



Maximum Value for OEMsSM

NX70 Installation Instructions RTD Conversion Module

Catalog Number: NX70-RTD4

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English

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Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will OE Max Controls be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, OE Max Controls cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by OE Max Controls with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual we use notes to make you aware of safety considerations.

WARNING

Identifies information about practices or circumstances which may lead to serious personal injury or death, property damage, or economic loss.

IMPORTANT

Identifies information that is critical for successful application and understanding of the product.

ATTENTION

Identifies information about practices or circumstances that can lead to minor personal injury, property damage, economic loss, or product malfunction. However, depending on situation, failure to follow the directions accompanying this symbol may also lead to serious consequences.

Safety Instructions

Please read this manual and the related documentation thoroughly and familiarize yourself with the directions before installing, operating, performing inspection and preventive maintenance. Make sure to follow the directions correctly to ensure normal operation of the product and your safety.

WARNING

- If this product is used in a situation that may cause personal injury and/or significant product damage, implement safe measures such as use of fault-safe equipment.
- Do not use this product under any conditions exposed to explosive gases. It may cause an explosion.

ATTENTION

- Make sure to use an external device when configuring the protective circuit breakers for emergencies or interlock circuits.
 - Fasten the terminal screws tightly to ensure that the cable connection is secure. Incorrect cable connection may cause overheating and product malfunction.
 - Operate and keep the product under the allowed conditions directed in product specifications. Otherwise it may cause overheating and product malfunction.
 - Do not disassemble or remodel the product. Otherwise it may cause an electric shock or malfunction.
 - Do not touch the terminals when the power is on. Otherwise it may cause an electric shock.
-

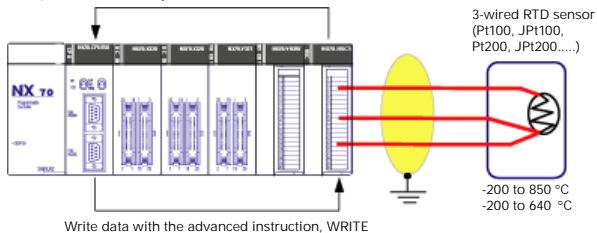
Overview

Hardware Description

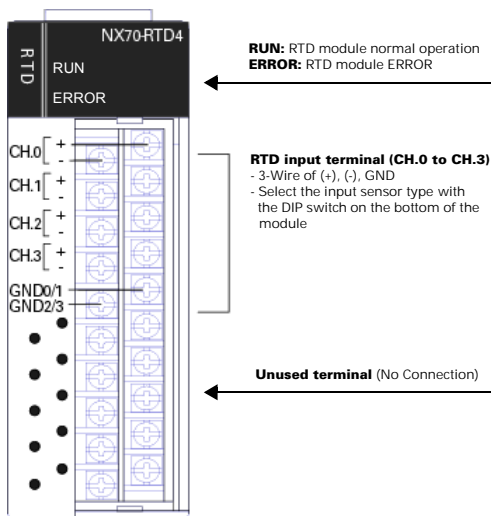


NX70 RTD Module (4CH)
NX70-RTD4

- 1) Read data with the advanced instruction, READ, or
- 2) Read data from input contacts



NX70-RTD4 (4CH, RTD input)



General Specifications

| Item | | Specifications |
|-----------------------|-----------|-------------------------------------------------------------------------------------------------|
| Temperature | Operating | 0 °C to +55 °C (32 °F to 131 °F) |
| | Storage | -25 °C to +70 °C (-13 °F to 158 °F) |
| Humidity | Operating | 30 to 85 % RH (Non-condensing) |
| | Storage | 30 to 85 % RH (Non-condensing) |
| Withstand voltage | | 500 V ac for 1 minute between I/O terminal (dc) and frame ground (power unit) |
| Insulation resistance | | 100 M Ω or more at 500 mega V dc between I/O terminal (dc) and frame ground (power unit) |
| Vibration immunity | | 10 to 55Hz, 1 cycle/minute: double amplitude of 0.75 mm, 10 minutes per axis (X, Y, Z) |
| Shock immunity | | Peak acceleration and duration 15g/11 ms, 3 times for each X, Y, Z direction. |
| Noise immunity | | 1500 Vp-p with 50ns to 1 μ s pulse width (generated by noise simulator) |
| Ambience | | No corrosive gas, no excessive dust |

ATTENTION



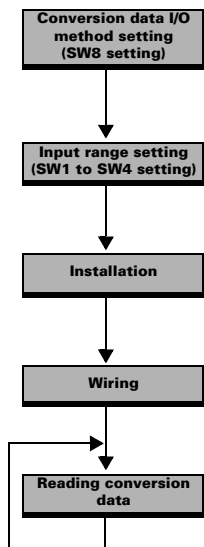
- Avoid installing analog module next to output module or power supply modules. There can be indirect interference on the module.
- Install analog modules as near the right edge of the motherboard as possible.

