

YTA610 and YTA710 Temperature Transmitters (Hardware)

IM 01C50G01-01EN

YTA610 and YTA710

Temperature Transmitters (Hardware)

IM 01C50G01-01EN 8th Edition

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Revision Information

1. Preface

The YTA temperature transmitter is fully factory-tested according to the specifications indicated on the order.

In order for the YTA temperature transmitter to be fully functional and to operate in an efficient manner, the manual must be carefully read to become familiar with the functions, operation, and handling of the YTA.

This manual gives instructions on handling, wiring, installation, maintenance, and general specifications.

To ensure correct use, please read this manual and following user's manuals.

Document No.	Explanation
IM 01C50G01-01EN	Hardware (This manual)
IM 01C50G01-02EN*1	For NEPSI Certification (Option code: /NS2, /NS25 and /NF2)
IM 01C50G01-01P *2	For Transmissor de Temperaturas YTA610 e YTA710 (Hardware) (Option code: /UF1, /US1 and /US15)
IM 01C50G01-01K *3	YTA610 and YTA710 Temperature Transmitters (Hardware) (Option code: /PF2, /PS2 and /PS25)
IM 01C50T01-02EN	For HART protocol type
IM 01C50T02-02EN	For FOUNDATION Fieldbus communication type
IM 01C50T03-02EN	For BRAIN protocol type
GS 01C50G01-01EN	YTA710 Temperature Transmitter
GS 01C50H01-01EN	YTA610 Temperature Transmitter



WARNING

When using the transmitter in a Safety Instrumented System (SIS) application, refer to Appendix 1 in either IM 01C50T01-02EN for the HART protocol.

The instructions and procedures in this section must be strictly followed in order to maintain the transmitter for this safety level.

These manuals can be downloaded from the website of Yokogawa or purchased from the Yokogawa representatives.

Website address: <http://www.yokogawa.com/fld/>

- *1: It is a manual when there is /NS2, /NS25 and /NF2 in the additional specifications.
- *2: It is a manual when there is /UF1, /US1 and /US15 in the additional specifications. This IM 01C50G01-01P is only in Portuguese.
- *3: It is a manual when there is /PF2, /PS2 and /PS25 in the additional specifications. This IM 01C50G01-01K is only in Korean.

■ Notes on the User's Manual

- This manual should be delivered to the end user.
- This manual and the identification tag attached on packing box are essential parts of the product; keep them in a safe place for future reference.
- The information contained in this manual is subject to change without prior notice.
- The information contained in this manual, in whole or part, shall not be transcribed or copied without notice.
- In no case does this manual guarantee the merchant ability of the transmitter or its adaptability to a specific client need.
- Should any doubt or error be found in this manual, submit inquiries to your local dealer.
- No special specifications are contained in this manual. When products whose suffix code or optional codes contain code "Z" and an exclusive document is attached, please read it along with this manual.
- Changes to specifications, structure, and components used may not lead to the revision of this manual unless such changes affect the function and performance of the transmitter.

■ Notes on Safety and Modifications

- This product is designed to be used by a person with specialized knowledge.
- Before handling the YTA, it is absolutely imperative that users of this equipment read and observe the safety instructions mentioned in each section of the manual in order to ensure the protection and safety of operators, the YTA itself and the system containing the transmitter. We are not liable for any accidents arising out of handling that does not adhere to the guidelines established in the safety instructions.
- No maintenance should be performed on explosionproof type temperature transmitters while the equipment is energized. If maintenance is required with the cover open, always first use a gas detector to check that no explosive gases are present.
- If the user attempts to repair or modify an explosionproof type transmitter and is unable to restore it to its original condition, damage to the explosionproof features result, leading to dangerous conditions. Contact your authorized Yokogawa Electric Corporation representative for repairs or modifications of an explosionproof type transmitter.

■ For Safe Use of Product

Please give your attention to the followings.

(a) Installation

- The instrument must be installed by an expert engineer or a skilled personnel. The procedures described about INSTALLATION are not permitted for operators.
- In case of high process temperature, care should be taken not to burn yourself because the surface of the case reaches a high temperature.
- All installation shall comply with local installation requirement and local electrical code.

(b) Wiring

- The instrument must be installed by an expert engineer or a skilled personnel. The procedures described about WIRING are not permitted for operators.
- Please confirm that voltages between the power supply and the instrument before connecting the power cables and that the cables are not powered before connecting.

(c) Maintenance

- Please do not carry out except being written to a maintenance descriptions. When these procedures are needed, please contact nearest YOKOGAWA office.
- Care should be taken to prevent the build up of drift, dust or other material on the display glass and name plate. In case of its maintenance, soft and dry cloth is used.

(d) Modification

Yokogawa will not be liable for malfunctions or damage resulting from any modification made to this instrument by the customer.

(e) Product Disposal

The instrument should be disposed of in accordance with local and national legislation/regulations.

(f) Authorized Representative in EEA

In relation to the CE Marking, The authorized representative for this product in the EEA (European Economic Area) is:

Yokogawa Europe B.V.
Euroweg 2, 3825 HD Amersfoort, The Netherlands

(g) Morocco conformity mark

This conformity mark indicates that the product complies with Moroccan safety and EMC requirements.

(h) UKCA mark (optional code /UK)

In the case of optional codes /UK, this conformity mark indicates that the product complies with UKCA requirements.

In relation to UKCA marking, The importer for this product into the Great Britain market via the YOKOGAWA sales channel is Yokogawa United Kingdom Limited, Stuart Road Manor Park Runcorn, WA7 1TR, United Kingdom

● Symbols used in this manual

The YTA temperature transmitter and this manual use the following safety related symbols and signals.

**WARNING**

Contains precautions to protect against the chance of explosion or electric shock which, if not observed, could lead to death or serious injury.

**CAUTION**

Contains precautions to protect against danger, which, if not observed, could lead to personal injury or damage to the instrument.

**IMPORTANT**

Contains precautions to be observed to protect against adverse conditions that may lead to damage to the instrument or a system failure.

**NOTE**

Contains precautions to be observed with regard to understanding operation and functions.

Some of the diagrams in this manual are partially omitted, described in writing, or simplified for ease of explanation. The screen drawings contained in the instruction manual may have a display position or characters (upper/lower case) that differ slightly from the full-scale screen to an extent that does not hinder the understanding of functions or monitoring of operation.

■ Warranty

- The warranty period of the instrument is written on the estimate sheet that is included with your purchase. Any trouble arising during the warranty period shall be repaired free of charge.
- Inquiries with regard to problems with the instrument shall be accepted by the sales outlet or our local dealer representative.
- Should the instrument be found to be defective, inform us of the model name and the serial number of the instrument together with a detailed description of nonconformance and a progress report. Outline drawings or related data will also be helpful for repair.
- Whether or not the defective instrument is repaired free of charge depends on the result of our inspection.

● Conditions not eligible for charge-exempt repair.

- Problems caused by improper or insufficient maintenance on the part of the customer.
- Trouble or damage caused by mishandling, misuse, or storage that exceeds the design or specification requirements.
- Problems caused by improper installation location or by maintenance conducted in a non-conforming location.
- Trouble or damage was caused by modification or repair that was handled by a party or parties other than our consigned agent.
- Trouble or damage was caused by inappropriate relocation following delivery.
- Trouble or damage was caused by fire, earthquake, wind or flood damage, lightning strikes or other acts of God that are not directly a result of problems with this instrument.

■ Trademarks

- HART is a trademark of the FieldComm Group.
- Registered trademarks or trademarks appearing in this manual are not designated by a TM or ® symbol.
- Other company names and product names used in this manual are the registered trademarks or trademarks of their respective owners.

■ Control of Pollution Caused by the Product

Please refer to the IM 01C00A20-01ZH for information on our management status pursuant to “Control of Pollution caused by Electronic Information Products” of the People’s Republic of China. Please search for the IM number in the Yokogawa library “ <https://www.yokogawa.com/library/> ”.

2. Notes on Handling

The YTA temperature transmitter is fully factorytested upon shipment. When the YTA is delivered, check the appearance for damage, and also check that the transmitter mounting parts shown in Figure 2.1 are included with your shipment. If “No Mounting Bracket” is indicated, no transmitter mounting bracket is included.

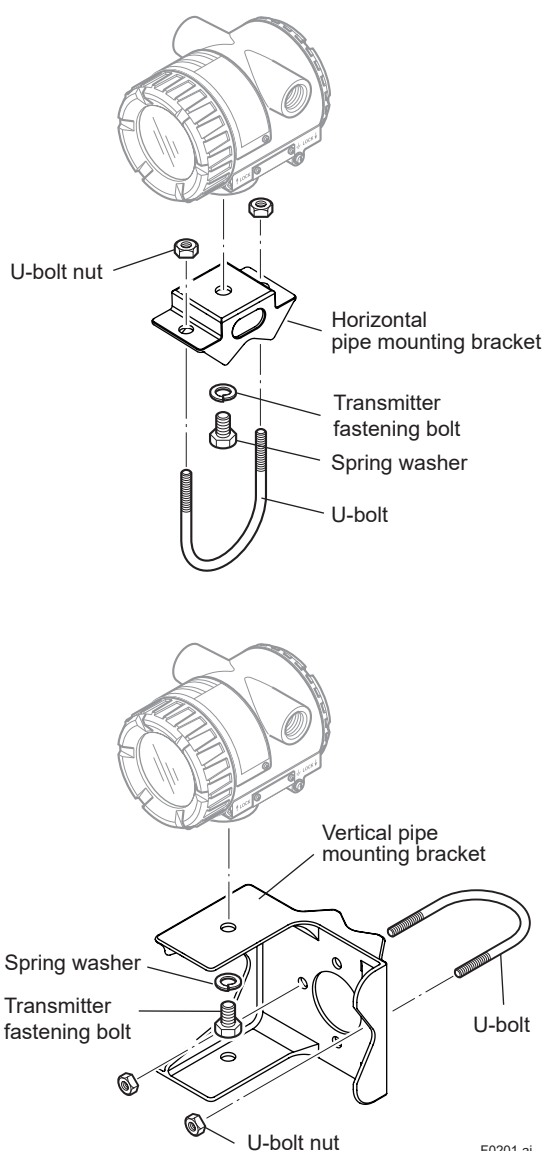


Figure 2.1 Transmitter mounting parts

2.1 Nameplate

The model name and specifications are written on the name plate attached to the case.

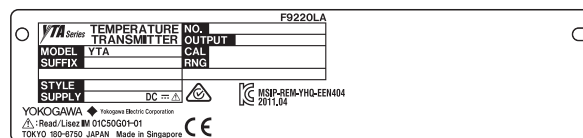


Figure 2.2 Name plate

2.2 Transport

To prevent damage while in transit, leave the transmitter in the original shipping container until it reaches the installation site.

2.3 Storage

When an extended storage period is expected, observe the following precautions:

1. If at all possible, store the transmitter in factoryshipped condition, that is, in the original shipping container.
2. Choose a storage location that satisfies the following requirements.
 - A location that is not exposed to rain or water.
 - A location subject to a minimum of vibration or impact.
 - The following temperature and humidity range is recommended. Ordinary temperature and humidity (25°C, 65%) are preferable.

Temperature:

No Integral indicator –40 to 85°C

With Integral indicator –30 to 80°C

Humidity: 0 to 100% RH (at 40°C)
3. The performance of the transmitter may be impaired if stored in an area exposed to direct rain and water. To avoid damage to the transmitter, install it immediately after removal from shipping container. Follow wiring instructions in Chapter 5.

2.4 Choosing the Installation Location

Although the temperature transmitter is designed to operate in a vigorous environment, to maintain stability and accuracy, the following is recommended:

(1) Ambient Temperature

It is preferable to not to expose the instrument to extreme temperatures or temperature fluctuations. If the instrument is exposed to radiation heat a thermal protection system and appropriate ventilation is recommended.

(2) Environmental Requirements

Do not allow the instrument to be installed in a location that is exposed to corrosive atmospheric conditions. When using the instrument in a corrosive environment, ensure the location is well ventilated.

The unit and its wiring should be protected from exposure to rainwater.

(3) Impact and Vibration

It is recommended that the instrument be installed in a location that is subject to a minimum amount of impact and vibration.

2.5 Use of a Transceiver



IMPORTANT

Although the temperature transmitter is designed to resist influence from high frequency noise; use of a transceiver in the vicinity of installation may cause problems. Installing the transmitter in an area free from high frequency noise (RFI) is recommended.

2.6 Insulation Resistance Test and Withstand Voltage Test



CAUTION

- (1) Overvoltage of the test voltage that is so small that it does not cause an dielectric breakdown may in fact deteriorate insulation and lower the safety performance; to prevent this it is recommended that the amount of testing be kept to a minimum.
- (2) The voltage for the insulation resistance test must be 500 V DC or lower, and the voltage for the withstand voltage test must be 500 V AC or lower. Failure to heed these guidelines may cause faulty operation.
- (3) For with a lightning protector (option code:/A), please remove the lightning protector from terminal at the test. In case of testing with the lightning protector, the voltage for the insulation resistance test must be 100V DC or lower, and the voltage for the withstand voltage test must be 100V AC or lower. Failure to heed these guidelines may cause faulty operation.

Follow the steps below to perform the test, the wiring of the transmission line must be removed before initiating testing.

2.6.1 Insulation resistance test procedure

■ Testing between the output terminal and input terminal

1. Lay transition wiring between the + terminal, the – terminal, and the check terminal of the terminal box.
2. Lay wiring across terminals 1, 2, 3, 4, and 5 of the terminal box.
3. Connect the insulation resistance meter (with the power turned OFF) between the transition wiring of Steps 1 and 2 above. The polarity of the input terminals must be positive and that of the output terminals must be negative.
4. Turn the power of the insulation resistance meter ON and measure the insulation resistance. The duration of the applied voltage must be the period during which 100MΩ or more is confirmed (or 20MΩ if the unit is equipped with a lightning protector).

5. Upon completion of the test, remove the insulation resistance meter, connect a 100KΩ resistor between the transition wiring, and allow the electricity to discharge. Do not touch the terminal with your bare hands while the electricity is discharging for more than 1 second.

■ Testing between the output terminal and grounding terminal

1. Lay transition wiring between the + terminal, the - terminal, and the check terminal of the terminal box, then connect an insulation resistance meter (with the power turned OFF) between the transition wiring and the grounding terminal. The polarity of the transition wiring must be positive and that of the grounding terminal must be negative.
2. Turn the power of the insulation resistance meter ON and measure the insulation resistance. The duration of the applied voltage must be the period during which 100MΩ or more is confirmed (or 20MΩ if the unit is equipped with a lightning protector).
3. Upon completion of the test, remove the insulation resistance meter, connect a 100KΩ resistor between the transition wiring and the grounding terminal, and allow the electricity to discharge. Do not touch the terminal with your bare hands while the electricity is discharging for more than 1 second.

■ Testing between the input terminal and grounding terminal

1. Lay transition wiring between terminals 1, 2, 3, 4 and 5 of the terminal box, and connect the insulation resistor (with the power turned OFF) between the transition wiring and the grounding terminal. The polarity of the transition wiring must be positive and that of the grounding terminal must be negative.
2. Turn the power of the insulation resistance meter ON and measure the insulation resistance. The duration of the applied voltage must be the period during which 100MΩ or more is confirmed (or 20MΩ if the unit is equipped with a lightning protector).

3. Upon completion of the test, remove the insulation resistance meter, connect a 100KΩ resistor between the transition wiring and the grounding terminal, and allow the electricity to discharge. Do not touch the terminal with your bare hands while the electricity is discharging for more than 1 second.

2.6.2 Withstand voltage test procedure

■ Testing between the output terminal and the input terminal

1. Lay transition wiring between the + terminal, the - terminal, and the check terminal of the terminal box.
2. Lay transition wiring between terminals 1, 2, 3, 4 and 5 of the terminal box.
3. Connect the withstand voltage tester (with the power turned OFF) between the transition wiring shown in Steps 1 and 2 above.
4. After setting the current limit value of the withstand voltage tester to 10mA, turn the power ON, and carefully increase the impressed voltage from 0V to the specified value.
5. The voltage at the specified value must remain for a duration of one minute.
6. Upon completion of the test, carefully reduce the voltage so that no voltage surge occurs.

■ Testing between the output terminal and the grounding terminal

1. Lay the transition wiring between the + terminal, the - terminal and the check terminal of the terminal box, and connect the withstand voltage tester (with the power turned OFF) between the transition wiring and the grounding terminal. Connect the grounding side of the withstand voltage tester to the grounding terminal.
2. After setting the current limit value of the withstand voltage tester to 10mA, turn the power ON, and gradually increase the impressed voltage from 0V to the specified value.
3. The voltage at the specified value must remain for a duration of one minute.
4. Upon completion of the test, carefully reduce the voltage so that no voltage surge occurs.

■ Testing between the input terminal and the grounding terminal

1. Lay the transition wiring across terminals 1, 2, 3, 4, and 5 of the terminal box and connect the withstand voltage tester (with the power turned OFF) between the transition wiring and the grounding terminal. Connect the grounding side of the withstand voltage tester to the grounding terminal.
2. After setting the current limit value of the withstand voltage tester to 10mA, turn the power ON, and gradually increase the impressed voltage from 0V to the specified value.
3. The voltage at the specified value must remain for a duration of one minute.
4. Upon completion of the test, carefully reduce the voltage so that no voltage surge occurs.

2.7 Installation of Explosion Protected Type Transmitters

In this section, further requirements and differences and for explosionproof type instrument are described. For explosionproof type instrument, the description in this chapter is prior to other description in this users manual.



CAUTION

To preserve the safety of explosionproof equipment requires great care during mounting, wiring, and piping. Safety requirements also place restrictions on maintenance and repair activities. Please read the following sections very carefully.

2.7.1 ATEX Certification

(1) Technical Data

a) ATEX intrinsically safe approval

Caution for ATEX intrinsically safe approval.

Note 1. Certification information

① 4 - 20mA type

- YTA610 and YTA710 with /KU2 temperature transmitter (4 - 20mA type) is applicable for use in hazardous locations.

[Intrinsically safe ia]

- Applicable Standard:
EN IEC 60079-0, EN 60079-11
- Certificate No. FM16ATEX0019X
- Type of protection and marking code:
II 1 G Ex ia IIC T5...T4 Ga
II 2 (1) D Ex ia [ia Da] IIIC T135°C Db
- Ambient Temperature:
-40 to 70°C for T4, -40 to 50°C for T5,
-30 to 70°C for IIIC
- Enclosure: IP66 in accordance with EN IEC60079-0, IP67 in accordance with only IEC60529
- Electrical parameters:
Supply/Output circuit: Terminals: +, -
Ui=30V, Ii=200mA, Pi=1.0W, Ci=22nF,
Li=0mH

Sensor circuit: Terminals: 1,2,3,4,5
Uo=6V, Io=90mA, Po=135mW, Co=10μF,
Lo=3.9mH

- Dielectric strength: 500 V a.c.r.m.s., 1 min
(See specific conditions of use)

[Intrinsically safe ic]

- Applicable Standard:
EN IEC 60079-0, EN 60079-11
- Certificate Not Applicable as per Annex VIII to ATEX 2014/34/EU
- Type of protection and marking code:
II 3 G Ex ic IIC T5...T4 Gc
- Ambient Temperature:
-30 to 70°C for T4, -30 to 50°C for T5
- Enclosure: IP66 in accordance with EN IEC60079-0, IP67 in accordance with only IEC60529
- Overvoltage category: I
- Electrical parameters:
Supply/Output circuit: Terminals: +, -
Ui=30V, Ci=22nF, Li=0mH
Sensor circuit: Terminals: 1,2,3,4,5
Uo=6V, Io=90mA, Po=135mW, Co=10μF,
Lo=3.9mH

- Dielectric strength: 500 V a.c.r.m.s., 1 min
(See specific conditions of use)
- ② Fieldbus type
- YTA610 and YTA710 with /KU25 temperature transmitter (Fieldbus type) is applicable for use in hazardous locations.

[Intrinsically safe ia]

- Applicable Standard:
EN IEC 60079-0, EN 60079-11
- Certificate No. FM16ATEX0019X
- Type of protection and marking code:
II 1 G Ex ia IIC T4 Ga
II 2 (1) D Ex ia [ia Da] IIIC T135°C Db
- Ambient Temperature:
–55 to 60°C for T4, –30 to 60°C for IIIC
- Enclosure: IP66/IP67
- Electrical parameters:
Supply/Output circuit: Terminals: +, -
FISCO field device or
Ui=30V, Ii=300mA, Pi=1.2W, Ci=2.2nF,
Li=0mH
Sensor circuit: Terminals: 1,2,3,4,5
Uo=6V, Io=90mA, Po=135mW, Co=10μF,
Lo=3.9mH

- Dielectric strength: 500 V a.c.r.m.s., 1 min
(See specific conditions of use)

[Intrinsically safe ic]

- Applicable Standard:
EN IEC 60079-0, EN 60079-11
- Certificate Not Applicable as per Annex VIII to ATEX 2014/34/EU
- Type of protection and marking code:
II 3 G Ex ic IIC T4 Gc
- Ambient Temperature: –30 to 70°C
- Enclosure: IP66/IP67
- Overvoltage category: I
- Electrical parameters:
Supply/Output circuit: Terminals: +, -
FISCO field device or
Ui=32V, Ci=2.2nF, Li=0mH
Sensor circuit: Terminals: 1,2,3,4,5
Uo=6V, Io=90mA, Po=135mW, Co=10μF,
Lo=3.9mH
- Dielectric strength: 500 V a.c.r.m.s., 1 min
(See specific conditions of use)



WARNING

Specification conditions of use

- Electrostatic charges on the non-metallic parts (excluding glass parts) or coated parts of the Temperature Transmitter shall be avoided.
- When the enclosure of the Temperature Transmitter is made of aluminum alloy, if it is mounted in an area where the use of Category 1G equipment is required, it must be installed such that, even in the event of rare incidents, an ignition source due to impact and/or friction sparks is excluded.
- The dielectric strength of 500V r.m.s between the intrinsically safe circuit and the enclosure of the Temperature Transmitter is limited, only by the removable surge absorber F9220AR.



WARNING

WARNING:

ELECTROSTATIC CHARGE MAY CAUSE AN EXPLOSION HAZARD. AVOID ANY ACTIONS THAT CAUSE THE GENERATION OF ELECTROSTATIC CHARGE, SUCH AS RUBBING WITH A DRY CLOTH ON COATING FACE OF THE PRODUCT.

Note 2. Note for multiple types of protection (KU2 and KU25)

- For the installation of this transmitter, once a particular type of protection is selected, any other type of protection cannot be used. The installation must be in accordance with the description about the type of protection in this instruction manual. Cross out the unnecessary type of protection on the name plate in the following ways.

Note 3. Conditions for safe use

**WARNING**

- A modification of the equipment would no longer comply with the construction described in the certificate documentation.
- When the ambient temp. $\geq 68^{\circ}\text{C}$, use heatersisting cables and cable glands $\geq 75^{\circ}\text{C}$ (applicable only when Ex iaD or Ex ic is selected)
- Potential electrostatic charging hazard (see 6)

1. Cable entry devices satisfying IP66/IP67 should be applied when installed in a hazardous area, and redundant holes for cable entry should be closed by suitable blanking elements.
2. The type of threads is indicated at the cable entry, using the following marking.

