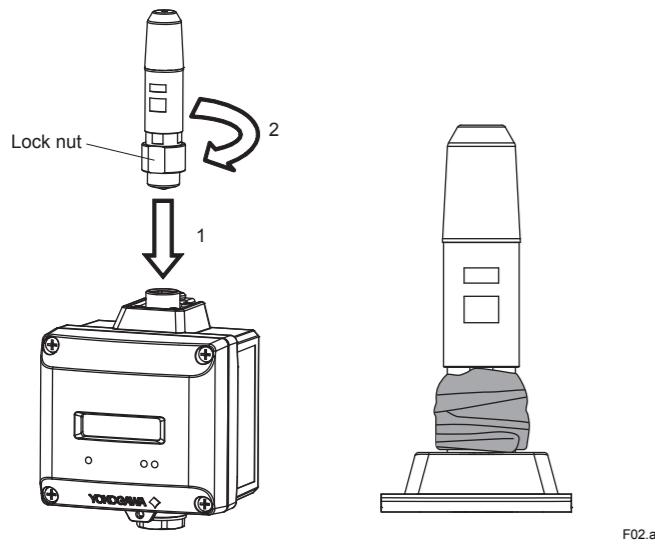


Figure 3.1 Installation of FN110 and Sealing of the Connector

To install FN110 with remote antenna cable, follow the procedure below.

1. Assemble the mounting bracket and fix it on a 50A (2-inch) pipe.
2. Connect the FN110 and the device the dedicated remote antenna cable. Tighten the connector of the remote antenna cable with a torque of 1.2 N·m. The minimum bend radius should be more than 100mm.
3. Protect the connectors of the FN110 and remote antenna cable as necessary.
4. Fix the remote antenna cable to an appropriate structure to protect the cable from the vibration, wind, and so on. The minimum bending radius for fixing in the state maintained for a long period should be more than 100 mm.
5. Fix the FN110 to the mounting bracket.

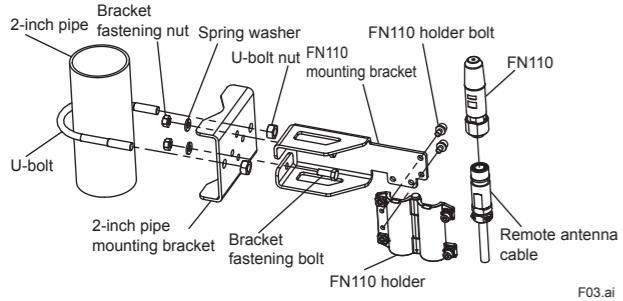


Figure 3.2 Vertical Pipe Mounting of FN110

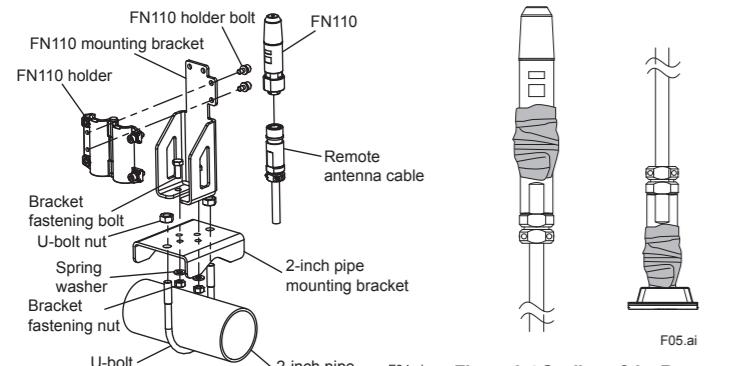


Figure 3.3 Horizontal Pipe Mounting of FN110

IMPORTANT

The connector is shipped with a dust cap. Keep the cap attached until the installation to protect the connector. The cap should be stored so that you can use it again when you detach FN110. In an extremely wet condition, use the optional water-proof cap.

