

General Specifications

XS110A Wireless Communication Module

Sushi Sensor

GS 01W06D01-01EN

■ GENERAL

This General Specifications (GS) describes the specifications for Wireless Communication Module. The XS110A Wireless Communication Module has battery-powered, and long-range wireless communication features. This product acts as a pressure sensor in combination with “XS530 Pressure Measurement Module” and acts as a temperature sensor in combination with “XS550 Temperature Measurement Module” and thermocouples. This product supplies power from a replaceable built-in battery to a measurement module.

LPWA (Low Power Wide Area) enables a long-range reachability for low power devices, to realize wide area coverage and easy installation.

For more details, refer to the General Specifications of the related products.

■ FEATURES

● Long-Distance Communication on License-free Bands

The XS110A has a long-distance communication feature and it enables easy installation for all over a plant. This module improves efficiency of plant maintenance by gathering various data in combination with a measurement module. The data can be utilized for early anomaly detection and prediction of equipment failure.

● Excellent Environmental Resistance with Battery Powered

The XS110A supplies power to a measurement module from a built-in battery. In combination with a measurement module, it acts as a battery-powered wireless sensor with the environmental resistance which is required for plant installation. Without any power cabling works, it can be installed everywhere in a plant.

● Supporting Hazardous Location Installation

The XS110A in combination with a measurement module can be installed in Zone 1 areas, such as petrochemical plants, paint plants, steel plants, where flammable gas or vapor may exist.

● Configuration and Status Monitoring Using Smartphone

Using an Android-based smartphone with NFC (Near Field Communication) interface makes configuration and status monitoring of sensors simple and intuitive.



■ STANDARD SPECIFICATIONS

□ WIRELESS SPECIFICATIONS

Communication Protocol:

LoRaWAN Class A

For detail on channel plan, refer to Table 1.

Modulation Method:

LoRa modulation

Data Rate:

250 to 21900 bps*

*: Available data rate vary depending on the country.

Frequency:

Refer to Table 1.

Radio Security:

AES 128-bit encryption

RF Transmitter Power:

Max. 7 dBm

Antenna:

Built-in Omni-directional antenna

□ POWER SUPPLY SPECIFICATIONS

Battery:

Lithium thionyl chloride battery (size D): 1 unit

Rated voltage: 3.6 V

Rated capacity: 19 Ah

PERFORMANCE SPECIFICATION

Battery Characteristics:

The battery life of XS110A depends on connected Measurement Module.
Refer to the General Specifications of each Measurement Module.

Update Time:

1 minute to 3 days

FUNCTIONAL SPECIFICATION

Output Signal:

LoRaWAN
For detail on channel plan and available countries and regions, refer to Table 1.

NFC Interface:

NFC Forum Type 2 Tag

Diagnostics Function:

Battery alarm, internal temperature, wireless communication failures, memory failures, Measurement Module connection failure

Software Download Features:

Allows the user to update the software of the sensor via the NFC interface.

Power Supply to the Measurement Module:

Supply voltage: 3.3 V
Supply current: 50 mA

INSTALLATION ENVIRONMENT

Ambient Temperature Limits:

Operating: -40 to 85 °C (-40 to 185°F)
Storage: -40 to 85 °C (-40 to 185°F)

Ambient Humidity:

0 to 100% RH (non-condensation)

Temperature Gradient:

Operating: Within ± 10 °C/h
Storage: Within ± 20 °C/h

Altitude:

[Type Code: 00] Up to 3000 m
[Type Code: K2, S2, P1]
80 to 110 kPa (Up to 2000 m*)
*: Ta : over 10 °C

Vibration Resistance:

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

Shock Resistance:

50 G 11 ms

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:

RE Directive (EEA and EFTA Countries),
FCC Approval (United States),
ISED Approval (Canada)
KC Marking (Korea)
RCM (Australia and New Zealand)

CE Conformity:

RoHS Directive:
EN50581
RE Directive:
Safety: EN61010-1 (Indoor/Outdoor use), EN62479
EMC: EN 301 489-1, EN 301 489-3,
EN61326-1 Class A Table 2, EN61326-2-3,
EN55011 Class A
Radio Spectrum: EN 300 220-2 (Band h1.3 in the table 1 of CEPT ERC Rec. 70-03), EN 300 330

ATEX Intrinsic Safety:

Refer to Table 2.

