User's Manual

YTA Series

YTA610 and YTA710
NEPSI Certification
[Option code: /NS2, /NS25 and /NF2]

IM 01C50G01-02EN

YOKOGAWA
Yokogawa Electric Corporation

IM 01C50G01-02EN
5th Edition

1. INTRODUCTION

Thank you for purchasing the YTA610 and YTA710 Temperature transmitters. This manual contains important note and handling cautions for the YTA Temperature Transmitters with NEPSI certification, option code /NS2, NS25 and /NF2. Refer to the following user's manuals for standard specifications, functions, handling cautions, and operations, etc.

Table 1. List of User's Manuals

Title	Document No.
YTA610 and YTA710 Temperature Transmitters (Hardware)	IM 01C50G01-01EN
YTA610 and YTA710 Temperature Transmitter (HART Protocol)	IM 01C50T01-02EN
YTA610 and YTA710 Temperature Transmitter (Fieldbus Communication)	IM 01C50T02-02EN

2. NEPSI Certification

(1) Technical Data

a) NEPSI Intrinsically Safe Type

Caution for NEPSI Intrinsically safe type

Note 1. Certification information

① 4-20mA type

Model YTA610 and YTA710 with /NS2 temperature transmitters for potentially explosive atmospheres:

- Certificate No.: GYJ25.1396X
- The symbol "X" placed after the certificate number indicates that the equipment is subject to the following special conditions for safe use.
- Applicable Standard: GB/T 3836.1, GB/T 3836.4
- Type of Protection and Marking code:
  Ex ia IIC T4···T5 Ga
  Ex ic IIC T4···T5 Gc
  Ex ia [ia Da] IIIC T135°C Db
- Temperature Class: T4, T5
- Ambient Temperature:
  –40 to 70°C for T4, –40 to 50°C for T5(Ex ia)
  –30 to 70°C(Ex ia [ia Da])
  –30 to 70°C for T4, –30 to 50°C for T5(Ex ic)
- Enclosure:
  IP66 in accordance with GB/T 3836.1
- Overvoltage category: I
- Electrical parameters (Ex ia)
  [Supply/Output circuit]
  Terminals: +, -
  Ui = 30 V
  Ii = 200 mA
  Pi = 1.0 W
  Ci = 22 nF
  Li = 0 mH
  [Sensor circuit]
  Terminals: 1, 2, 3, 4, 5
  Uo = 6 V
  Io = 90 mA
  Po = 135 mW
  Co = 10 µF
  Lo = 3.9 mH
- Electrial parameters (Ex ic):
  [Supply/Output circuit]
  Terminals: +, -
  Ui = 30 V
  Ci = 22 nF
  Li = 0 mH
  [Sensor circuit]
  Terminals: 1, 2, 3, 4, 5
  Uo = 6 V
  Io = 90 mA
  Po = 135 mW
  Co = 10 µF
  Lo = 3.9 mH
- Dielectric strength: 500 V a.c.r.m.s., (See special conditions for safe use)

② Fieldbus type
Model YTA610 and YTA710 with /NS25 temperature transmitters for potentially explosive atmospheres:

- Certificate No.: GYJ25.1396X
- The symbol “X” placed after the certificate number indicates that the equipment is subject to the following special conditions for safe use.
- Applicable Standard:
  GB/T 3836.1, GB/T 3836.4
- Type of Protection and Marking Code:
  Ex ia IIC T4 Ga
  Ex ic IIC T4 Gc
  Ex ia [ia Da] IIIC T135°C Db
- Temperature Class: T4
- Ambient Temperature:
  –55 to 60°C for T4(Ex ia)
  –30 to 60°C(Ex ia [ia Da])
  –30 to 70°C for T4(Ex ic)
- Enclosure:
  IP66 in accordance with GB/T 3836.1
- Overvoltage category: I
- Electrical parameters (Ex ia)
  [Supply/output circuit]
  Terminals: +, -
  FISCO field device or Ui = 30 V
  Ii = 300 mA
  Pi = 1.2 W
  Ci = 2.2 nF
  Li = 0 mH
  [Sensor input circuit]
  Terminals: 1, 2, 3, 4, 5
  Uo = 6 V
  Io = 90 mA
  Po = 135 mW
  Co = 10 µF
  Lo = 3.9 mH
- Electrial parameters (Ex ic)
  [Supply/Output circuit]
  Terminals: +, -
  FISCO field device or Ui = 32 V
  Ci = 2.2 nF
  Li = 0 mH
  [Sensor circuit]
  Terminals: 1, 2, 3, 4, 5
  Uo = 6 V
  Io = 90 mA
  Po = 135 mW
  Co = 10 µF
  Lo = 3.9 mH
- Dielectric strength: 500 V a.c.r.m.s., (See special conditions for safe use)