CAUTION

- Before installing, turn off the equipment to be installed.
- When installing, secure FN110 by tightening the lock nut. Tightening by screwing the housing instead of the lock nut may cause failure such as cable disconnection.
- When using the remote antenna cable, use the dedicated cable provided by Yokogawa as accessories for FN110.
- The remote antenna cable and other cables should not be bundled together.
- To maintain a good connection between the modules, protect the connector from the corrosive atmosphere by the following treatment.
 1. Clean the connection to be protected.
 2. Wind the butyl rubber self-bonding tape around the connection. See the manual of the tape about the winding.
 3. To protect the butyl rubber self-bonding tape from the environment such as ultraviolet rays and so on, wind vinyl tape (or a vinyl type self-bonding tape) on it.
 4. When the tape is necessary, prepare appropriate tape for the installing environment.
- Do not cover the nameplate by the tapes.

3.3 Installation of an Explosion Protected Instrument

Refer to "6. Explosion Protected Instrument".

4. Operation

FN110 is used with FN series product (e.g., FN310 Field Wireless Multi-Protocol Module) or LN90 Interface Adapter. For the usage of FN110, refer to the User's Manual of the device to be connected to FN110.

When Inter module communication code -R1 is specified, refer to FN110 Modbus communication for PLC/RTU User's Manual (IM 01W03B01-21EN) also.

5. General Specifications

Please refer to GS 01W03B01-01EN for the latest information.

5.1 Specifications

Communication Protocol:

ISA100.11a (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 Voltage:

2.9 - 4.8 V

Refer to "6. Explosion Protected Instrument" also.

Consumption Current:

Max. 60 mA

[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 enables you 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

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)

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.

Weight:

100 g

5.2 Regulatory Compliance Statements

This product 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)

Applied to a wireless module that incorporates.

Construction Design Attestation Number: 006-000202

FCC Approval (United States)

(Part 15B, 15C)

This device complies with part 15 of the FCC Rules. Operation is subject to following two conditions: (1) This device may not cause harmful interface, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC WARNING:

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Co-located:

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

RF Exposure Compliance:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines.

This equipment should be installed and operated keeping the radiator at least 20 cm or more away from person's body.

IC Approval (Canada)

(RSS-Gen)

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

French:

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

(RSS-102)

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment and meets RSS-102 of the IC radio frequency (RF) Exposure rules. This equipment should be installed and operated keeping the radiator at least 20 cm or more away from person's body (excluding extremities: hands, wrists, feet and ankles).

French:

Cet équipement est conforme aux limites d'exposition aux rayonnements énoncées pour un environnement non contrôlé et respecte les règles d'exposition aux fréquences radioélectriques (RF) CNR-102 de l'IC. Cet équipement doit être installé et utilisé en gardant une distance de 20 cm ou plus entre le dispositif rayonnant et le corps (à l'exception des extrémités : mains, poignets, pieds et chevilles).

RE Directive (EU Countries)

Hereby, Yokogawa Electric Corporation declares that the radio equipment type FN110 is in compliance with Directive 2014/53/EU.

The full text of the EU declaration of conformity is available at the following internet address:

<http://www.yokogawa.com/fid/>

The Authorized Representative for this product in the EEA is: Yokogawa Europe B.V. Euroweg 2, 3825 HD Amersfoort, THE NETHERLANDS.

CE Conformity:

RoHS Directive: EN50581

ATEX Directive: Refer to "6.3 ATEX Certification"

RE Directive:

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

(1) Pollution Degree 2

"Pollution degree" describes the degree to which a solid, liquid, or gas which deteriorates dielectric strength or surface resistivity is adhering. "2" applies to normal indoor atmosphere. Normally, only non-conductive pollution occurs. Occasionally, however, temporary conductivity caused by condensation must be expected.

(2) Installation Category I

"Overvoltage category (Installation category)" describes a number which defines a transient overvoltage condition. It implies the regulation for impulse with stand voltage. "I" applies to electrical equipment which is supplied from the circuit when appropriate transient overvoltage control means (interfaces) are provided.

EMC: EN 301 489-1, EN 301 489-17, EN61326-1 Class A Table 2, EN55011 Class A

CAUTION

This instrument is a Class A product, and it is designed for use in the industrial environment. Please use this instrument in the industrial environment only.