Canadian Safety Standards:

CAN/CSA-C22.2 No.61010-1
CSA-C22.2 No.94.2
IEC 60529
Pollution degree 2
Overvoltage category I

Degrees of Protection:

IP66/IP67 and Type 4X
Apply when connected to the Measurement Module.

KC Marking:

Trade Name: Yokogawa Electric Corp.
Equipment Name: Wireless Communication Module
Manufacturer: Yokogawa Electric Corp.

PHYSICAL SPECIFICATIONS

Housing Material:

Plastic (PC)

Weight:

300 g (0.66 lb)*
*: Without battery

■ SOFTWARE SPECIFICATIONS

□ SUSHI SENSOR APP

This software is used to perform the setting and status check of this product via the NFC interface.

Operating Environment:

Item	Recommended System Requirements
OS	Android 5.1.1 or higher
CPU	Snapdragon 800 or better
Resolution	1280 x 720 dots or more
NFC	Readers, Writer
GPS	Optional

Note of Available Android Device:

When using Sushi Sensor APP to the Android device must comply with the following.

- When using an NFC link in a non-hazardous area, the maximum magnetic field strength generated by the Android device is 18 A/m (r.m.s.) or less (Compliant with ISO / IEC 14443).
- When using an NFC link in a hazardous area, only an Android device confirmed by Yokogawa Electric Corporation can be used.
- If additional information and approvals for Android devices are required, contact a Yokogawa representative.

Table 1 Area code, frequency and Channel Plan

Area Code	Frequency	Channel Plan	Countries and Regions
2	863 to 870 MHz *1	EU868	Europe
3	902 to 928 MHz *2	US915	North America
4	919 to 925 MHz *2	AS923-1	Singapore, Malaysia, Thailand
5	915 to 928 MHz	AU915	Australia
6	915 to 928 MHz	AS923-1	New Zealand
7	920.9 to 923.3 MHz	KR920	Korea

*1: This wireless frequency can be used throughout Europe, although there are some restrictions in Sweden and Greece.

*2: Available frequency bands vary depending on the country.

Table 2 Specification for explosion protected type

Item	Description	Type
ATEX intrinsic safety	Certificate number: DEKRA 20ATEX0024 X Applicable standards: EN IEC 60079-0:2018, EN 60079-11:2012 Ex marking: Ⓜ II 2 G Ex ib IIC T4 Gb Ambient temperature: -40 to 75°C (-40 to 167°F) * Electrical parameters: Connector U _o = 6.88 V, I _o = 1.54 A, P _o = 0.3 W, C _o = 10 μF, L _o = 3 μH Enclosure: IP66/IP67 in accordance with only EN 60529 when combined with certified equipment.	K2
IECEx intrinsic safety	Certificate number: IECEx DEK 19.0027X Applicable standards: IEC 60079-0 Ed. 7.0 (2017), IEC 60079-11 Ed. 6.0 (2011) Ex marking: Ex ib IIC T4 Gb Ambient temperature: -40 to 75°C (-40 to 167°F) * Electrical parameters: Connector U _o = 6.88 V, I _o = 1.54 A, P _o = 0.3 W, C _o = 10 μF, L _o = 3 μH Enclosure: IP66/IP67 in accordance with only IEC 60529 when combined with certified equipment.	S2
Korea intrinsic safety	Certificate number: 20-AV4BO-0550X (XS110A+XS530) 20-AV4BO-0551X (XS110A+XS550) Applicable standards: Notice of Ministry of Labor 2020-33 Harmonized with IEC 60079-0 Ed.7.0 (2017), IEC 60079-11 Ed.6.0 (2011) Ex marking: Ex ib IIC T4 Ambient temperature: -40 to 75°C * Enclosure: IP66/IP67 in accordance with only IEC 60529 when combined with certified equipment.	P1

* Additionally, limited by the ambient temperature range of the equipment connected to XS110A.

