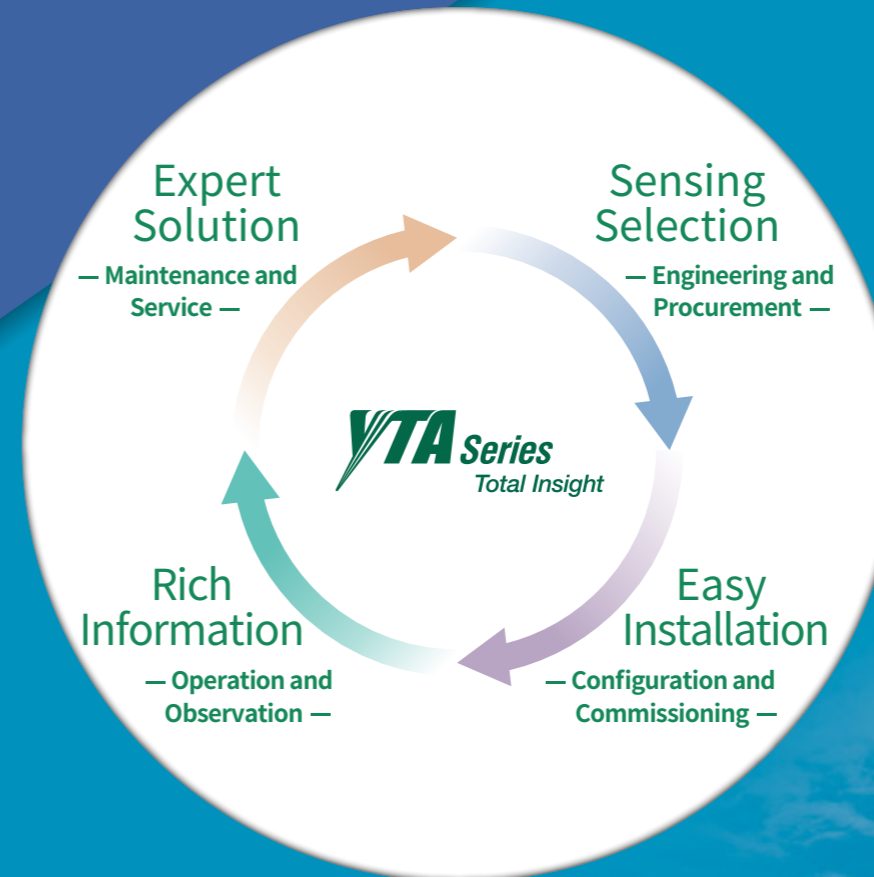YOKOGAWA ◆

Co-innovating tomorrow ™

OpreX™ Field Instruments

YTA610/YTA710

Temperature Transmitter
– Total Insight –

Temperature Transmitter YTA610/YTA710

Over many years Yokogawa has designed and built leading technology temperature transmitters and measurement devices. Building on this experience, Yokogawa has created a new generation of temperature transmitters to provide accurate, reliable temperature measurement. The YTA610/YTA710 temperature transmitters bring unique value to temperature measurement while meeting a range of user needs.

YTA710

YTA610

YOKOGAWA supports the entire lifecycle of products.

- From 'Sensing' to 'Sensemaking' -

Through reliable sensing technology and data utilization, we will continue to provide new value throughout the customer's lifecycle.

The YTA110/310/320 series announced in 1998 was globally adopted because of the excellent value it provided for a wide range of customer needs. Moving forward, the YTA610/YTA710 series will give improved value for an even more extensive range of customer temperature measurement needs. The YTA610/YTA710 transmitters, like all other Yokogawa field instruments, are supported over the entire product lifecycle.

Expert Solution
— Maintenance and Service —

Sensing Selection
— Engineering and Procurement —

YTA Series
Total Insight

Rich Information
— Operation and Observation —

Easy Installation
— Configuration and Commissioning —

YOKOGAWA's History of Temperature Transmitters

YTA50 YTA70
Head mount

YT200
First generation

YTA110 YTA310 YTA320
Second generation

YTA510
World first ISA100 Wireless

YTMX580
ISA100 Wireless 8 inputs

YTA70P
Panel mount
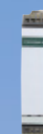
YTA610 YTA710
Next generation Field mount

2016

2015

1990   2000   2010

Sensing Selection
— Engineering and Procurement —

Multi Tier Lineup

Yokogawa offers a two-tier lineup to fit the customer application needs.

YTA710
Ultimate Transmitter

YTA710 is the premium solution offering unsurpassed accuracy (Pt100:±0.10°C/±0.18°F) and the ultimate diagnostics for demanding applications.