RTD Conversion Module Specifications

RTD (Resistive Temperature Detectors)

| Catalog number | NX70 PLC, NX70-RTD4(4 channels/module) |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RTD sensor | 3-Wire |
| Number of RTD input channels | 4 Channels |
| Digital conversion | Signed 16-bit binary (2's complement) |
| Converter type | 24-bit Σ - Δ A/D Converter |
| I/O characteristics (Temperature sensor and digital output) | ① Pt100 (a=0.00385, -200 to 850 °C => -2,000 to 8,500) ⑤ 300 Ω (10m Ω /BIT) ② Pt200, Pt500, Pt1000 ⑥ 1.2K Ω (20m Ω /BIT) ③ JPt100 (a=0.00385, -200 to 640 °C => -2,000 to 6,400) ⑦ 2000 Ω (100m Ω /BIT) ④ Jpt200, Jpt500, Jpt1000 ⑧ NI100, NI120, CU10 |
| Max. resolution | 0.1 °C, 0.1 °F, 10 m Ω , 20 m Ω |
| Overall accuracy | \pm 0.1 %/FS (25 °C) |
| Conversion speed | 60 ms/CH |
| External input impedance | 10 M Ω |
| Current source | 1 mA (Excitation Current) |
| Isolation method | Between input channel and internal circuit: DC/DC converter and photocoupler Isolation Between input channels: Non-Isolation |
| Number of I/O points | I/O contact type: 64 points input Shared memory type: 16 points input |
| Internal current consumption (5 V) | Internal power 5 V 280 mA or less |
| External connection method | 20-pin terminal block (M3.0) |

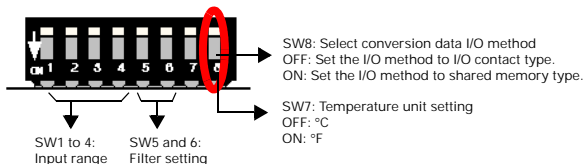
Operating Procedure



| Procedure | Operation |
|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Conversion data input method setting (SW8) | <ol style="list-style-type: none"> 1. Select conversion data input method with SW8. OFF: I/O contact type ON: Shared memory type 2. SW8 is only recognized on power-on, so input method cannot be changed during PLC operation. |
| Input range setting (SW1 to SW4) | <ol style="list-style-type: none"> 1. Set the sensor type (input range). 2. Set the temperature unit (°C or °F). 3. Input range can be changed during PLC operation. |
| Installation | See Installation on page 13. |
| Wiring | <ol style="list-style-type: none"> 1. Refer to wiring diagram for the RTD module. 2. Use 3-Wire RTD sensor to connect (+), (-), GND |
| Reading conversion data | <ol style="list-style-type: none"> 1. When SW8 is set to ON (shared memory type), use READ instruction to read conversion data from the shared memory. 2. When SW8 is set to OFF (I/O contact type), no additional instruction is needed. |
| Please do not disassemble or modify internal components of the RTD module. | |

Input Range Selection

Dip switch is located on the bottom of the module.



Dip Switch Settings

SW1 to SW4: Input range setting

| SW1 | SW2 | SW3 | SW4 | Input range and conversion data | Remarks |
|-----|-----|-----|-----|----------------------------------------------------------|---------|
| OFF | OFF | OFF | OFF | PT100, 0.00385, -200 to 850 °C, 0.1 °C or 0.1 °F/count | |
| ON | OFF | OFF | OFF | PT200, 0.00385, -200 to 850 °C, 0.1 °C or 0.1 °F/count | |
| OFF | ON | OFF | OFF | PT500, 0.00385, -200 to 850 °C, 0.1 °C or 0.1 °F/count | |
| ON | ON | OFF | OFF | PT1000, 0.00385, -200 to 270 °C, 0.1 °C or 0.1 °F/count | |
| OFF | OFF | ON | OFF | JPT100, 0.003916, -200 to 640 °C, 0.1 °C or 0.1 °F/count | |
| ON | OFF | ON | OFF | JPT200, 0.003916, -200 to 640 °C, 0.1 °C or 0.1 °F/count | |
| OFF | ON | ON | OFF | JPT500, 0.003916, -200 to 640 °C, 0.1 °C or 0.1 °F/count | |
| ON | ON | ON | OFF | NI100, 0.00618, -60 to 250 °C, 0.1 °C or 0.1 °F/count | |
| OFF | OFF | OFF | ON | NI200, 0.00618, -60 to 250 °C, 0.1 °C or 0.1 °F/count | |
| ON | OFF | OFF | ON | NI500, 0.00618, -60 to 250 °C, 0.1 °C or 0.1 °F/count | |
| OFF | ON | OFF | ON | NI120, 0.00672, -80 to 250 °C, 0.1 °C or 0.1 °F/count | |
| ON | ON | OFF | ON | CU10, 0.00427, -200 to 260 °C, 0.1 °C or 0.1 °F/count | |
| OFF | OFF | ON | ON | Resistance Input, 1 to 2,000 Ω, 100 mΩ/1count | |
| ON | OFF | ON | ON | Resistance Input, 1 to 327 Ω, 10 mΩ/1count | |
| OFF | ON | ON | ON | Resistance Input, 1 to 1.2 KΩ, 50 mΩ/1count | |
| ON | ON | ON | ON | ---- | |

