

**VTA Series**

Temperature solutions



# **VTA Series**

Temperature is the most vital process variable, accept nothing less than...

- Safety
- Precision
- Versatility

Bulletin 01C50A01-01EN

[www.yokogawa.com](http://www.yokogawa.com)

**vigilantplant.**<sup>®</sup>  
The clear path to operational excellence

**YOKOGAWA** 

The quality that you've come to expect.

# YTA Series

Temperature solutions

## Accuracy

YTA series enables advanced linearization of 17 types of industrial temperature sensors and input signals such as mV or Ohms ( $\Omega$ ). Utilizing a selected high grade 16bit A/D converter allows YTA to achieve a best in class performance of 0.02% of span or  $\pm 0.1^\circ\text{C}$ .

## Stability

YTA's stability is inherited from its meticulous product design and development philosophy. Containing a precision internal reference, YTA can detect and automatically correct for any instability, delivering a 5 year stability guarantee.

## Robustness

Robust dual compartment housing with hermetically sealed terminals ensure a long service life, even in the harshest of industrial environments. The durable epoxy paint maximizes chemical resistance, for maximum protection in marine environments where salt spray and semi immersion are common a stainless housing is available.



# CONTROL & SAFETY

## YTA110 & YTA320

### Clear informative Indicator



YTA's large informative indicator clearly displays the current status and process information at a glance. A 32 segment circular bar graph provides a clear graphical feedback of the process measurement, while the measurement value itself is displayed in the center along with the correct measurement units. Below the measurement value a dot matrix area keeps you updated with diagnostic information, such as measurement and alarm status etc...

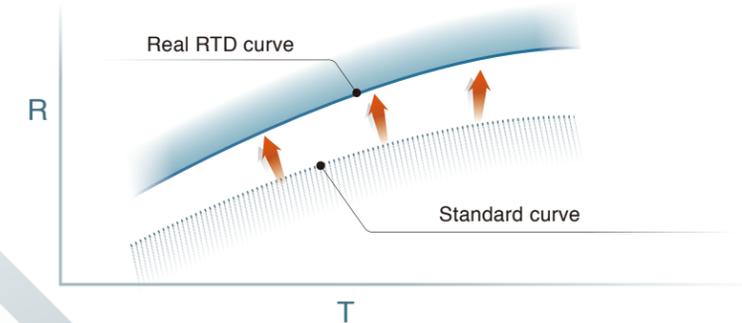


## YTA320

### Sensor Matching



The linear curve which is assumed to relate temperature and resistance for RTD's, causes minor errors in the final temperature measurement. For the highest accuracy temperature measurement, the specific RTD characteristics described by the Calendar Van Dusen coefficients are programmed into our YTA temperature transmitter.



### Dual Compartment, NEMA 4X IP 67 housing

YTA's dual-compartment housing isolates the field wiring terminals from the electronics, enabling high resistance to harsh environments.

Reliability and durability are guaranteed with NEMA 4X and IP67 compliance. The dual-compartment housing protects the electronics from moisture ingress and eliminates the need to expose the electronics to the environment. This ensures a long service life and stability, while reducing maintenance and cost of ownership.



### Easy Installation

Easier installation, commissioning and operation, universal inputs keeps inventory costs low while allowing our YTA series to fulfill a wide range of options, which means you can specify a YTA series transmitter to suit virtually all applications. From field mounted to head mounted (Hockey puck), failed sensor backup or differential temperature measurements, there is a YTA temperature transmitter to suit your requirements.

### Failed Sensor Backup

YTA has an automatic failed sensor backup function that transfers seamlessly to the standby sensor when needed. When the primary sensor fails, the transmitter will automatically switch over to the standby, secondary sensor. An error message is displayed on the local indicator and an alarm message is generated for the host system and asset manager.

The failed sensor can then be replaced without losing vital process information. This allows the sensor to be replaced at the next convenient maintenance period, avoiding unnecessary trips to the field and a possible unscheduled plant shutdown.