■ MODEL AND SUFFIX CODES

Model	Suffix Codes	Description
XS110A		Wireless Communication Module
Inter-module communication	-A	Digital communication for XS-series
Area	2	Europe EU868
	3	North America US915
	4	Singapore, Malaysia, Thailand AS923-1
	5	Australia AU915
	6	New Zealand AS923-1
	7	Korea KR920
Type	00	General Purpose
	K2	ATEX intrinsic safety*2
	S2	IECEx intrinsic safety*3
	P1	Korea intrinsic safety*4
—	-A	Always A
Housing material	5	Plastic (PC)
Power source	D	Battery powered (Battery not included)
—	A	Always A

*1: Applicable when Area Code is 3.

*2: Applicable when Area Code is 2 or 4.

*3: Applicable when Area Code is 4, 5 or 6.

*4: Applicable when Area Code is 7.

OPTIONAL ACCESSORIES

Item	Parts Number	Description
Batteries*1	F9915NR	Lithium-thionyl chloride batteries*2, 2 pieces*3

*1: Alternatively, Tadiran TL-5930/S, SL-2780/S or VITZROCELL SB-D02 batteries can be purchased from your local distributor.

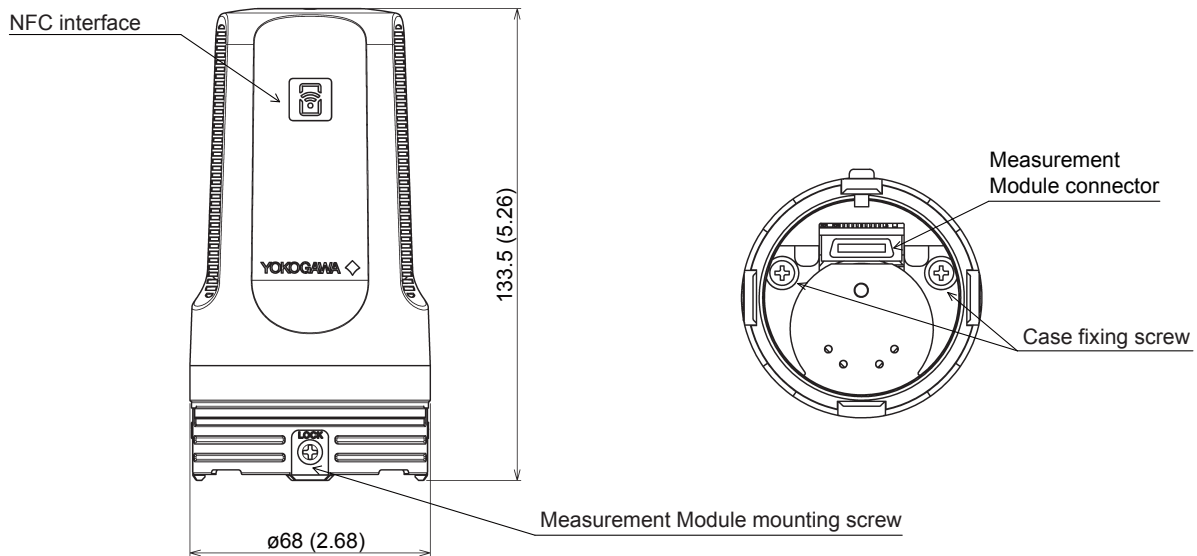
*2: Tadiran TL-5930/S

*3: This product works with one size D battery, but the accessory is a set of two.

DIMENSIONS

Main body

Units: mm (approx. inch)



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<Ordering Information>

1. Model, suffix codes, and option code

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<Related Products General Specifications>

XS530 Pressure Measurement Module:

Refer to GS 01W06F01-01EN

XS550 Temperature Measurement Module:

Refer to GS 01W06F02-01EN