Screw Size	Marking
ISO M20×1.5 female	M
ANSI 1/2 NPT female	N

F0203.ai

3. The equipment should be used in explosive atmospheres together with an associated apparatus, following the instructions of this equipment and the connected associated apparatus. Connection at the wiring terminals should be made correctly.
4. The selected type of the Ex marking on the name plate should be indicated. For this purpose, the tick boxes can be used as follows.
 - ☒ Ex ia IIC T4 Ga
 - ☐ Ex iaD [iaD 20] 21 IP6X T135°C
 - ☐ Ex ic IIC T4 Gc
5. It is forbidden to change the configuration of the equipment except for the removable surge absorber, to ensure the explosion protection performance of the equipment.
6. If the equipment is mounted in an area where explosive atmospheres may be present, it must be installed in such a way that the risk from electrostatic discharges and propagating brush discharges caused by rapid flow of dust are avoided.
7. The equipment must be installed in accordance with IIE029 A63, and with IEC60079-14 and/or relevant local codes.
The type of threads is indicated near the cable entry as follows.
8. Only personnel authorized by Yokogawa Electric Corporation can repair the equipment.

b) ATEX Flameproof Type and Dust Ignition Proof Type

Caution for ATEX Flameproof Type and Dust Ignition Proof Type

Note 1. Certificate information

- YTA710 with /KF2, YTA610 and YTA710 with /KU2 and /KU25 temperature transmitters are applicable for use in hazardous locations.
- No. KEMA 07ATEX0130X
- Applicable Standard:
EN IEC 60079-0, EN 60079-1,
EN 60079-31
- Type of Protection and Marking Code:
II 2 G Ex db IIC T6/T5 Gb,
II 2 D Ex tb IIIC T70°C / T90°C Db
- Ambient Temperature for Gas Atmospheres:
–40 to 75°C (T6), –40 to 80°C (T5)
- Ambient Temperature for Dust Atmospheres:
–30 to 65°C (T70°C), –30 to 80°C (T90°C)
- Degree of protection of enclosure: IP66 in accordance with EN IEC60079-0
- Supply Voltage : 42 V dc max. (4 to 20 mA type)
: 32 V dc max. (Fieldbus type)
- Output Signal : 4 to 20 mA
: 24 mA dc max. (Fieldbus type)

Note 2. Installation

- Cable glands, adapters and/or blanking elements with a suitable IP rating shall be of Ex d IIC/Ex tb IIIC certified by ATEX and shall be installed so as to maintain the specific degree of protection (IP Code) of the equipment.
- All wiring shall comply with local installation requirement.
- In order to prevent the earthing conductor from loosening, the conductor must be secured to the terminal, tightening the screw with appropriate torque.
Care must be taken not to twist the conductor.
- When the combination type is installed tick the box of the selected type of protection on the label when the transmitter is installed in order to avoid confusion. Permanently mark the protection type installed. Once the type is marked, it cannot be changed.
 - e. g. In case of selecting “db”, not “tb” or other type of protections
 - ☒ Ex db IIC T6/T5 Gb
 - ☐ Ex tb IIIC T70°C/T90°C Db

Note 3. Operation

- Keep "WARNING" on the equipment as follows.
WARNING: AFTER DE-ENERGIZING, DELAY 10 MINUTES BEFORE OPENING. WHEN THE AMBIENT TEMP. $\geq 70^{\circ}\text{C}$, USE THE HEAT-RESISTING CABLES & CABLE GLANDS $\geq 90^{\circ}\text{C}$. POTENTIAL ELECTROSTATIC CHARGING HAZARD -SEE USER'S MANUAL
- Take care not to generate mechanical spark when access to the instrument and peripheral devices in hazardous location.
- Electrostatic charge may cause an explosion hazard. Avoid any actions that cause the generation of electrostatic charge, such as rubbing with a dry cloth on coating face of the product.
- If the YTA is mounted in an area where the use of Category 2D equipment is required, it shall be installed in such a way that the risk from electrostatic discharges and propagating brush discharges caused by rapid flow of dust is avoided.
- To satisfy IP66, apply waterproof glands to the electrical connection port.
- If the equipment is affected by external sources of heating or cooling from plant facilities, make sure that the parts in contact with the equipment or in the near vicinity of the equipment do not exceed the ambient temperature range of the equipment.

Note 4. Specific Condition of use

- The unearthed hanging tag plate has a capacitance of 4 pF.
- In case of /N4 (optional code) and Group IIC, suitability in the specific application shall be determined by the user.

**WARNING**

- Precaution shall be taken to minimize the risk from electrostatic discharges and propagating brush discharges on the non-metallic parts (excluding glass parts) and coated parts of the equipment.
- Flameproof joints are not intended to be repaired. Contact Yokogawa representative or Yokogawa office.

Note 5. Maintenance and Repair

- Warning: When maintenance and repair are performed, confirm the following conditions. After that perform them.
- Only personnel authorized by Yokogawa Electric Corporation can repair the equipment in accordance with the relevant standards: EN 60079-19 (Equipment repair, overhaul and reclamation) and EN 60079-17 (Electrical installation inspection and maintenance); otherwise the certification will be voided.

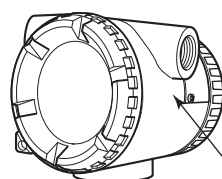
Note 6. Surge absorber

- The surge absorber can be removed from, or added to the equipment.

(2) Electrical Connection

The type of electrical connection is stamped near the electrical connection port according to the following marking.

Screw Size	Marking
ISO M20×1.5 female	$\triangle$ M
ANSI 1/2 NPT female	$\triangle$ N



Location of the marking

F0204.ai

(3) Installation**WARNING**

All wiring shall comply with local installation requirement and local electrical code.

(4) Operation**WARNING**

- OPEN CIRCUIT BEFORE REMOVING COVER. INSTALL IN ACCORDANCE WITH THIS USER'S MANUAL
- Take care not to generate mechanical sparking when access to the instrument and peripheral devices in hazardous locations.

(5) Maintenance and Repair



WARNING

The instrument modification or parts replacement by other than authorized Representative of Yokogawa Electric Corporation is prohibited and will void the certification.

(6) Name Plate

YTA710 /KF2 Flameproof and Dust ignition proof type

YTA Series TEMPERATURE TRANSMITTER		NO. F9220LG
MODEL YTA	CAL	OUTPUT
SUFFIX	RNG	
STYLE		
SUPPLY	DC	
YOKOGAWA Yokogawa Electric Corporation Read/Listen IM 01C50G01-01 TOKYO 180-8750 JAPAN		CE 0344 (X) I12GD P66/P67

No. KEMA 07ATEX0130X
☐ Ex db IIC T6/T5 Gb
☐ Ex tb IIIC T70°C/T90°C Db
 TEMP. CLASS T6/T5
 Tamb(Gas) -40 to +75°C(T6)
 -40 to +80°C(T5)
 (Dust) -30 to +65°C(T70°C)
 -30 to +80°C(T90°C)
 ENCLOSURE: IP66

WARNING
 AFTER DE-ENERGIZING, DELAY 10 MINUTES BEFORE OPENING. WHEN THE AMBIENT TEMP. ≥ 70°C, USE THE HEAT-RESISTING CABLES & CABLE GLANDS ≥ 90°C. POTENTIAL ELECTROSTATIC CHARGING HAZARD -SEE USER'S MANUAL

No. KEMA 07ATEX0130X
☐ Ex db IIC T6/T5 Gb
☐ Ex tb IIIC T70°C/T90°C Db
 TEMP. CLASS T6/T5
 Tamb(Gas) -40 to +75°C(T6)
 -40 to +80°C(T5)
 (Dust) -30 to +65°C(T70°C)
 -30 to +80°C(T90°C)
 ENCLOSURE: IP66

WARNING
 AFTER DE-ENERGIZING, DELAY 10 MINUTES BEFORE OPENING. WHEN THE AMBIENT TEMP. ≥ 70°C, USE THE HEAT-RESISTING CABLES & CABLE GLANDS ≥ 90°C. POTENTIAL ELECTROSTATIC CHARGING HAZARD -SEE USER'S MANUAL

YTA Series TEMPERATURE TRANSMITTER		NO. F9220LG
MODEL YTA	CAL	OUTPUT
SUFFIX	RNG	
STYLE		
SUPPLY	DC	
YOKOGAWA Yokogawa Electric Corporation Read/Listen IM 01C50G01-01 TOKYO 180-8750 JAPAN		CE 0344 (X) I12GD P66/P67

No. KEMA 07ATEX0130X
☐ Ex db IIC T6/T5 Gb
☐ Ex tb IIIC T70°C/T90°C Db
 TEMP. CLASS T6/T5
 Tamb(Gas) -40 to +75°C(T6)
 -40 to +80°C(T5)
 (Dust) -30 to +65°C(T70°C)
 -30 to +80°C(T90°C)
 ENCLOSURE: IP66

WARNING
 AFTER DE-ENERGIZING, DELAY 10 MINUTES BEFORE OPENING. WHEN THE AMBIENT TEMP. ≥ 70°C, USE THE HEAT-RESISTING CABLES & CABLE GLANDS ≥ 90°C. POTENTIAL ELECTROSTATIC CHARGING HAZARD -SEE USER'S MANUAL

F0205.ai

Intrinsically safe approval and Flameproof and Dust ignition approval (4 - 20 mA type)

YTA Series TEMPERATURE TRANSMITTER		NO. F9220LK
MODEL YTA	CAL	OUTPUT
SUFFIX	RNG	
STYLE		
SUPPLY	DC	
YOKOGAWA Yokogawa Electric Corporation Read/Listen IM 01C50G01-01 TOKYO 180-8750 JAPAN		CE 0344 P66/P67

No. KEMA 07ATEX0130X
☐ Ex db IIC T5...T4 Ga
☐ Ex tb IIIC T135°C Db IIIC: -30 ≤ Ta ≤ 70°C
 Supply/Output: Sensor: Uo=6.0V, Io=90mA, Po=135mW
 Co=22nF, Li=0mH
 Uo=6.0V, Io=90mA, Po=135mW, Co=10μF, Lo=3.9mH

WARNING
 AFTER DE-ENERGIZING, DELAY 10 MINUTES BEFORE OPENING. WHEN THE AMBIENT TEMP. ≥ 70°C, USE THE HEAT-RESISTING CABLES & CABLE GLANDS ≥ 90°C. POTENTIAL ELECTROSTATIC CHARGING HAZARD -SEE USER'S MANUAL

YTA Series TEMPERATURE TRANSMITTER		NO. F9220LK
MODEL YTA	CAL	OUTPUT
SUFFIX	RNG	
STYLE		
SUPPLY	DC	
YOKOGAWA Yokogawa Electric Corporation Read/Listen IM 01C50G01-01 TOKYO 180-8750 JAPAN		CE 0344 P66/P67

No. FM16ATEX0019X
☐ Ex db IIC T5...T4 Ga
☐ Ex tb IIIC T135°C Db IIIC: -30 ≤ Ta ≤ 70°C
 Supply/Output: Sensor: Uo=6.0V, Io=90mA, Po=135mW
 Co=22nF, Li=0mH
 Uo=6.0V, Io=90mA, Po=135mW, Co=10μF, Lo=3.9mH

WARNING
 WHEN THE AMBIENT TEMP. ≥ 68°C, USE HEAT-RESISTING CABLES AND CABLE GLANDS ≥ 75°C. POTENTIAL ELECTROSTATIC CHARGING HAZARD -SEE USER'S MANUAL

No. KEMA07ATEX0130X
☐ Ex db IIC T6/T5 Gb
☐ Ex tb IIIC T70°C/T90°C Db
 TEMP. CLASS T6/T5
 Tamb(Gas) -40 to +75°C(T6), -40 to +80°C(T5)
 (Dust) -30 to +65°C(T70°C), -30 to +80°C(T90°C)
WARNING AFTER DE-ENERGIZING, DELAY 10 MINUTES BEFORE OPENING. WHEN THE AMBIENT TEMP. ≥ 70°C, USE THE HEAT-RESISTING CABLES & CABLE GLANDS ≥ 90°C. POTENTIAL ELECTROSTATIC CHARGING HAZARD -SEE USER'S MANUAL

F0206.ai

Intrinsically safe approval and Flameproof and Dust ignition approval (Fieldbus type)

YTA Series TEMPERATURE TRANSMITTER		NO. F9220LL
MODEL YTA	CAL	OUTPUT
SUFFIX	RNG	
STYLE		
SUPPLY	DC	
YOKOGAWA Yokogawa Electric Corporation Read/Listen IM 01C50G01-01 TOKYO 180-8750 JAPAN		CE 0344 P66/P67

No. KEMA07ATEX0130X
☐ Ex db IIC T6/T5 Gb
☐ Ex tb IIIC T70°C/T90°C Db
 TEMP. CLASS T6/T5
 Tamb(Gas) -40 to +75°C(T6), -40 to +80°C(T5)
 (Dust) -30 to +65°C(T70°C), -30 to +80°C(T90°C)
WARNING AFTER DE-ENERGIZING, DELAY 10 MINUTES BEFORE OPENING. WHEN THE AMBIENT TEMP. ≥ 70°C, USE THE HEAT-RESISTING CABLES & CABLE GLANDS ≥ 90°C. POTENTIAL ELECTROSTATIC CHARGING HAZARD -SEE USER'S MANUAL

YTA Series TEMPERATURE TRANSMITTER		NO. F9220LL
MODEL YTA	CAL	OUTPUT
SUFFIX	RNG	
STYLE		
SUPPLY	DC	
YOKOGAWA Yokogawa Electric Corporation Read/Listen IM 01C50G01-01 TOKYO 180-8750 JAPAN		CE 0344 P66/P67

No. FM16ATEX0019X
☐ Ex db IIC T4 Ga
☐ Ex ia IIC T4 Ga
☐ Ex ia IIC T4 Ga
 T4: -55 ≤ Ta ≤ 60°C
 T5: -40 ≤ Ta ≤ 50°C
 II 2(1) D ☐ Ex ia IIC T135°C Db IIIC: -30 ≤ Ta ≤ 70°C
 Supply/Output: Uo=30V, Ii=300mA, Pi=1.2W, Ci=2.2nF, Li=0mH
 Sensor: Uo=6.0V, Io=90mA, Po=135mW, Co=10μF, Lo=3.9mH

WARNING
 WHEN THE AMBIENT TEMP. ≥ 68°C, USE HEAT-RESISTING CABLES AND CABLE GLANDS ≥ 75°C. POTENTIAL ELECTROSTATIC CHARGING HAZARD -SEE USER'S MANUAL

No. KEMA07ATEX0130X
☐ Ex db IIC T6/T5 Gb
☐ Ex tb IIIC T70°C/T90°C Db
 TEMP. CLASS T6/T5
 Tamb(Gas) -40 to +75°C(T6), -40 to +80°C(T5)
 (Dust) -30 to +65°C(T70°C), -30 to +80°C(T90°C)
WARNING AFTER DE-ENERGIZING, DELAY 10 MINUTES BEFORE OPENING. WHEN THE AMBIENT TEMP. ≥ 70°C, USE THE HEAT-RESISTING CABLES & CABLE GLANDS ≥ 90°C. POTENTIAL ELECTROSTATIC CHARGING HAZARD -SEE USER'S MANUAL

F0207.ai

MODEL: Specified model code.

SUFFIX: Specified suffix code.

STYLE: Style code.

SUPPLY: Supply voltage.

NO.: Serial number and year of production*1.

OUTPUT: Output signal.

FACTORY CAL: Specified calibration range.

YOKOGAWA ♦ TOKYO 180-8750 JAPAN:

The manufacturer name and the address*2.

*1: The product-producing country.

*2: "180-8750" is a postal code which represents the following address.

2-9-32 Nakacho, Musashino-shi, Tokyo Japan

*3: The identification number of Notified Body.

*4: Production year/month.

2.7.2 IECEx Certification

(1) Technical Data

a) IECEx intrinsically safe approval

Caution for IECEx intrinsically safe approval.

Note 1. Certification information

① 4 - 20mA type

- YTA610 and YTA710 with /SU2 temperature transmitter (4 - 20mA type) is applicable for use in hazardous locations.
- Applicable Standard:
IEC 60079-0, IEC 60079-11
- Certificate No. IECEx FMG 16.0014X
- Type of protection and marking code:
Ex ia IIC T5...T4 Ga
Ex ic IIC T5...T4 Gc
Ex ia [ia Da] IIIC T135°C Db
- Ambient Temperature:
–40 to 70°C for T4, –40 to 50°C for T5,
–30 to 70°C for IIIC (Ex ia)
–30 to 70°C for T4, –30 to 50°C for T5 (Ex ic)
- Enclosure: IP66 in accordance with IEC60079-0, IP67 in accordance with only IEC60529
- Overvoltage category: I
- Electrical parameters (Ex ia):
Supply/Output circuit: Terminals: +, -
Ui=30V, Ii=200mA, Pi=1.0W, Ci=22nF,
Li=0mH
Sensor circuit: Terminals: 1, 2, 3, 4, 5
Uo=6V, Io=90mA, Po=135mW, Co=10μF,
Lo=3.9mH
- Electrical parameters (Ex ic):
Supply/Output circuit: Terminals: +, -
Ui=30V, Ci=22nF, Li=0mH
Sensor circuit: Terminals: 1, 2, 3, 4, 5
Uo=6V, Io=90mA, Po=135mW, Co=10μF,
Lo=3.9mH
- Dielectric strength: 500 V a.c.r.m.s., 1 min
(See specific conditions of use)

② Fieldbus type

- YTA610 and YTA710 with /SU25 temperature transmitter (Fieldbus type) is applicable for use in hazardous locations.
- Applicable Standard:
IEC 60079-0, IEC 60079-11
- Certificate No. IECEx FMG 16.0014X
- Type of protection and marking code:
Ex ia IIC T4 Ga
Ex ic IIC T4 Gc
Ex ia [ia Da] IIIC T135°C Db
- Ambient Temperature(Ex ia):
–55 to 60°C for T4, –30 to 60°C for IIIC
- Ambient Temperature(Ex ic): –30 to 70°C
- Enclosure: IP66 in accordance with IEC60079-0, IP67 in accordance with only IEC60529
- Overvoltage category: I
- Electrical parameters (Ex ia):
Supply/Output circuit: Terminals: +, -
FISCO field device or
Ui=30V, Ii=300mA, Pi=1.2W, Ci=2.2nF,
Li=0mH
Sensor circuit: Terminals: 1, 2, 3, 4, 5
Uo=6V, Io=90mA, Po=135mW, Co=10μF,
Lo=3.9mH
- Electrical parameters (Ex ic):
Supply/Output circuit: Terminals: +, -
FISCO field device or
Ui=32V, Ci=2.2nF, Li=0mH
Sensor circuit: Terminals: 1, 2, 3, 4, 5
Uo=6V, Io=90mA, Po=135mW, Co=10μF,
Lo=3.9mH
- Dielectric strength: 500 V a.c.r.m.s., 1 min
(See specific conditions of use)



WARNING

Specific conditions of use

- Electrostatic charges on the non-metallic parts (excluding glass parts) or coated parts of the Temperature Transmitter shall be avoided.
- When the enclosure of the Temperature Transmitter is made of aluminum alloy, if it is mounted in an area where the use of EPL Ga equipment is required, it must be installed such that, even in the event of rare incidents, an ignition source due to impact and/or friction sparks is excluded.
- The dielectric strength of 500 V r.m.s. between the intrinsically safe circuit and the enclosure of the Temperature Transmitter is limited, only by the removable surge absorber F9220AR.

**WARNING****WARNING:**

ELECTROSTATIC CHARGE MAY CAUSE AN EXPLOSION HAZARD. AVOID ANY ACTIONS THAT CAUSE THE GENERATION OF ELECTROSTATIC CHARGE, SUCH AS RUBBING WITH A DRY CLOTH ON COATING FACE OF THE PRODUCT.

Note 2. Note for multiple types of protection (SU2 and SU25)

- For the installation of this transmitter, once a particular type of protection is selected, any other type of protection cannot be used. The installation must be in accordance with the description about the type of protection in this instruction manual. Cross out the unnecessary type of protection on the name plate in the same ways of ATEX.

Note 3. Conditions for safe use

**WARNING**

- A modification of the equipment would no longer comply with the construction described in the certificate documentation.
- When the ambient temp. $\geq 68^{\circ}\text{C}$, use heatersisting cables and cable glands $\geq 75^{\circ}\text{C}$ (applicable only when Ex iaD or Ex ic is selected)
- Potential electrostatic charging hazard (see 6)

- Cable entry devices satisfying IP66 should be applied when installed in a hazardous area, and redundant holes for cable entry should be closed by suitable blanking elements.
- The type of threads is indicated at the cable entry, using the following marking.

Screw Size	Marking
ISO M20×1.5 female	Δ M
ANSI 1/2 NPT female	Δ N

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- The equipment should be used in explosive atmospheres together with an associated apparatus, following the instructions of this equipment and the connected associated apparatus. Connection at the wiring terminals should be made correctly.

- The selected type of the Ex marking on the name plate should be indicated. For this purpose, the tick boxes can be used as follows.

- ☒ Ex ia IIC T4 Ga
- ☐ Ex iaD [iaD 20] 21 IP6X T135°C
- ☐ Ex ic IIC T4 Gc

- It is forbidden to change the configuration of the equipment except for the removable surge absorber, to ensure the explosion protection performance of the equipment.
- If the equipment is mounted in an area where explosive atmospheres may be present, it must be installed in such a way that the risk from electrostatic discharges and propagating brush discharges caused by rapid flow of dust are avoided.
- The equipment must be installed in accordance with IIE029 A63, and with IEC60079-14 and/or relevant local codes.
The type of threads is indicated near the cable entry as follows.
- Only personnel authorized by Yokogawa Electric Corporation can repair the equipment.

b) IECEx Flameproof Type and Dust Ignition Proof Type

Caution for IECEx flameproof type and Dust Ignition Proof Type

Note 1. Certification information

- YTA710 with /SF2, YTA610 and YTA710 with /SU2 and /SU25 temperature transmitters are applicable for use in hazardous locations.
- No. IECEx KEM 07.0044X
- Applicable Standard:
IEC 60079-0, IEC 60079-1, IEC 60079-31
- Type of Protection and Marking Code:
Ex db IIC T6/T5 Gb,
Ex tb IIIC T70°C / T90°C Db
- Ambient Temperature for Gas Atmospheres:
–40 to 75°C (T6), –40 to 80°C (T5)
- Ambient Temperature for Dust Atmospheres:
–30 to 65°C (T70°C), –30 to 80°C (T90°C)
- Enclosure: IP66 in accordance with IEC60079-0
- Supply Voltage : 42 V dc max. (4 to 20 mA type)
: 32 V dc max. (Fieldbus type)
- Output Signal : 4 to 20 mA
: 24 mA dc max. (Fieldbus type)

Note 2. Installation

- Cable glands, adapters and/or blanking elements with a suitable IP rating shall be of Ex d IIC/Ex tb IIIC certified by IECEx and shall be installed so as to maintain the specific degree of protection (IP Code) of the equipment.
- All wiring shall comply with local installation requirement.
- In order to prevent the earthing conductor from loosening, the conductor must be secured to the terminal, tightening the screw with appropriate torque.
Care must be taken not to twist the conductor.
- When the combination type is installed tick the box of the selected type of protection on the label when the transmitter is installed in order to avoid confusion. Permanently mark the protection type installed. Once the type is marked, it cannot be changed.
e.g. In case of selecting “db”, not “tb” or other type of protections
☒ Ex db IIC T6/T5 Gb
☐ Ex tb IIIC T70°C/T90°C Db

Note 3. Operation

- Keep strictly the “WARNING” on the label on the transmitter.
WARNING: AFTER DE-ENERGIZING, DELAY 10 MINUTES BEFORE OPENING. WHEN THE AMBIENT TEMP. $\geq 70^{\circ}\text{C}$, USE THE HEAT-RESISTING CABLES & CABLE GLANDS $\geq 90^{\circ}\text{C}$. POTENTIAL ELECTROSTATIC CHARGING HAZARD -SEE USER'S MANUAL
- Take care not to generate mechanical spark when access to the instrument and peripheral devices in hazardous location.
- Electrostatic charge may cause an explosion hazard. Avoid any actions that cause the generation of electrostatic charge, such as rubbing with a dry cloth on coating face of the product.
- If the YTA is mounted in an area where the use of EPL Db equipment is required, it shall be installed in such a way that the risk from electrostatic discharges and propagating brush discharges caused by rapid flow of dust is avoided.
- To satisfy IP66, apply waterproof glands to the electrical connection port.