YTA610
Essential Transmitter

YTA610 is the base solution offering accurate temperature measurement (Pt100:±0.14°C/ ±0.25°F) and essential diagnostics to keep the process running well.

Engineered Robustness

Today's temperature applications can be located in very harsh environments; Yokogawa's temperature transmitters are engineered to endure the tough conditions with a dual compartment housing design made from either low copper aluminum or stainless steel. The dual compartment design isolates the field wiring terminals from the electronics.
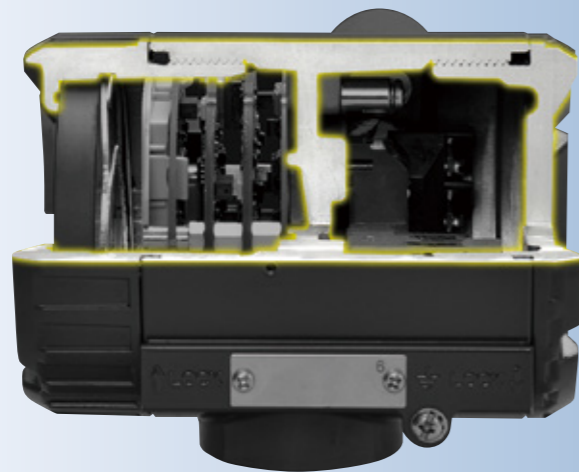
Worldwide Approvals

With the rapid globalization of markets, numerous international standards and approvals are becoming necessary; therefore, Yokogawa instruments have acquired various international certifications including flameproof, functional safety (SIL: Safety Integrity Level IEC61508), electromagnetic compatibility (EMC), and communication protocols.

Universal Inputs

In addition to measuring temperature with various RTDs and thermocouples, the YTA610/YTA710 can be used to convert DC voltage and resistance into an analog 4 to 20 mA output. There is a wide range of devices that can be used to supply a resistance or voltage input.

Output

Input

Temperature sensor

Input

mV or Ω
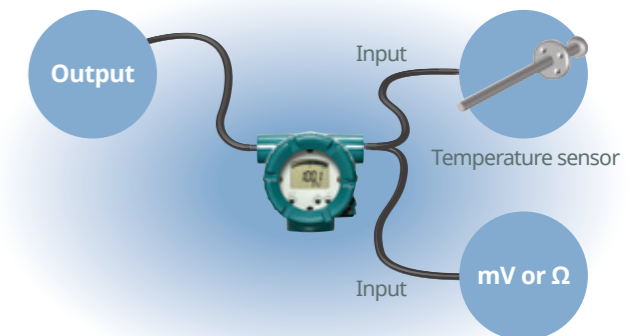
Product Finder

Yokogawa provides a complete lineup of field instruments. The product finder on the YOKOGAWA Website helps users to select devices. Based on the process measurement or standards (flameproof, functional safety (SIL), and communication protocol) that the user enters, the product finder quickly selects the most suitable instrument.

Easy Installation
— Configuration and Commissioning —

Display

At a glance, the YTA610 /YTA710 indicator displays the current process measurement or status of the transmitter in a large easy to read format. The sweeping bar graph provides a graphical representation of the measurement, while the center line and bottom line of the display indicate the actual value and unit of measure. When detecting a problem, the center line displays the alarm code while the bottom line shows a short alarm code description.

Local Parameter Setting (LPS)

Basic parameters can be set quickly on-site with the LPS configuration buttons, located on the display, without the need for a Hand Held Communicator (HHC) or additional configuration tools.

* Accessible parameters vary depending on the communication protocol

Sensor Matching

Although all RTD Pt. sensors follow an overall standard resistance curve, each RTD Pt. sensor, because of the manufacturing process or slight variations in material makeup, have a unique resistance output curve. The difference between the 'ideal' standard curve and sensor's actual curve will cause errors in measurement. For applications with a high accuracy requirement, temperature sensor manufacturers can supply sensor-specific information to define the individual resistance output.
Sensor matching is an optional function available on the YTA610/YTA710 for RTD Pt. sensor that can use the sensor manufacturers sensor-specific information (known as Callendar-Van Dusen coefficients) to increase the accuracy of the measurement.

