MITSUBISHI ELECTRIC

Mitsubishi Programmable Controller

MELSEC iQ-R series

MELSEC iQ-R Channel Isolated Thermocouple Input Module/Channel Isolated RTD Input Module User's Manual (Application)

-R60TD8-G
-R60RD8-G

SAFETY PRECAUTIONS

(Read these precautions before using this product.)

Before using this product, please read this manual and the relevant manuals carefully and pay full attention to safety to handle the product correctly.

The precautions given in this manual are concerned with this product only. For the safety precautions of the programmable controller system, refer to the MELSEC iQ-R Module Configuration Manual.

In this manual, the safety precautions are classified into two levels: "⚠ WARNING" and "⚠ CAUTION".

⚠ **WARNING**	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ **CAUTION**	Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Under some circumstances, failure to observe the precautions given under "⚠ CAUTION" may lead to serious consequences.

Observe the precautions of both levels because they are important for personal and system safety.

Make sure that the end users read this manual and then keep the manual in a safe place for future reference.

[Design Precautions]

⚠WARNING

- Configure safety circuits external to the programmable controller to ensure that the entire system operates safely even when a fault occurs in the external power supply or the programmable controller. Failure to do so may result in an accident due to an incorrect output or malfunction.
  (1) Emergency stop circuits, protection circuits, and protective interlock circuits for conflicting operations (such as forward/reverse rotations or upper/lower limit positioning) must be configured external to the programmable controller.
  (2) When the programmable controller detects an abnormal condition, it stops the operation and all outputs are:
    - Turned off if the overcurrent or overvoltage protection of the power supply module is activated.
    - Held or turned off according to the parameter setting if the self-diagnostic function of the CPU module detects an error such as a watchdog timer error.
  (3) All outputs may be turned on if an error occurs in a part, such as an I/O control part, where the CPU module cannot detect any error. To ensure safety operation in such a case, provide a safety mechanism or a fail-safe circuit external to the programmable controller. For a fail-safe circuit example, refer to "General Safety Requirements" in the MELSEC iQ-R Module Configuration Manual.
  (4) Outputs may remain on or off due to a failure of a component such as a relay and transistor in an output circuit. Configure an external circuit for monitoring output signals that could cause a serious accident.
- In an output circuit, when a load current exceeding the rated current or an overcurrent caused by a load short-circuit flows for a long time, it may cause smoke and fire. To prevent this, configure an external safety circuit, such as a fuse.
- Configure a circuit so that the programmable controller is turned on first and then the external power supply. If the external power supply is turned on first, an accident may occur due to an incorrect output or malfunction.
- For the operating status of each station after a communication failure, refer to manuals relevant to the network. Incorrect output or malfunction due to a communication failure may result in an accident.

[Design Precautions]

⚠WARNING

- When connecting an external device with a CPU module or intelligent function module to modify data of a running programmable controller, configure an interlock circuit in the program to ensure that the entire system will always operate safely. For other forms of control (such as program modification, parameter change, forced output, or operating status change) of a running programmable controller, read the relevant manuals carefully and ensure that the operation is safe before proceeding. Improper operation may damage machines or cause accidents.
- Especially, when a remote programmable controller is controlled by an external device, immediate action cannot be taken if a problem occurs in the programmable controller due to a communication failure. To prevent this, configure an interlock circuit in the program, and determine corrective actions to be taken between the external device and CPU module in case of a communication failure.
- Do not write any data to the "system area" and "write-protect area" of the buffer memory in the module. Also, do not use any "use prohibited" signals as an output signal from the CPU module to each module. Doing so may cause malfunction of the programmable controller system. For the "system area", "write-protect area", and the "use prohibited" signals, refer to the user's manual for the module used.
- If a communication cable is disconnected, the network may be unstable, resulting in a communication failure of multiple stations. Configure an interlock circuit in the program to ensure that the entire system will always operate safely even if communications fail. Failure to do so may result in an accident due to an incorrect output or malfunction.
- To maintain the safety of the programmable controller system against unauthorized access from external devices via the network, take appropriate measures. To maintain the safety against unauthorized access via the Internet, take measures such as installing a firewall.