- If the equipment is affected by external sources of heating or cooling from plant facilities, make sure that the parts in contact with the equipment or in the near vicinity of the equipment do not exceed the ambient temperature range of the equipment.

Note 4. Specific conditions of use

- The unearthed hanging tag plate has a capacitance of 4 pF.
- In case of /N4(optional code) and Group IIC, suitability in the specific application shall be determined by the user.

**WARNING**

- Precaution shall be taken to minimize the risk from electrostatic discharges and propagating brush discharges on the non-metallic parts (excluding glass parts) and coated parts of the equipment.
- Flameproof joints are not intended to be repaired. Contact Yokogawa representative or Yokogawa office.

Note 5. Maintenance and Repair

- Warning: When maintenance and repair are performed, confirm the following conditions. After that perform them.
- Only personnel authorized by Yokogawa Electric Corporation can repair the equipment in accordance with the relevant standards: IEC 60079-19 (Equipment repair, overhaul and reclamation) and IEC 60079-17 (Electrical installation inspection and maintenance); otherwise the certification will be voided.

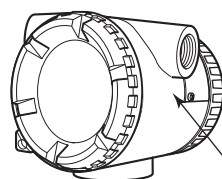
Note 6. Surge absorber

- The surge absorber can be removed from, or added to the equipment.

(2) Electrical Connection

The type of electrical connection is stamped near the electrical connection port according to the following marking.

Screw Size	Marking
ISO M20×1.5 female	M
ANSI 1/2 NPT female	N



Location of the marking

F0204.ai

(3) Name Plate

YTA710/SF2 Flameproof and Dust ignition proof type

YTA Series TEMPERATURE TRANSMITTER		F9220LS	
MODEL	YTA	NO.	OUTPUT
SUFFIX		CAL	RNG
STYLE	DC		
SUPPLY			

YOKOGAWA ◆ Yokogawa Electric Corporation
Read/Linez IM 01C50G01-01
TOKYO 180-8750 JAPAN

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IP66/P67

No. IECEx KEM 07.0044X
Ex db IIC T6/T5 Gb
Ex tb IIIC T70°C/T90°C Db
TEMP. CLASS T6/T5
Tamb(Gas) -40 to +75°C(T6)
-40 to +80°C(T5)
(Dust) -30 to +65°C(T70°C)
-30 to +80°C(T90°C)
ENCLOSURE: IP66

WARNING
AFTER DE-ENERGIZING, DELAY 10 MINUTES BEFORE OPENING. WHEN THE AMBIENT TEMP. ≥70°C, USE THE HEAT-RESISTING CABLES & CABLE GLANDS ≥90°C. POTENTIAL ELECTROSTATIC CHARGING HAZARD -SEE USER'S MANUAL

No. IECEx KEM 07.0044X
Ex db IIC T6/T5 Gb
Ex tb IIIC T70°C/T90°C Db
TEMP. CLASS T6/T5
Tamb(Gas) -40 to +75°C(T6)
-40 to +80°C(T5)
(Dust) -30 to +65°C(T70°C)
-30 to +80°C(T90°C)
ENCLOSURE: IP66

WARNING
AFTER DE-ENERGIZING, DELAY 10 MINUTES BEFORE OPENING. WHEN THE AMBIENT TEMP. ≥70°C, USE THE HEAT-RESISTING CABLES & CABLE GLANDS ≥90°C. POTENTIAL ELECTROSTATIC CHARGING HAZARD -SEE USER'S MANUAL

YTA Series TEMPERATURE TRANSMITTER		F9220LS	
MODEL	YTA	NO.	OUTPUT
SUFFIX		CAL	RNG
STYLE	DC		
SUPPLY			

YOKOGAWA ◆ Yokogawa Electric Corporation
Read/Linez IM 01C50G01-01
TOKYO 180-8750 JAPAN

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IP66/P67

No. IECEx KEM 07.0044X
Ex db IIC T6/T5 Gb
Ex tb IIIC T70°C/T90°C Db
TEMP. CLASS T6/T5
Tamb(Gas) -40 to +75°C(T6)
-40 to +80°C(T5)
(Dust) -30 to +65°C(T70°C)
-30 to +80°C(T90°C)
ENCLOSURE: IP66

WARNING
AFTER DE-ENERGIZING, DELAY 10 MINUTES BEFORE OPENING. WHEN THE AMBIENT TEMP. ≥70°C, USE THE HEAT-RESISTING CABLES & CABLE GLANDS ≥90°C. POTENTIAL ELECTROSTATIC CHARGING HAZARD -SEE USER'S MANUAL

F0208.ai

Intrinsically safe approval and Flameproof and Dust ignition approval (4 - 20 mA type)

YTA Series TEMPERATURE TRANSMITTER		F9220LV	
MODEL	YTA	NO.	OUTPUT
SUFFIX		CAL	RNG
STYLE	DC		
SUPPLY			

YOKOGAWA ◆ Yokogawa Electric Corporation
Read/Linez IM 01C50G01-01
TOKYO 180-8750 JAPAN

MSIP-REM-YHO-EEN404 2011.04

IP66/P67

No. IECEx FMG 16.0014X
Ex ia IIC T4 Ga
Ex ia [ia Da] IIC T135°C Db
Supply/Output: Ui=30V, Ii=200mA, Pi=1.0W, Ci=22nF, Li=0mH
Sensor: Uo=6.0V, Io=90mA, Po=135mW, Co=10μF, Lo=3.9mH

T4: -40 ≤ Ta ≤ 70°C
T5: -40 ≤ Ta ≤ 50°C
IIIC: -30 ≤ Ta ≤ 70°C

WARNING
WHEN THE AMBIENT TEMP. ≥68°C, USE HEAT-RESISTING CABLES AND CABLE GLANDS ≥75°C. POTENTIAL ELECTROSTATIC CHARGING HAZARD -SEE USER'S MANUAL

YTA Series TEMPERATURE TRANSMITTER		F9220LV	
MODEL	YTA	NO.	OUTPUT
SUFFIX		CAL	RNG
STYLE	DC		
SUPPLY			

YOKOGAWA ◆ Yokogawa Electric Corporation
Read/Linez IM 01C50G01-01
TOKYO 180-8750 JAPAN

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IP66/P67

No. IECEx FMG 16.0014X
Ex ia IIC T4 Ga
Ex ia [ia Da] IIC T135°C Db
Supply/Output: Ui=30V, Ii=200mA, Pi=1.0W, Ci=22nF, Li=0mH
Sensor: Uo=6.0V, Io=90mA, Po=135mW, Co=10μF, Lo=3.9mH

T4: -40 ≤ Ta ≤ 70°C
T5: -40 ≤ Ta ≤ 50°C
IIIC: -30 ≤ Ta ≤ 70°C

WARNING
WHEN THE AMBIENT TEMP. ≥68°C, USE HEAT-RESISTING CABLES AND CABLE GLANDS ≥75°C. POTENTIAL ELECTROSTATIC CHARGING HAZARD -SEE USER'S MANUAL

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Intrinsically safe approval and Flameproof and Dust ignition approval (Fieldbus type)

YTA Series TEMPERATURE TRANSMITTER		F9220LV	
MODEL	YTA	NO.	OUTPUT
SUFFIX		CAL	RNG
STYLE	DC		
SUPPLY			

YOKOGAWA ◆ Yokogawa Electric Corporation
Read/Linez IM 01C50G01-01
TOKYO 180-8750 JAPAN

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IP66/P67

No. IECEx FMG 16.0014X
Ex ia IIC T4 Ga
Ex ia [ia Da] IIC T135°C Db
Supply/Output: Ui=30V, Ii=300mA, Pi=1.2W, Ci=2.2nF, Li=0mH
Sensor: Uo=6.0V, Io=90mA, Po=135mW, Co=10μF, Lo=3.9mH

T4: -55 ≤ Ta ≤ 60°C
IIIC: -30 ≤ Ta ≤ 60°C

WARNING
WHEN THE AMBIENT TEMP. ≥68°C, USE HEAT-RESISTING CABLES AND CABLE GLANDS ≥75°C. POTENTIAL ELECTROSTATIC CHARGING HAZARD -SEE USER'S MANUAL

YTA Series TEMPERATURE TRANSMITTER		F9220LV	
MODEL	YTA	NO.	OUTPUT
SUFFIX		CAL	RNG
STYLE	DC		
SUPPLY			

YOKOGAWA ◆ Yokogawa Electric Corporation
Read/Linez IM 01C50G01-01
TOKYO 180-8750 JAPAN

MSIP-REM-YHO-EEN404 2011.04

IP66/P67

No. IECEx FMG 16.0014X
Ex ia IIC T4 Ga
Ex ia [ia Da] IIC T135°C Db
Supply/Output: Ui=30V, Ii=300mA, Pi=1.2W, Ci=2.2nF, Li=0mH
Sensor: Uo=6.0V, Io=90mA, Po=135mW, Co=10μF, Lo=3.9mH

T4: -55 ≤ Ta ≤ 60°C
IIIC: -30 ≤ Ta ≤ 60°C

WARNING
WHEN THE AMBIENT TEMP. ≥68°C, USE HEAT-RESISTING CABLES AND CABLE GLANDS ≥75°C. POTENTIAL ELECTROSTATIC CHARGING HAZARD -SEE USER'S MANUAL

F0210.ai

MODEL: Specified model code.

SUFFIX: Specified suffix code.

STYLE: Style code.

SUPPLY: Supply voltage.

NO.: Serial number and year of production*1.

OUTPUT: Output signal.

FACTORY CAL: Specified calibration range.

YOKOGAWA ◆ TOKYO 180-8750 JAPAN:

The manufacturer name and the address*2.

*1: The product-producing country.

*2: "180-8750" is a postal code which represents the following address.

2-9-32 Nakacho, Musashino-shi, Tokyo Japan

*3: The identification number of Notified Body.

*4: Production year/month.

2.7.3 FM Certification

(1) Technical Data

a) FM (US) intrinsically safe approval/non-incendive approval

Caution for FM (US) intrinsically safe approval/non-incendive approval.

Note 1. Certification information

① 4 - 20mA type

- YTA610 and YTA710 with /FU1 temperature transmitter (4 - 20mA type) is applicable for use in hazardous locations.
- Applicable standard:
FM Class 3600, FM Class 3610,
FM Class 3611, FM Class 3810,
ANSI/UL-60079-0, ANSI/ISA-60079-11,
ANSI/IEC 60529, ANSI/UL 61010-1,
ANSI/UL 61010-2-30, NEMA 250,
ANSI/UL 121201
- Certificate No.FM16US0033X
- Marking/Rating
Intrinsically safe for Class I, II, III Division 1,
Groups A, B, C, D, E, F, G, T5...T4
Class I, Zone 0 AEx ia IIC T5...T4
Non-incendive for Class I, II, Division 2, Groups
A, B, C, D, F, G, T5...T4
Class III, Division 1 T5...T4
Class I, Zone 2 Group IIC T5...T4
- Ambient Temperature:
-40 to 70°C for T4, -40 to 50°C for T5
- Enclosure Type 4X, IP66/IP67
- Electrical parameters:
Intrinsically safe for
Supply/Output circuit:
Terminals: +, -
Ui=30V, Ii=200mA, Pi=1.0W, Ci=22nF,
Li=0mH
Sensor circuit:
Terminals: 1, 2, 3, 4, 5
Uo=6V, Io=90mA, Po=135mW, Co=10μF,
Lo=3.9mH
Non-incendive for
Supply/Output circuit:
Terminals: +, -
Ui=30V, Ci=22nF, Li=0mH
Sensor circuit:
Terminals: 1, 2, 3, 4, 5
Uo=6V, Io=90mA, Po=135mW, Co=10μF,
Lo=3.9mH
- Dielectric strength: 500 V a.c.r.m.s., 1 min
(See specific conditions of use)

② Fieldbus type

- YTA610 and YTA710 with /FU15 temperature transmitter (Fieldbus type) is applicable for use in hazardous locations.
- Applicable standard:
FM Class 3600, FM Class 3610,
FM Class 3611, FM Class 3810,
ANSI/UL-60079-0, ANSI/ISA-60079-11,
ANSI/IEC 60529, ANSI/UL 61010-1,
ANSI/UL 61010-2-30, NEMA 250,
ANSI/UL 121201
- Certificate No.FM16US0033X
- Marking/Rating
Intrinsically safe for
Class I, II, III Division 1 Groups A, B, C, D, E, F,
G T4
Class I, Zone 0 AEx ia IIC T4
Non-incendive for
Class I, II, Division 2, Groups A, B, C, D, F, G T4
Class III Division 1 T4
Class I Zone 2 Group IIC T4
- Ambient Temperature: -55 to 60°C
- Enclosure Type 4X, IP66/IP67
- Electrical parameters:
Intrinsically safe for
Supply/Output circuit:
Terminals: +, -
FISCO field device or
Ui=30V, Ii=300mA, Pi=1.2W, Ci=2.2nF,
Li=0mH
Sensor circuit:
Terminals: 1, 2, 3, 4, 5
Uo=6V, Io=90mA, Po=135mW, Co=10μF,
Lo=3.9mH
Non-incendive for
Supply/Output circuit:
Terminals: +, -
Ui=32V, Ci=2.2nF, Li=0mH
Sensor circuit:
Terminals: 1, 2, 3, 4, 5
Uo=6V, Io=90mA, Po=135mW, Co=10μF,
Lo=3.9mH
- Dielectric strength: 500 V a.c.r.m.s., 1 min
(See specific conditions of use)

**WARNING**

Specific conditions of use

- Electrostatic charges on the non-metallic parts (excluding glass parts) or coated parts of the Temperature Transmitter shall be avoided.
- When the enclosure of the Temperature Transmitter is made of aluminum alloy, if it is mounted in Zone 0, it must be installed such that, even in the event of rare incidents, an ignition source due to impact and/or friction sparks is excluded.
- The dielectric strength of 500 V r.m.s. between the intrinsically safe circuit and the enclosure of the Temperature Transmitter is limited, only by the removable surge absorber F9220AR.

Note 2. Note for multiple types of protection (FU1 and FU15)

- For the installation of this transmitter, once a particular type of protection is selected, any other type of protection cannot be used. The installation must be in accordance with the description about the type of protection in this instruction manual. Cross out the unnecessary type of protection on the name plate in the same ways of ATEX.

Note 3. Installation

Installation should be in accordance with Control Drawing IIE029-A61.

b) FM Explosionproof Type

Caution for FM Explosionproof type

Note 1. Certification information

- YTA710 with /FF1, YTA610 and YTA710 with /FU1 and /FU15 temperature transmitter are applicable for use in hazardous locations.
- Applicable Standard:
FM Class 3600, FM Class 3615,
FM Class 3810, NEMA250
- Certificate No.FM18US0002
- Explosionproof for Class I, Division 1, Groups A, B, C, and D.
- Dust-ignitionproof for Class II/III, Division 1, Groups E, F and G.
- Enclosure rating: TYPE 4X.
- Temperature Class: T6
- Ambient Temperature: -40 to 60°C
- Supply Voltage: 42 V dc max. (4 to 20 mA type)
: 32 V dc max. (Fieldbus type)
- Output Signal: 4 to 20 mA
: 24 mA dc max. (Fieldbus type)

Note 2. Installation

- All wiring shall comply with National Electrical Code ANSI/NEPA70 and Local Electrical Codes.
- "FACTORY SEALED, CONDUIT SEAL NOT REQUIRED".

Note 3. Operation

- Keep strictly the "WARNING" on the nameplate attached on the transmitter.
WARNING: OPEN CIRCUIT BEFORE REMOVING COVER. "FACTORY SEALED, CONDUIT SEAL NOT REQUIRED". AFTER DE-ENERGIZING, DELAY 2 MINUTES BEFORE OPENING. INSTALL IN ACCORDANCE WITH THE INSTRUCTION MANUAL IM 01C50G01-01EN.
- Take care not to generate mechanical spark when access to the instrument and peripheral devices in hazardous location.

Note 4. Maintenance and Repair

- The instrument modification or parts replacement by other than authorized representative of Yokogawa Electric Corporation is prohibited and will void Factory Mutual Explosionproof Approval.

Note 5. Surge absorber

- The surge absorber can be removed from, or added to the equipment.

2.7.4 CSA Certification

(1) Technical Data

a) FM (Canada) intrinsically safe approval/non-incendive approval

Caution for FM (Canada) intrinsically safe approval/non-incendive approval.

Note 1. Certification information

① 4 - 20mA type

- YTA610 and YTA710 with /CU1 temperature transmitter (4 - 20mA type) is applicable for use in hazardous locations.
- Applicable standard:
CAN/CSA-C22.2 No. 94.2, C22.2 No.213,
CAN/CSA-C22.2 No. 60079-0,
CAN/CSA-C22.2 No. 60079-11,
CAN/CSA-C22.2 No. 60529,
CAN/CSA-C22.2 No. 61010-1,
CAN/CSA-C22.2 No. 61010-2-030
- Certificate No.FM16CA0023X
- Marking/Rating
Intrinsically safe for
Class I, II, III Division 1, Groups A, B, C, D, E,
F, G, T5...T4
Ex ia IIC T5...T4 Ga
Non-incendive for
Class I, II, Division 2, Groups A, B, C, D, F, G,
T5...T4
Class III, Division 1 T5...T4
- Ambient Temperature:
-40 to 70°C for T4, -40 to 50°C for T5
- Enclosure Type 4X, IP66/IP67
- Electrical parameters:
Intrinsically safe for
Supply/Output circuit:
Terminals: +,-
Ui=30V, Ii=200mA, Pi=1.0W, Ci=22nF,
Li=0mH
Sensor circuit:
Terminals: 1, 2, 3, 4, 5
Uo=6V, Io=90mA, Po=135mW, Co=10μF,
Lo=3.9mH
Non-incendive for
Supply/Output circuit:
Terminals: +,-
Ui=30V, Ci=22nF, Li=0mH
Sensor circuit:
Terminals: 1, 2, 3, 4, 5
Uo=6V, Io=90mA, Po=135mW, Co=10μF,
Lo=3.9mH
- Dielectric strength: 500 V a.c.r.m.s., 1 min
(See specific conditions of use)

② Fieldbus type

- YTA610 and YTA710 with /CU15 temperature transmitter (Fieldbus type) is applicable for use in hazardous locations.
- Applicable standard:
CAN/CSA-C22.2 No. 94.2, C22.2 No.213,
CAN/CSA-C22.2 No. 60079-0,
CAN/CSA-C22.2 No. 60079-11,
CAN/CSA-C22.2 No. 60529,
CAN/CSA-C22.2 No. 61010-1,
CAN/CSA-C22.2 No. 61010-2-030
- Certificate No.FM16CA0023X
- Marking/Rating
Intrinsically safe for
Class I, II, III Division 1, Groups A, B, C, D, E,
F, G T4
Ex ia IIC T4 Ga
Non-incendive for
Class I, II, Division 2, Groups A, B, C, D, F,
G T4
Class III, Division 1 T4
- Ambient Temperature: -55 to 60°C
- Enclosure Type 4X, IP66/IP67
- Electrical parameters:
Intrinsically safe for
Supply/Output circuit:
Terminals: +, -
FISCO field device or
Ui=30V, Ii=300mA, Pi=1.2W, Ci=2.2nF,
Li=0mH
Sensor circuit:
Terminals: 1, 2, 3, 4, 5
Uo=6V, Io=90mA, Po=135mW, Co=10μF,
Lo=3.9mH
Non-incendive for
Supply/Output circuit:
Terminals: +/-
Ui=32V, Ci=2.2nF, Li=0mH
Sensor circuit:
Terminals: 1, 2, 3, 4, 5
Uo=6V, Io=90mA, Po=135mW, Co=10μF,
Lo=3.9mH
- Dielectric strength: 500 V a.c.r.m.s., 1 min
(See specific conditions of use)

**WARNING**

Specific conditions of use

- Electrostatic charges on the non-metallic parts (excluding glass parts) or coated parts of the Temperature Transmitter shall be avoided.
- When the enclosure of the Temperature Transmitter is made of aluminum alloy, if it is mounted in Zone 0, it must be installed such that, even in the event of rare incidents, an ignition source due to impact and/or friction sparks is excluded.
- The dielectric strength of 500 V r.m.s. between the intrinsically safe circuit and the enclosure of the Temperature Transmitter is limited, only by the removable surge absorber F9220AR.

Note 2. Note for multiple types of protection (CU1 and CU15)

- For the installation of this transmitter, once a particular type of protection is selected, any other type of protection cannot be used. The installation must be in accordance with the description about the type of protection in this instruction manual. Cross out the unnecessary type of protection on the name plate in the same ways of ATEX.

Note 3. Installation

Installation should be in accordance with Control Drawing IIE029-A62.

b) CSA Explosionproof Type

Caution for CSA Explosionproof type

Note 1. Certification information

- YTA710 with /CF1, YTA610 and YTA710 with /CU1 and /CU15 temperature transmitters are applicable for use in hazardous locations.
- Applicable Standard:
C22.2 No. 25, C22.2 No. 30, C22.2 No. 94.2, C22.2 No. 213, C22.2 No.61010-1, C22.2 No. 61010-2- 030
- Certificate No.1089576

- Class I, Groups B, C and D;
- Class II, Groups E, F and G;
- Class III.
- Enclosure: TYPE 4X
- Temperature Class: T6
- Ambient Temperature: –40 to 60°C (Gas)
–30 to 60°C (Dust)
- Supply Voltage: 42 V dc max. (4 to 20 mA type)
: 32 V dc max. (Fieldbus type)
- Output Signal: 4 to 20 mA
: 24 mA dc max. (Fieldbus type)

Note 2. Installation

- All wiring shall comply with Canadian Electrical Code Part I and Local Electrical Codes.

Note 3. Operation

- Keep strictly the “WARNING” on the label attached on the transmitter.
WARNING: AFTER DE-ENERGIZING, DELAY 2 MINUTES BEFORE OPENING.
APRÈS POWER-OFF, ATTENDRE 2 MINUTES AVANT D’OUVRIR.
- Take care not to generate mechanical spark when access to the instrument and peripheral devices in hazardous location.

Note 4. Maintenance and Repair

- The instrument modification or parts replacement by other than authorized representative of Yokogawa Electric Corporation is prohibited and will void Canadian Standards Explosionproof Certification.

Note 5. Surge absorber

- When Lightning Protector is removed or installed
“AFTER DE-ENERGIZING, DELAY 2 MINUTES BEFORE OPENING.”