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.

Explosion Protected Types:

Intrinsically safe: FM (United States or Canada), ATEX, IECEx and TIIS Approvals
Type n: IECEx Approval

The connector is shipped with a dust cap. Keep the cap attached until the installation to protect the connector. The cap should be stored so that you can use it again when you detach FN110. In an extremely wet condition, use the optional water-proof cap.



IMPORTANT

The connector is shipped with a dust cap. Keep the cap attached until the installation to protect the connector. The cap should be stored so that you can use it again when you detach FN110. In an extremely wet condition, use the optional water-proof cap.

■ Control of Pollution Caused by the product

- This is an explanation for the product based on "Control of Pollution caused by Electronic Information Products" in the People's Republic of China.

電子情報製品汚染制御管理方法（中国版 RoHS）

产品中有害物质或元素的名称及含量

型号	部件名称	有害物质					
		铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
FN110	壳体	×	○	○	○	○	○
现场无线通信模块	基板组件	×	○	○	○	○	○
	电缆	×	○	○	○	○	○

○：表示该部件的所有均质材料中的有害物质的含量均在 GB/T26572 标准中所规定的限量以下。
×：表示至少该部件的某些均质材料中的有害物质的含量均在 GB/T26572 标准中所规定的限量以上。

环保使用期限：



该标识适用于 SJ/T11364 中所述，在中华人民共和国销售的电子电气产品的环保使用期限。

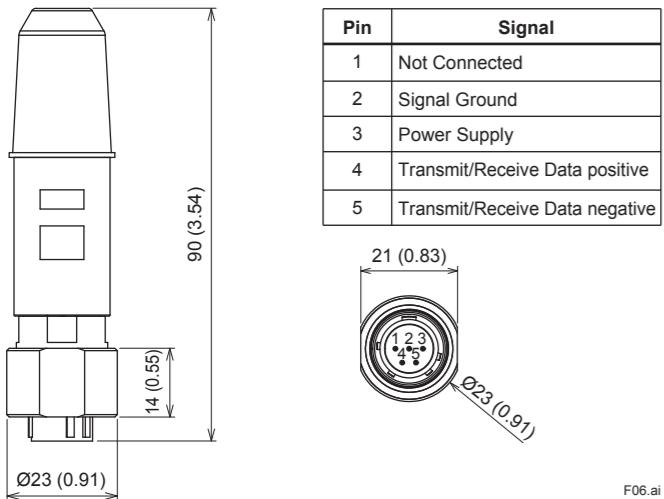
注) 该年数为“环保使用期限”，并非产品的质量保证期。

5.3 Model and Suffix Codes

Refer to the General Specification "GS 01W03B01-01EN".

5.4 External Dimensions and Pin Assignment

Unit: mm (approx. inch)



Plug type of FN110: JR13WPI-5P (connector mating with type of JR13WRI-5S or JR13WJI-5S)

6. Explosion Protected Instrument

6.1 FM Approval (United States)

Caution for FM intrinsically safe type (United States).

(1) Technical Data

Model FN110 Field Wireless Communication Module with optional code /FS17 for potentially explosive atmospheres:

- 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
- Ambient Temperature: -40 to 70 °C (-40 to 158°F)

(2) Electrical Parameters

Refer to Control Drawing (IFM042-A71).