[Design Precautions]

⚠CAUTION

- Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100mm or more between them. Failure to do so may result in malfunction due to noise.
- During control of an inductive load such as a lamp, heater, or solenoid valve, a large current (approximately ten times greater than normal) may flow when the output is turned from off to on. Therefore, use a module that has a sufficient current rating.
- After the CPU module is powered on or is reset, the time taken to enter the RUN status varies depending on the system configuration, parameter settings, and/or program size. Design circuits so that the entire system will always operate safely, regardless of the time.
- Do not power off the programmable controller or reset the CPU module while the settings are being written. Doing so will make the data in the flash ROM undefined. The values need to be set in the buffer memory and written to the flash ROM again. Doing so also may cause malfunction or failure of the module.
- When changing the operating status of the CPU module from external devices (such as the remote RUN/STOP functions), select "Do Not OPEN in Program" for "Open Method Setting" in the module parameters. If "OPEN in Program" is selected, an execution of the remote STOP function causes the communication line to close. Consequently, the CPU module cannot reopen the line, and external devices cannot execute the remote RUN function.

[Installation Precautions]

⚠WARNING

- Shut off the external power supply (all phases) used in the system before mounting or removing the module. Failure to do so may result in electric shock or cause the module to fail or malfunction.

[Installation Precautions]

⚠CAUTION

- Use the programmable controller in an environment that meets the general specifications in the Safety Guidelines included with the base unit. Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product.
- To mount a module, place the concave part(s) located at the bottom onto the guide(s) of the base unit, and push in the module until the hook(s) located at the top snaps into place. Incorrect interconnection may cause malfunction, failure, or drop of the module.
- When using the programmable controller in an environment of frequent vibrations, fix the module with a screw.
- Tighten the screws within the specified torque range. Undertightening can cause drop of the screw, short circuit, or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.
- When using an extension cable, connect it to the extension cable connector of the base unit securely. Check the connection for looseness. Poor contact may cause malfunction.
- When using an SD memory card, fully insert it into the SD memory card slot. Check that it is inserted completely. Poor contact may cause malfunction.
- Securely insert an extended SRAM cassette into the cassette connector of the CPU module. After insertion, close the cassette cover and check that the cassette is inserted completely. Poor contact may cause malfunction.
- Do not directly touch any conductive parts and electronic components of the module, SD memory card, extended SRAM cassette, or connector. Doing so can cause malfunction or failure of the module.

[Wiring Precautions]

⚠WARNING

- Shut off the external power supply (all phases) used in the system before installation and wiring. Failure to do so may result in electric shock or cause the module to fail or malfunction.
- After installation and wiring, attach the included terminal cover to the module before turning it on for operation. Failure to do so may result in electric shock.

[Wiring Precautions]