Note 2. Special condition for safe use

WARNING

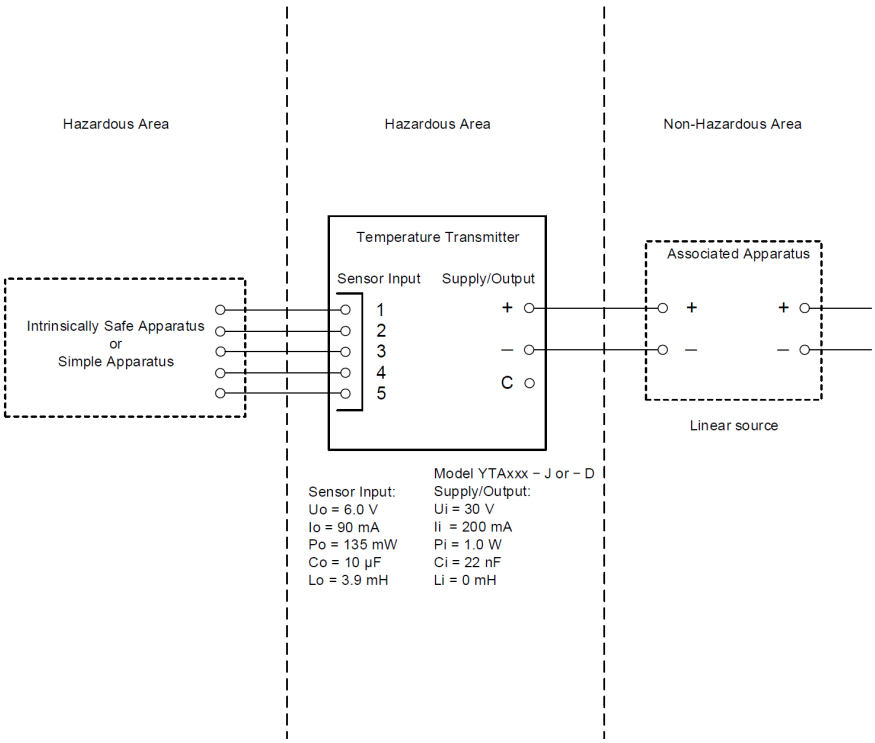
- When the enclosure of the Temperature Transmitter is made of aluminum alloy, if it is mounted in an area where the use of EPL Ga equipment is required, it must be installed such that, even in the event of rare incidents, an ignition source due to impact and/or friction sparks is excluded
- Electrostatic charges on the non-metallic parts (excluding glass parts) or coated parts of the Temperature Transmitter shall be avoided.
- See information for Ambient Temperature.
- 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. When the surge absorber is used, the earthing facility should be in accordance with relative Clause of GB 3836.15-2024.