High accuracy curve after correction

Standard curve

Resistance
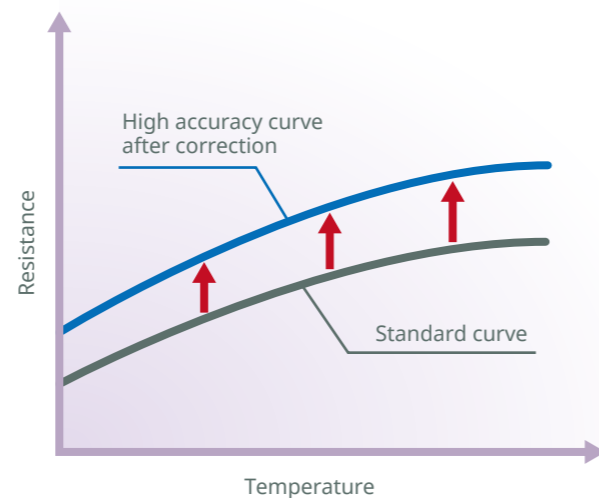
Temperature

Custom Thermocouple User Table

The YTA610/YTA710 offers a range of preprogrammed thermocouple inputs; but, if the input thermocouple being used is not one of the preprogrammed and the temperature-to-EMF data is available for that sensor, the YTA610/YTA710 uses the custom table to determine the temperature based on the thermocouple EMF input value via FieldMate.

No.	Temp.	Electro. force
1	t_1	V_1
.	.	.
.	.	.
.	.	.
n	t_n	V_n

Temperature

EMF
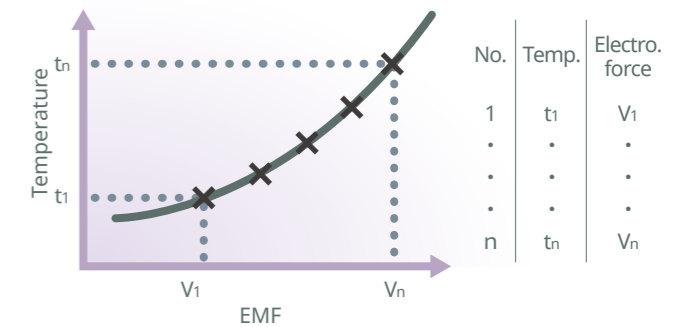
Configuration Using FieldMate

FieldMate - versatile device management wizard is a tool for adjusting and configuring instruments.
Instrument maintenance, management, and even replacement can be performed with easily understood intuitive screens.

FieldMate

Rich Information
— Operation and Observation —

NAMUR NE107

All device alarms are classified into the four categories ("Failure", "Function Check", "Out of Specification" and "Maintenance Required") defined by the NAMUR NE107 recommendations. These alarms are displayed on the asset management system in the appropriate category, enabling the operator to recognize the device status and take the necessary corrective action.

Alarm on LCD

When detecting a problem, the indicator displays the alarm code and a short alarm code description for easy recognition by the operator.

Sensor Backup

The YTA610/YTA710 have the capability of having two sensors supply input to the unit - one can serve as the primary sensor and second as the secondary sensor. The transmitter can be set up to automatically switch to the secondary sensor if the primary sensor fails. When this occurs, an alarm message is generated on the transmitter display and transmitted to the host system and asset manager. The failed sensor can be replaced during the next maintenance period, avoiding unscheduled plant shutdowns and any adverse impact to plant control due to a faulty temperature sensor.

Data Log Through PRM

Through linking with Plant Resource Manager (PRM), data is saved from the YTA610/ YTA710 that is used to analyze plant maintenance activities. PRM centralizes asset management and provides intelligent plant-wide diagnostics.

Collects data

Sensor Diagnostics

Advanced diagnostics for the temperature sensor and its electrical cable is implemented. The diagnosis information arrows to reduce the plant downtime by providing predictive maintenance information and backup sensor preparation in advance.

### Sensor Drift Diagnostics
— For YTA610/YTA710 —

The transmitter can be set up to monitor the measured difference between the two sensors. A user-defined alarm will alert when that difference reaches the programmed value.

Alarm
Sensor Value
Difference between Sensor 1 and 2
Operating Time
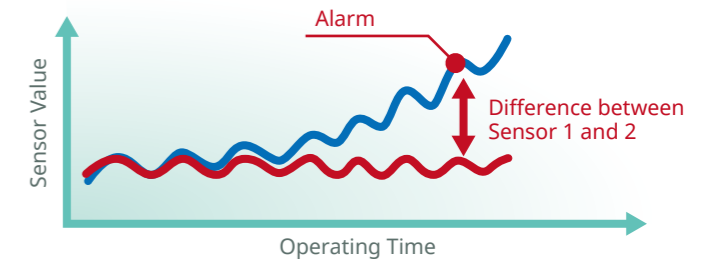
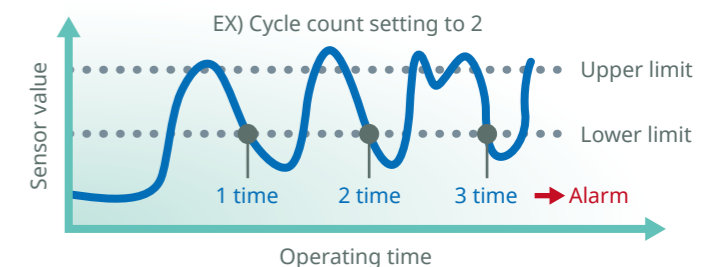### RTD Sensor Corrosion Diagnostics
— For YTA710 —