⚠CAUTION

- Individually ground the FG and LG terminals of the programmable controller with a ground resistance of 100 ohms or less. Failure to do so may result in electric shock or malfunction.
- Use applicable solderless terminals and tighten them within the specified torque range. If any spade solderless terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.
- Check the rated voltage and signal layout before wiring to the module, and connect the cables correctly. Connecting a power supply with a different voltage rating or incorrect wiring may cause fire or failure.
- Connectors for external devices must be crimped or pressed with the tool specified by the manufacturer, or must be correctly soldered. Incomplete connections may cause short circuit, fire, or malfunction.
- Securely connect the connector to the module. Poor contact may cause malfunction.
- Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100mm or more between them. Failure to do so may result in malfunction due to noise.
- Place the cables in a duct or clamp them. If not, dangling cable may swing or inadvertently be pulled, resulting in damage to the module or cables or malfunction due to poor contact. Do not clamp the extension cables with the jacket stripped.
- Check the interface type and correctly connect the cable. Incorrect wiring (connecting the cable to an incorrect interface) may cause failure of the module and external device.
- Tighten the terminal screws or connector screws within the specified torque range. Undertightening can cause drop of the screw, short circuit, fire, or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, fire, or malfunction.
- When disconnecting the cable from the module, do not pull the cable by the cable part. For the cable with connector, hold the connector part of the cable. For the cable connected to the terminal block, loosen the terminal screw. Pulling the cable connected to the module may result in malfunction or damage to the module or cable.
- Prevent foreign matter such as dust or wire chips from entering the module. Such foreign matter can cause a fire, failure, or malfunction.
- A protective film is attached to the top of the module to prevent foreign matter, such as wire chips, from entering the module during wiring. Do not remove the film during wiring. Remove it for heat dissipation before system operation.
- Programmable controllers must be installed in control panels. Connect the main power supply to the power supply module in the control panel through a relay terminal block. Wiring and replacement of a power supply module must be performed by qualified maintenance personnel with knowledge of protection against electric shock. For wiring, refer to the MELSEC iQ-R Module Configuration Manual.
- For Ethernet cables to be used in the system, select the ones that meet the specifications in the user's manual for the module used. If not, normal data transmission is not guaranteed.
- Individually ground the shielded cables of the programmable controller with a ground resistance of 100 ohms or less. Failure to do so may result in electric shock or malfunction.

[Precautions for using channel isolated thermocouple input modules]

- Do not place the module near a device that generates magnetic noise.

[Startup and Maintenance Precautions]

⚠WARNING

- Do not touch any terminal while power is on. Doing so will cause electric shock or malfunction.
- Correctly connect the battery connector. Do not charge, disassemble, heat, short-circuit, solder, or throw the battery into the fire. Also, do not expose it to liquid or strong shock. Doing so will cause the battery to produce heat, explode, ignite, or leak, resulting in injury and fire.
- Shut off the external power supply (all phases) used in the system before cleaning the module or retightening the terminal screws, connector screws, or module fixing screws. Failure to do so may result in electric shock.

[Startup and Maintenance Precautions]

⚠CAUTION

- When connecting an external device with a CPU module or intelligent function module to modify data of a running programmable controller, configure an interlock circuit in the program to ensure that the entire system will always operate safely. For other forms of control (such as program modification, parameter change, forced output, or operating status change) of a running programmable controller, read the relevant manuals carefully and ensure that the operation is safe before proceeding. Improper operation may damage machines or cause accidents.
- Especially, when a remote programmable controller is controlled by an external device, immediate action cannot be taken if a problem occurs in the programmable controller due to a communication failure. To prevent this, configure an interlock circuit in the program, and determine corrective actions to be taken between the external device and CPU module in case of a communication failure.
- Do not disassemble or modify the modules. Doing so may cause failure, malfunction, injury, or a fire.
- Use any radio communication device such as a cellular phone or PHS (Personal Handy-phone System) more than 25cm away in all directions from the programmable controller. Failure to do so may cause malfunction.
- Shut off the external power supply (all phases) used in the system before mounting or removing the module. Failure to do so may cause the module to fail or malfunction.
- Tighten the screws within the specified torque range. Undertightening can cause drop of the component or wire, short circuit, or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.
- After the first use of the product, do not mount/remove the module to/from the base unit, and the terminal block to/from the module, and do not insert/remove the extended SRAM cassette to/from the CPU module more than 50 times (IEC 61131-2 compliant) respectively. Exceeding the limit may cause malfunction.
- After the first use of the product, do not insert/remove the SD memory card to/from the CPU module more than 500 times. Exceeding the limit may cause malfunction.
- Do not touch the metal terminals on the back side of the SD memory card. Doing so may cause malfunction or failure.
- Do not touch the integrated circuits on the circuit board of an extended SRAM cassette. Doing so may cause malfunction or failure of the module.
- Do not drop or apply shock to the battery to be installed in the module. Doing so may damage the battery, causing the battery fluid to leak inside the battery. If the battery is dropped or any shock is applied to it, dispose of it without using.
- Startup and maintenance of a control panel must be performed by qualified maintenance personnel with knowledge of protection against electric shock. Lock the control panel so that only qualified maintenance personnel can operate it.
- Before handling the module, touch a conducting object such as a grounded metal to discharge the static electricity from the human body. Failure to do so may cause the module to fail or malfunction.

