

General Specifications

XS822 Steam Trap Monitoring Module

Sushi Sensor

GS 01W06G01-01EN

■ GENERAL

The XS822 Steam Trap Monitoring Module has the function of detecting steam trap conditions.

This product functions as a wireless steam trap monitoring device when paired with the "XS110A Wireless Communication Module," making it ideal for Industrial IoT (IIoT) applications. The XS822 Steam Trap Monitoring Module receives its electrical power from the XS110A. This setup allows for remote monitoring of steam traps.

Timely maintenance of malfunctioning steam traps is anticipated to mitigate risks such as equipment failure and enhance energy efficiency.

Refer to General Specifications of "XS110A Wireless Communication Module" for details of wireless features.



■ FEATURES

● Detection of Steam trap Conditions using Temperature and Ultrasonic Wave

Equipped with both a temperature sensor and an ultrasonic sensor, this product can detect the condition of steam traps (Good, Cold, or Blow through) without needing parameter settings like working pressure or steam trap type. It is compatible with various types of steam traps.

● Simple Installation on Steam Piping

This product is secured to a steam pipe using a dedicated waveguide, making installation straightforward and eliminating the need for drilling. The waveguide is adaptable to various types of steam piping.

● Configuration and Status Monitoring via Smartphone

Configuring and monitoring device status is simple and intuitive using an Android-based smartphone with an NFC (Near Field Communication) interface.

■ STANDARD SPECIFICATIONS

□ MEASUREMENT RANGE

Maximum Steam Temperature:

440°C (824°F)*

*The combination of heat dissipating parts varies with the steam temperature.

Minimum Steam Pressure:

100 kPa (14.5 psi)

□ PERFORMANCE SPECIFICATIONS

Temperature Sensor:

Measuring range: -40 to +200°C (-40 to 392°F)

Resolution: 1°C

Update Period:

1 minute to 3 days*

* This refers to the wireless transmission cycle. For the measurement cycle, please refer to the "Steam trap diagnosis function".

Battery Characteristics:

Battery life is 10 years under the following conditions*

Update Period: 1 hour

Ambient temperature: 23±2°C (73.4±3.6°F)

* Environmental condition such as vibration may affect the battery life.

FUNCTIONAL SPECIFICATIONS**Steam trap condition detection function:**

Detects the conditions of steam traps (Good, Cold, Blow through) every hour.

Output:

Steam trap condition (Good, Cold, Blow through), Temperature

Diagnostic Function:

Sensor failure, temperature sensor over-range, memory failure

INSTALLATION ENVIRONMENT**Ambient Temperature Limits:**

Operating: -40 to 70°C (-40 to 158°F)
Storage: -40 to 85°C (-40 to 185°F)

Ambient Humidity Limits:

0 to 100 %RH (non-condensation)

Altitude:

[Type Code:00] Up to 3,000m
[Type Code:K2, S2, F1] Up to 2,000 m* (80 kPa to 110 kPa)
*: Ta : over 10°C

Vibration Resistance:

0.07 mmP-P (10 to 60 Hz)
1 G (60 Hz 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.

CE Conformity*1:

EMC Directive:

EN 61326-1 Class A Table 2, EN 61326-2-3,
EN 55011 Class A Group 1

ATEX Intrinsic Safety:

Refer to Table 1

*1: When area code is 4, C or H (only Type = K2), CE mark is given on the marking. When area code is 4, C or H, it cannot be used in European Economic Area.

EU RoHS Directive compliant

Other Normative Standards:

Safety: EN61010-1 (Indoor/Outdoor use)

Canadian Safety Standards:

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

Degrees of Protection:

IP66/IP67, Type 4X
Apply when connected to the XS110A.

PHYSICAL SPECIFICATIONS**Housing Material:**

Stainless Steel

Weight:

630 g (Does not include the waveguide or heat dissipating parts)

Mounting:

Refer to "MODEL AND SUFFIX CODES."