(3) Installation

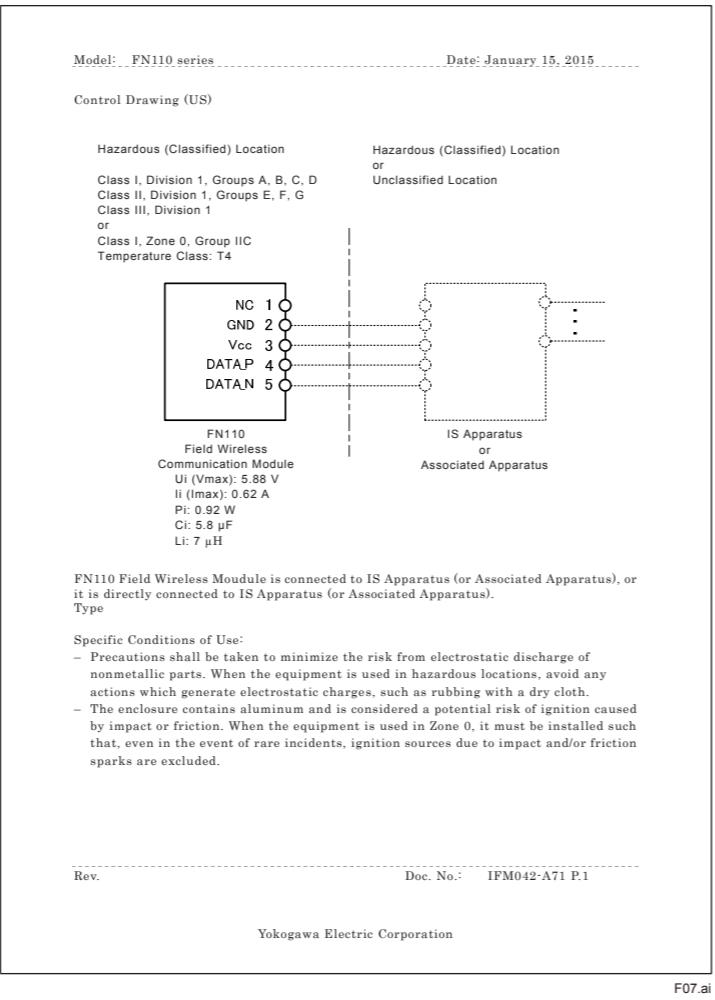
Refer to Control Drawing (IFM042-A71).

(4) Maintenance and Repair



The instrument modification or parts replacement by other than an authorized representative of Yokogawa Electric Corporation is prohibited and will void FM Approval.

(5) Control Drawing (IFM042-A71)



6.2 FM Approval (Canada)

Caution for FM intrinsically safe type (Canada).

(1) Technical Data

Model FN110 Field Wireless Communication Module with optional code /CS17 for potentially explosive atmospheres:

- 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
- Ambient Temperature: -40 to 70 °C (-40 to 158°F)

(2) Electrical Parameters

Refer to Control Drawing (IFM042-A72).

(3) Installation

Refer to Control Drawing (IFM042-A72).

