

General Specifications

XS770A Wireless Vibration Sensor

Sushi Sensor

LoRa Alliance Certified™

GS 01W06E01-01EN

■ GENERAL

The Wireless Vibration Sensor XS770A is a compact battery-powered, measures vibration and temperature, and targets Industrial IoT (IIoT) applications.

With this sensor you can detect indication of abnormalities of the assets and the equipment by monitoring long term trend of the vibration and the surface temperature. Visualization of the long term trend achieves condition based maintenance and effective asset management.

LPWA (Low Power Wide Area) offers long range reachability to low power devices, allowing wide area coverage and easy installation.

■ FEATURES

● Battery-powered Compact Wireless Sensor

The XS770A is compact and has excellent environment resistance characteristics. It can be installed in a plant where wiring is difficult. With a number of this sensor, you can collect various data for plant maintenance by early detection and prediction of equipment failure.

● Installable in Hazardous Location

This sensor can be installed in Zone 2 areas, such as petrochemical plants, paint plants, drug plants, where flammable gas or vapor may exist.

● Long Distance Communication on License-free Bands

This sensor has adopted LoRaWAN. LoRaWAN has excellent sensitivity reception, good radio interference resistance, and offers a communication distance of 10 km or more in an ideal communication environment. You can install this sensor anywhere you want over vast area.

● 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, EU868, AS923

Data Rate:

250 to 11000 bps (LoRa modulation)

Frequency:

[Area code: 2]

863 to 870 MHz*

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

[Area code: 4]

919 to 925 MHz*

*: Available frequency bands vary depending on the country.

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: 1 unit
(dedicated product)

Rated voltage: 3.6 V

Rated capacity: 2.6 Ah

PERFORMANCE SPECIFICATIONS

Measurement:

Item		Specifications
Vibration	Measurement	Acceleration (peak), Velocity (RMS)
	Axis	X, Y, Z axes and 3-axis composite
	Range *1	Acceleration: 0 to 130 m/s ² Velocity *2: 0 to 20 mm/s
	Frequency range	10 to 1,000 Hz (± 3 dB)
	Accuracy (100 Hz)	X, Y, Z axes : ±10% FS 3-axis composite: ±20% FS
Temperature	Measurement	Temperature
	Range	-20 to 85°C
	Resolution	0.1°C
	Measurement part	Base

*1: Peak value of the input vibration. For the relation between the measurement frequency band and measurable range, refer to the following figure.

*2: The 20 mm/s pk value is equivalent to 14 mm/s RMS when input is based on a sine wave.

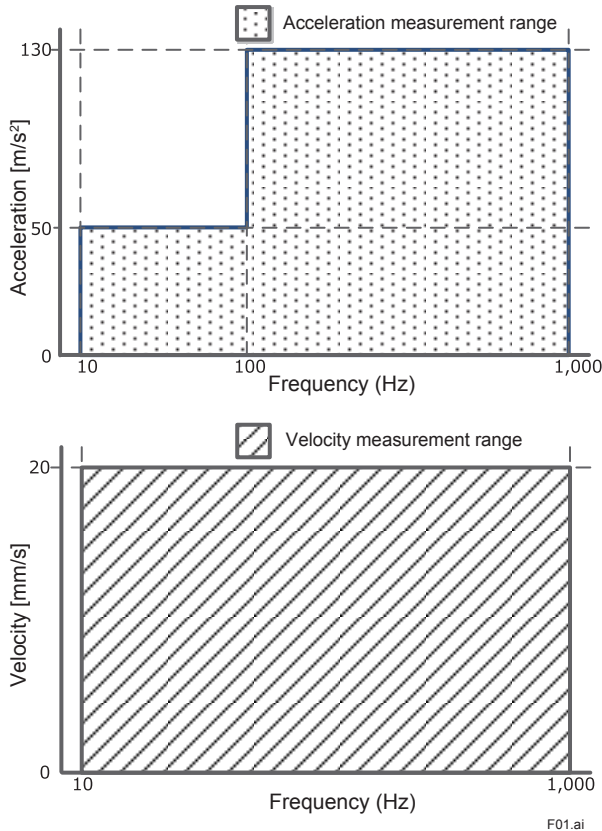


Figure: Measurable Range

Battery Characteristics:

The typical battery life is 4 years in the following conditions*.

- Update period: 1 hour
- Ambient temperature: 23±2°C

*: Environmental condition such as vibration and the type of connected device may affect the battery life.