Table 1 Specification for explosion protected type

Item	Description	Type
ATEX intrinsic safety	Certificate number: DEKRA 23ATEX0082X 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 70°C (-40 to 158°F) Electrical parameters: Ui = 6.88 V, Li = 1.54 A, Pi = 0.3 W, Ci = 8.9 µF, Li = 2.82 µH Enclosure: IP20 (Note) Explosion protection is certified as IP20, but IP66/IP67 in accordance with only EN 60529 is applied when combined with XS110A.	K2
IECEx intrinsic safety	Certificate number: IECEx DEK 23.0058X Application 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°C to 70°C (-40 to 158°F) Electrical parameters: Ui = 6.88 V, Li = 1.54 A, Pi = 0.3 W, Ci = 8.9 µF, Li = 2.82 µH Enclosure: IP20 (Note) Explosion protection is certified as IP20, but IP66/IP67 in accordance with only IEC 60529 is applied when combined with XS110A.	S2
FM intrinsic safety	Certificate number: FM25US0365X Applicable standards: FM 3600:2022, FM 3610:2021, FM 3810:2021, ANSI/UL 60079-0 Ed. 7 (2024), ANSI/UL 60079-11 Ed. 6 (2023), ANSI/UL 61010-1 Ed.3 (2012), NEMA 250-1991 Ex marking: IS CL I/II/III DIV 1 GP ABCDEFG T4, CL I ZN 0 AEx ia IIC T4 Ga Ambient temperature: -40 to 70°C (-40 to 158°F) Electrical parameters: Ui = 6.88 V, Li = 1.54 A, Pi = 0.3 W, Ci = 8.9 µF, Li = 2.82 µH Enclosure: Type 4X when combined with XS110A.	F1

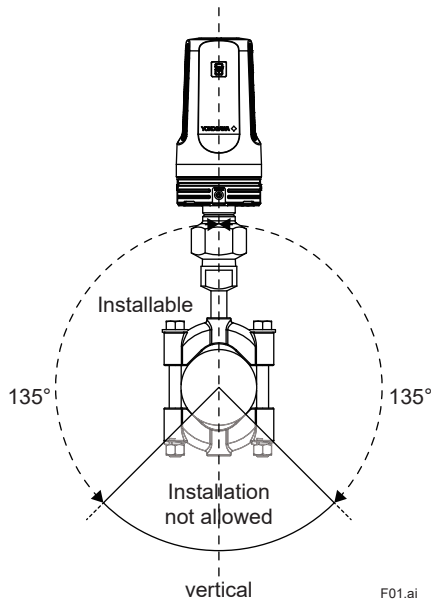
■ NOTES ON INSTALLATION

This module must be mounted within 15cm (6 inches) of the inlet side of the steam trap.

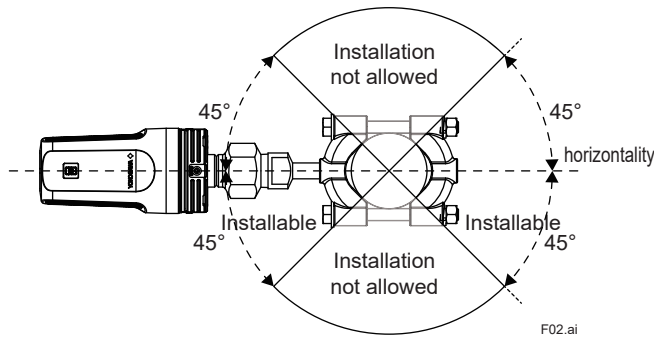
The necessary heat dissipating parts are provided based on the steam temperature codes in “MODEL AND SUFFIX CODES”.
Please refer to the table below for the appropriate combination of steam temperature codes and heat dissipating parts.
While the product can be used at steam temperatures other than those specified by the MS code, it is essential to install and use the heat dissipating parts as indicated in the table. If the provided heat dissipating parts are insufficient, please arrange for additional accessories.