SW5 to SW6: Filter setting

| SW5 | SW6 | Filter setting | Remarks |
|-----|-----|----------------|-----------------------------------------------------------------------------------------------------------------------|
| OFF | OFF | Filter #0 | Activating a filter that has a higher filter number produces more stable conversion data but slower conversion speed. |
| ON | OFF | Filter #1 | |
| OFF | ON | Filter #2 | |
| ON | ON | Filter #3 | |

SW7: Temperature unit setting

| SW7 | Temperature unit |
|-----|--------------------------------|
| OFF | 0.1 °C |
| ON | 0.1 °F °F = (9/5) x °C + 32 |

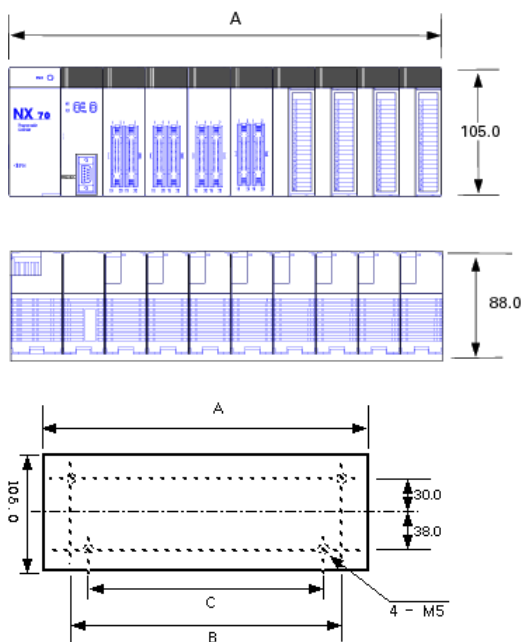
SW8: Conversion data I/O method setting

| SW8 | RTD 4CH | Conversion data input method | Input range and conversion data |
|-----|-----------------|------------------------------------------|------------------------------------------------------------------------------------------------------------|
| OFF | 64 points input | I/O contact type (I/O conversion data) | Easy to use. User programming for reading conversion data is not needed. |
| ON | 16 points | Shared memory type (I/O conversion data) | READ instruction on user program is needed for reading conversion data. Range excess feature available. |

Installation

Installation Dimensions

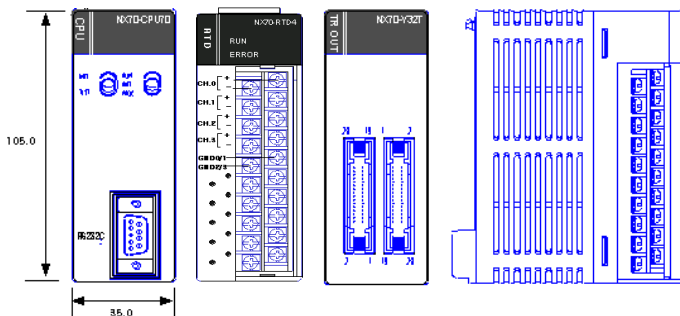
System Dimensions (mm)



unit (mm)

| Slot Types | Catalog Number | Dimensions (A) | Dimensions (B) | Dimensions (C) |
|--------------|----------------|----------------|----------------|----------------|
| 2-slot type | NX70-BASE02 | 149.5 | 129.5 | 115.5 |
| 3-slot type | NX70-BASE03 | 185.0 | 165.0 | 151.0 |
| 5-slot type | NX70-BASE05 | 256.0 | 236.0 | 222.0 |
| 6-slot type | NX70-BASE06 | 291.5 | 271.5 | 257.5 |
| 8-slot type | NX70-BASE08 | 362.5 | 342.5 | 328.5 |
| 10-slot type | NX70-BASE10 | 398.0 | 378.0 | 364.0 |
| 12-slot type | NX70-BASE12 | 433.5 | 413.5 | 399.5 |

CPU, I/O, RTD Conversion Module Dimensions (mm)



Installation Environment

ATTENTION



Do not install your RTD conversion module if any of the following conditions are present:

- Ambient temperature outside the range of 0 to 55 °C (32 to 131 °F).
- Direct sunlight.
- Humidity outside the range of 30% to 85% (non-condensing).
- Chemicals that may affect electronic parts.
- Excessive or conductive dust, or salinity.
- High voltage, strong magnetic fields, or strong electromagnetic influences.
- Direct impact and excessive vibration.

ATTENTION



Installing Modules on the System

3. Wire analog I/O cables to the terminal block.
4. Turn on the power connected to the RTD conversion module.
5. Turn on the main PLC power.

ATTENTION



Removing Modules from the System

1. Turn off the main PLC power.
2. Turn off the power to the RTD conversion module.
3. Remove the wirings from the terminal block.