Update Time:

1 minute to 3 days

FUNCTIONAL SPECIFICATIONS

Output:

LoRaWAN (EU868: EU, AS923: Southeast Asia)

NFC Interface:

NFC forum Type 2 Tag

Diagnostic Function:

Battery alarm, internal temperature, wireless communication failures, sensor over-range, sensor failures, memory failures

Software Download Function:

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

INSTALLATION ENVIRONMENT

Ambient Temperature Limits:

Operating: -20 to 80 °C (Explosion protected (ATEX))

Ambient Humidity Limits:

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

Shock Resistance:

100 G

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)

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 Intrinsically safe declaration:
 Applicable standard: EN 60079-0:2012+A11:2013
 EN 60079-11:2012

II 3 G Ex ic IIB T4 Gc
 Enclosure: IP66/IP67 in accordance with EN 60529
 Ambient temperature: -20 to 80°C (-4 to 176°F)

Degrees of Protection:

IP66/IP67

PHYSICAL SPECIFICATIONS

Housing Material:

Case: Plastic (PBT)
Base: Stainless steel

Weight:

260 g

Mounting:

Mounting on the measurement target using the screw*
(a hexagon socket head screw is included)

*: Can also mount using the magnetic holder supplied
as an accessory. Note that, when using the magnetic
holder, the vibration measurement frequency band
drops.

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 equivalent or higher
Resolution	1280x720 dots or more
NFC	Reader, writer
GPS	Optional

Note of Available Android Device:

When using Sushi Sensor APP for ATEX intrinsically
safe explosion devices, Android device must comply
with the following.

- When using 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 NFC link in a hazardous area, only
Android device confirmed by Yokogawa Electric
Corporation can be used.
- If additional information and approvals for
Android device are required, contact a Yokogawa
representative.

■ MODEL AND SUFFIX CODES

Model	Suffix Codes	Description
XS770A *1	Wireless Vibration Sensor
---	-A	Always A
Area	2	EU
	4	Southeast Asia
Type	K2	Intrinsically Safe for ATEX, II 3 G Ex ic IIB T4 Gc
---	-A	Always A
Housing material	1	Plastic, Stainless steel
Power source	C	Battery powered including battery
---	A	Always A

*1: A hexagon socket head screw to mount this product is included.

■ OPTIONAL ACCESSORIES

Item	Parts Number	Description
Magnetic holder	F9096DA	Magnet for mounting (M6 female screw)

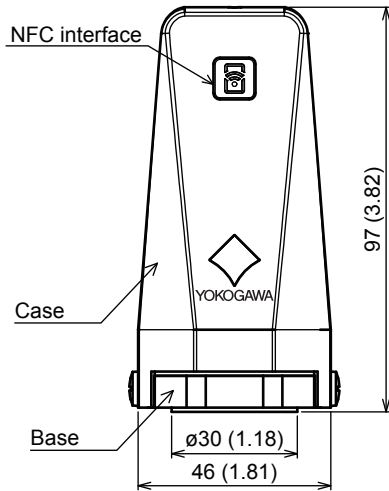
Model	Suffix Codes	Description
XS70BT *1	Lithium battery
Battery type	-A	Dedicated battery for XS770A
---	A	Always A
Number of Unit	-C004	4 units
	-C012	12 units

*1: The XS70BT is a set of a dedicated product (model: LS14500 C5SY) with battery connectors attached to SAFT battery

■ DIMENSIONS

● Main unit

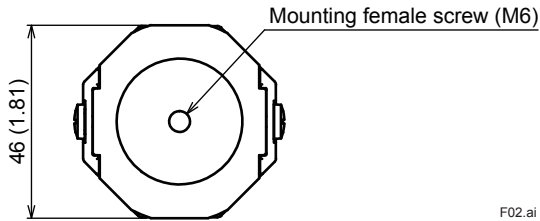
Unit: mm (approx. inch)



● Hexagon socket set screw (M6)



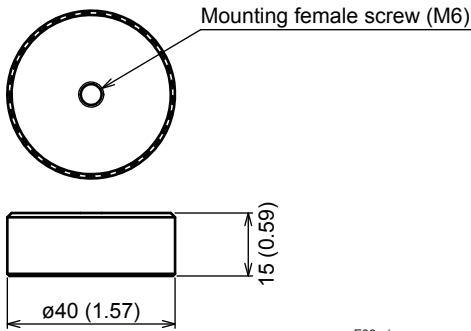
F04.ai



F02.ai

● Magnetic holder

Part No.: F9096DA



F03.ai

<Ordering Information>

1. Model, suffix codes, and option code

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