Steam Temperature	Process Temperature Code	Included Heat Dissipating Parts
Up to 195°C (383°F)	M	None
Up to 255°C (491°F)	H	1 heat sink
Up to 440°C (824°F)	E	2 heat sinks and 1 heat sink extension bolt

Process Temperature 160°C (320°F) or less
Installation is restricted to within ±135° from the vertical upward direction.



Process Temperature higher than 160°C (320°F)
Installation is restricted to within ±45° from the vertical upward direction.



■ MODEL AND SUFFIX CODES

Model	Suffix Codes	Description
XS822		Steam Trap Monitoring Module
Inter-module communication	-A	Digital communication for XS-series
Area	2	Europe EU868
	3	North America US915
	4	Malaysia, Singapore, Thailand AS923-1
	C	Indonesia AS923-2
	H	Saudi Arabia, UAE, Bahrain EU868
Type	00	General Purpose*1
	K2	ATEX intrinsic safety*2
	S2	IECEX intrinsic safety*3
	F1	FM intrinsic safety*4
---	-A	Always A
Housing material	6	Stainless Steel
Process Temperature*5	M	Up to 195°C (383°F)
	H	Up to 255°C (491°F)
	E	Up to 440°C (824°F)
---	A	Always A
Waveguide*6	-0	None*7
	-1	Pipe Size 1/2" or 3/4"
	-2	Pipe Size 1"
	-3	Pipe Size 1 1/4"
	-4	Pipe Size 1 1/2"
	-5	Pipe Size 2"
---	A	Always A

*1: Applicable when Area Code is 2 or 3.

*2: Applicable when Area Code is 2, 4, C or H. Area code H is applied to Saudi Arabia and Bahrain.

*3: Applicable when Area Code is 4 or H. Area code H is applied to Saudi Arabia and UAE.

*4: Applicable when Area Code is 3 and sales country is United States.

*5: The required heat dissipating parts for the selected Process Temperature Code are included as standard.

*6: For installation on pipes larger than 2", please contact us.

*7: If select Waveguide Code is None, be sure to arrange for the best waveguide for your installation.

■ OPTIONAL ACCESSORIES

Item	Parts Number	Description
Protection Cap	F9097ND	Rubber protection cap*1
Waveguide for pipe size 1/2" or 3/4"	F9097GH	316SST or equivalent
Waveguide for pipe size 1"	F9097GJ	316SST or equivalent
Waveguide for pipe size 1 1/4"	F9097GK	316SST or equivalent
Waveguide for pipe size 1 1/2"	F9097GL	316SST or equivalent
Waveguide for pipe size 2"*2	F9097GM	316SST or equivalent
Heat sink	F9097GD	316SST or equivalent
Heat sink extension bolt	F9097GE	316SST or equivalent

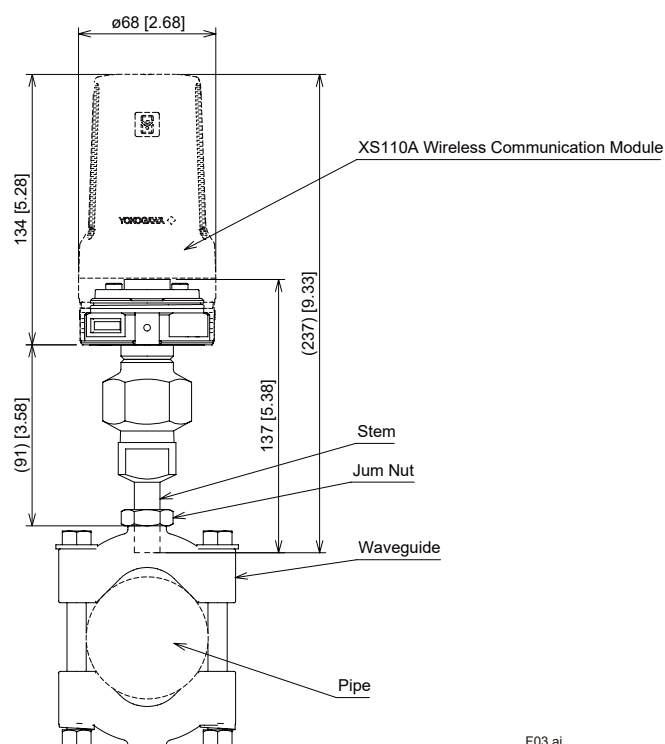
*1: The protective cap temporarily shields the product's connector when the XS110A is detached from the XS822 for battery replacement or other purposes. Note that removing the XS110A compromises the product's waterproof and dustproof capabilities.