ATTENTION**Preventing PLC System Malfunctions**

- Use an isolation transformer and line filter on the incoming power to the PLC when there is equipment using or producing high current, high voltage, or large magnetic fields in the vicinity.
 - Use analog sensor that meets the rated specifications for module connection. Otherwise, it may cause operation errors.
 - Separate the main PLC power line ground from all other power grounds. Always use class 3 grounding.
 - Do not exceed the current and power rating of the external 24 VDC provided by the PLC power supply.
 - Avoid system faults due to programming errors by reading and fully understanding this system manual and the PLC instruction set.
 - Perform regular preventive maintenance on installed systems, checking devices and wiring for potential breakdowns and failures.
-

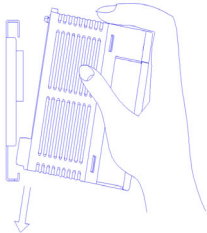
ATTENTION**Installing RTD conversion module**

- Avoid installing a RTD conversion module next to output module or power supply modules.
 - Install a RTD conversion module as near the right edge of the motherboard as possible.
-

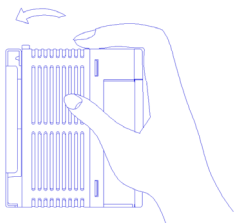
Mounting/Dismounting Module

Mounting

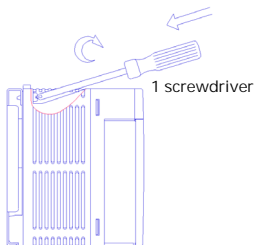
1. Insert the module by inserting the tab into the groove first and pushing the module against the backplane.



2. Push the top of the module toward the backplane until it is clamped in place.

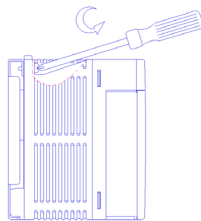


3. Ensure that the module is in place against the backplane, and then fasten the screw using a screwdriver.

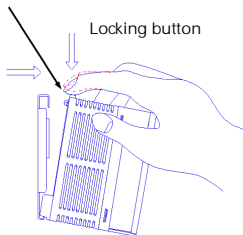


Dismounting

1. Unfasten the screw that holds the module in place using a screwdriver.



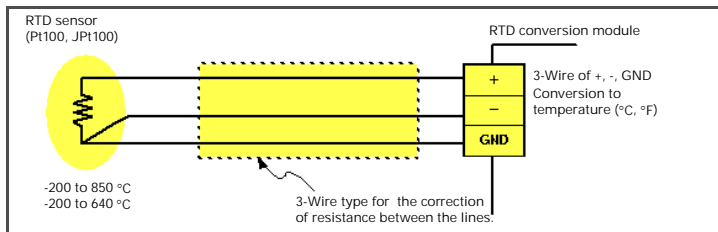
2. Hold on pressing the locking button on the top edge of the module, and pull the module from the backplane.



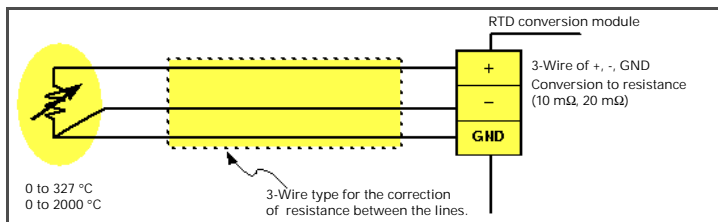
Wiring

RTD Conversion Module Wiring Diagram

RTD Input



Resistance input



NOTE

Do not place RTD input signal wire near wires other than PLC, such as AC cables or high voltage cables. Do not tie RTD input signal wire.
Do not use same cables for signal wire and AC wire to outside devices.

IMPORTANT

- Resistance Temperature Detector (RTD): RTD utilizes the resistance change induced by temperature change. It passes constant current through changing resistance and measure the voltage. $V = I * R$
- Converter type: (24-bit Σ - Δ A/D with Digital & Analog Noise Filter)
- Sensor Excitation Current: 1 mA
- α : Temperature constant, unit = $(\Omega/\Omega)/^{\circ}\text{C}$
For Pt100, resistance changes by 0.385 Ohm(Ω) per 1 $^{\circ}\text{C}$ temperature change.
For JPt100, resistance changes by 0.3916 Ohm(Ω) per 1 $^{\circ}\text{C}$ temperature change.
- Pt100 standards: IEC751, DIN43760, JIS1604-1989 (Most RTD sensors at present)
- JPt100 standards: JIS1604-1981, D100.
- Temperature sensor types: RTD, Thermocouple, Thermistor, Silicon Sensor



中文

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重要用户信息

固态电子设备的运行特性不同于机电设备。由于存在这种差异，而且，由于固态电子设备具有各种不同的用途，因此，所有负责应用该设备的人必须自己确保，此设备的每种预期用途都是可以接受的。

在任何情况下，OE Max Controls 对因使用或应用此设备导致的间接损害或继发性损害均不承担任何责任。

本手册中包含的示例和图示只用于说明目的。由于任何特定安装都具有许多相关的可变因素和要求，因此，OE Max Controls 不对基于示例和图示的实际使用承担任何责任。