WARNING

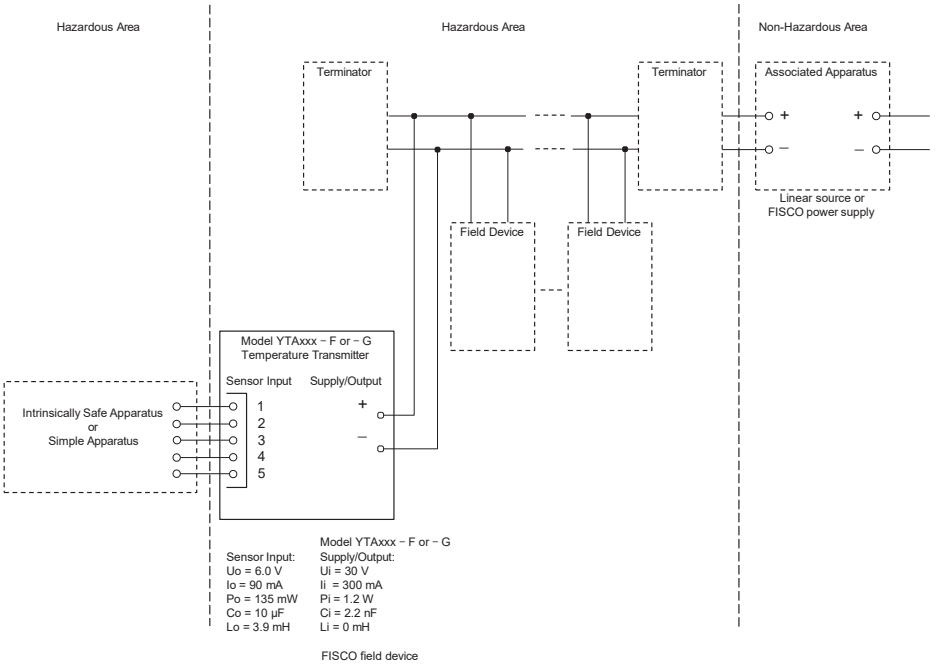
WARNING: ELECTROSTATIC CHARGE MAY CAUSE AN EXPLOSION HAZARD. AVOID ANY ACTIONS THAT CAUSE THE GENERATION OF ELECTROSTATIC CHARGE, SUCH AS RUBBING WITH A DRY CLOTH ON COATING FACE OF THE PRODUCT.

Note 3. Control Drawing

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



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



Special conditions for safe 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
– See information for Ambient Temperature.
– 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. When the surge absorber is used, the earthing facility should be in accordance with relative Clause of GB 3836.15-2024.

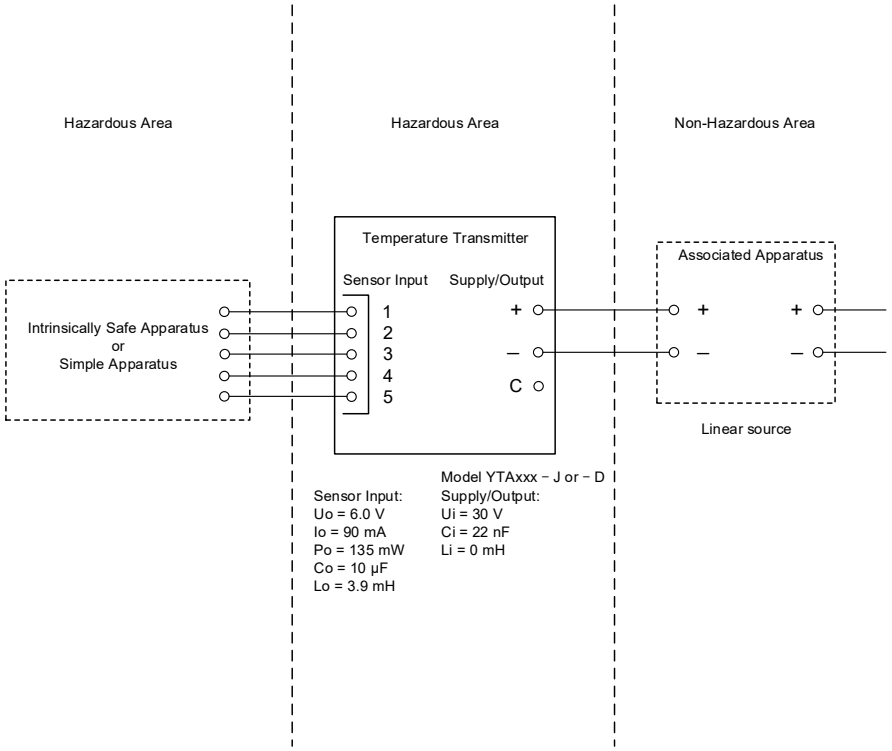
WARNING–ELECTROSTATIC CHARGE MAY CAUSE AN EXPLOSION HAZARD. AVOID ANY ACTIONS THAT CAUSE THE GENERATION OF ELECTROSTATIC CHARGE, SUCH AS RUBBING WITH A DRY CLOTH ON COATING FACE OF THE PRODUCT.