This diagnostic detects any corrosion at the terminals or along the connection wiring between the sensor and the transmitter monitoring sensor resistance. When the resistance reaches the user-defined value, the transmitter will alert that there is a wire break or bad electrical connection.

Alarm
Line resistance
Threshold
Operating time
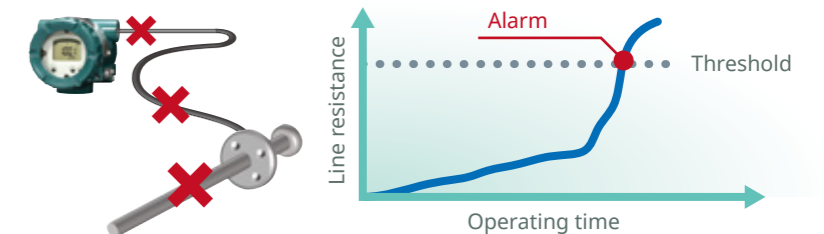
Temperature Cycle Diagnostics
— For YTA710 —

Cyclic temperature change results in a gradual deterioration of the temperature sensor. Users can set threshold and frequency limits to trigger an alarm status. This alarm can be used by the user to estimate the remaining life of the sensor.
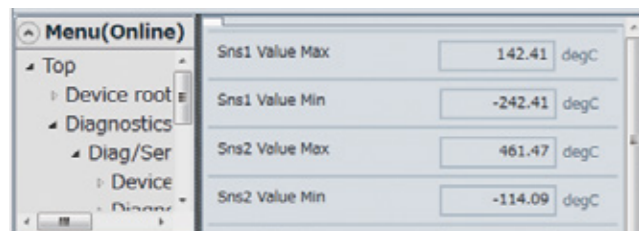
EX) Cycle count setting to 2
Sensor value
Upper limit
Lower limit
1 time   2 time   3 time   Alarm
Operating time

Expert Solution
— Maintenance and Service —

Service Log

Alarms detected by the instrument are stored in internal memory along with run time information. Troubleshooting can be performed quickly by checking the log.

- Alarm log
- Max / Min temperature sensor value
- Max / Min ambient temperature value
- Operating time

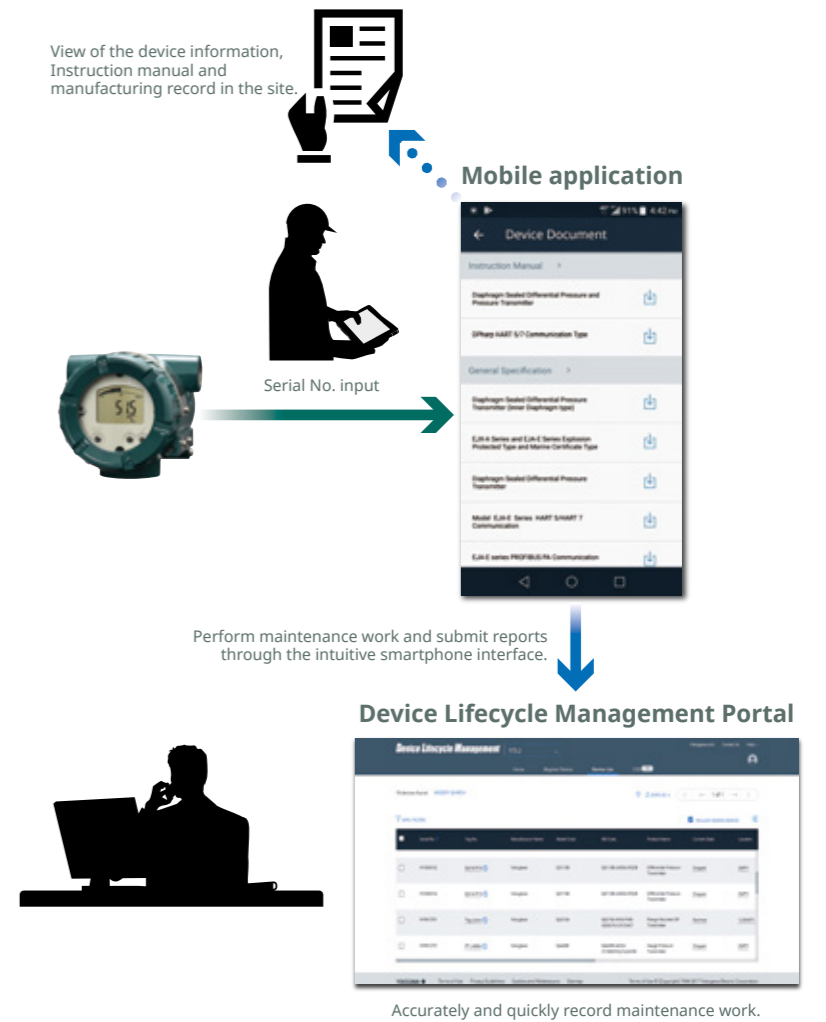| Menu(Online)		
▲ Top	Sns1 Value Max	142.41	degC
▷ Device root	Sns1 Value Min	-242.41	degC
▲ Diagnostics	Sns2 Value Max	461.47	degC
▲ Diag/Ser	Sns2 Value Min	-114.09	degC
▷ Device		
▷ Diagn		