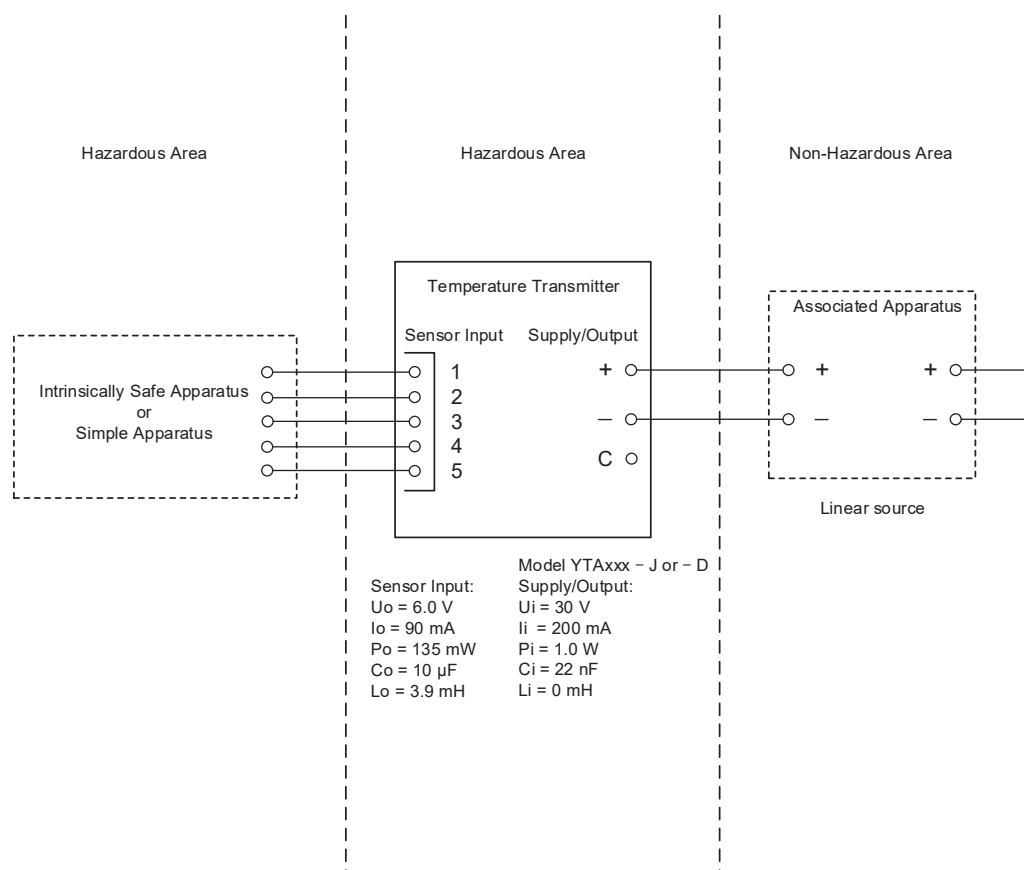
2.7.5 Control Drawing

Control Drawing for ATEX and IECEx Ex ia

Yokogawa Electric Corporation				Model	YTAXxx		
Title	Control Drawing						
No.	IIE029-A63	Page	01	Revision	1	Date	2017-08-18

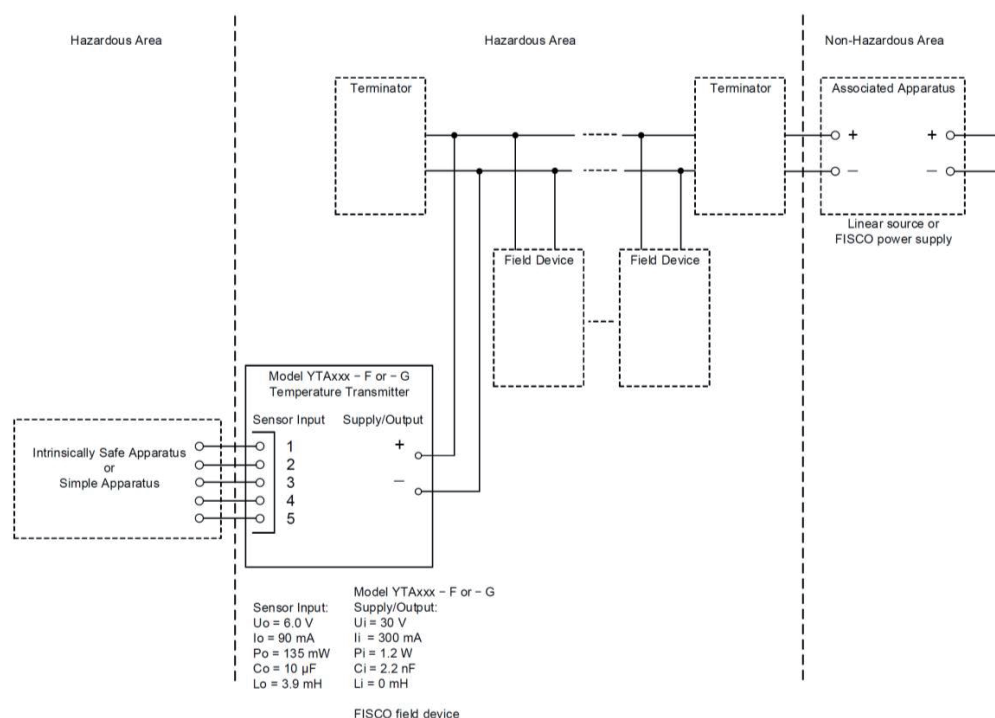
Control Drawing (ATEX, IECEx)

Intrinsically Safe Installation for YTAxxx – J or – D (Ex ia)



Control Drawing for ATEX and IECEx Ex ia

Intrinsically Safe Installation for YTAxxx – F or – G (Ex ia)



Specific Conditions of Use:

- Electrostatic charges on the non-metallic parts (excluding glass parts) or coated parts of the Temperature Transmitter shall be avoided.
- (ATEX) When the enclosure of the Temperature Transmitter is made of aluminium alloy, if it is mounted in a potentially explosive atmosphere requiring apparatus of equipment category 1 G is required, it must be installed such that, even in the event of rare incidents, an ignition source due to impact and/or friction sparks is excluded.
- (IECEx) When the enclosure of the Temperature Transmitters is made of aluminium alloy, if it is mounted in a potentially explosive atmosphere requiring apparatus of equipment EPL Ga is required, it must be installed such that, even in the event of rare incidents, an ignition source due to impact and/or friction sparks is excluded.
- The dielectric strength of 500 V r.m.s. between the intrinsically safe circuit and the enclosure of the Temperature Transmitter is limited, only by the removable surge absorber F9220AR

WARNING—ELECTROSTATIC CHARGE MAY CAUSE AN EXPLOSION HAZARD.
AVOID ANY ACTIONS THAT CAUSE THE GENERATION OF ELECTROSTATIC CHARGE, SUCH AS
RUBBING WITH A DRY CLOTH ON COATING FACE OF THE PRODUCT.

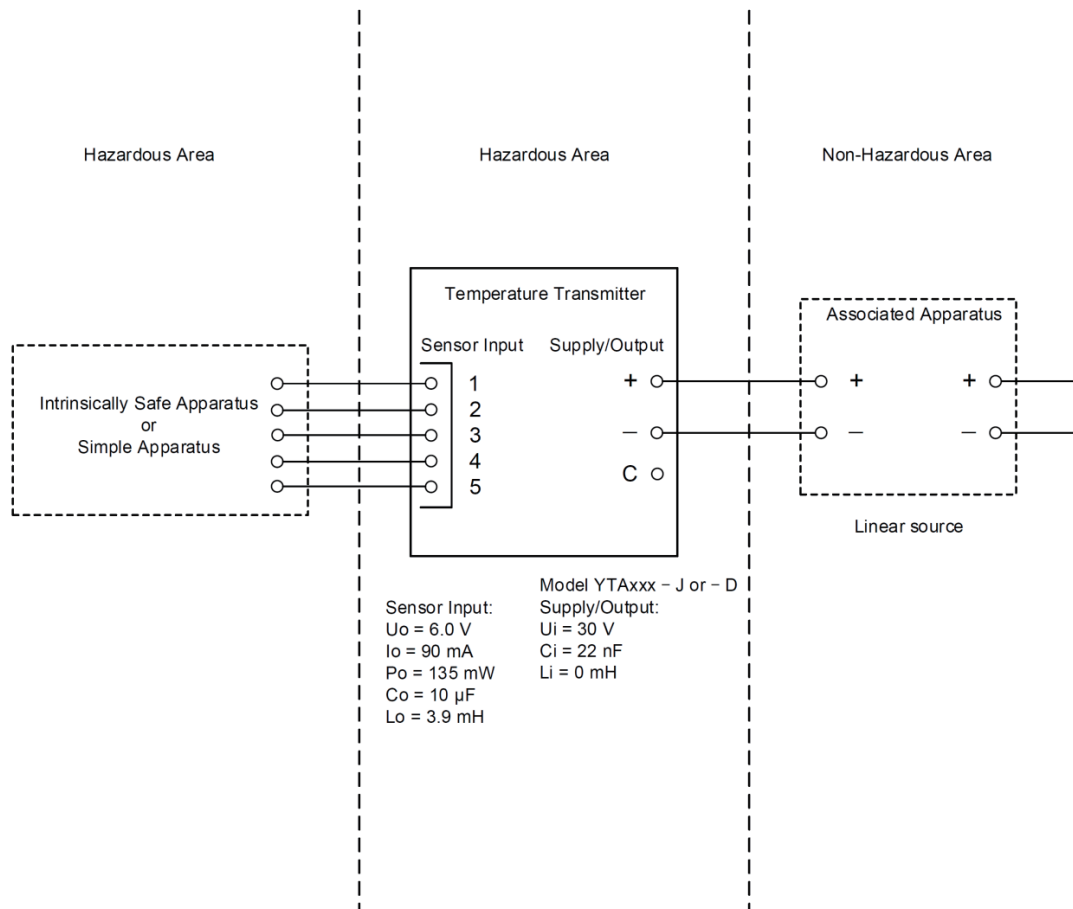
WARNING —WHEN USED IN AREAS WITH AN EXPLOSIVE DUST ATMOSPHERE AND
THE AMBIENT TEMP. $\geq 68^{\circ}\text{C}$, USE HEAT-RESISTING CABLES AND CABLE GLANDS
 $\geq 75^{\circ}\text{C}$

Notes:

1. The surge absorber F9220AR can be removed from, or added to the equipment.
2. The push-button switches on the integral indicator must be operated only when an explosive atmosphere is not present.
3. When use in area with an explosive dust atmosphere, Cable glands, adapters and/or blanking elements shall be of Ex “t” and shall be installed so as to maintain the specified degree of protection (IP Code) according to the environmental conditions. IP must be at least IP54.

Control Drawing ATEX Ex ic

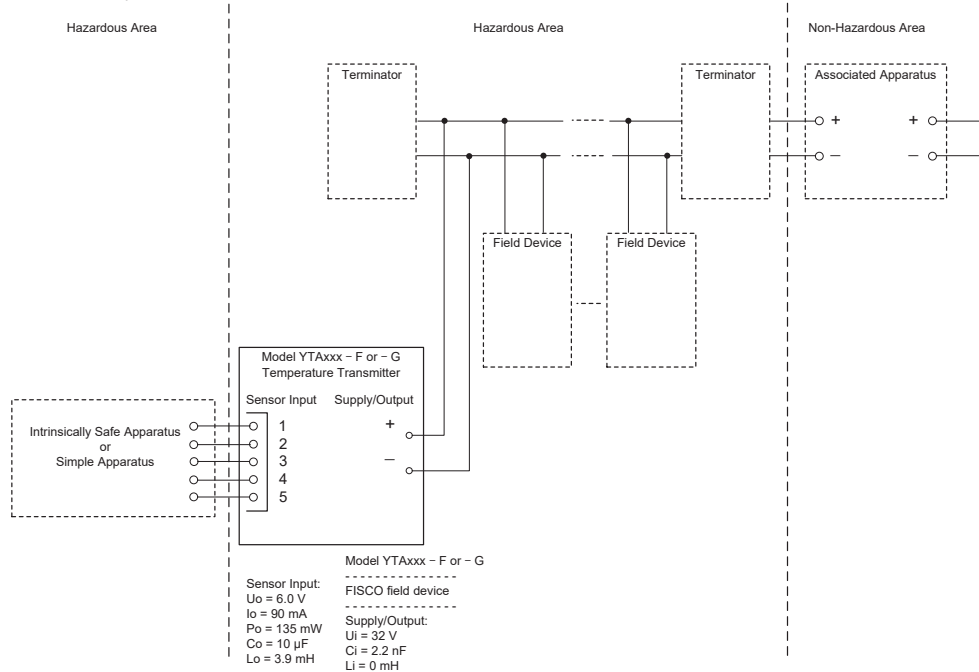
Intrinsically Safe Installation for YTAxxx – J or – D (Ex ic)



Control Drawing ATEX Ex ic

Yokogawa Electric Corporation				Model	YTAxxx		
Title	Control drawing						
No.	IKE061-A07	Page	02	Revision	0	Date	2017-12-27

Intrinsically Safe Installation for YTAxxx – F or – G (Ex ic)



Specific Condition of Use:

- Electrostatic charges on the non-metallic parts (excluding glass parts) or coated parts of the Temperature Transmitter shall be avoided.
- The dielectric strength of 500 V r.m.s. between the intrinsically safe circuit and the enclosure of the Temperature Transmitter is limited, only by the removable surge absorber F9220AR.

WARNING –WHEN THE AMBIENT TEMP. $\geq 68^{\circ}\text{C}$, USE HEAT-RESISTING CABLES AND CABLE GLANDS $\geq 75^{\circ}\text{C}$

WARNING –ELECTROSTATIC CHARGE MAY CAUSE AN EXPLOSION HAZARD.
AVOID ANY ACTIONS THAT CAUSE THE GENERATION OF ELECTROSTATIC CHARGE, SUCH AS RUBBING WITH A DRY CLOTH ON COATING FACE OF THE PRODUCT.

Notes:

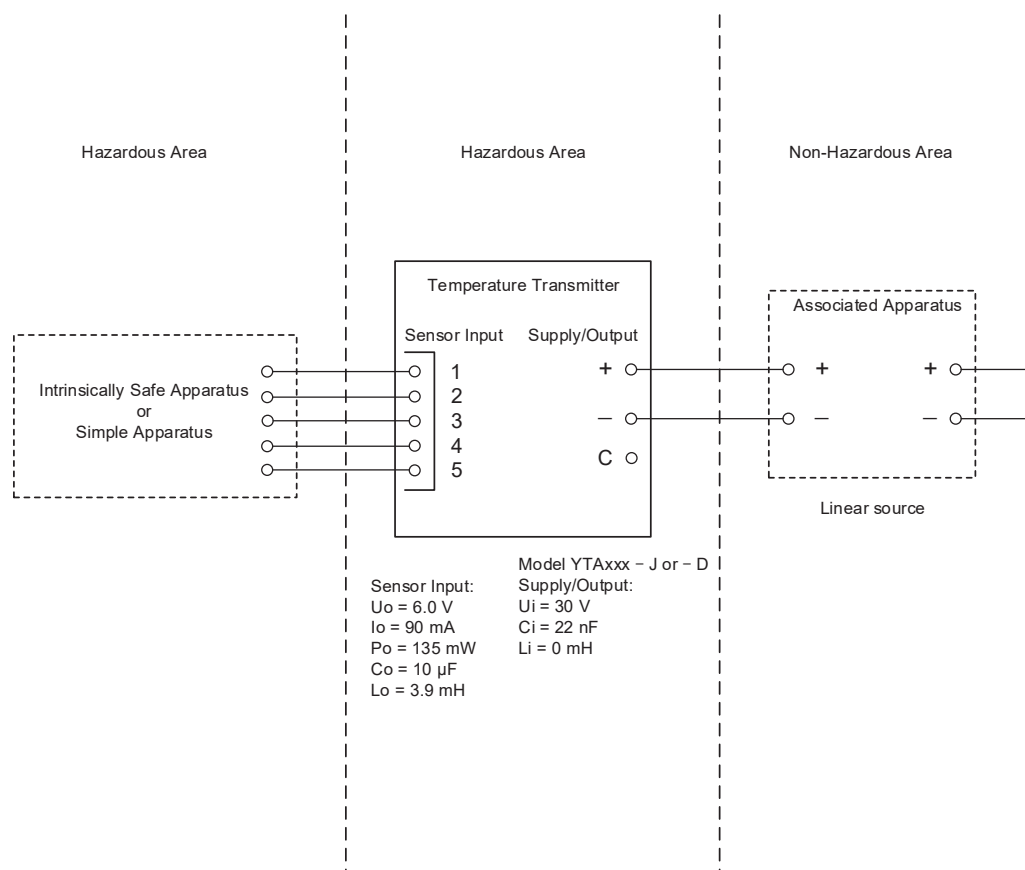
- The surge absorber F9220AR can be removed from, or added to the equipment.
- The equipment must be installed so that pollution degree 2 in accordance with EN 60664-1 is maintained inside the enclosure.
- Cable glands, adapters and/or blanking elements shall be of Ex “n”, Ex “e” or Ex “d” and shall be installed so as to maintain the specified degree of protection (IP Code) according to the environmental conditions. IP must be at least IP54.

Control Drawing IECEx Ex ic

Yokogawa Electric Corporation				Model	YTxxx		
Title	Control Drawing						
No.	IIE029-A63	Page	03	Revision	1	Date	2017-08-18

Control Drawing (IECEx)

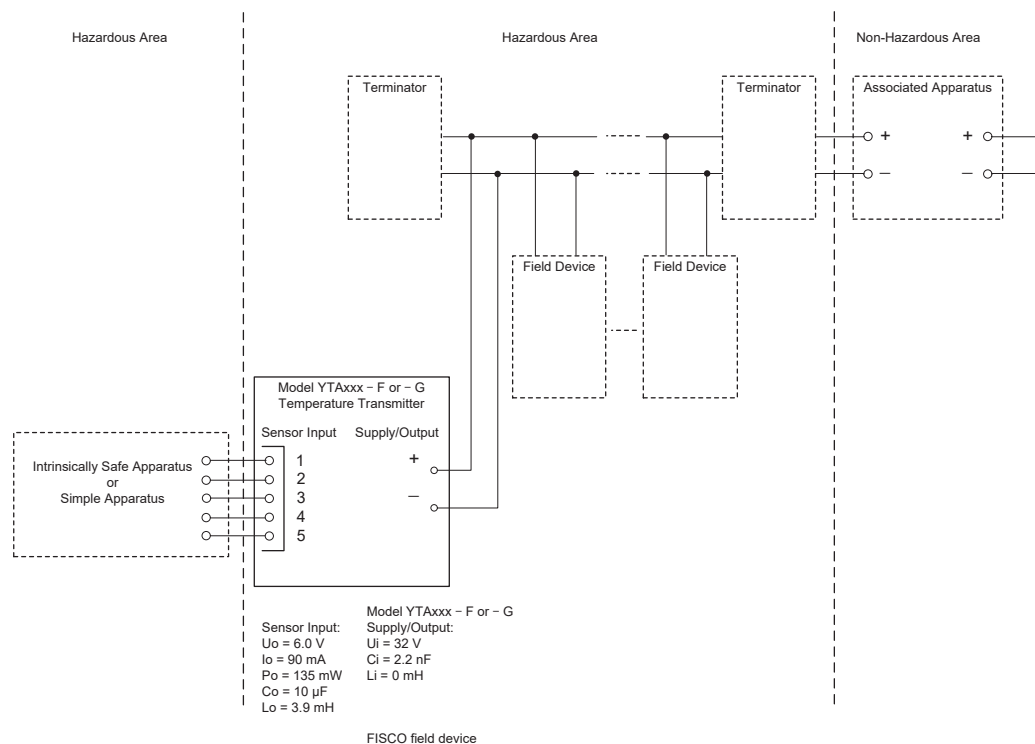
Intrinsically Safe Installation for YTAxxx – J or – D (Ex ic)



Control Drawing IECEx Ex ic

Yokogawa Electric Corporation				Model	YTAXxx		
Title	Control Drawing						
No.	IIE029-A63	Page	04	Revision	0	Date	2017-08-18

Intrinsically Safe Installation for YTAxxx – F or – G (Ex ic)



Specific Condition of Use:

- Electrostatic charges on the non-metallic parts (excluding glass parts) or coated parts of the Temperature Transmitter shall be avoided.
- The dielectric strength of 500 V r.m.s. between the intrinsically safe circuit and the enclosure of the Temperature Transmitter is limited, only by the removable surge absorber F9220AR.

WARNING –WHEN THE AMBIENT TEMP. $\geq 68^\circ\text{C}$, USE HEAT-RESISTING CABLES AND CABLE GLANDS $\geq 75^\circ\text{C}$

WARNING –ELECTROSTATIC CHARGE MAY CAUSE AN EXPLOSION HAZARD.

AVOID ANY ACTIONS THAT CAUSE THE GENERATION OF ELECTROSTATIC CHARGE, SUCH AS RUBBING WITH A DRY CLOTH ON COATING FACE OF THE PRODUCT.

Notes:

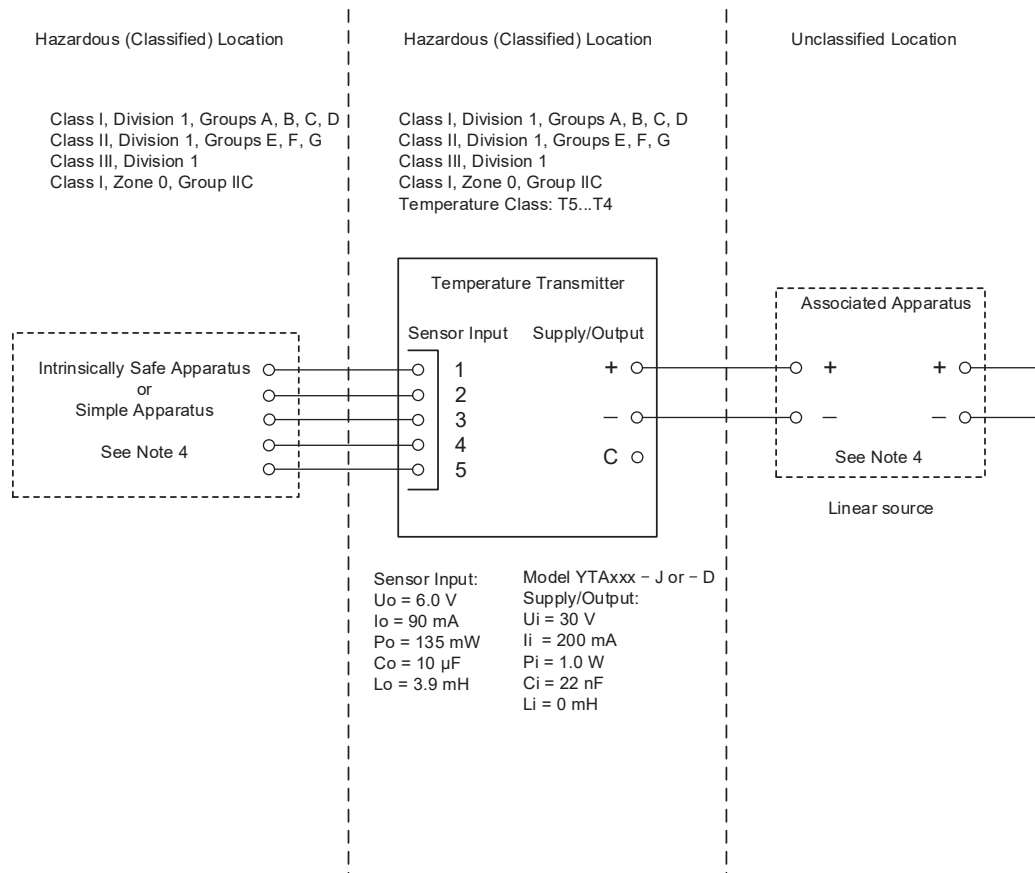
- The surge absorber F9220AR can be removed from, or added to the equipment.
- The equipment must be installed so that pollution degree 2 in accordance with IEC 60664-1 is maintained inside the enclosure.
- Cable glands, adapters and/or blanking elements shall be of Ex “n”, Ex “e” or Ex “d” and shall be installed so as to maintain the specified degree of protection (IP Code) according to the environmental conditions. IP must be at least IP54.