# CONTROL & MONITORING

## YTA70

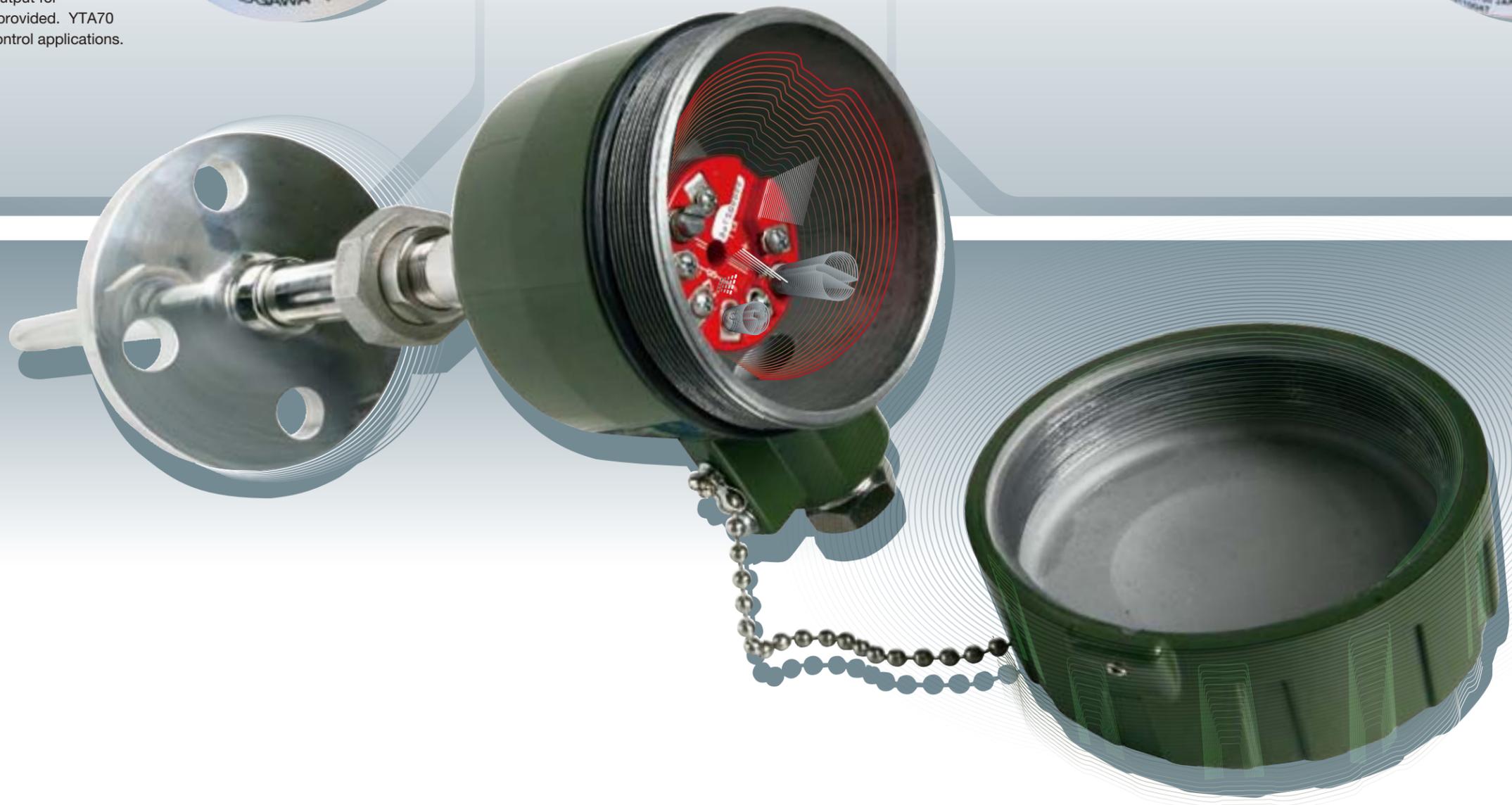


The YTA70 delivers all the benefits found in the YTA50 while adding the industrial standard communications protocol HART (Highway Addressable Remote Transducer). The HART protocol allows you to conveniently configure the transmitter using the latest FDT/DTM technology. YTA70 accepts 17 different signal inputs, such as Thermocouples, RTD, Ohms or a DC millivolts source and additionally enables custom sensors using a configurable matrix. A standard linearized industrial 4 to 20mA DC output for transmission to a control system is provided. YTA70 is the optimum choice for all your control applications.