至于使用本手册中描述的信息、电路、设备或软件，OE Max Controls 不承担任何专利责任。

如果没有 OE Max Controls 的书面批准，禁止全部或部分复制本手册的内容。

在整个手册中，我们将使用各种标记来提醒您注意安全方面的事项。

警告

表示可能导致严重人身伤害或死亡、财产损失或经济损失的做法或情况的信息。

重要说明

表示对成功应用和了解本产品至关重要的信息。

注意

表示可能导致轻微人身伤害、财产损失、经济损失或产品失灵的做法或情况的信息。不过，根据实际情况，不遵守附有此符号的指示可能也会导致严重后果。

安全说明

在安装、操作、进行检查和预防性维护之前，请通读本手册和相关文档，并熟悉手册中的相关说明。务必正确遵循说明进行操作，以确保产品正常运转和您的安全。

警告



- 如果使用本产品的场合可能会导致人身伤害和/或使设备受到严重损坏，请采取相应的安全保护措施，如使用安全可靠的设备。
- 不要在具有爆炸性气体的任何环境中使用本产品。否则，可能会导致爆炸。

注意



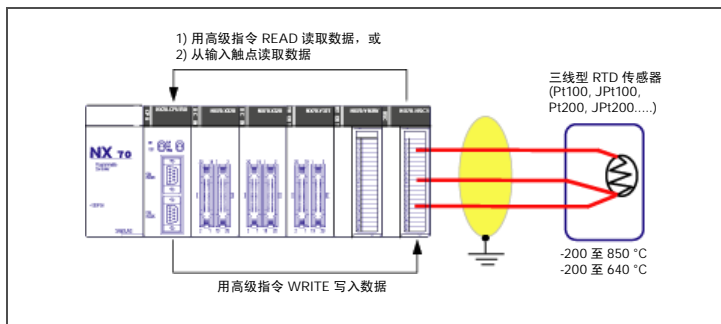
- 在配置应急保护断路器或联锁电路时，确保使用外部设备。
- 牢牢地拧紧端子螺钉，以确保电缆连接紧固可靠。如果电缆连接不正确，则可能会导致产品过热和失灵。
- 请在满足产品规格所要求的条件下操作和保存产品。否则，可能导致产品过热和失灵。
- 不要拆卸或改造产品。否则，可能导致电击危险或产品失灵。
- 电源接通时不要触摸端子。否则，可能导致电击事故。

概述

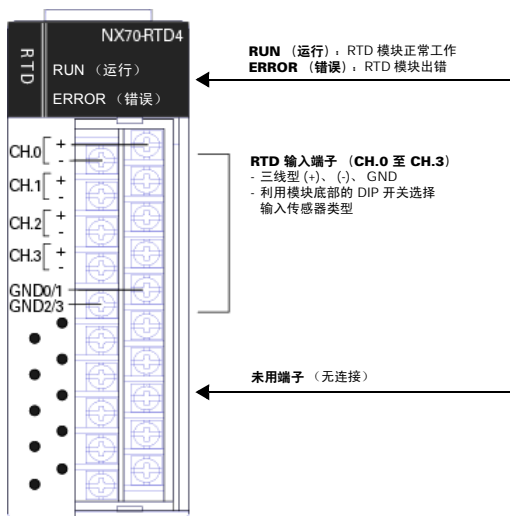
硬件说明



NX70 RTD 模块 (4 通道)
NX70-RTD4



NX70-RTD4 (4 通道, RTD 输入)



常规规格

| 项目 | | 规格 |
|-------|----|---------------------------------------------------------------|
| 温度 | 运行 | 0 °C 至 +55 °C (32 °F 至 131 °F) |
| | 储存 | -25 °C 至 +70 °C (-13 °F 至 158 °F) |
| 湿度 | 运行 | 30 至 85% RH (无冷凝) |
| | 储存 | 30 至 85% RH (无冷凝) |
| 耐电压性 | | 在 I/O 端子 (DC) 和机箱地线 (电源装置) 之间 500V AC 持续 1 分钟 |
| 绝缘阻抗 | | 100 M Ω 或更高 (I/O 端子 (DC) 与机箱地线 (电源装置) 之间的电压为 500MV DC) |
| 抗振动性 | | 10 ~ 55Hz, 1 周期/分钟; 双振幅 0.75 mm, 每轴向持续 10 分钟 (X, Y, Z) |
| 抗冲击性 | | 在 X、Y、Z 轴每个方向上, 最大加速度和承受时间: 15g/11 ms (3 次) |
| 噪声抗扰度 | | 1500 Vp-p, 脉冲宽度 50ns 至 1 μ s (自噪声模拟装置发出) |
| 环境 | | 无腐蚀性气体, 无浓尘 |

注意



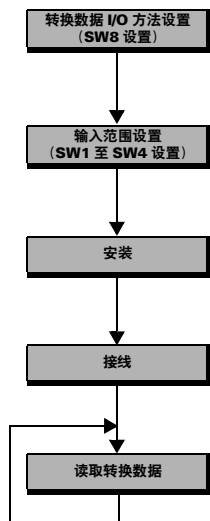
- 不要在输出模块或电源模块旁边安装模拟模块。这可能对模块有间接干扰。
- 将模拟模块安装在尽可能靠近主板右边缘的地方。