Control Drawing for FM (US) intrinsically safe approval (4 - 20 mA type)

Yokogawa Electric Corporation				Model	YTAxxx		
Title	Control Drawing						
No.	IIE029-A61	Page	01	Revision	1	Date	2017-08-18

Control Drawing (US)

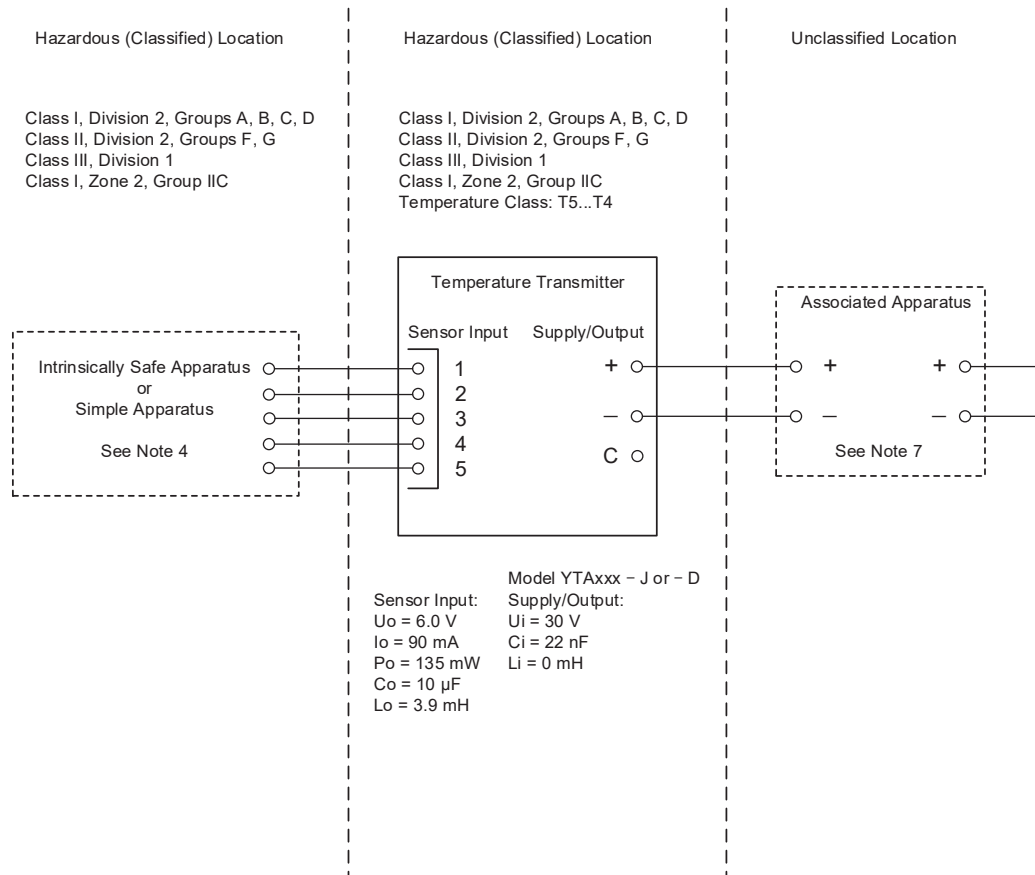
Intrinsically Safe Installation for YTAxxx – J or – D



Control Drawing for FM (US) Division 2 installation (4 - 20 mA type)

Yokogawa Electric Corporation				Model	YTAxxx		
Title	Control Drawing						
No.	IIE029-A61	Page	02	Revision	1	Date	2017-08-18

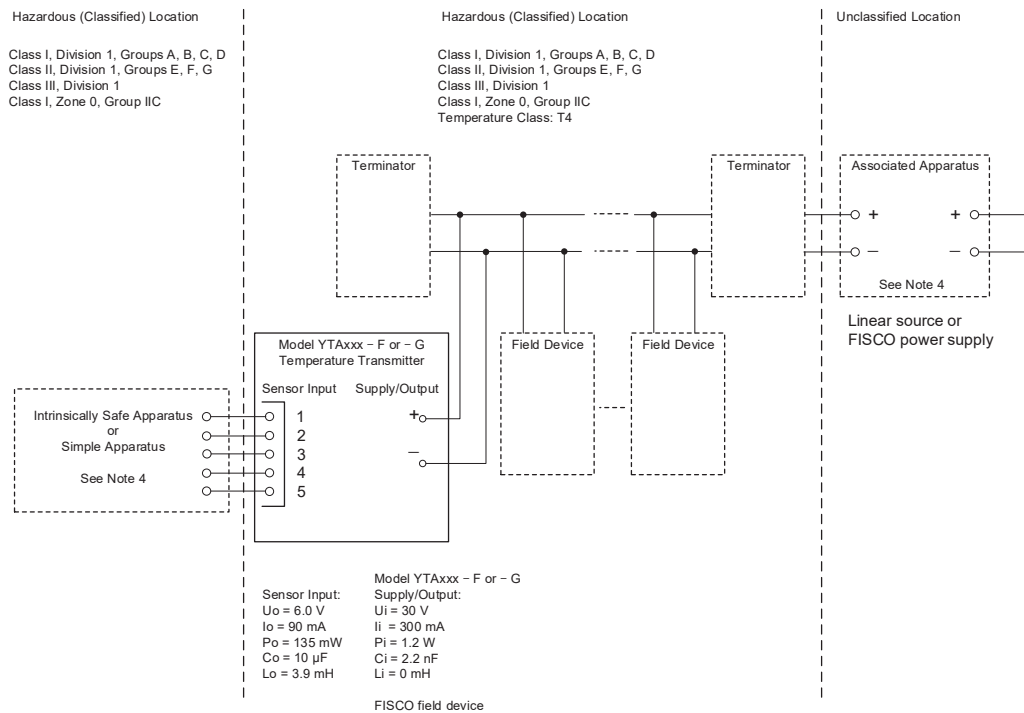
Division 2 Installation for YTAxxx – J or – D



Control Drawing for FM (US) intrinsically safe approval (Fieldbus type)

Yokogawa Electric Corporation				Model	YTAxxx		
Title	Control Drawing						
No.	IIE029-A61	Page	03	Revision	1	Date	2017-08-18

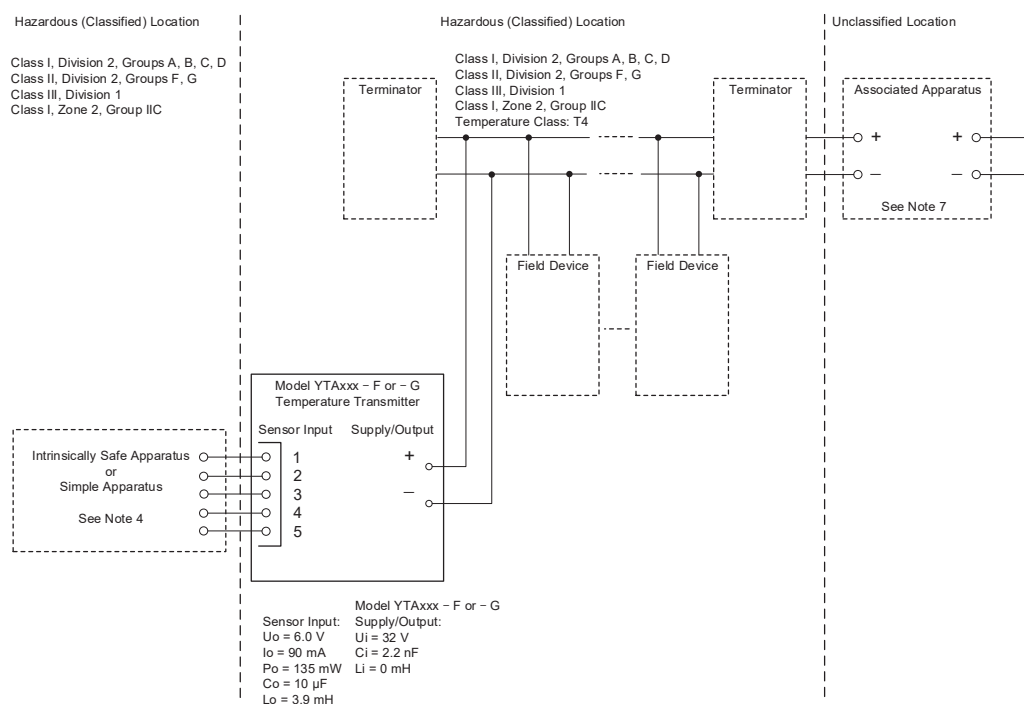
Intrinsically Safe Installation for YTAxxx – F or – G



Control Drawing for FM (US) Division 2 installation (Fieldbus type)

Yokogawa Electric Corporation				Model	YTxxx		
Title	Control Drawing						
No.	IIE029-A61	Page	04	Revision	2	Date	2017-08-18

Division 2 Installation for YTAxxx – F or – G



Control Drawing for FM (US) intrinsically safe approval/non-incendive approval (4 - 20 mA & Fieldbus type)

Yokogawa Electric Corporation				Model	YTAxxx		
Title	Control Drawing						
No.	IIE029-A61	Page	05	Revision	2	Date	2018-08-24

Specific Conditions of Use:

- Electrostatic charges on the non-metallic parts (excluding glass parts) or coated parts of the Temperature Transmitter shall be avoided.
- When the enclosure of the Temperature Transmitter is made of aluminum alloy, if it is mounted in Zone 0, it must be installed such that, even in the event of rare incidents, an ignition source due to impact and/or friction sparks is excluded.
- The dielectric strength of 500 V r.m.s. between the intrinsically safe circuit and the enclosure of the Temperature Transmitter is limited, only by the removable surge absorber F9220AR.

Notes:

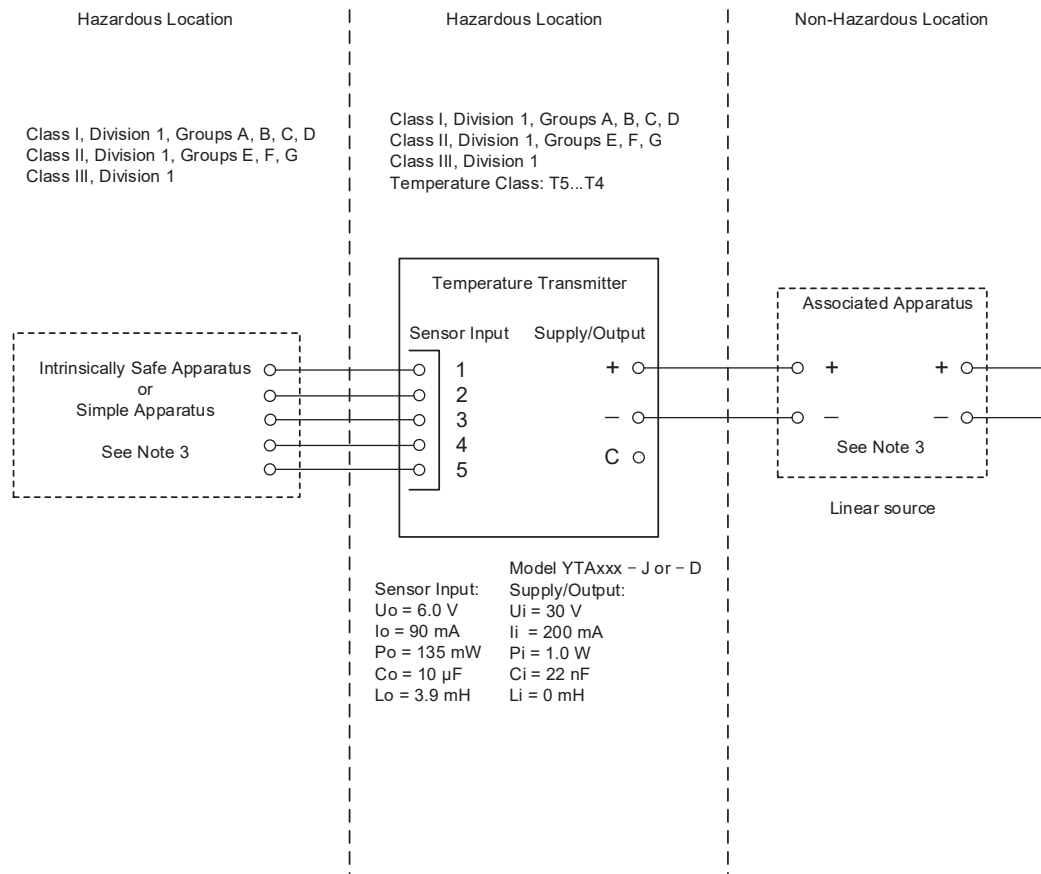
1. No revision to this drawing without prior approval of FM.
2. Installation must be in accordance with the National Electric Code (NFPA70), ANSI/ISA-RP12.06.01, and relevant local codes.
3. The Associated Apparatus must be FM-approved.
4. The following conditions must be satisfied for each circuit.
 - $V_{oc} \text{ (or } U_o) \leq U_i$
 - $I_{sc} \text{ (or } I_o) \leq I_i$
 - $P_o \leq P_i$
 - $C_a \text{ (or } C_o) \geq C_i + C_{cable}$
 - $L_a \text{ (or } L_o) \geq L_i + L_{cable}$
5. Control equipment connected to the Associated Apparatus must not use or generate a voltage more than U_m of the Associated Apparatus.
6. The control drawing of the Associated Apparatus must be followed when installing the equipment.
7. In case Nonincendive Field Wiring Concept is used for the interconnection, FM-approved Associated Nonincendive Field Wiring Apparatus, which meets the following conditions, must be used as the Power Supply / Control Equipment.
 - $V_{oc} \text{ (or } U_o) \leq U_i$
 - $C_a \text{ (or } C_o) \geq C_i + C_{cable}$
 - $L_a \text{ (or } L_o) \geq L_i + L_{cable}$
8. The surge absorber F9220AR can be removed from, or added to the equipment.
9. Dust-tight conduit seals must be used when installed in Class II or Class III environments.
10. FISCO/FNICO installation must be in accordance with ANSI/ISA-60079-25.
11. The terminator(s) must be FM approved.
12. The push-button switches on the integral indicator must be operated only when an explosive atmosphere is not present.
13. WARNING –ELECTROSTATIC CHARGE MAY CAUSE AN EXPLOSION HAZARD. AVOID ANY ACTIONS THAT CAUSE THE GENERATION OF ELECTROSTATIC CHARGE, SUCH AS RUBBING WITH A DRY CLOTH ON COATING FACE OF THE PRODUCT.
14. WARNING – SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY AND SUITABILITY FOR HAZARDOUS LOCATION

Control Drawing for FM (Canada) intrinsically safe approval (4 - 20mA type)

Yokogawa Electric Corporation				Model	YTAxxx		
Title	Control Drawing						
No.	IIE029-A62	Page	01	Revision	1	Date	2017-08-18

Control Drawing (Canada)

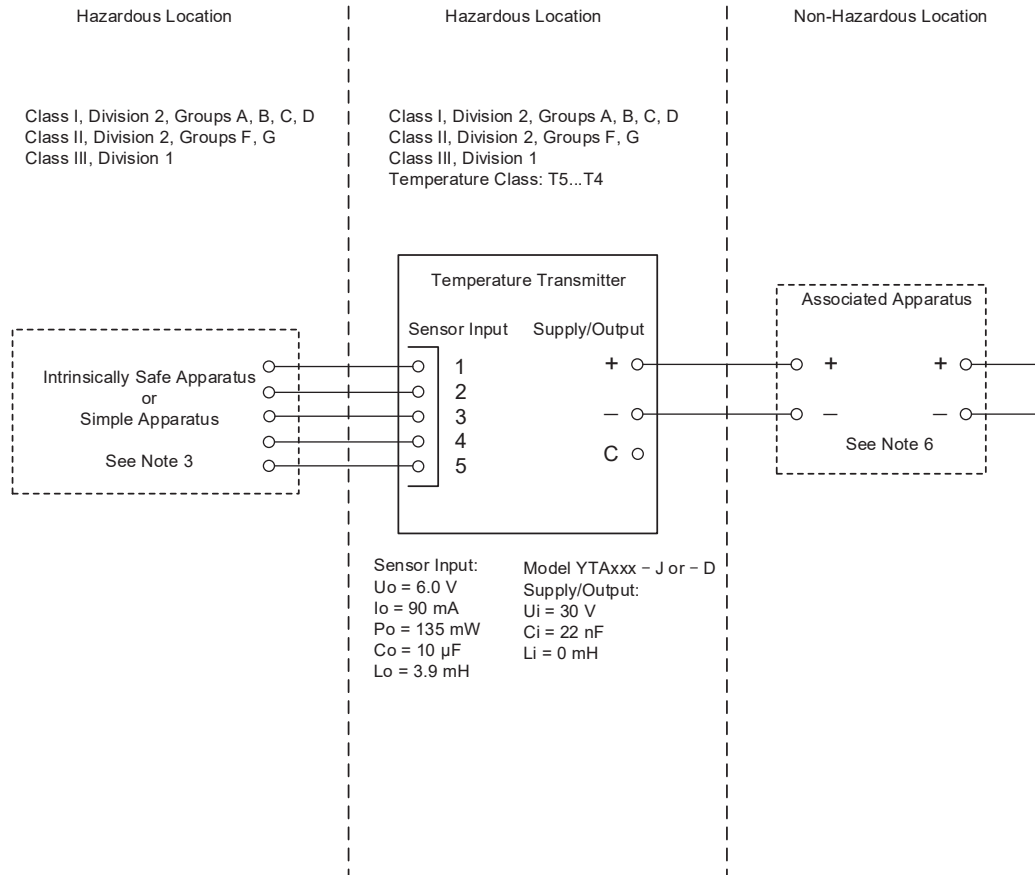
Intrinsically Safe Installation for YTAxxx – J or – D



Control Drawing for FM (Canada) Division 2 installation (4 - 20 mA type)

Yokogawa Electric Corporation				Model	YTAxxx		
Title	Control Drawing						
No.	IIE029-A62	Page	02	Revision	1	Date	2017-08-18

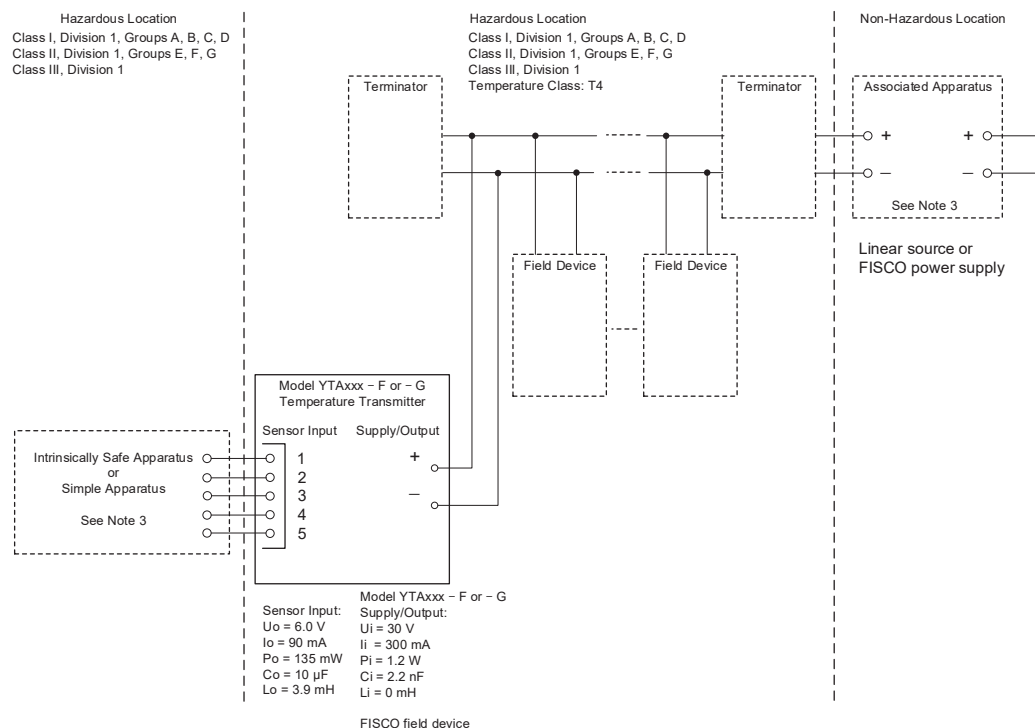
Division 2 Installation for YTAxxx – J or – D



Control Drawing for FM (Canada) intrinsically safe approval (Fieldbus type)

Yokogawa Electric Corporation				Model	YTAxxx			
Title	Control Drawing							
No.	IIE029-A62		Page	03	Revision	1	Date	2017-08-18

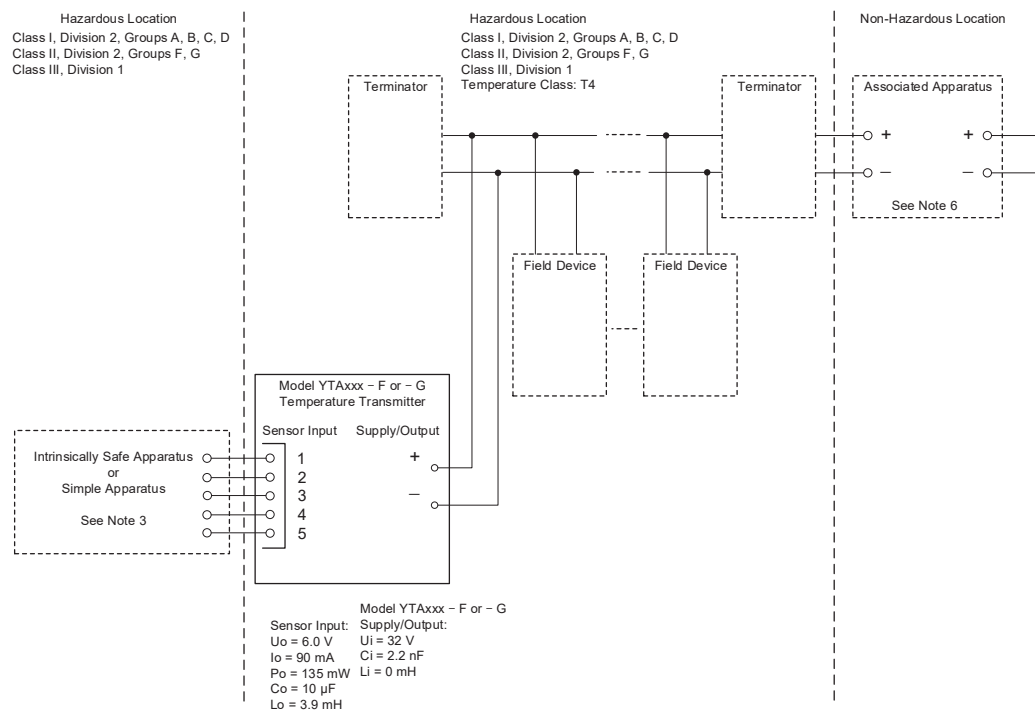
Intrinsically Safe Installation for YTAxxx – F or – G



Control Drawing for FM (Canada) Division 2 installation (Fieldbus type)

Yokogawa Electric Corporation				Model	YTAxxx			
Title	Control Drawing							
No.	IIE029-A62		Page	04	Revision	2	Date	2017-08-18

Division 2 Installation for YTAxxx – F or – G



Control Drawings for FM (Canada) intrinsically safe approval/non-incendive approval (4 - 20 mA & Fieldbus type)

Yokogawa Electric Corporation				Model	YTAxxx			
Title	Control Drawing							
No.	IIE029-A62		Page	05	Revision	2	Date	2018-08-24

Specific Conditions of Use:

- Electrostatic charges on the non-metallic parts (excluding glass parts) or coated parts of the Temperature Transmitter shall be avoided.
- When the enclosure of the Temperature Transmitter is made of aluminum alloy, if it is mounted in Zone 0, it must be installed such that, even in the event of rare incidents, an ignition source due to impact and/or friction sparks is excluded.
- The dielectric strength of 500 V r.m.s. between the intrinsically safe circuit and the enclosure of the Temperature Transmitter is limited, only by the removable surge absorber F9220AR.