## YTA50

The YTA50 is a PC programmable head mounted temperature transmitter with a single universal input. The universal input accepts Thermocouples, RTD, Ohms or a DC millivolts source. All inputs are linearized and converted in to an industrial standard 4 to 20mA DC output for transmission to a system. YTA50 is the optimum choice for all your monitoring applications.



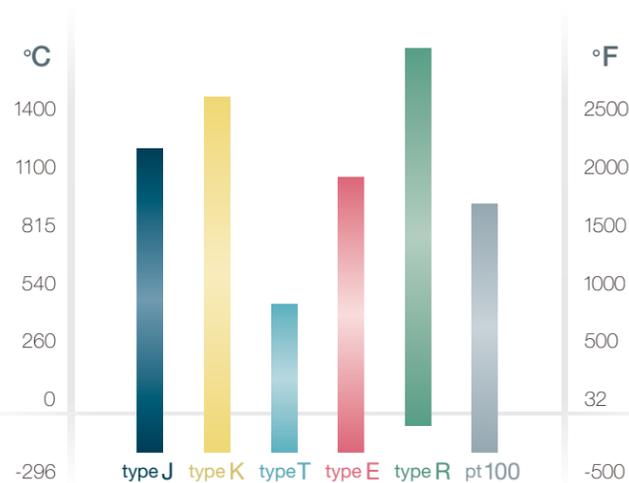
# Sensors



# Thermowells



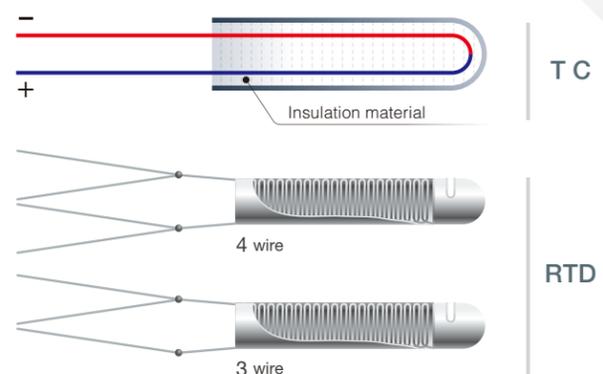
## Sensor rangeability



## Temperature Sensors

An assortment of temperature sensors are readily available, these include Resistance Temperature Detectors (RTD's) and Thermocouples (TC's) to suit all process automation applications. Wire wound RTD's represent the most common temperature sensors, because of their inherent accuracy and stability, they are used extensively in process measurement and control.

Thermocouples deliver high temperature capability and are more vibration tolerant than RTD's. Furthermore, they can be manufactured in small diameters for asset monitoring purposes. The quality of the sensor remains essential to the overall health of your process and plant.



## Thermowells

Thermowells are an important part of the temperature measurement and the plant's containment solution, providing protection against potentially dangerous process mediums.

A correctly designed thermowell can withstand;

- Erosion
- Corrosion
- High pressures and velocities
- Various mechanical stressors

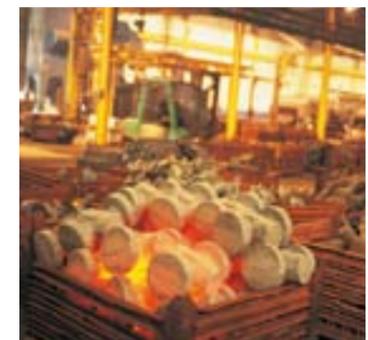
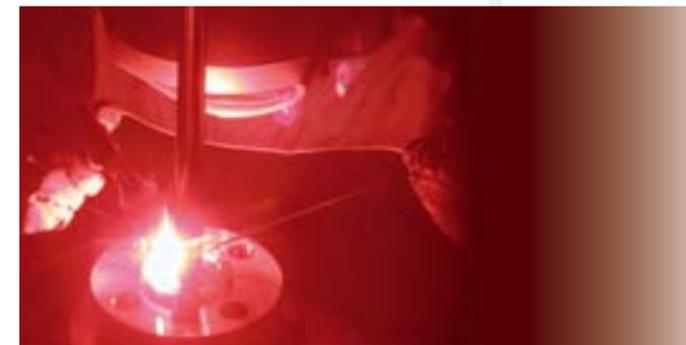
Quality of design and manufacturing is essential to meet the requirements of a variety of process environments.