RTD 转换模块规格

RTD (电阻温度探测器)

| 目录号 | NX70 PLC: NX70-RTD4 (4 通道/模块) |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RTD 传感器 | 三线型 |
| RTD 输入通道数 | 4 通道 |
| 数字转换 | 16 位有符号二进制整数 (二进制的补码) |
| 转换器类型 | 24 位 Σ -D A/D 转换器 |
| I/O 特性 (温度传感器和数字输出) | ① Pt100 (a=0.00385, -200 ~ 850 °C => -2,000 ~ 8,500) ⑤ 300 Ω (10m Ω /位) ② Pt200, Pt500, Pt1000 ⑥ 1.2K Ω (20m Ω /位) ③ JPt100 (a=0.00385, -200 ~ 640 °C => -2,000 ~ 6,400) ⑦ 2000 Ω (100m Ω /位) ④ Jpt200, Jpt500, Jpt1000 ⑧ NI100, NI120, CU10 |
| 最大分辨率 | 0.1 °C, 0.1 °F, 10 m Ω , 20 m Ω |
| 总精度 | ± 0.1 %/FS (25 °C) |
| 转换速度 | 60 ms/CH |
| 外部输入阻抗 | 10 M Ω |
| 电流源 | 1 mA (激励电流) |
| 隔离方法 | 输入通道和内部电路之间: DC/DC 转换器和光电耦合器隔离 输入通道之间: 非隔离 |
| I/O 点数 | I/O 触点型: 64 点输入 共享存储器型: 16 点输入 |
| 内部电流消耗 (5 V) | 内部功率 5 V 280 mA 或更小 |
| 外部连接方法 | 20 针端子块 (M3.0) |

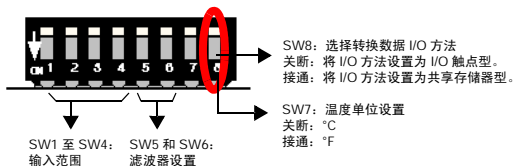
操作过程



| 过程 | 操作 |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 转换数据输入方法设置 (SW8) | <ol style="list-style-type: none"> 用 SW8 来选择转换数据输入方法。 关断：I/O 触点型 接通：共享存储器型 由于只有在接通电源时才能识别 SW8，因此在 PLC 运转期间不可以更改输入方法。 |
| 输入范围设置 (SW1 至 SW4) | <ol style="list-style-type: none"> 设置传感器类型（输入范围）。 设置温度单位（°C 或 °F）。 在 PLC 运转期间可以更改输入范围。 |
| 安装 | 请参阅 page 26 的“安装”一节。 |
| 接线 | <ol style="list-style-type: none"> 请参考 RTD 模块的接线图。 使用三线型 RTD 传感器连接 (+)、(-)、GND |
| 读取转换数据 | <ol style="list-style-type: none"> 当 SW8 设置为接通（共享存储器型）时，使用 READ 指令从共享存储器读取转换数据。 当 SW8 设置为关断（I/O 触点型）时，不需要附加的指令。 |
| 请勿拆卸或改动 RTD 模块的内部元件。 | |

输入范围选择

DIP 开关位于模块底部。



DIP 开关设置

SW1 至 SW4: 输入范围设置

| SW1 | SW2 | SW3 | SW4 | 输入范围和转换数据 | 备注 |
|-----|-----|-----|-----|-----------------------------------------------------|----|
| 关断 | 关断 | 关断 | 关断 | PT100, 0.00385, -200 ~ 850 °C, 0.1 °C 或 0.1 °F/计数 | |
| 接通 | 关断 | 关断 | 关断 | PT200, 0.00385, -200 ~ 850 °C, 0.1 °C 或 0.1 °F/计数 | |
| 关断 | 接通 | 关断 | 关断 | PT500, 0.00385, -200 ~ 850 °C, 0.1 °C 或 0.1 °F/计数 | |
| 接通 | 接通 | 关断 | 关断 | PT1000, 0.00385, -200 ~ 270 °C, 0.1 °C 或 0.1 °F/计数 | |
| 关断 | 关断 | 接通 | 关断 | JPT100, 0.003916, -200 ~ 640 °C, 0.1 °C 或 0.1 °F/计数 | |
| 接通 | 关断 | 接通 | 关断 | JPT200, 0.003916, -200 ~ 640 °C, 0.1 °C 或 0.1 °F/计数 | |
| 关断 | 接通 | 接通 | 关断 | JPT500, 0.003916, -200 ~ 640 °C, 0.1 °C 或 0.1 °F/计数 | |
| 接通 | 接通 | 接通 | 关断 | NI100, 0.00618, -60 ~ 250 °C, 0.1 °C 或 0.1 °F/计数 | |
| 关断 | 关断 | 关断 | 接通 | NI200, 0.00618, -60 ~ 250 °C, 0.1 °C 或 0.1 °F/计数 | |
| 接通 | 关断 | 关断 | 接通 | NI500, 0.00618, -60 ~ 250 °C, 0.1 °C 或 0.1 °F/计数 | |
| 关断 | 接通 | 关断 | 接通 | NI120, 0.00672, -80 ~ 250 °C, 0.1 °C 或 0.1 °F/计数 | |
| 接通 | 接通 | 关断 | 接通 | CU10, 0.00427, -200 ~ 260 °C, 0.1 °C 或 0.1 °F/计数 | |
| 关断 | 关断 | 接通 | 接通 | 电阻输入, 1 ~ 2,000 Ω, 100 mΩ/1 计数 | |
| 接通 | 关断 | 接通 | 接通 | 电阻输入, 1 ~ 327 Ω, 10 mΩ/1 计数 | |
| 关断 | 接通 | 接通 | 接通 | 电阻输入, 1 ~ 1.2 KΩ, 50 mΩ/1 计数 | |
| 接通 | 接通 | 接通 | 接通 | ----- | |