Notes:

1. No revision to this drawing without prior approval of FM.
2. Installation must be in accordance with the Canadian Electrical Code Part I (C22.1), ANSI/ISA RP12.06.01, and relevant local codes.
3. The following conditions must be satisfied for each circuit.
 - $V_{oc} \text{ (or } U_o) \leq U_i$
 - $I_{sc} \text{ (or } I_o) \leq I_i$
 - $P_o \leq P_i$
 - $C_a \text{ (or } C_o) \geq C_i + C_{cable}$
 - $L_a \text{ (or } L_o) \geq L_i + L_{cable}$
4. Control equipment connected to the Associated Apparatus must not use or generate a voltage more than U_m of the Associated Apparatus.
5. The control drawing of the Associated Apparatus must be followed when installing the equipment.
6. In case Nonincendive Field Wiring Concept is used for the interconnection, Nonincendive Field Wiring Apparatus, which meets the following conditions, must be used as the Power Supply / Control Equipment.
 - $V_{oc} \text{ (or } U_o) \leq U_i$
 - $C_a \text{ (or } C_o) \geq C_i + C_{cable}$
 - $L_a \text{ (or } L_o) \geq L_i + L_{cable}$
7. The surge absorber F9220AR can be removed from, or added to the equipment.
8. Dust-tight conduit seal must be used when installed in Class II and Class III environments.
9. FISCO/FNICO installation must be in accordance with CAN/CSA-C22.2 No. 60079-25.
10. The push-button switches on the integral indicator must be operated only when an explosive atmosphere is not present.
11. WARNING –ELECTROSTATIC CHARGE MAY CAUSE AN EXPLOSION HAZARD. AVOID ANY ACTIONS THAT CAUSE THE GENERATION OF ELECTROSTATIC CHARGE, SUCH AS RUBBING WITH A DRY CLOTH ON COATING FACE OF THE PRODUCT.
12. WARNING – SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY AND SUITABILITY FOR HAZARDOUS LOCATIONS

2.8 EMC Conformity Standards

EN61326-1 Class A, Table 2

EN61326-2-3

EN61326-2-5 (for Fieldbus)

Immunity influence during the test:

Output shift is specified within $\pm 1\%$ of full span.



CAUTION

This instrument is a Class A product, and it is designed for use in the industrial environment. Please use this instrument in the industrial environment only.



NOTE

YOKOGAWA recommends customer to apply the Metal Conduit Wiring or to use the twisted pair Shield Cable for signal wiring to conform the requirement of EMC Regulation, when customer installs the YTA Transmitter to the plant.

2.9 Safety Requirement Standards

EN61010-1, C22.2 No.61010-1

- Altitude of installation site: Max. 2,000 m above sea level
- Installation category: I
(Anticipated transient overvoltage 330 V)
- Pollution degree: 2
- Indoor/Outdoor use

EN IEC 61010-2-030, C22.2 No.61010-2-030

- Measurement category: O(Other)
(Measurement Input voltage: 150mVdc max)

2.10 EU RoHS Directive

Applicable standard: EN IEC 63000

Applicable production sites are shown below. The condition of the RoHS compliant production sites are as follows:

Singapore, China, Japan, Saudi Arabia, UAE, USA

The production sites can be confirmed by the serial number shown in the frame of "NO." in the name plate of the product.

Serial numbers (9 letters): **AA**nnnnnnnn

AA: Identification code of production site

Singapore: Use "C2" or "C0"

China: Use "S5"

Japan: Use "91" or "90"

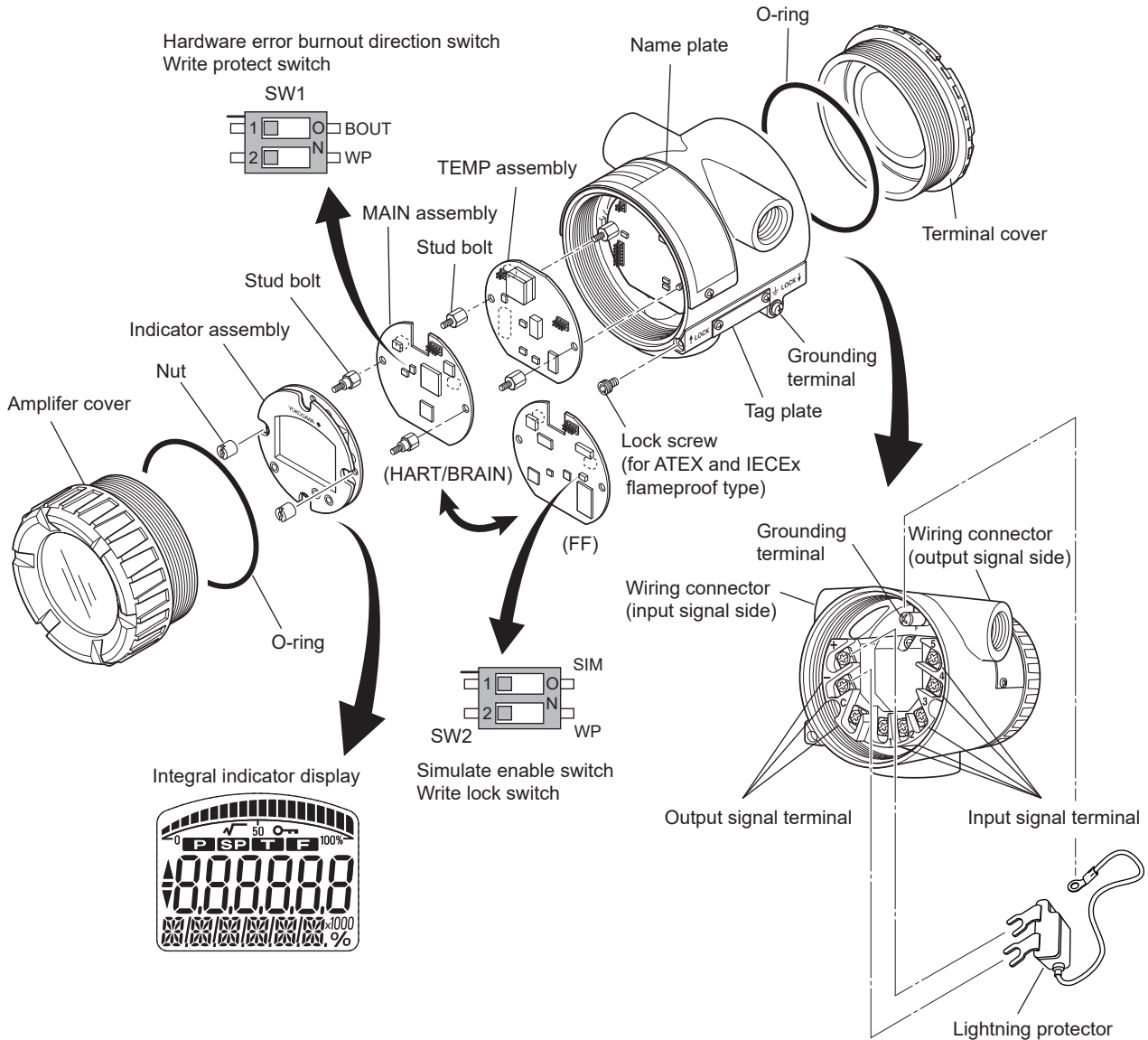
Saudi Arabia: Use "Y3"

UAE: Use "Y4"

USA: Use "U1"

3. Part Names and Functions

3.1 Part Names



F0301.ai

Figure 3.1 Part Names

3.2 Hardware Error Burnout and Hardware Write Protect Switch (HART/BRAIN)

There are two slide switches on the MAIN assembly board. One sets the hardware error burnout direction, and the other sets a hardware write protection function which disables parameter changes through the use of a handheld terminal or some other communication method.

The temperature transmitter is equipped with a hardware error burnout function used to set the output direction upon hardware error, and a sensor burnout function that sets the direction of the output in the event of burnout of the temperature sensor. When factory-shipped under standard specification or suffix code /C3, the output of both hardware error burnout and sensor burnout are set to HIGH, but if suffix code /C1 or /C2 is specified, the hardware error burnout is set to LOW (-5%) output, and sensor burnout is set to LOW (-2.5%) output, respectively. The setting of the direction of output from burnout can be changed.

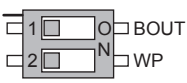
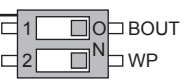
To change the direction of output arising from burnout, set the switch on the MAIN assembly (see Figure 3.1 and Table 3.1). To change the direction of output arising out of sensor burnout, a dedicated hand-held terminal is required to rewrite the parameters within the transmitter.

For details, refer to the separate instruction manual, IM 01C50T01-02EN “HART Protocol” or IM 01C50T03-02EN “BRAIN Protocol”.

 NOTE

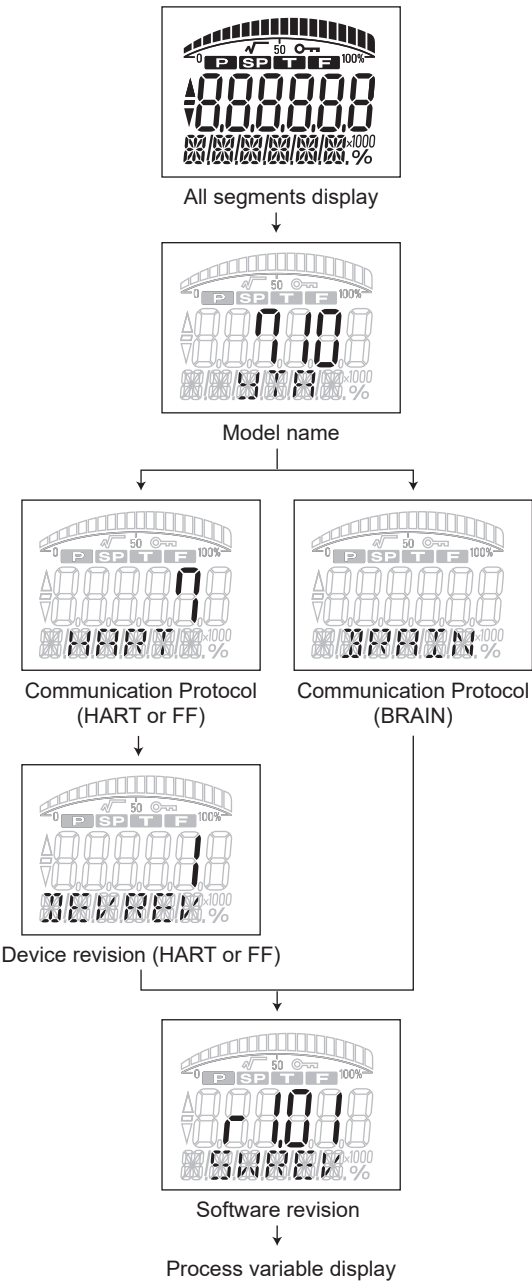
- 1. Turn off the power supply before changing the switches
- 2. To change the switches, it is necessary to remove the integral indicator assembly. Refer to “ 6.3.1 Replacement of Integral Indicator” about the procedures.

Table 3.1 Burnout Direction and Hardware Write Protect Switch

Burnout direction (BOUT) and hardware write protect (WP) switch position	SW1	SW1
		
Hardware error burnout direction	HIGH	LOW
Hardware error burnout output	110% or more (21.6 mA DC)	-5% or less (3.2 mA DC)
Remark	Set to HIGH when standard specification or suffix code /C3 is provided	Set to LOW when suffix code /C1 or /C2 is provided
Hardware write protect switch	OFF Write enabled	ON Write disabled

3.3 Integral Indicator Display Function

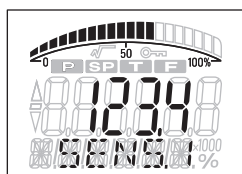
(1) Integral Indicator Display When Powering On



F0302.ai

(2) Process Variable Display

Process variables that can be displayed in YTA are shown in the Table 3.2. A cycle of up to four displays can be shown by assigning variables to the parameters. Indicates values of process variables with the indication limits –99999 to 99999.



F0303.ai

Table 3.2 Process Variable Display

Process variable	HART	BRAIN	FF
Sensor1	✓	—	✓
Sensor1 - Terminal	✓	—	✓
Terminal	✓	—	✓
Sensor2	✓	—	✓
Sensor2 - Terminal	✓	—	✓
Sensor1 - Sensor2	✓	—	✓
Sensor2 - Sensor1	✓	—	✓
Sensor Average	✓	—	✓
Sensor Backup	✓	—	✓
PV	✓	✓	—
SV	✓	✓	—
TV	✓	✓	—
QV	✓	✓	—
% of RANG	✓	✓	—
mA of RANGE	✓	✓	—
AI1	—	—	✓
AI2	—	—	✓
AI3	—	—	✓
AI4	—	—	✓

3.4 Local Parameter Setting



WARNING

The local push button on the integral indicator must not be used in a hazardous area. When it is necessary to use the push button, operate it in a non-hazardous location.



IMPORTANT

- Do not turn off the power to the temperature transmitter immediately after performing parameter setting. Powering off within 30 seconds of performing this procedure will return the parameter to its previous setting.
- LCD update will be slower at low ambient temperature, and it is recommended to use LPS function at temperatures above –10 degrees C.
- To implement local parameter settings, it is necessary to turn off the software Write protect and the hardware write protect switch on the MAIN assembly.

3.4.1 Local Parameter Setting (LPS) Overview

Parameter configuration by the 3 push button on the integral indicator offers easy and quick setup for parameters of Tag number, Unit, PV Damping, Display out 1, and etc. There is no effect on measurement signal (analog output or communication signal) when Local Parameter Setting is carried out.

Table 3.3 Action

Action	Operation
Activate	Push ▲ or ▼ button
Move	Push ▲ or ▼ button
Edit	Push SET button
Save	After parameter setting → Push SET button → "SAVE?" → Push SET button → "SAVED" If "FAILED" appear, retry or check the specifications.
Cancel	After parameter setting → Push SET button → "SAVE?" → Push ▲ or ▼ button → "CANCL?" → Push SET button → "CANCLD"
Abort	Hold down the SET button for over 2 seconds → "ABORT" and move to the process measurement display
Exit	Push ▲ button (When the first parameter is selected) or Push ▼ button (When the last parameter is selected)
Time out	no operation for 10 minutes

Table 3.4 Parameters List (HART)

Write Mode: RW=read/write, R=read only

Item	Indicator Display	Write Mode	Setting Type	Remarks
Tag number	TAG	RW	Character	up to 8 characters
Long tag number	LNG.TAG	RW	Character	up to 32 characters
PV unit	PV.UNIT	RW	Selection	K, °C, °F, °R, mV, ohm, mA, %, NOUNIT
PV damping time constant	PV.DAMP	RW	Numeric	0.00 to 100.00 seconds
Sensor 1 type	S1.TYPE	RW	Selection	mv, ohm, Pt100, JPt100, Pt200, Pt500, Pt1000, Cu10, Ni120, TYPE.B, TYPE.E, TYPE.J, TYPE.K, TYPE.N, TYPE.R, TYPE.S, TYPE.T, TYPE.L, TYPE.U, TYPE.W3, TYPE.C, USR. TBL, NO.CNCT, S.MATCH
Sensor 1 wire	S1.WIRE	RW	Selection	2, 3, 4
Sensor 2 type	S2.TYPE	RW	Selection	same as sensor1 type
Sensor 2 wire	S2.WIRE	RW	Selection	same as sensor1 wire
PV lower range	PV LRV	RW	Numeric	
PV upper range	PV URV	RW	Numeric	
Sensor burnout direction	BUN.DIR	RW	Selection	HIGH, LOW, USER, OFF
Sensor burnout value (mA)	BUN mA	RW	Numeric	3.6 to 21.6 mA
Sensor burnout value (%)	BUN %	RW	Numeric	-2.5 to 110%
Display out 1	DISP.1	RW	Selection	SENS.1, S.1-TER., TERM, SENS.2, S.2 - TER., S.1 - S.2, S2 - S.1, AVG, BACKUP, PV, SV, TV, QV, OUT %, OUT.mA
Write protect	WRT.PRT	RW	Selection, Character	ON, OFF, Up to 8 Characters
Model	MODEL	R	—	
HART revision	HART	R	—	
Device revision	DEV.REV	R	—	
Software revision	SW.REV	R	—	

Table 3.5 Parameters List (FF)

Write Mode: RW=read/write, R=read only

Item	Indicator Display	Write Mode	Setting Type	Remarks
PD TAG	PD.TAG	R	—	
Disp Out 1	DISP.1	RW	Selection	SENS.1, S.1-TER., TERM, SENS.2, S.2 - TER., S.1 - S.2, S2 - S.1, AVG, BACKUP, AI1.OUT, AI2.OUT, AI3.OUT, AI4.OUT
Local Write Lock	HW.LOCK	RW	Selection, Character	ON, OFF, Up to 8 Characters
Simulation	HW SIM	RW	Selection	ON, OFF
Model	MODEL	R	—	
Dev Rev	DEV.REV.	R	—	
Software Rev	SW.REV	R	—	

Table 3.6 Parameters List (BRAIN)

Write Mode: RW=read/write, R=read only

Item	Indicator Display	Write Mode	Setting Type	Remarks
Tag number	TAG	RW	Character	up to 16 characters
PV unit	PV.UNIT	RW	Selection	K, °C, °F, °R, mV, ohms, mA, %, NOUNIT
PV damping time constant	PV.DAMP	RW	Selection	0,1,2,...,100 seconds
Sensor 1 type	S1.TYPE	RW	Selection	TYPE.B, TYPE.E, TYPE.J, TYPE.K, TYPE.N, TYPE.R, TYPE.S, TYPE.T, TYPE.C, TYPE.W3, TYPE.L, TYPE.U, Pt100, Pt200, Pt500, Pt1000, JPt100, Ni120, Cu10, S.MATCH, ohms, mV, NO.CNCT
Sensor 1 wire	S1.WIRE	RW	Selection	2, 3, 4
Sensor 2 type	S2.TYPE	RW	Selection	same as sensor1 type
Sensor 2 wire	S2.WIRE	RW	Selection	same as sensor1 wire
PV lower range	PV LRV	RW	Numeric	
PV upper range	PV URV	RW	Numeric	
Sensor burnout direction	BUN.DIR	RW	Selection	HIGH, LOW, USER, OFF
Sensor burnout value (mA)	BUN mA	RW	Numeric	3.6 to 21.6 mA
Sensor burnout value (%)	BUN %	RW	Numeric	-2.5 to 110%
Display out 1	DISP.1	RW	Selection	PV, SV, TV, QV
Write protect	WRT.PRT	RW	Selection, Character	ON, OFF, Up to 8 Characters
Model	MODEL	R	—	
Software revision	SW.REV	R	—	

3.4.2 Parameters Configuration

(1) Activating Local Parameter Setting

Push the ▲ or ▼ button on the integral indicator to activate the local parameter setting mode. The transmitter will exit automatically from the local parameter setting mode if no operation is carried out for 10 minutes.

(2) Parameter Setting Review

▼ As you press the button, you will be shown in the order of the Parameter list in each communication table.

Press ▲ to back to previous Parameter.

Press ▲ on the first Parameter or ▼ on the last Parameter to back to the process value display screen.

(3) Character Configuration

Character parameter → Push SET button → Change the first character by pushing ▲/▼ button → Push SET button to go to the second character → Change the second character by pushing ▲/▼ button → Set all other characters in the same way → Hold down the SET button → "SAVE?" → Push SET button → "SAVED"

(4) Selection Configuration

Selection parameter → Push SET button → Use ▲/▼ button to select → Push SET button → "SAVE?" → Push SET button → "SAVED"

(5) Numeric Configuration

Numeric parameter → Push SET button → Change the first digit by pushing ▲/▼ button → Push SET button to go to the second digit → Change the second figure by pushing ▲/▼ button → Set all other digits in the same way → Hold down the SET button → "SAVE?" → Push SET button → "SAVED"

Available numbers

Number of digits	Selection	Remarks
1	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, -9, -8, -7, -6, -5, -4, -3, -2, -1, -0	Determine plus and minus in the first digit. Return cannot be selected. In case of integer a minus cannot be selected.
2 to 5	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, Dot(.), r*	A dot uses a one digit. Two dots cannot use. In case of integer a dot cannot be selected.
6	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, r*	

*: Press the SET button at the time of r display, one digit will return.

(6) Selection, Character Configuration

Select the Selection Character parameter to display the current status.

Press the SET button to enter the character configuration.

See 3. Character Configuration.

(7) Parameter Setting Lock

To disable parameter changes by the local parameter setting there are two different ways.

- Communication parameter write protect = On
- Hardware write protection switch on MAIN assembly = ON

Reviewing local parameter setting by push button on the integral indicator is available at any time even when the local parameter setting is locked.

4. Installation



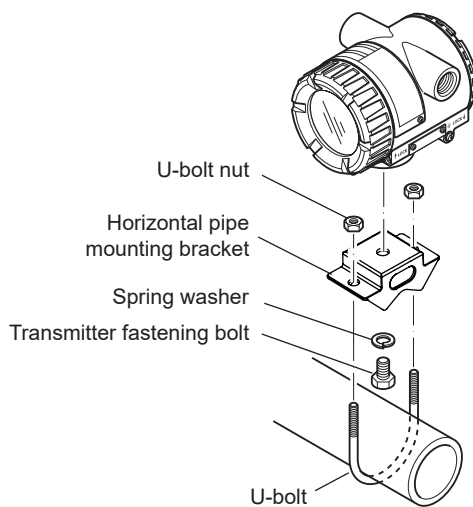
IMPORTANT

- When performing on-site pipe fitting work that involves welding, use care to prevent outflow of the welding current into the transmitter.
- Do not use the transmitter as a foothold for installation.

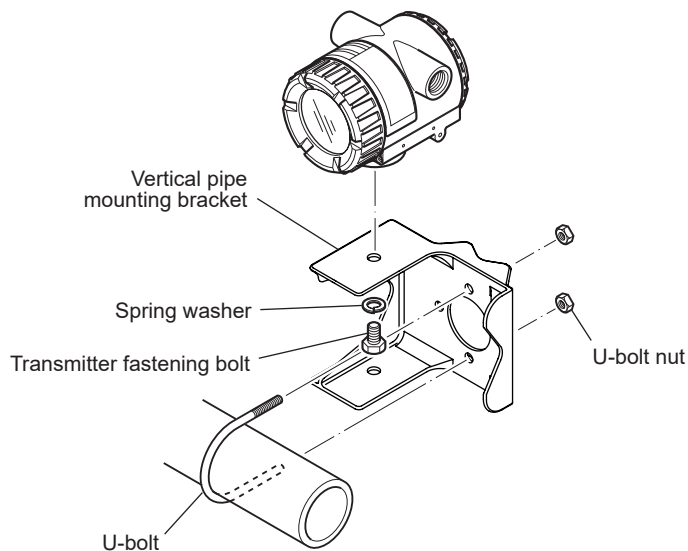
- For details of choosing the installation location, refer to the guidelines outlined in Section 2.4, "Choosing the installation location".
- The mounting bracket shown in Figure 4.1 is used for the transmitter and is installed on 50A (2B) pipe. It can be installed either on a horizontal pipe and a vertical pipe or on a wall.
- To install the mounting bracket on the transmitter, torque the transmitter lock screw to about 20 to 30N•m.

Horizontal Pipe Mounting

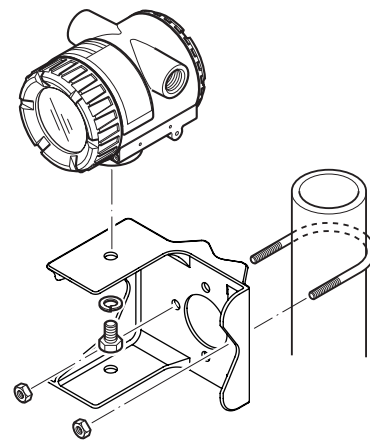
- When using a horizontal pipe mounting bracket



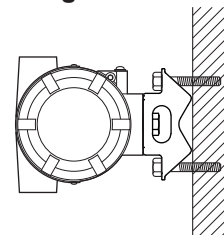
- When using a vertical pipe mounting bracket



Vertical Pipe Mounting



Wall Mounting



Note: Wall mounting bolts are user-supplied.

F0401.ai

Figure 4.1 Mounting the Transmitter

5. Wiring

5.1 Notes on Wiring



IMPORTANT

- Apply a waterproofing sealant to the threads of the connection port. (It is recommended that you use non-hardening sealant made of silicon resin for waterproofing.)
- Lay wiring as far away as possible from electrical noise sources such as large transformers, motors and power supplies.
- Remove the wiring connection dust-caps before wiring.
- To prevent electrical noise, the signal cable and the power cable must not be housed in the same conduit.
- The terminal box cover is locked by an Allen head bolt (a shrouding bolt) on ATEX and IECEx flameproof type transmitters. When the shrouding bolt is driven clockwise by an Allen wrench, it is going in and cover lock is released, and then the cove can be opened by hands. See Subsection 6.3 “Disassembly and Assembly” for details.