WARNING –WHEN USED IN AREAS WITH AN EXPLOSIVE DUST ATMOSPHERE AND THE AMBIENT TEMP. ≥68°C, USE HEAT-RESISTING CABLES AND CABLE GLANDS ≥75°C

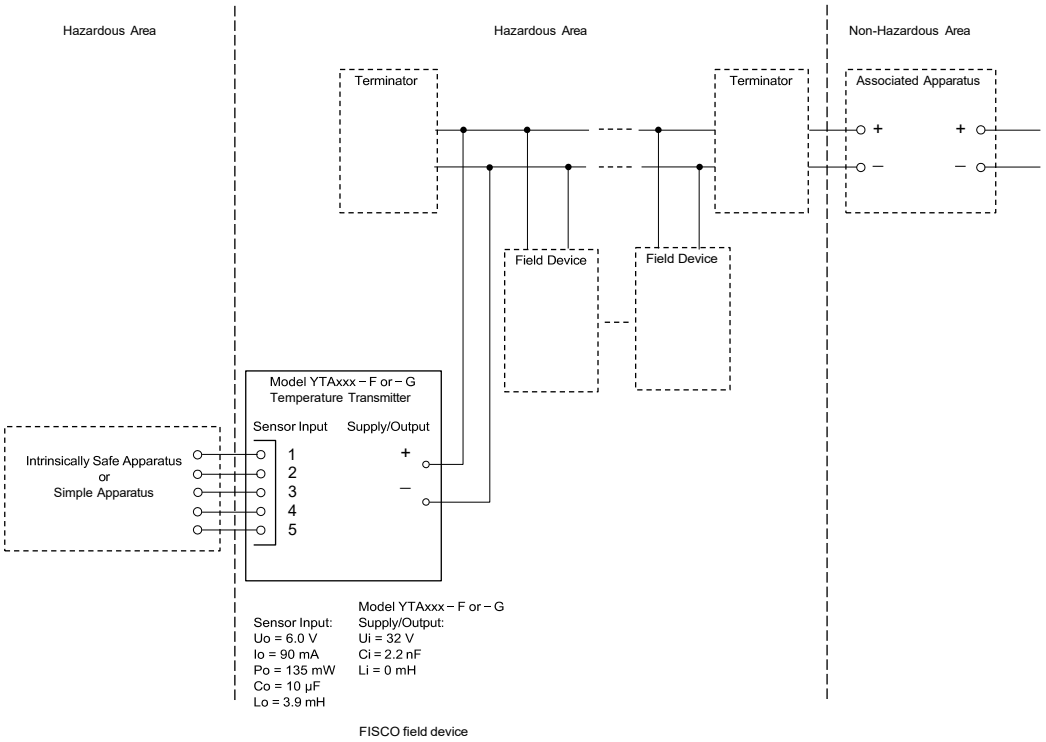
Notes:

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.

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



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



Special conditions for safe use:

– Electrostatic charges on the non-metallic parts (excluding glass parts) or coated parts of the Temperature Transmitter shall be avoided.
– See information for Ambient Temperature.
– 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. When the surge absorber is used, the earthing facility should be in accordance with relative Clause of GB 3836.15-2024.

WARNING –WHEN THE AMBIENT TEMP. ≥68°C, USE HEAT-RESISTING CABLES AND CABLE GLANDS ≥75°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:

1. The surge absorber F9220AR can be removed from, or added to the equipment.
2. The equipment must be installed so that pollution degree 2 in accordance with IEC 60664-1 is maintained inside the enclosure.

3. 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.
4. The push-button switches on the integral indicator must be operated only when an explosive atmosphere is not present.

Note 4. 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. ≥68°C, use heat-resisting cables and cable glands ≥75°C (applicable only when Ex iaD or Ex ic is selected)
- Potential electrostatic charging hazard (see 6)

1 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.

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

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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 ia [ia Da] IIIC T135°C Db
☐ 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 Installation, use, and maintenance of the equipment shall be done in accordance with GB/T 3836.13, GB 3836.15, GB 3836.16, GB/T 3836.18, GB 50257 and GB 15577, and relevant local codes/requirements.