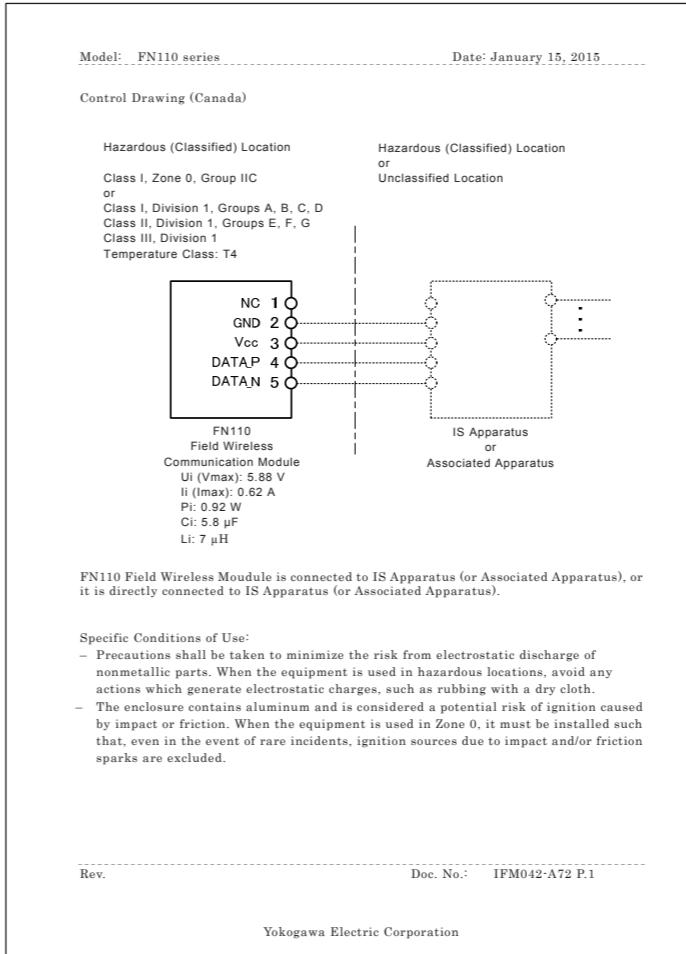
(4) Maintenance and Repair



WARNING

The instrument modification or parts replacement by other than an authorized representative of Yokogawa Electric Corporation is prohibited and will void FM Approval.

(5) Control Drawing (IFM042-A72)



Model: FN110 series Date: January 15, 2015

Notes:

- Installation must be in accordance with the Canadian Electrical Code Part I (C22.1), ANSI/ISA-RP12.06.01, and relevant local codes.
- Control equipment connected to IS Apparatus (or Associated Apparatus) must not use or generate a voltage more than U_m of the control equipment.
- The following conditions must be satisfied.

$$U_o \text{ (or } V_o \text{)} \leq U_i \text{ (Vmax)}$$

$$I_o \text{ (or } I_{sc} \text{)} \leq I_i \text{ (Imax)}$$

$$P_o \leq P_i$$

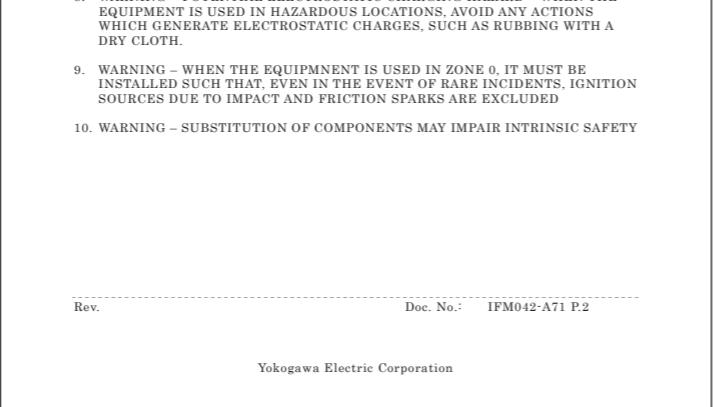
$$C_o \text{ (or } C_a \text{)} \geq C_i + C_{cable}$$

$$L_o \text{ (or } L_a \text{)} \geq L_i + L_{cable}$$
- The equipment satisfies the requirements for IP66 and Type 4X only when it is connected to a connector JR13WRI-5S or JR13WJI-5S (Hirose Electric) and tightened with a torque of 1.2~2.0 N·m. Appropriate type of socket must be used in accordance with the instruction manual.
- The control drawing of IS Apparatus (or Associated Apparatus) must be followed when installing the equipment.
- WARNING – POTENTIAL ELECTROSTATIC CHARGING HAZARD – WHEN THE EQUIPMENT IS USED IN HAZARDOUS LOCATIONS, AVOID ANY ACTIONS WHICH GENERATE ELECTROSTATIC CHARGES, SUCH AS RUBBING WITH A DRY CLOTH.
- WARNING – WHEN THE EQUIPMENT IS USED IN ZONE 0, IT MUST BE INSTALLED SUCH THAT, EVEN IN THE EVENT OF RARE INCIDENTS, IGNITION SOURCES DUE TO IMPACT AND FRICTION SPARKS ARE EXCLUDED
- WARNING – SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY

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Model: FN110 series Date: January 15, 2015

DANGER POTENTIEL DE CHARGES ÉLECTROSTATIQUES - QUAND LE MÉTIERL EST UTILISÉ DANS DES ENDROITS DANGEREUX, ÉVITER TOUTE ACTION QUI GENERENT CHARGES ELECTROSTATIQUES, COMME FROTTEANT AVEC UN CHIFFON SEC.