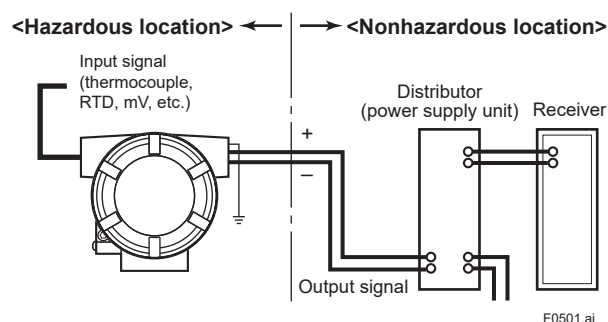
5.2 Loop Construction

The YTA temperature transmitter is a two-wire temperature transmitter that uses the output power supply wiring and signal wiring alternately.

The transmission loop requires DC power. Connect the transmitter with the distributor as shown in Figure 5.1.

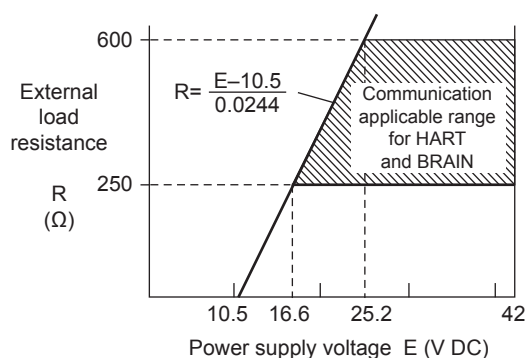
For the transmission loop, the load resistance of the distributor or other instrument to be installed in the loop and the lead wire must be within the range shown in Figure 5.2.

For details of communication requirements, refer to the additional reference materials, IM 01C50T01-02EN “YTA610 and YTA710 Temperature Transmitter (HART Protocol)” and IM 01C50T03-02EN “YTA710 Temperature Transmitter Functions (BRAIN Protocol)”.



F0501.ai

Figure 5.1 Loop Construction (for General-use Type and Flameproof Type)



F0502.ai

Figure 5.2 Relation Between Power Supply Voltage and External Load Resistance

Note: For intrinsic safe explosion-proof type units, the internal resistance of the safety barrier is also included in the load resistance.

5.3 Cable Selection

5.3.1 Input signal Cable Selection

A dedicated cable is used for connection between the temperature sensor and the temperature transmitter.

When a thermocouple is used as the temperature sensor, a compensation wire must be used that it appropriate for the type of thermocouple (refer to compensating cables for JIS C 1610/IEC60584-3 thermocouples). When a RTD is used as the temperature sensor, 2-core/3-core/4-core cable must be used (refer to JIS C 1604/IEC60751). The terminal of the dedicated cable is a 4 mm screw.

5.3.2 Output Signal Cable Selection

- With regard to the type of wire to be used for wiring, use twisted wires or cables with performance equivalent of 600V vinyl insulated cable (JIS C3307).
- For wiring in areas susceptible to electrical noise, use shielded wires.
- For wiring in high or low temperature areas, use wires or cables suitable for such temperatures.
- For use in an atmosphere where harmful gases or liquids, oil, or solvents are present, use wires or cables made of materials resistant to those substances.
- It is recommended that a self-sealing terminal with insulation sleeve (4-mm screw) be used for lead wire ends.

5.4 Cable and Terminal Connections

5.4.1 Input Terminal Connections



NOTE

Turn off the power when installing the sensor. Please make sure that the sensor will not affect the host system in case not turning off the power.



NOTE

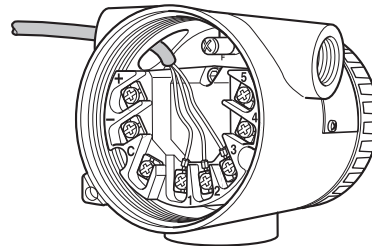
It is recommended that the terminals be connected in the order of STEP 1 and STEP 2.



CAUTION

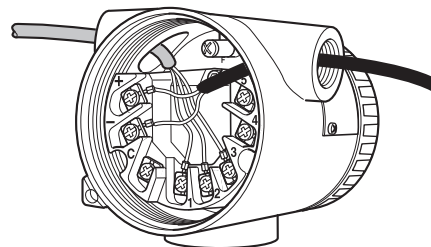
When wiring, pay attention not to damage the cable and cores. All the cores of the cable must have the sufficient insulation around them.

STEP 1
(1)



a. Cable connection to RTD 3-wire

STEP 2
(2)

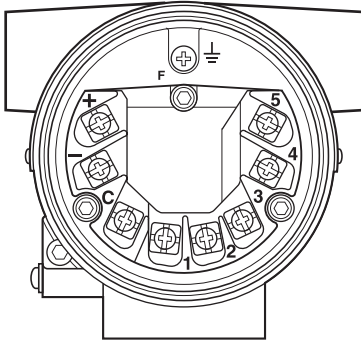


b. Output signal cable connection

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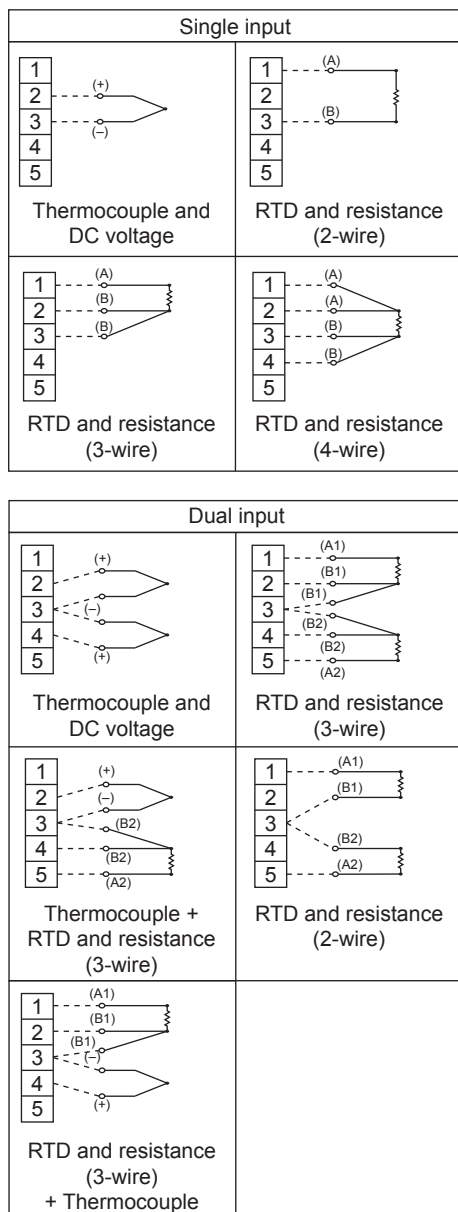
Figure 5.3 Terminal Connection Procedure

- The temperature sensor is to be connected as shown in Figures 5.5.



F0504.ai

Figure 5.4 Terminal Diagram



F0505.ai

Figure 5.5 Wiring Connection Diagram

5.4.2 Output Terminal Connection

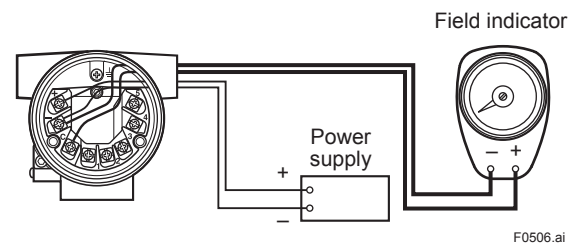
(1) Connection of output signal/power supply cable

Connect the output signal cable (shared with the power supply cable) to the – terminal and the + terminal. For details, refer to Figure 5.1, “Loop construction”.

(2) Connection of wiring for field indicator

Connect the lead wire for the field indicator with the – terminal and the C terminal.

Note: Use a field indicator with an internal resistance of 10Ω or less.



F0506.ai

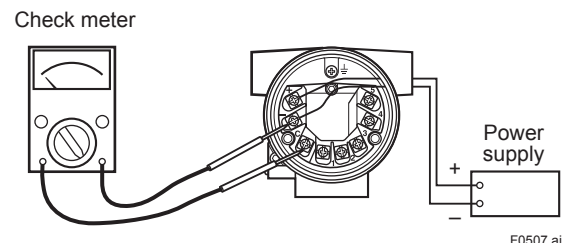
Figure 5.6 Connection to Field Indicator

(3) Connection of check meter

Connect the check meter with the – terminal and the C terminal.

The current signal of output signal 4 to 20 mA DC is output from the – terminal and the C terminal.

Note: Use a check meter with internal resistance of 10Ω or less.



F0507.ai

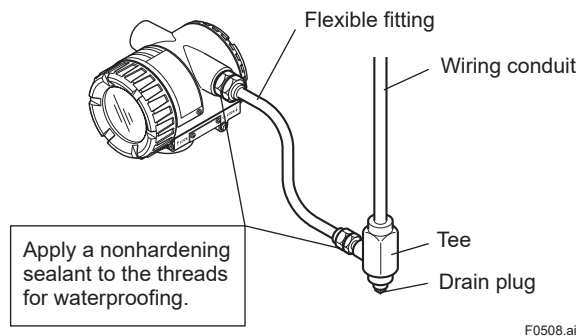
Figure 5.7 Check Meter Connection

5.5 Wiring Cautions

(1) General-use Type and Intrinsically Safe Type

Use metal conduit wiring or a waterproof gland (metal wiring conduit JIS F 8801) for cable wiring.

- Apply nonhardening sealant to the threads of the wiring tap and a flexible fitting for secure waterproofing. Figure 5.8 shows an example of wiring on the output side. This example also applies to the wiring on the input side.



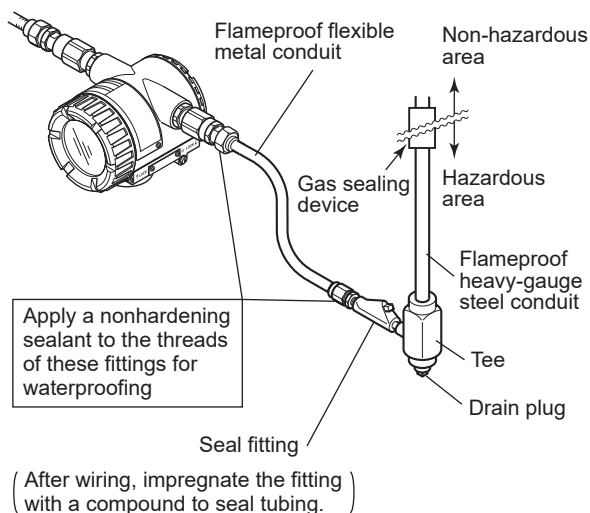
F0508.ai

Figure 5.8 Example of Wiring Using a Wiring Conduit

(2) Flameproof Type

Wire cables through a flameproof packing adapter, or using a flameproof metal conduit.

- A seal fitting must be installed near the terminal box connection port for a sealed construction.
- Apply a nonhardening sealant to the threads of the terminal box connection port, flexible metal conduit and seal fitting for waterproofing.



F0509.ai

Figure 5.9 Typical Wiring Using Flameproof Metal Conduit

5.6 Grounding

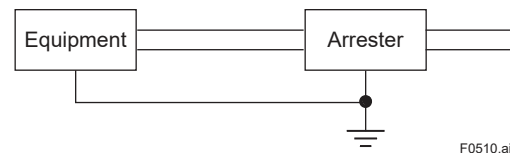
Grounding is always required for the proper operation of transmitters. Follow the domestic electrical requirements as regulated in each country. For a transmitter with a lightning protector, grounding should satisfy ground resistance of 10Ω or less.

Ground terminals are located on the inside and outside of the terminal box. Either of these terminals may be used.

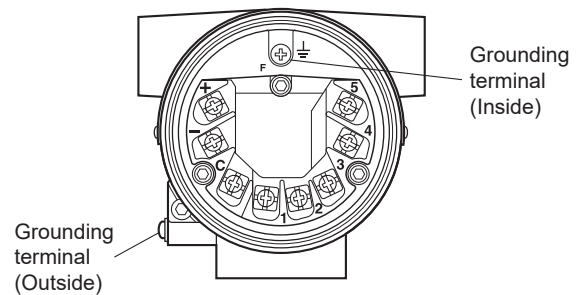


CAUTION

To use an external arrester, carry out the interlocked grounding as shown below, and perform grounding work (ground resistance: 10Ω or less) in the arrester side.



F0510.ai



F0511.ai

Figure 5.10 Grounding Terminal

6. Maintenance

6.1 General

Each component of this instrument is configured in units to make maintenance easier.

This chapter contains disassembly and assembly procedures associated with calibration, adjustment and part replacement required for maintenance of the affected instrument.



IMPORTANT

1. Maintenance of this instrument should be performed in a service shop where the necessary tools are provided.
2. Handling the MAIN and Indicator assembly
Some of the parts contained in the MAIN and Indicator assembly are susceptible to static electricity damage. Before performing maintenance, use a ground wrist band or other antistatic measures, and avoid touching the electronic components and circuits with bare hands.

6.2 Calibration

This instrument is fully factory-tested and is guaranteed for the intended accuracy, eliminating the need for calibration. When calibration needs to be verified, the following equipment and calibration procedure is recommended.

6.2.1 Selection of Equipment for Calibration

Table 6.1 lists the equipment required for calibration. The calibration equipment traceable to a verifying agency standard should be used.

Table 6.1 Calibration Equipment List

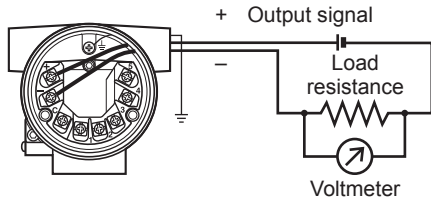
Name	Recommended	Remark
Power supply	SDBT, SDBS distributor	4 to 20mA DC (Output voltage: 26.5 ± 1.5 V DC, drop by internal 250Ω resistance included)
Load resistance	2792 standard resistor ($250\Omega \pm 0.005\%$)	For 4 to 20mA DC
Voltmeter		For 4 to 20mA DC signal
Universal calibrator		For calibration of DC voltage and thermocouple
Variable resistor	279301 6-dial variable resistor (accuracy: $\pm(0.01\%$ of rdg + $2\text{m}\Omega$))	For calibration of RTD input

6.2.2 Calibration Procedure

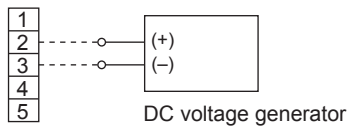
To conduct calibration required to evaluate the uncertainty while using the instrument, follow the steps below:

1. In accordance with the example wiring shown in Figure 6.1, connect each equipment, and warm up for 3 minutes or more. Lay wiring on the input side according to the sensor to be used.

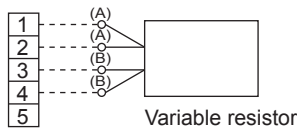
a. Wiring of power supply and output



b. Example of wiring for thermocouple or DC voltage input (when 1 input type is used)



c. Example of wiring for RTD 4-core type (when 1 input type is used)



F0601.ai

Figure 6.1 Example of Wiring for Calibration Equipment

2. For DC voltage input
With a voltage generator, deliver input signals corresponding to 0, 25, 75, or 100% of the input span to the temperature transmitter. Measure the resulting input signal with the voltmeter (digital multimeter) and check the output value relative to the input value.
3. For thermocouple input
Since this instrument is equipped with a reference junction compensating function, use a reference junction compensating function in universal calibrator in order to compensate for this function upon calibration. According to the reference millivolt table for thermocouple, obtain millivolt corresponding to 0, 25, 50, 75, or 100% of the span, and use that power as the input value, then deliver it from the universal calibrator to the temperature transmitter. Measure the resulting output signal with the voltage meter (digital multimeter) and check the output value relative to the input value.

4. RTD

Using a RTD as input, calibration of the temperature transmitter is carried out via a 4-core wire connection.

As defined the reference resistor value table of the RTD, obtain resistance values corresponding to 0, 25, 50, 75 or 100% of the span, and use the obtained resistance as the input value, then deliver it to the temperature transmitter by means of a variable resistor. Measure the resulting output signal with the voltmeter (digital multimeter) and check the output value relative to the input value.

5. In Steps 2 through 4, if the output signal deviates from the given range of accuracy when a given input signal is delivered, adjust the output using the handheld terminal. For details of how to adjust the output, refer to the additional reference, "HART Protocol" IM 01C50T01-02EN, or "BRAIN Protocol" IM 01C50T03-02EN and the instruction manual for each terminal.

6.3 Disassembly and Assembly

This section details the procedure for part replacement or disassembly and assembly of each component depending on the maintenance process.

Before starting disassembly and assembly work, turn off the power, and use a tool suited to the associated work.

Table 6.2 lists the tools required for disassembly and assembly of the instrument.

Table 6.2 Tools for Disassembly and Assembly

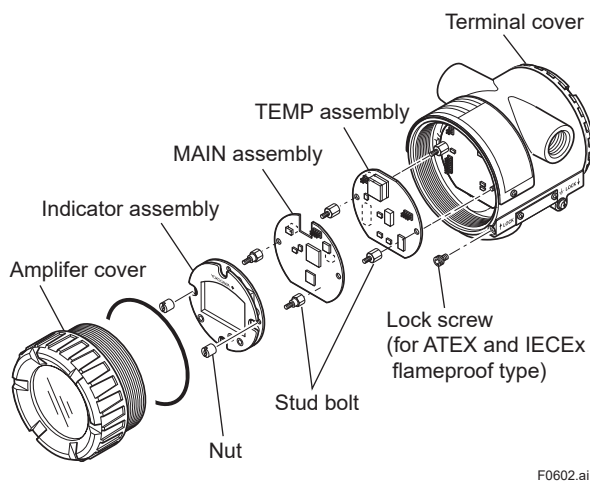
Tool name	Quantity	Remark
Phillips screwdriver	1	For M10 screw
Standard screwdriver	1	
Hexagonal wrench	1	
Crescent wrench	1	
Torque wrench	1	
Box wrench	1	
Box screwdriver	1	
Forceps	1	



CAUTION

Precautions for ATEX and IECEx Flameproof Type Transmitters

- For a withstand flameproof type transmitter, as a rule, move the transmitter to a non-hazardous location, then proceed with maintenance and restore the instrument to the original condition.
- For a withstand ATEX and IECEx flameproof type transmitter, turn the lock bolt (hexagon socket bolt) clockwise with a wrench for hexagon head, unlock and remove the cover. When installing the cover, it is the must to turn the lock bolt counterclockwise and lock the cover (locked to a torque of 0.7 Nm).
- For a withstand flameproof type transmitter, in no case should the user be allowed to modify the transmitter. Therefore, no user is allowed to add a integral indicator, or use the transmitter with the indicator removed. Contact us for any modification.



F0602.ai

Figure 6.2 Mounting and Removal of Integral Indicator Assembly

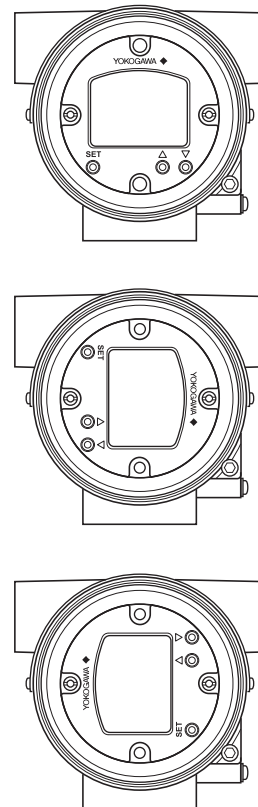
6.3.1 Replacement of Integral Indicator

■ Removal of integral indicator

1. Remove the cover.
2. Remove two nuts while using your hand to support the integral indicator.
3. Remove the indicator assembly from the MAIN assembly. At this time, straighten and pull the indicator assembly forward so that the connector connecting the MAIN assembly and the indicator assembly is not damaged.

■ Mounting the Integral indicator

Integral Indicator can be installed in the following three directions.



F0603.ai

Figure 6.3 Installation Direction of Indicator

1. Place the Indicator assembly in desired direction over the MAIN assembly.
2. Align the mounting hole of the Indicator assembly with the stud bolt hole, and carefully insert the indicator into the connector in a straight manner so that the connector is not damaged.
3. Tighten the two nuts that secure the indicator.
4. Mount the cover.

6.4 Troubleshooting

When the measured value is found abnormal, follow the troubleshooting flowchart below. If the complex nature of the trouble means that the cause cannot be identified using the following flowchart, refer the matter to our service personnel.

6.4.1 Basic Troubleshooting Flow

When the process measurement is found to be abnormal, it is necessary to determine whether the input temperature is out of range, the sensor has failed or being damaged, or the unit has been improperly wired. If it is suspected that the measurement system is the source of the problem, use the flowchart to identify the affected area and determine how to proceed.

In these troubleshooting steps, the self diagnostic function provides helpful solutions to the problem, refer to the instructions in Section 6.5 for details.