Max / Min temperature sensor value (FieldMate)

Detachable Lightning Protector (Option)

The YTA610/YTA710 offers an optional lightning protector that is connected directly to the multi-level terminal block. The design allows the lightning protector to be easily added or replaced in the field.
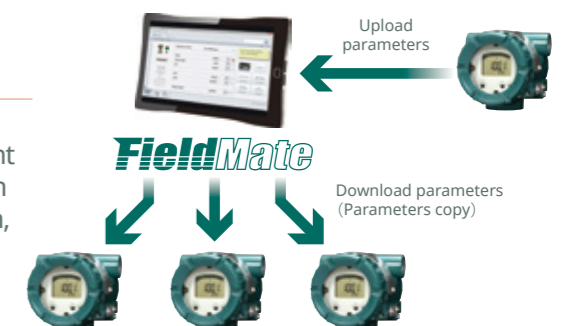
Device Lifecycle Management

The newly developed Device Lifecycle Management service helps to minimize the amount of manual work that must be performed and improves the management of devices information. This service makes it easy to register, view, and manage information on instruments that is useful for maintenance work, and helps customers to improve the efficiency of plant maintenance work and the quality of data management. Through solutions such as this Device Lifecycle Management service, Yokogawa will provide its customers the support they need to ensure the optimal management of their plant assets.

View of the device information, Instruction manual and manufacturing record in the site.

Mobile application

Serial No. input

Perform maintenance work and submit reports through the intuitive smartphone interface.

Device Lifecycle Management Portal

Accurately and quickly record maintenance work.

Data Transfer Using FieldMate

Yokogawa's FieldMate - Versatile Device Management Wizard can be used program the same configuration into multiple devices using the data transfer function, that can reduce total device configuration time.

Upload parameters

Download parameters (Parameters copy)

Temperature measuring instrument lineup

	YTA710	YTA610	YTA510	YTA70	YTA70P	DTSX
Features	Two-wire system high accuracy	Two-wire system general purpose	Wireless communication	Installed directly in the temperature sensor terminal box	High density implementation	Optical fiber temperature sensor
Installation method	Field mount	Field mount	Field mount	Head mount	Panel mount	Panel mount
Communication protocols	HART FOUNDATION Fieldbus BRAIN	HART FOUNDATION Fieldbus	ISA100 Wireless	HART	HART	MODOBUS/ TCP
Display	Yes With LPS function	Yes With LPS function	Yes	No	No	No (Separete installation is possible)
Functional safety (IEC61508)	SIL2	SIL2	No	No	No	No
Number of inputs (Number of channels)	1/2	1/2	2	1	1	2/4/16*
Sensor diagnostics	Ultimate	Essential	Burnout detection	Burnout detection	Burnout detection	Optical fiber burnout detection
Explosion proof	Flameproof Intrinsically safe Non-Incendive	Flameproof Intrinsically safe Non-Incendive	Intrinsically safe	Intrinsically safe	Intrinsically safe	Non-Incendive Type n

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OpreX™ Through the comprehensive OpreX portfolio of products, services, and solutions, Yokogawa enables operational excellence across the enterprise.

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