QUAND LE MÉTIERL EST UTILISÉ DANS LA ZONE 0, IL DOIT ÊTRE INSTALLÉE TELLE QUE, MÊME EN CAS D'INCIDENTS RARE, SOURCES D'ALLUMAGE DUE AUX IMPACTS ET SPARKS FRICTION EST EXCLUE.

SUBSTITUTION DE COMPOSANTS PEUT IMPAIR LA SÉCURITÉ INTRINSÈQUE.

6.3. ATEX Certification

6.3.1. ATEX Documentation

This is only applicable to the countries in European Union.

GB	All instruction manuals for ATEX Ex related products are available in English, German and French. Should you require Ex related instructions in your local language, you are to contact your nearest Yokogawa office or representative.
DK	Alle brugervejledninger for produkter relateret til ATEX Ex er tilgængelige på engelsk, tysk og fransk. Skulle De ønske yderligere oplysninger om håndtering af Ex produkter på eget sprog, kan De rette henvendelse herom til den nærmeste Yokogawa afdeling eller forhandler.
I	Tutti i manuali operativi di prodotti ATEX contrassegnati con Ex sono disponibili in inglese, tedesco e francese. Se si desidera ricevere i manuali operativi di prodotti Ex in lingua locale, mettersi in contatto con l'ufficio Yokogawa più vicino o con un rappresentante.
E	Todos los manuales de instrucciones para los productos antiexplosivos de ATEX están disponibles en inglés, alemán y francés. Si desea solicitar las instrucciones de estos artículos antiexplosivos en su idioma local, deberá ponerse en contacto con la oficina o el representante de Yokogawa más cercano.
NL	Alle handleidingen voor de producten die te maken hebben met ATEX explosiebeveiliging (Ex) zijn verkrijgbaar in het Engels, Duits en Frans. Neem, indien u aanwijzingen op het gebied van explosiebeveiliging nodig hebt in uw eigen taal, contact op met de dichtstbijzijnde vestiging van Yokogawa of met een vertegenwoordiger.
SF	Kaikkien ATEX Ex -tyypistien tuotteiden käyttööheet ovat saatavilla englannin-, saksan- ja ranskankielisissä. Mikäli tarvitsette Ex -tyypistien tuotteiden ohjeita omalla paikallisella kielillässä, ottakaa yhteyttä läheimpään Yokogawa-toimistoon tai -edustajaan.
P	Todos os manuais de instruções referentes aos produtos Ex da ATEX estão disponíveis em Inglês, Alemão e Francês. Se necessitar de instruções na sua língua relacionadas com produtos Ex, deverá entrar em contacto com a delegação mais próxima ou com um representante da Yokogawa.
F	Tous les manuels d'instruction des produits ATEX Ex sont disponibles en langue anglaise, allemande et française. Si vous nécessitez des instructions relatives aux produits Ex dans votre langue, veuillez bien contacter votre représentant Yokogawa le plus proche.
D	Alle Betriebsanleitungen für ATEX Ex bezogene Produkte stehen in den Sprachen Englisch, Deutsch und Französisch zur Verfügung. Sollten Sie die Betriebsanleitungen für Ex-Produkte in Ihrer Landessprache benötigen, setzen Sie sich bitte mit Ihrem örtlichen Yokogawa-Vertreter in Verbindung.
S	Alla instruktionsböcker för ATEX Ex (explosionssäkra) produkter är tillgängliga på engelska, tyska och franska. Om Ni behöver instruktioner för dessa explosionssäkra produkter på annat språk, skall Ni kontakta närmaste Yokogawakontor eller representant.
GR	Ολα τα εγχειρίδια λειτουργίας των προϊόντων με ATEX Ex διατίθενται στα Αγγλικά, Γερμανικά και Γαλλικά. Σε περίπτωση που χρειάζεστε οδηγίες σχετικά με Ex στην τοπική γλώσσα παρακαλούμε επικοινωνήστε με το πλησιέστερο γραφείο της Yokogawa ή αντιπρόσωπο της.

6.3.2. Installation

(1) Technical Data

Caution for ATEX Intrinsically safe type. This chapter includes a control drawing of IIE023-A71.