SW5 至 SW6: 滤波器设置

| SW5 | SW6 | 滤波器设置 | 备注 |
|-----|-----|-------|----------------------------------|
| 关断 | 关断 | 0号滤波器 | 激活编号较高的滤波器可产生更稳定的转换数据, 但会降低转换速度。 |
| 接通 | 关断 | 1号滤波器 | |
| 关断 | 接通 | 2号滤波器 | |
| 接通 | 接通 | 3号滤波器 | |

SW7: 温度单位设置

| SW7 | 温度单位 |
|-----|--------------------------------|
| 关断 | 0.1 °C |
| 接通 | 0.1 °F °F = (9/5) × °C + 32 |

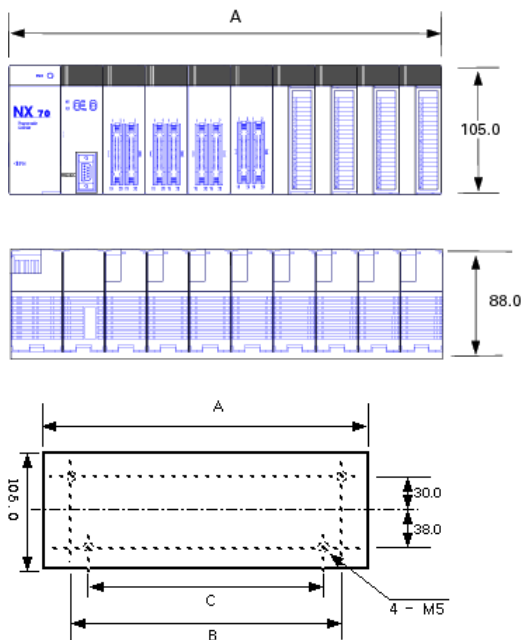
SW8: 转换数据 I/O 方法设置

| SW8 | RTD 4 通道 | 转换数据输入方法 | 输入范围和转换数据 |
|-----|----------|-----------------------|-------------------------------------|
| 关断 | 64 点输入 | I/O 触点型 (I/O 转换数据) | 使用方便。 用户读取转换数据不需要进行编程。 |
| 接通 | 16 点 | 共享存储器型 (I/O 转换数据) | 读取转换数据需要用户程序中的 READ 指令。 提供超范围功能。 |

安装

安装尺寸

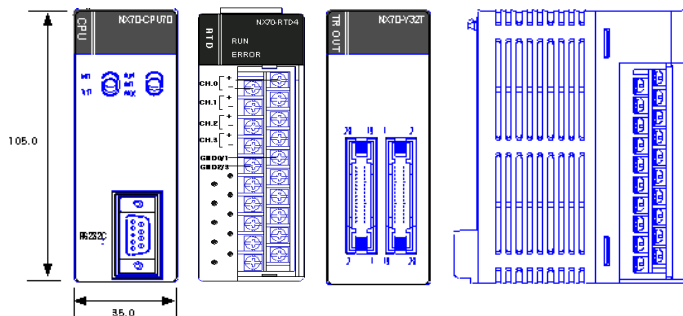
系统尺寸 (毫米)



单位 (毫米)

| 插槽类型 | 目录号 | 尺寸 (A) | 尺寸 (B) | 尺寸 (C) |
|--------|-------------|--------|--------|--------|
| 2 插槽型 | NX70-BASE02 | 149.5 | 129.5 | 115.5 |
| 3 插槽型 | NX70-BASE03 | 185.0 | 165.0 | 151.0 |
| 5 插槽型 | NX70-BASE05 | 256.0 | 236.0 | 222.0 |
| 6 插槽型 | NX70-BASE06 | 291.5 | 271.5 | 257.5 |
| 8 插槽型 | NX70-BASE08 | 362.5 | 342.5 | 328.5 |
| 10 插槽型 | NX70-BASE10 | 398.0 | 378.0 | 364.0 |
| 12 插槽型 | NX70-BASE12 | 433.5 | 413.5 | 399.5 |

CPU、I/O、RTD 转换模块尺寸 (毫米)



安装环境

注意



- 下列任何场合都不适合安装 RTD 转换模块：
- 环境温度超出 0 至 55 °C (32 至 131 °F) 的范围。
 - 阳光直射处。
 - 湿度超出 30% 至 85% (无冷凝) 的范围。
 - 周围存在可能影响电子器件的化学品。
 - 浓尘场所或存在导电尘埃或含盐物质的场所。
 - 受高电压、强磁场或强电磁影响的场所。
 - 直接碰撞和剧烈振动。