*2: For installation on pipes larger than 2", please contact us.

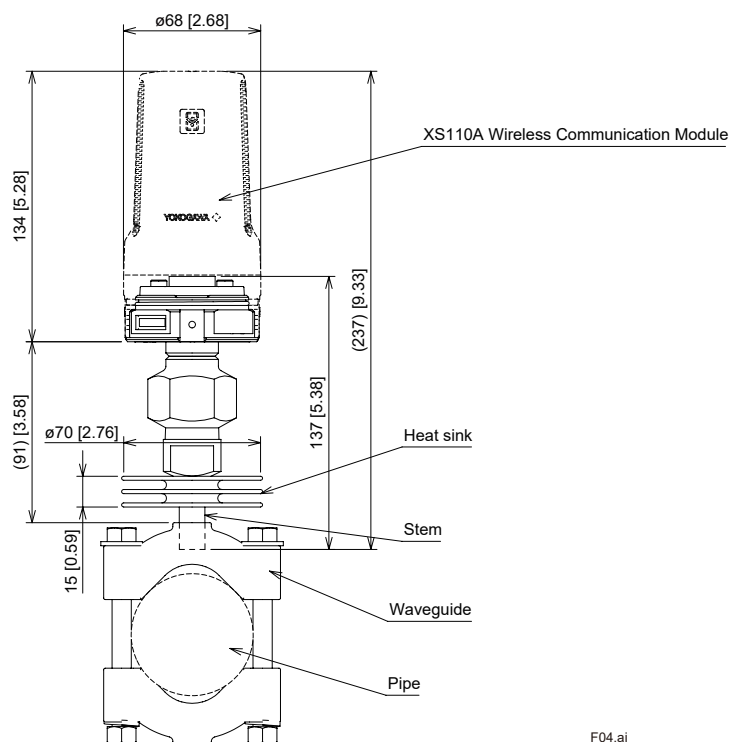
■ DIMENSIONS

- Process Temperature Code M or for use at steam temperatures 195°C (383°F) or less

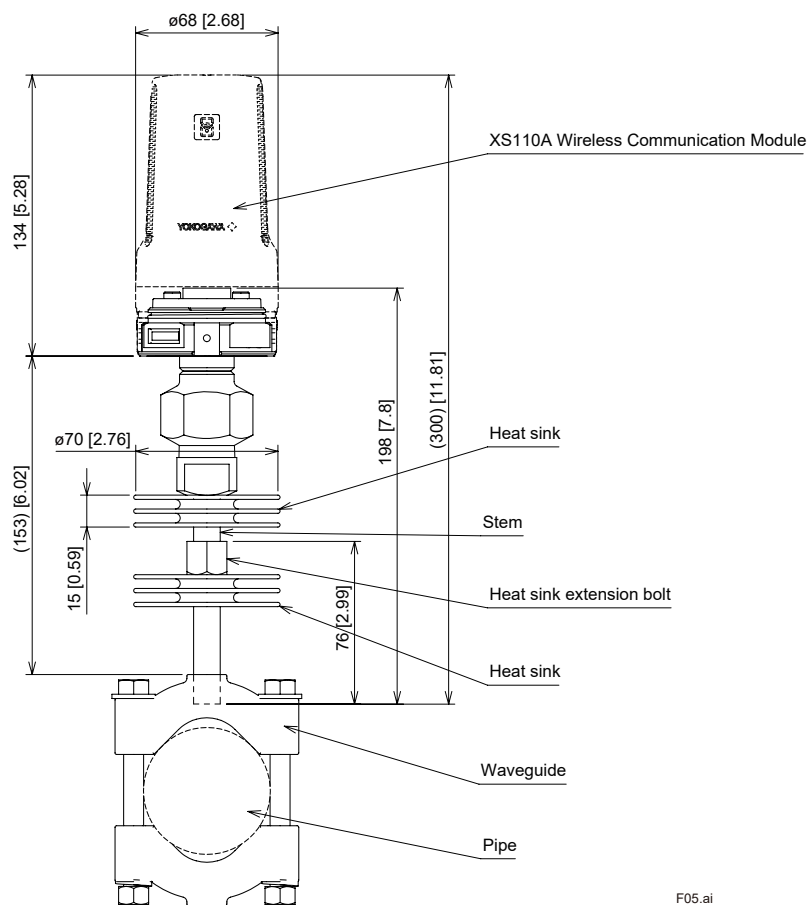
Units: mm [approx. inch]