8 Only personnel authorized by Yokogawa Electric Corporation can repair the equipment.

9 The enclosure provides a degree of protection of IP66 in accordance with GB/T 3836.1, or IP67 in accordance with GB/T 4208.

b) NEPSI Flameproof Type

Caution for NEPSI Flameproof Type

Note 1. Model YTA610/NF2 and YTA710/NF2 temperature transmitters for potentially explosive atmospheres:

- Applicable Standard: GB/T 3836.1-2021, GB/T 3836.2-2021, GB/T 3836.31-2021
- Certificate No.: GYJ26.1105X
- Type of Protection and Marking Code: Ex db IIC T5/T6 Gb, Ex tb IIIC T70°C/T90°C Db
- Temperature Class: T5, T6
- Ambient Temperature for Gas Atmospheres: –40 to 80°C for T5, –40 to 75°C for T6
- Ambient Temperature for Dust Atmospheres: –30 to 65°C for T70°C, –30 to 80°C for T90°C
  Enclosure: IP66 in accordance with GB/T 3836.1-2021

Note 2. Electrical Data

- 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 3. Installation

- All wiring shall comply with local installation Requirements.
- When the one type of protection is installed, tick the box of the selected type of protection on the label when the transmitter is installed to avoid confusion.
  e.g. In case of selecting “db”, not “tb”
  ☑ Ex db IIC T5/T6 Gb
  ☐ Ex tb IIIC T70°C /T90°C Db

Note 4. Operation

- Keep strictly the “WARNING” on the label on the transmitter.
  WARNING: AFTER DE- ENERGIZING, DELAY 10 MINUTES BEFORE OPENING. WHEN THE AMBIENT TEMP. ≥70°C, USE THE HEAT- RESISTING CABLE & CABLE GLANDS ≥90°C. POTENTIAL ELECTROSTATIC CHARGING HAZARD. -SEEUSER’S MANUAL BEFORE USE.
- Take care not to generate mechanical spark when access to the instrument and peripheral devices in hazardous location.

Note 5. Conditions for safe use

- The external earth connection facility shall be connected reliably.
- M20X1.5 or 1/2-14NPT thread type cable entry, adapters and/or blanking elements, certified by certification body with type of protection Ex db IIC Gb in accordance with GB/T 3836.1-2021 and GB/T 3836.2-2021, should be applied when installation in explosive gas atmosphere.
- M20X1.5 or 1/2-14NPT thread type cable entry, adapters and/or blanking elements, certified by certification body with type of protection Ex tb IIIC Db in accordance with GB/T 3836.1-2021 and GB/T 3836.31-2021, should be applied when installation in combustible dust atmosphere. At least IP6X should be guaranteed after the assembly.
- Forbid end user to change the configuration to ensure the equipment’s explosion protection performance.
- When installation, use and maintenance of Temperature Transmitter, observe following standards
  GB/T 3836.13-2021 “Explosive atmospheres - Part 13: Equipment repair, overhaul and reclamation”
  GB3836.15-2024 “Electrical atmospheres Part 15: Electrical installations in design, selection and erection”
  GB3836.16-2024 “Electrical atmospheres Part 16: Electrical installations inspection and maintenance”
  GB50257-2014”Code for construction and acceptance of electric equipment on fire and explosion hazard electrical equipment installation engineering”
  GB15577-2018 “Safety regulations for dust explosion prevention and protection”

Note 6. Special condition for safe use

WARNING

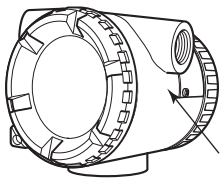
The suffix “X” placed after the certificate number indicates that this product is subject to special conditions for safe use:

- The values of the flamepaths are different from the standard values given in GB/T3836.2-2021. Repair of the equipment is only allowed when done by the manufacturer or authorized representative.
- When used in hazardous location, electrostatic discharge should be avoided.

(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



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Revision Record

Dec. 2016	1st edition	New Publication.
Oct. 2019	2nd edition	Revised edition.
Feb. 2020	3rd edition	Revised edition.
Sep. 2021	4th edition	Changed NEPSI Certificate No.
June 2026	5th edition R1	Changed NEPSI Certificate No. Certification-related corrections.