Note 1. Model FN110 Field Wireless Communication Module with optional code /KS27 for potentially explosive atmospheres:

- No.: Presafe 15ATEX6309X
- Applicable Standards: EN 60079-0:2012+A11:2013, EN 60079-11:2012
- Type of Protection and Marking code: Ex ia IIC T4 Ga
- Group: II
- Category: 1 G
- Ambient Temperature: -40 to 70 °C (-40 to 158°F)
- Enclosure: IP66 according to EN 60529:1991+A1:2000+A2:2013

Note 2. Electrical Parameters

Ui = 5.88 V, Ii = 0.62 A, Pi = 0.92 W, Ci = 5.8 μF, Li = 7 μH

Note 3. Installation

- Installation should be in accordance with local installation requirements. (Refer to "Figure 6.1 Control Drawing for ATEX Certification")
- Control Drawing (ATEX)

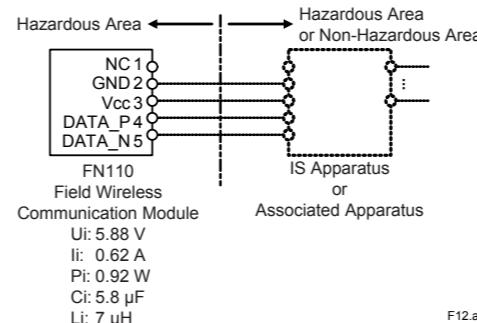


Figure 6.1 Control Drawing, IIE023-A71 for ATEX Certification

Note 4. FN110 Field Wireless Module is connected to IS Apparatus (or Associated Apparatus), or it is directly connected to IS Apparatus (or Associated Apparatus). The equipment satisfies the requirements for IP66 only when it is connected to a connector JR13WRI-5S or JR13WJI-5S (Hirose Electric). Appropriate type of socket must be used in accordance with the instruction manual.

Note 5. Special conditions for Safe Use

- Precautions shall be taken to minimize the risk from electrostatic discharge of nonmetallic parts.
- When Field Wireless Communication Module is used in a potentially explosive atmosphere requiring equipment category 1 G, it must be installed such that, even in the event of rare incidents, ignition sources due to impact and/or friction sparks are excluded.

! WARNING

Potential electrostatic charging hazard - Electrostatic charge may cause an explosion hazard. Avoid any actions that cause the generation of electrostatic charge, such as rubbing with a dry cloth on the product.

(2) Operation

! WARNING

Take care not to generate mechanical sparking when access to the instrument and peripheral devices in a hazardous location.

(3) Maintenance and repair

! WARNING

The instrument modification or parts replacement by other than an authorized Representative of Yokogawa Electric Corporation is prohibited and will void the certification.

(4) Nameplate

Please refer to "Figure 2.1 Nameplate" for ATEX Certification.

MODEL: Specified model code.

SUFFIX: Specified suffix code.

S/N: Serial number.

EUI64: EUI64 address.

SUPPLY: Supply voltage.

TAG NO.: Tag number.

TOKYO 180-8750 JAPAN: The manufacturer name and the address*1. *1: "180-8750" is a zip code which represents the address: 2-9-32 Nakacho, Musashino-shi, Tokyo, Japan.

6.4. IECEx Certification

6.4.1. IECEx Intrinsically Safe Type

Caution for IECEx Intrinsically safe type. This chapter includes a control drawing of IIE023-A72.

Note 1. Model FN110 Field Wireless Communication Module with optional code /SS27 for potentially explosive atmospheres.