- Process Temperature Code H or for use at steam temperatures higher than 195°C (383°F) and 255°C (491°F) or less

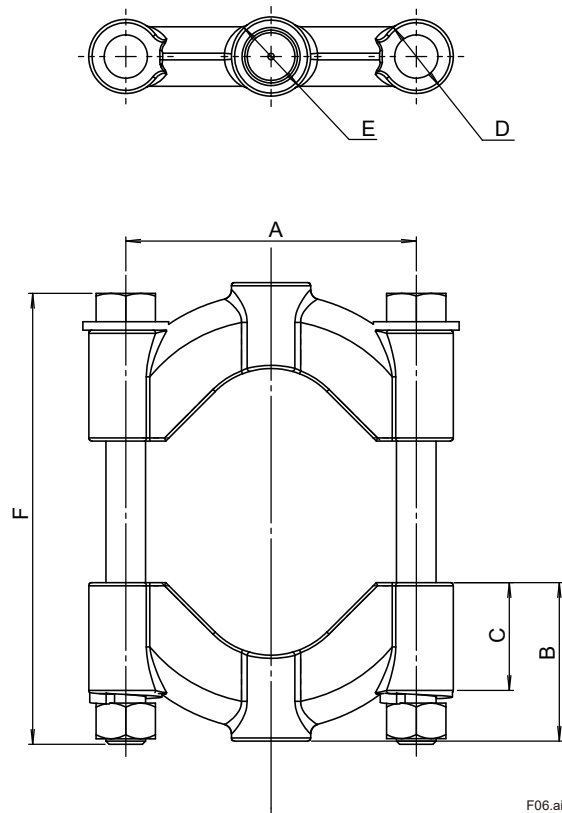


- Process Temperature Code E for use at steam temperatures higher than 255°C (491°F) and 440°C (824°F) or less



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□ Waveguide



Pipe Size	1/2" or 3/4"	1"	1 1/4"	1 1/2"	2"
Parts Num	F9097GH	F9097GJ	F9097GK	F9097GL	F9097GM
A	38 [1.55]	54 [2.20]	54 [2.20]	70 [2.86]	70 [2.86]
B	25 [1.02]	31 [1.27]	31 [1.27]	38 [1.55]	38 [1.55]
C	16 [0.65]	20 [0.82]	20 [0.82]	27 [1.10]	27 [1.10]
D	13 [0.53]	13 [0.53]	13 [0.53]	18 [0.74]	18 [0.74]
E	19 [0.77]	19 [0.77]	19 [0.77]	19 [0.77]	19 [0.77]
F	64 [2.61]	70 [2.88]	76 [3.10]	89 [3.63]	102 [4.12]

<Ordering Information>

1. Model, suffix codes, and option code

<Related Products General Specifications>

XS110A Wireless Communication Module

Refer to GS 01W06D01-01EN

<Trademarks>

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<The appearance of accessories>

Waveguides, heat sinks, and heat sink extension bolts may exhibit some discoloration or rust, but this does not impact their quality or performance.