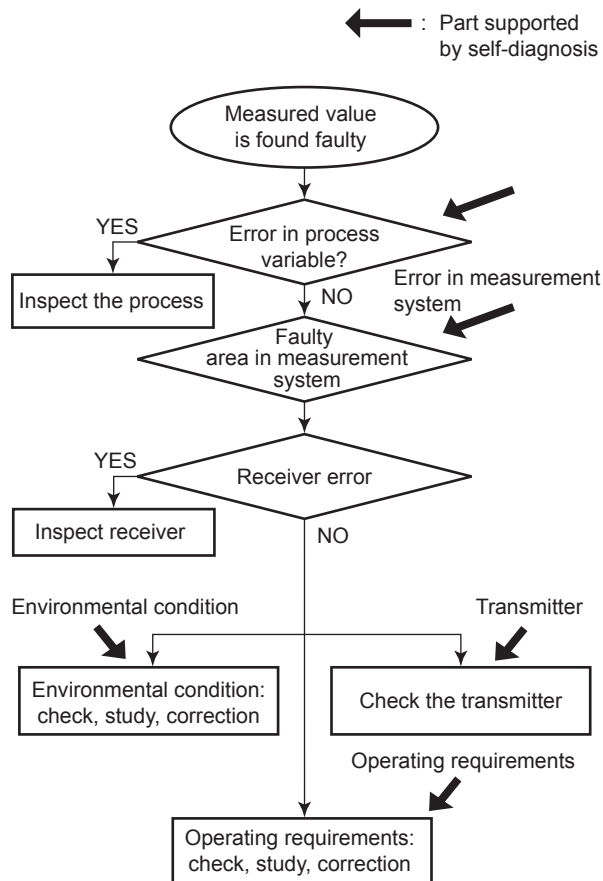
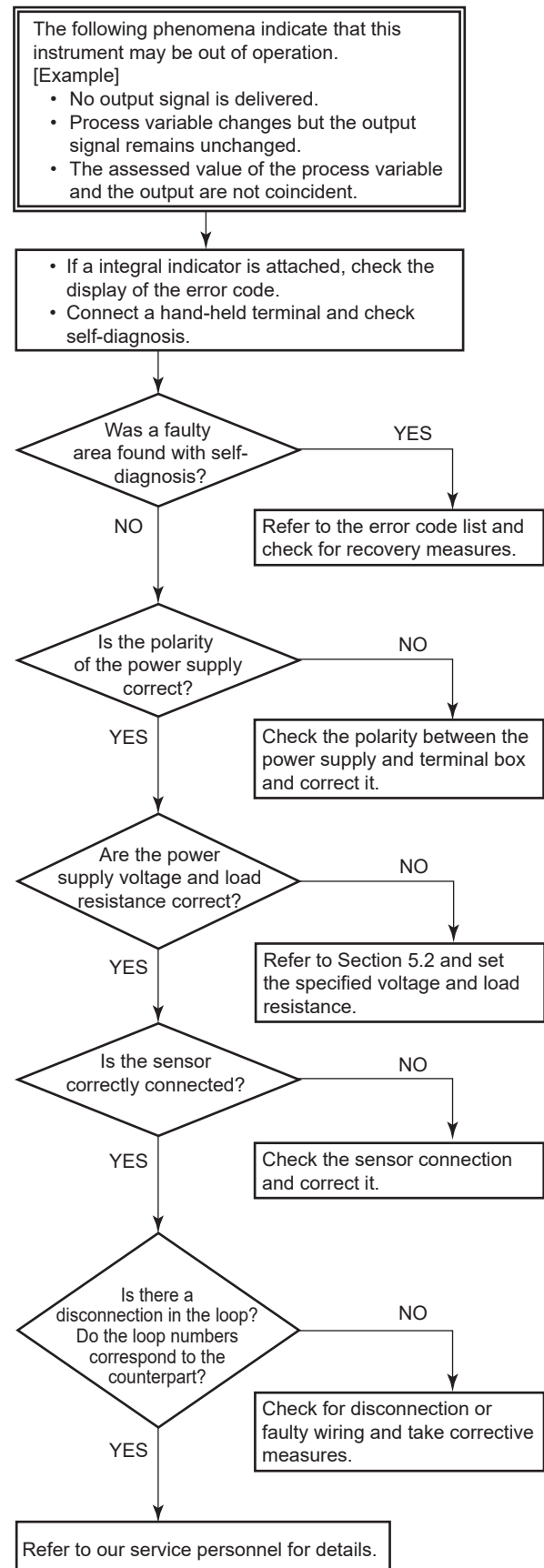


Figure 6.4 Basic Flow and Self-diagnosis

F0604.ai

6.4.2 Example of Troubleshooting Flow



F0605.ai

Figure 6.5 Example of Troubleshooting Flow

Table 6.3 Problems and Causes

Observed Problems	Possible Cause	Related Parameter (HART)	Related Parameter (FF)	Related Parameter (BRAIN)
Output fluctuates greatly.	Span is too narrow.	PV LRV PV URV	—	E10:PV LRV E11:PV URV
	Input adjustment by user was not correctly done.	reset Sensor1(2) Trim	Sensor1 Trim Sensor2 Trim	I16:S1 ADJ CLR I26:S2 ADJ CLR
	Output adjustment by user was not correctly done.	reset AO Trim	—	I33:OUT ADJ CLR
Transmitter outputs fixed current.	The transmitter is in manual (test output) mode.	exec Loop Test enable Dev Var Sim	SIM_ENABLE_MSG	F10:OUTPUT MODE I30:OUTPUT
	Output adjustment by user was not correctly done.	reset AO Trim	—	I33:OUT ADJ CLR
Output is reversed. (See note 1)	LRV is greater than URV.	PV LRV PV URV	—	E10:PV LRV E11:PV URV
Parameters cannot be changed.	The transmitter is in write protect status.	Write Protect	WRITE_LOCK	G40:WRT PROTECT G41:WRT ENABLE
Sensor backup function doesn't work correctly.	Configuration of Sensor1 and Sensor2 is not correct.	Sns1(2) Probe Type Sns1(2) Wire Status group2 Mask Status group3 Mask	SENSOR_TYPE_1(2) SENSOR_ CONNECTION_1(2) SENSOR_STATUS_ MASK_3 SENSOR_STATUS_ MASK_4	D10:SENSOR1 TYPE D11:SENSOR1 WIRE D30:SENSOR2 TYPE D31:SENSOR2 WIRE K10:S1 FAIL MASK K11:S2 FAIL MASK K12:S1 SHRT MASK K13:S2 SHRT MASK K23:BKUP S1 MASK K24:BKUP S2 MASK
	Sensor backup mode is not enabled.	PV is	BACKUP_VALUE	B10:PV is
Output damping doesn't work.	Damping time constant is set to "0 second."	AO Damping	PV_FTIME	E20:AO DAMP

Note 1: If the reversed output is desired and necessary setting was done by user, it is not considered as a problem.

Table 6.4 Problems and Countermeasures

Observed Problems	Possible Cause	Countermeasure
Output fluctuates greatly.	Span is too narrow.	Check the range, and change the settings to make the span larger.
	Input adjustment by user was not correctly done.	Clear the user adjustment (Sensor trim) value or set it to off.
	Output adjustment by user was not correctly done.	Clear the user adjustment (output trim) value or set it to off.
Transmitter outputs fixed current.	The transmitter is in manual (test output) mode.	Release manual mode. (Make the transmitter return to Automatic Mode)
	Output adjustment by user was not correctly done.	Clear the user adjustment (output trim) value or set it to off.
Output is reversed. (See note 1)	LRV is greater than URV.	Set the correct value to URV and LRV.
Parameters cannot be changed.	The transmitter is in write protect status.	Release write protect.
Sensor backup function doesn't work correctly.	Configuration of Sensor1 and Sensor2 is not correct.	• Check the type and wire settings for Sensor1 and Sensor2. • Check the connection of Sensor1 and Sensor2.
	Sensor backup mode is not enabled.	Change PV mapping "Sensor Backup."
Output damping doesn't work.	Damping time constant is set to "0 second."	Set correct value.

Note 1: If the reversed output is desired and necessary setting was done by user, it is not considered as a problem.

6.5 Integral Indicator and Error Display

For temperature transmitters equipped with an integral indicator, errors in the temperature sensor or the transmitter cause an integral indicator to call up the applicable error code. Table 6.5 lists the error codes for HART and BRAIN. Table 6.7 lists the error codes for Foundation fieldbus.

Table 6.5 List of Error Codes (HART and BRAIN)

Alarm Number	Indicator Message	Cause	Output operation during error
AL.00	CPU.ERR	MAIN CPU failed	According to the transmitter failure output (burnout) Communication disabled
AL.01	SENSOR	Sensor non-volatile memory verifies alarm	According to the transmitter failure output (burnout) Communication enabled
AL.02	TMP.MEM	Non-volatile memory of the TEMP ASSY verify alarm	
AL.03	AD.CONV	Input circuit hardware failed	
AL.04*3	CAL.ERR	MAIN ASSY memory failed	
AL.05	CAL.ERR	TEMP ASSY memory failed	
AL.06	TMP.ERR	TEMP ASSY voltage failed	
AL.07	COM.EEP	Communication non-volatile memory verifies alarm	Continue to operate and output
AL.08	TMP.MEM	Non-volatile memory of the TEMP ASSY verifies alarm	
AL.09	COM.ERR	Internal communication failed	According to the transmitter failure output (burnout) Communication enabled
AL.10	S.1.FAIL	Sensor 1 failed or disconnected from terminal block	Refer table 6.6
AL.11	S.2.FAIL	Sensor 2 failed or disconnected from terminal block	Refer table 6.6
AL.12*1	S.1.SHRT	Sensor 1 short-circuited	Refer table 6.6
AL.13*1	S.2.SHRT	Sensor 2 short-circuited	Refer table 6.6
AL.14*1	S.1.CORR	Sensor 1 corroded	Continue to operate and output
AL.15*1	S.2.CORR	Sensor 2 corroded	Continue to operate and output
AL.20	S.1.SGNL	Sensor 1 input is out of measurable range.	Continue to operate and output
AL.21	S.2.SGNL	Sensor 2 input is out of measurable range.	Continue to operate and output
AL.22*4	TERMNL	Terminal block temperature is abnormal. Or terminal block temperature sensor failed	Refer table 6.6
AL.23	S.1.FAIL	During sensor backup operation, Sensor1 fails, it has output Sensor2	Operating to the backup side. When the backup side also fails, output is according to burnout setting.
AL.24	S.2.FAIL	During sensor backup operation, Sensor2 fails	Continue to operate and output
AL.25	DRIFT	Sensor drift	Continue to operate and output
AL.26*1	S.1.CYCL	Temperature cycling times of Sensor1 exceeds the threshold	Continue to operate and output
AL.27*1	S.2.CYCL	Temperature cycling times of Sensor2 exceeds the threshold	Continue to operate and output
AL.30	PV LO	PV value is below the range limit setting	Lower limit 3.68mA (-2%)
AL.31	PV HI	PV value is above the range limit setting	Upper limit 20.8mA (105%)
AL.40	S.1 LO	Measured temperature of sensor 1 is too low	Continue to operate and output
AL.41	S.1 HI	Measured temperature of sensor 1 is too high	Continue to operate and output
AL.42	S.2 LO	Measured temperature of sensor 2 is too low	Continue to operate and output
AL.43	S.2 HI	Measured temperature of sensor 2 is too high	Continue to operate and output
AL.44	AMBNT.L	Ambient temperature is below -40 degree C	Continue to operate and output
AL.45	AMBNT.H	Ambient temperature is above 85 degree C	Continue to operate and output
AL.50	LRV LO	LRV setting is below the sensor operating temperature range	Continue to operate and output

Alarm Number	Indicator Message	Cause	Output operation during error
AL.51	LRV HI	LRV setting is above the sensor operating temperature range	Continue to operate and output
AL.52	URV LO	URV setting is below the sensor operating temperature range	Continue to operate and output
AL.53	URV HI	URV setting is above the sensor operating temperature range	Continue to operate and output
AL.54	SPAN.LO	It is set below recommended minimum span	Continue to operate and output
AL.60	PV.CFG	There is a setting error in the sensor that is mapped to the PV	Hold the output of the previous error When it occurs at startup, hold at 4mA
AL.61*2	S.1 CFG	There is a false set to sensor1	Continue to operate and output
AL.62*2	S.2 CFG	There is a false set to sensor2	Continue to operate and output

*1: Applicable only for YTA710.

*2: Applicable only for HART.

*3: In software revision HART R1.03.01 or earlier or BRAIN R1.01.01, AL04 may be generated even when abnormality or disconnection of the terminal block temperature sensor occurs.

*4: In software revision HART R1.03.01 or earlier or BRAIN R1.01.01, even if abnormality or disconnection of the terminal block temperature sensor occurs, AL22 may not be output and AL04 may be generated.

Table 6.6 Output operation (HART and BRAIN)

Current output mapping	S.1.FAIL	S.2.FAIL	S.1.SHRT*3	S.2.SHRT*3	TERMNL
SENS.1	Sensor Burnout	*1	Sensor Burnout	*1	*1*4
S.1-TER	Sensor Burnout	*1	Sensor Burnout	*1	Sensor Burnout*4
TERM	*1	*1	*1	*1	Sensor Burnout*4
SENS.2	*1	Sensor Burnout	*1	Sensor Burnout	*1*4
S.2-TER	*1	Sensor Burnout	*1	Sensor Burnout	Sensor Burnout*4
S.1-S.2	Sensor Burnout	Sensor Burnout	Sensor Burnout	Sensor Burnout	*1*4
S.2-S.1	Sensor Burnout	Sensor Burnout	Sensor Burnout	Sensor Burnout	*1*4
AVG	Sensor Burnout	Sensor Burnout	Sensor Burnout	Sensor Burnout	*1*4
BACKUP	*2	*2	*2	*2	*1*4

*1: Continue to operate and output.

*2: When both sensor1 and sensor2 occur error, output is burnout.

*3: Applicable only for YTA710.

*4: In software revision HART R1.03.01 or earlier or BRAIN R1.01.01, fixed output value just before the alarm occurred.

Table 6.7 List of Error Codes (FF)

Alarm Number	Indicator Message	Cause
AL.00	CPU.ERR	MAIN CPU failed
AL.01	SENSOR	Sensor non-volatile memory verifies alarm
AL.02	TMP.MEM	Non-volatile memory of the TEMP ASSY verifies alarm
AL.03	AD.CONV	Input circuit hardware failed
AL.04	CAL.ERR	MAIN ASSY memory failed
AL.05	CAL.ERR	TEMP ASSY memory failed
AL.06	TMP.ERR	TEMP ASSY voltage failed
AL.07	COM.EEP	Communication non-volatile memory verifies alarm
AL.08	TMP.MEM	Non-volatile memory of the TEMP ASSY verifies alarm
AL.09	COM.ERR	Internal communication failed
AL.10	S.1.FAIL	Sensor 1 failed or disconnected from terminal block
AL.11	S.2.FAIL	Sensor 2 failed or disconnected from terminal block
AL.12*1	S.1.SHRT	Sensor 1 short-circuited
AL.13*1	S.2.SHRT	Sensor 2 short-circuited
AL.14*1	S.1.CORR	Sensor 1 corroded
AL.15*1	S.2.CORR	Sensor 2 corroded
AL.20	S.1.SGNL	Sensor 1 input is out of measurable range.
AL.21	S.2.SGNL	Sensor 2 input is out of measurable range.
AL.22	TERMNL	Terminal block temperature is abnormal. Such as abnormal or disconnection of the terminal block temperature sensor
AL.23	S.1.FAIL	During sensor backup operation, Sensor1 fails, it has output Sensor2
AL.24	S.2.FAIL	During sensor backup operation, Sensor2 fails
AL.25	DRIFT	Sensor drift
AL.26*1	S.1.CYCL	Temperature cycling times of Sensor1 exceeds the threshold
AL.27*1	S.2.CYCL	Temperature cycling times of Sensor2 exceeds the threshold
AL.40	S.1 LO	Measured temperature of sensor 1 is to low
AL.41	S.1 HI	Measured temperature of sensor 1 is to high
AL.42	S.2 LO	Measured temperature of sensor 2 is to low
AL.43	S.2 HI	Measured temperature of sensor 2 is to high
AL.44	AMBNT.L	Ambient temperature is below -40 degree C
AL.45	AMBNT.H	Ambient temperature is above 85 degree C
AL.61	S.1 CFG	There is a false set to sensor1
AL.62	S.2 CFG	There is a false set to sensor2
AL.100	NOT.RDY	Any function block is not scheduled
AL.101	AI1 HH	HI HI alarm occurs in AI1 block
AL.101	AI1 LL	LO LO alarm occurs in AI1 block
AL.102	AI2 HH	HI HI alarm occurs in AI2 block
AL.102	AI2 LL	LO LO alarm occurs in AI2 block
AL.103	AI3 HH	HI HI alarm occurs in AI3 block
AL.103	AI3 LL	LO LO alarm occurs in AI3 block
AL.104	AI4 HH	HI HI alarm occurs in AI4 block
AL.104	AI4 LL	LO LO alarm occurs in AI4 block
AL.105	PID1.HH	HI HI alarm occurs in PID1 block
AL.105	PID1.LL	LO LO alarm occurs in PID1 block
AL.106	PID2.HH	HI HI alarm occurs in PID2 block
AL.106	PID2.LL	LO LO alarm occurs in PID2 block
AL.110	RS O/S	The actual mode of the RS block is O/S.
AL.111	STB O/S	The actual mode of the STB block is O/S.
AL.112	LTB O/S	The actual mode of the LTB block is O/S.
AL.113	MTB O/S	The actual mode of the MTB block is O/S.
AL.114	AI1 O/S	The actual mode of the AI1 block is O/S.
AL.115	AI2 O/S	The actual mode of the AI2 block is O/S.
AL.116	AI3 O/S	The actual mode of the AI3 block is O/S.

Alarm Number	Indicator Message	Cause
AL.117	AI4 O/S	The actual mode of the AI4 block is O/S.
AL.118	SCHEDL	Execution of AI1 is not scheduled.
AL.119	SCHEDL	Execution of AI2 is not scheduled.
AL.120	SCHEDL	Execution of AI3 is not scheduled.
AL.121	SCHEDL	Execution of AI4 is not scheduled.
AL.122	STB.MAN	The actual mode of the STB block is Man.
AL.130	DI1 O/S	The actual mode of the DI1 block is O/S.
AL.130	DI1.MAN	The actual mode of the DI1 block is Man.
AL.130	SCHEDL	Execution of DI1 is not scheduled.
AL.130	DI1.SIM	Simulate of the DI1 block is active.
AL.131	DI2 O/S	The actual mode of the DI2 block is O/S.
AL.131	DI2.MAN	The actual mode of the DI2 block is Man.
AL.131	SCHEDL	Execution of DI2 is not scheduled.
AL.131	DI2.SIM	Simulate of the DI2 block is active.
AL.132	DI3 O/S	The actual mode of the DI3 block is O/S.
AL.132	DI3.MAN	The actual mode of the DI3 block is Man.
AL.132	SCHEDL	Execution of DI3 is not scheduled.
AL.132	DI3.SIM	Simulate of the DI3 block is active.
AL.133	DI4 O/S	The actual mode of the DI4 block is O/S.
AL.133	DI4.MAN	The actual mode of the DI4 block is Man.
AL.133	SCHEDL	Execution of DI4 is not scheduled.
AL.133	DI4.SIM	Simulate of the DI4 block is active.
AL.134	PID1.O/S	The actual mode of the PID1 block is O/S.
AL.134	PID.MAN	The actual mode of the PID1 block is Man.
AL.134	SCHEDL	Execution of PID1 is not scheduled.
AL.134	PID.BYP	The bypass action for PID1 is active.
AL.135	PID2.O/S	The actual mode of the PID2 block is O/S.
AL.135	PID.MAN	The actual mode of the PID2 block is Man.
AL.135	SCHEDL	Execution of PID2 is not scheduled.
AL.135	PID.BYP	The bypass action for PID2 is active.
AL.136	SC O/S	The actual mode of the SC block is O/S.
AL.136	SC MAN	The actual mode of the SC block is Man.
AL.136	SCHEDL	Execution of SC is not scheduled.
AL.137	IS O/S	The actual mode of the IS block is O/S.
AL.137	IS MAN	The actual mode of the IS block is Man.
AL.137	SCHEDL	Execution of IS is not scheduled.
AL.138	AR O/S	The actual mode of the AR block is O/S.
AL.138	AR MAN	The actual mode of the AR block is Man.
AL.138	SCHEDL	Execution of AR is not scheduled.
AL.150	AI1.SIM	Simulate of the AI1 block is active.
AL.151	AI2.SIM	Simulate of the AI2 block is active.
AL.152	AI3.SIM	Simulate of the AI3 block is active.
AL.153	AI4.SIM	Simulate of the AI4 block is active.
AL.154	AI1.MAN	The actual mode of the AI1 block is Man.
AL.155	AI2.MAN	The actual mode of the AI2 block is Man.
AL.156	AI3.MAN	The actual mode of the AI3 block is Man.
AL.157	AI4.MAN	The actual mode of the AI4 block is Man.

*1: Applicable only for YTA710.

7. General Specifications

Please refer to the following General Specifications list for the specifications, model, suffix and option codes, and external dimensions of each product.

The General Specifications can be downloaded from the website of Yokogawa.

Website address: <https://www.yokogawa.com/solutions/products-platforms/field-instruments/>

■ General Specifications List

Model	Document Title	Document No.
YTA610	YTA610 Temperature Transmitter	GS 01C50H01-01EN
YTA710	YTA710 Temperature Transmitter	GS 01C50G01-01EN

If you cannot find it on our website, please contact YOKOGAWA office.

Revision Information

- Title : YTA610 and YTA710 Temperature Transmitters (Hardware)
- Manual No. : IM 01C50G01-01EN

Edition	Date	Page	Revised Item
1st	June 2016	—	New publication.
2nd	Oct. 2016	—	Add YTA610. Incorporate manual change 16-028 and 16-045.
		1-1	Add document No. of GS 01C50H01-01EN.
		1-5	Add YTA610 to the table.
		2-4	Add ATEX Intrinsically safe approval.
		2-5	Revise the name plate.
		2-6 & 2-7	Add name plate (intrinsically safe approval and Flameproof and Dust ignition approval).
		2-7	Add IECEx intrinsically safe approval.
		2-9	Add FM (US) intrinsically safe approval/non-incendive approval.
		2-10	Add FM (Canada) intrinsically safe approval/non-incendive approval.
		2-13 to 2-24	Add "2.7.5 Control Drawing".
		3-4	Add note for Ni120.
		6-1	Revise the description of IMPORTANT.
		6-3	Delete "6.3.2 Replacement of MAIN and TEMP Assembly".
		6-6 & 6-7	Add *1 to the Table 6.4.
		6-7	Add *3 to the Table 6.5.
		6-8 & 6-9	Add *1 to the Table 6.6.
		7-1	Revise 5 year stability.
		7-2	Revise Sensor-Diagnostics.
			Add software download class.
			Add SIL certification.
		7-3	Revise supply voltage requirements.
		7-4	Revise accuracy of type N. Delete Ni120.
		7-5 to 7-9	Add YTA610 specifications.
		7-10	Add YTA610.
			Add *3 to the optional specifications table.
		7-11 to 7-15	Add intrinsically safe and non-incendive type (KU2, KU25, SU2, SU25, FU1, FU15, CU1, and CU15).
		7-16	Add YTA610.
3rd	Dec. 2017	1-1	Add document No. of IM 01C50G01-02EN, IM 01C50G01-01P and IM 01C50G01-01K.
		2-4	Add Fieldbus Type.
		2-5 & 2-8	Change applicable standards and Type of Protection and Marking Code, Add Supply Voltage and Output Signal specifications.
		2-6 & 2-7	Change Name Plate.
		2-7	IECEx intrinsically safe approval Items to be changed.
		2-15 & 2-16	Add Control Drawing.
		2-27	Add Immunity influence during the test.
		3-4	Delete *1 Applicable only for YTA610.
		7-2	Add Immunity influence during the test, Add EU RoHS Directive.
		7-4	Add Ni120.
		7-7	Add Immunity influence during the test, Add EU RoHS Directive and add SIL Certification.
		7-9	Change Note1.
		7-12	Revise ATEX Intrinsically safe.
		7-13	Revise IECEx.
		7-16	Add NEPSI (NF2, NS2, NS25).
		7-17	Add INMETRO (UF1, US1, US15).
		7-18	Add KOSHA (PF2, PS2, PS25).

Edition	Date	Page	Revised Item
4th	Mar. 2018	2-5	Revise ATEX intrinsically safe approval
			Add “Ex ic” of ATEX intrinsically safe approval 4-20mA type
		2-8	Add “Ex ic” of IECEx intrinsically safe approval
			Revise IECEx intrinsically safe approval
		2-10	Revise FM (US) intrinsically safe approval/nonincendive
		2-11	Revise FM (Canada) intrinsically safe approval/nonincendive approval
		2-14 to 2-29	Revise Control Drawing
		6-5	Add Table 6.4
		7-1 to 7-4	Add BRAIN Type.
		7-13	Add R1 Option and VE, VR Option.
		7-14	Add Table 7.5
		7-15	Revise ATEX
			Add Ex ic
		7-16	Revise IECEx
			Add Ex ic
5th	June 2019	1-1	Add reference for functional safety
		3-1	Add Nut to 3.PART
		3-2	Delete (HART/BRAIN) Add FF
		3-4, 3-5	Add Character and Selection.
		3-6	Change Parameters Configuration
		5-2	Add Note
		6-5	Delete (HART/FF)
		6-6,6-7	Correction of errors
		7-1 to 7-13	Change Standard specification contents
6th	Apr. 2020	2-4 to 2-7	Revise ATEX Certification
		2-9 to 2-11	Revise IECEx Certification
		2-12 to 2-13	Revise FM Certification
		2-14 to 2-15	Revise CSA Certification
		2-17 to 2-19	Changed Control Drawing
		2-27	Changed Control Drawing
		2-32	Changed Control Drawing
		2-33	Add EU RoHS Directive
		7-1	Delete the description for general specifications and add the General Specifications list.
7th	Mar. 2021	2-4 to 2-8	Revise ATEX Certification
		2-9 to 2-12	Revise IECEx Certification
		2-13 to 2-14	Revise FM Certification
		2-15 to 2-16	Revise CSA Certification
		2-34	Revise EU RoHS Directive
8th	Dec. 2025	1-3	Add (h) UKCA mark.
		1-4	Change the contents of Control of Pollution Caused by the Product
		2-1	Change the figures of mounting brackets
		2-4 to 2-8	Revise ATEX Certification
		2-9 to 2-12	Revise IECEx Certification
		2-16	Revise CSA Explosion-proof Type Certification
		2-34	Update 2.9 Safety Requirement Standards
		2-34	Update 2.10 EU RoHS Directive.
		4-1	Change the figures of mounting brackets