- No.: IECEx PRE 15.0015X
- Applicable Standards: IEC 60079-0:2011, IEC 60079-11:2011
- Type of Protection and Marking code: Ex ia IIC T4 Ga
- Ambient Temperature: -40 to 70 °C (-40 to 158°F)
- Enclosure: IP66 according to IEC 60529:2013

Note 2. Electrical Parameters

Ui = 5.88 V, Ii = 0.62 A, Pi = 0.92 W, Ci = 5.8 μF, Li = 7 μH

Note 3. Installation

- Installation should be in accordance with local installation requirements. Refer to "Figure 6.2 Control Drawing, IIE023-A72 for IECEx Certification and Note 4 of 6.3.2 Installation".
- Control Drawing (IECEx)

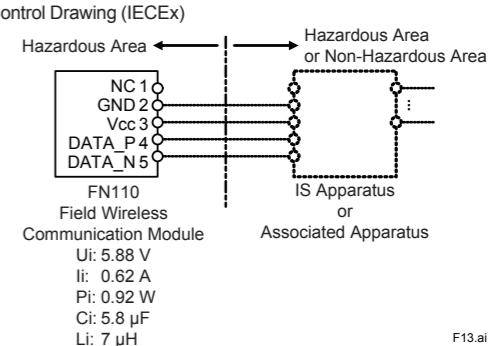


Figure 6.2 Control Drawing, IIE023-A72 for IECEx Certification

Note 4. Maintenance and Repair

! WARNING

The instrument modification or parts replacement by other than an authorized Representative of Yokogawa Electric Corporation is prohibited and will void IECEx Intrinsically safe Certification.

Note 5. Special conditions for Safe Use

Precautions shall be taken to minimize the risk from electrostatic discharge of nonmetallic parts. When Field Wireless Communication Module is used in a potentially explosive atmosphere requiring EPL Ga, it must be installed such that, even in the event of rare incidents, ignition sources due to impact and/or friction sparks are excluded.

! WARNING

Potential electrostatic charging hazard - Electrostatic charge may cause an explosion hazard. Avoid any actions that cause the generation of electrostatic charge, such as rubbing with a dry cloth on the product.

6.4.2. IECEx Type n

Caution for IECEx type of protection "n".

Note 1. Model FN110 Field Wireless Communication Module with optional code /SN27

for potentially explosive atmospheres.

- No.: IECEx PRE 16.0052X

• Applicable Standards:

IEC 60079-0:2011, IEC 60079-15:2010

- Type of Protection and Marking code: Ex nA IIC T4 Gc

• Ambient Temperature: -40 to 70 °C (-40 to 158°F)

- Enclosure: IP66/ IP67 according to IEC 60079-15

Note 2. Power supply

- Voltage range: 2.9 V to 4.3 V d.c.

- Current: 60mA max

Note 3. Installation

- The equipment must be installed in accordance with IEC60079-14 and local electrical codes.

- The equipment must be installed in accordance with the user's manual.

• Protection cap (Metal waterproof cap) shall be used, when FN110 is not installed.

• Fixture specified by manufacturer (such as mounting bracket with holder) shall be used, when FN110 is installed.

• The metallic enclosure of FN110 is connected to the screen of the external cable, and earthed with the frame ground of the connected equipment. In order to avoid multi-point earthing, potential equalization is required between the metallic enclosure of FN110 and the frame ground of the connected equipment.

• Locknut of plug for field wiring connections shall be tightened with specified torque values.

WARNING

Do not separate FN110 and remote antenna cable when energized.

Note 4. Maintenance and Repair

WARNING

The instrument modification or parts replacement by other than an authorized Representative of Yokogawa Electric Corporation is prohibited and will void IECEx Type of protection "n" Certification.

Note 5. Special conditions of Use

- FN110 satisfies the requirements for IP66/IP67, only when it is connected to cable specified by manufacturer.

Revision Record

Title: FN110 Field Wireless Communication Module

Manual No.: IM 01W03B01-01EN

Edition	Date	Page	Revised item
1st	July 2014	—	New Publication.
2nd	Dec. 2014	1 2	2.1 Add Bundled items 5.2 Add CSA Safety Requirements Modify Explosion-Proof Types
3rd	Dec. 2015	—	Add ATEX and IECEx Certification.
4th	May 2016	—	Add FM Approvals (United States and Canada)
5th	July 2016	—	Add Canadian Safety Standards
6th	Apr. 2017	—	1.4 add new section and update CE Conformity (RoHS)
7th	June 2017	—	Add inter module communication code -R1 and IECEx Type n Approval Revise descriptions for RE Directive Revise applicable standard notation of FM Intrinsically safe Approval