注意



- 在系统上安装模块
3. 将模拟 I/O 电缆接入端子块。
 4. 接通连接 RTD 转换模块的电源。
 5. 接通主 PLC 电源。

注意



- 从系统中拆卸模块
1. 关断主 PLC 电源。
 2. 关断连接 RTD 转换模块的电源。
 3. 从端子块中拔下接线。

注意**预防 PLC 系统失灵**

- 如果附近存在使用或产生强电流、高电压或强电磁的设备，请在 PLC 的输入电源端采用隔离变压器和线路滤波器。
 - 使用符合模块连接额定规格的模拟传感器。否则，会导致操作错误。
 - 将主 PLC 电源地线与所有其他电源地线分开。始终使用 3 类接地。
 - 不要超过 PLC 电源提供的外部 24 VDC 的电流和额定功率。
 - 通过阅读和完全理解本系统手册和 PLC 指令集，避免因编程错误造成的系统故障。
 - 对已安装的系统定期进行预防性维护，检查设备和接线是否存在潜在的破坏和故障。
-

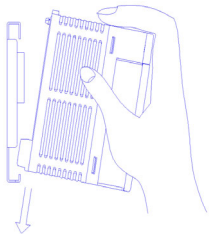
注意**安装 RTD 转换模块**

- 不要在输出模块或电源模块旁边安装 RTD 转换模块。
 - 将 RTD 转换模块安装在尽可能靠近主板右边缘的地方。
-

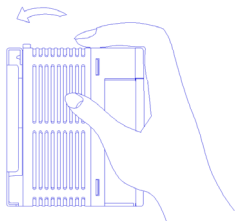
安装/拆卸模块

安装

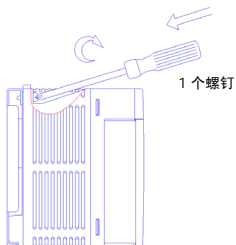
1. 将模块上用来固定该模块的凸出部分插入底板上的模块固定凹槽中。



2. 正对着底板方向用力推模块顶部，直到模块啮合到位。

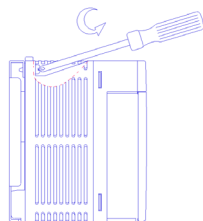


3. 确保模块正确安放在底板上，然后使用螺丝刀拧紧螺钉。

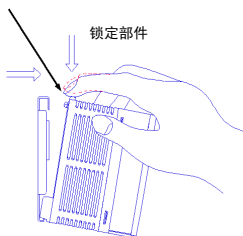


拆卸

1. 使用螺丝刀拧开用于固定模块的螺钉。



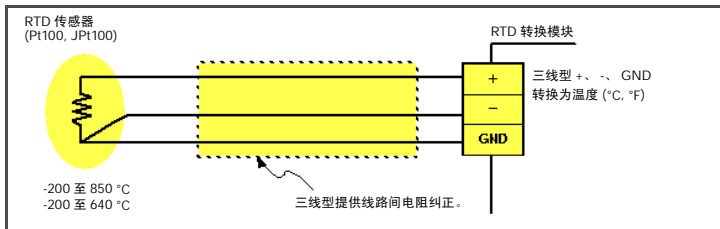
2. 按住位于模块顶侧边缘上的锁定按钮，从底板中拔出模块。



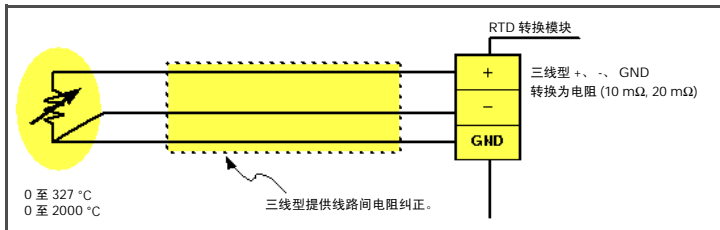
接线

RTD 转换模块接线图

RTD 输入



电阻输入



注

不要将 RTD 输入信号线靠近除 PLC 以外的接线，比如交流电电缆或高压电缆。不要系紧 RTD 输入信号线。

不要对连接外部设备的信号线和交流电线使用相同的电缆。

重要说明

- 电阻温度探测器 (RTD): RTD 利用温度变化产生的电阻变化。它通过在变化的电阻传输恒定电流，以便测得电压。 $V = I * R$
- 转换器类型: (带模拟和数字式噪声滤波器的 24 位 $\Sigma-\Delta$ A/D)
- 传感器激励电流: 1 mA
- α : 温度常数, 单位 = $(\Omega/\Omega)/^{\circ}\text{C}$
对于 Pt100, 每 1 °C 温度变化, 电阻变化 0.385 Ohm(Ω)。
对于 JPt100, 每 1 °C 温度变化, 电阻变化 0.3916 Ohm(Ω)。
- Pt100 标准: IEC751, DIN43760, JIS1604-1989 (目前大多数 RTD 传感器)
- JPt100 标准: JIS1604-1981, D100。
- 温度传感器类型: RTD, 热电偶, 热敏电阻, 硅传感器



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