Thermowells can be manufactured from barstock, forgings or tubular construction and in a variety of materials ranging from stainless steel to exotic alloys. These ensure mechanical integrity, safety and longevity.

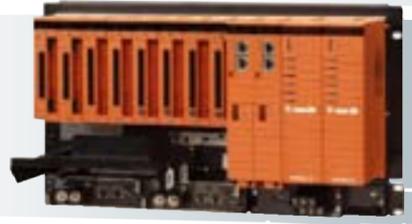
A welded flanged thermowell can be an acceptable solution for many applications, however, a full penetration welded flanged thermowell (double "J") delivers the maximum mechanical strength for high pressure service.

Once welded and heat treated the thermowell becomes effectively a one piece construction of similar alloys. Quality assurance testing, such as; dye-penetration, X-Ray, ultrasonic and pressure testing confirm the welding process.

The ultimate thermowell is formed from a single piece of material, forging and therefore, has no welds. This is an excellent choice for high pressure, arduous process.



# Safety



“Quality First” is a no compromise founding principle of Yokogawa embedded throughout our operations and processes worldwide. Quality requires more than procedures and standards, it requires a quality minded culture to thrive and this is realised through the knowledge, skills and experience of our people.

Quality requires a continuous introspective process of refinement and improvement. This fits perfectly with Japanese culture where the concept that “Nothing is permanent, perfect and lasts forever.” drives the quest for the highest possible quality. Forever vigilant, constantly striving to improve the complete product life cycle, including; design, manufacturing, logistics and after sales support. We believe that customer satisfaction is derived directly from quality.

That’s why at Yokogawa, “Quality First” philosophy is the responsibility of everyone, from R&D through to final production; from the line operator to the managing director.

# Quality

In today’s highly regulated production environment, compliance with the latest safety standards and regulations is mandatory.

Plant safety and the safety of personnel are equally as important today as plant availability, throughput and increased profitability. For these reasons Yokogawa believes safety should not be an option, it should be standard in all modern process automation & control equipment. Our strategy is to continue to build the finest high quality, reliable, industrial automation & control solutions and incorporate the latest safety standards such as IEC61508 in their design. YTA has been designed and built in accordance with this new philosophy. This is why YTA is such an important part of our Safety Excellence Suite of Total Safety Solutions.

“Do you regard safety as an option?  
No?..... Neither do we!”

Whether or not YTA is installed in a Safety Instrument Function (SIF) it will deliver a lifetime of benefits, one of which being high integrity process measurements validated by onboard safety diagnostic functions.

With YTA, you no longer have to sacrifice plant availability for plant safety. YTA allows you to maximize your plant’s safe availability while optimizing operational uptime.

SIL	PFD <sub>avg</sub>	RRF
4	$\geq 10^{-5}$ to $< 10^{-4}$	$> 10,000$ to $< 100,000$
3	$\geq 10^{-4}$ to $< 10^{-3}$	$> 1,000$ to $< 10,000$
2	$\geq 10^{-3}$ to $< 10^{-2}$	$> 100$ to $< 1,000$
1	$\geq 10^{-2}$ to $< 10^{-1}$	$> 10$ to $< 100$

PFD: Probability of Failure on Demand  
RRF: Risk Reduction Factor (RRF=1/PFD)



## Production Process

## Design

We believe in investing in our customer’s future as a means to securing our own future, investing more than 8% of corporate revenues in R&D. At the forefront of industrial automation technology, designing and development new sensors and automation platforms while enhancing existing solutions with safety (IEC61508) and advanced process diagnostics.

From conception through to design and development and eventual sales release we follow a meticulous design process that ensures the highest possible final product quality. Every product is subject to continuous testing and inspection to guarantee the final product quality and integrity.

**vigilantplant.**<sup>®</sup>

The clear path to operational excellence

SEE  
CLEARLY

KNOW  
IN ADVANCE

ACT  
WITH AGILITY

VigilantPlant is Yokogawa's automation concept for safe, reliable, and profitable plant operations. VigilantPlant aims to enable an ongoing state of Operational Excellence where plant personnel are watchful and attentive, well-informed, and ready to take actions that optimize plant and business performance.

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