[Operating Precautions]

⚠CAUTION

- When changing data and operating status, and modifying program of the running programmable controller from an external device such as a personal computer connected to an intelligent function module, read relevant manuals carefully and ensure the safety before operation. Incorrect change or modification may cause system malfunction, damage to the machines, or accidents.
- Do not power off the programmable controller or reset the CPU module while the setting values in the buffer memory are being written to the flash ROM in the module. Doing so will make the data in the flash ROM undefined. The values need to be set in the buffer memory and written to the flash ROM again. Doing so can cause malfunction or failure of the module.

[Disposal Precautions]

⚠CAUTION

- When disposing of this product, treat it as industrial waste.
- When disposing of batteries, separate them from other wastes according to the local regulations. For details on battery regulations in EU member states, refer to the MELSEC iQ-R Module Configuration Manual.

[Transportation Precautions]

⚠CAUTION

- When transporting lithium batteries, follow the transportation regulations. For details on the regulated models, refer to the MELSEC iQ-R Module Configuration Manual.
- The halogens (such as fluorine, chlorine, bromine, and iodine), which are contained in a fumigant used for disinfection and pest control of wood packaging materials, may cause failure of the product. Prevent the entry of fumigant residues into the product or consider other methods (such as heat treatment) instead of fumigation. The disinfection and pest control measures must be applied to unprocessed raw wood.

CONDITIONS OF USE FOR THE PRODUCT

(1) Mitsubishi programmable controller ("the PRODUCT") shall be used in conditions;
i) where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
ii) where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.

(2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.
MITSUBISHI SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI'S USER, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.
("Prohibited Application")
Prohibited Applications include, but not limited to, the use of the PRODUCT in;
- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
- Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
- Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.

Notwithstanding the above, restrictions Mitsubishi may in its sole discretion, authorize use of the PRODUCT in one or more of the Prohibited Applications, provided that the usage of the PRODUCT is limited only for the specific applications agreed to by Mitsubishi and provided further that no special quality assurance or fail-safe, redundant or other safety features which exceed the general specifications of the PRODUCTs are required. For details, please contact the Mitsubishi representative in your region.

INTRODUCTION

Thank you for purchasing the Mitsubishi MELSEC iQ-R series programmable controllers. This manual describes the functions, parameter settings, and troubleshooting of the relevant products listed below. Before using this product, please read this manual and the relevant manuals carefully and develop familiarity with the functions and performance of the MELSEC iQ-R series programmable controller to handle the product correctly. When applying the program examples provided in this manual to an actual system, ensure the applicability and confirm that it will not cause system control problems. Please make sure that the end users read this manual.

Point

Unless otherwise specified, this manual provides program examples in which the I/O numbers of X/Y0 to X/YF are assigned to a temperature input module. Assign I/O numbers when applying the program examples to an actual system. For I/O number assignment, refer to the following.

MELSEC iQ-R Module Configuration Manual

Relevant products

R60TD8-G, R60RD8-G

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RELEVANT MANUALS

Manual name [manual number]	Description	Available form
MELSEC iQ-R Channel Isolated Thermocouple Input Module/Channel Isolated RTD Input Module User's Manual (Application) [SH-081495ENG] (this manual)	Functions, parameter settings, I/O signals, buffer memory, and troubleshooting of the channel isolated thermocouple input module and the channel isolated RTD input module	Print book e-Manual PDF
MELSEC iQ-R Channel Isolated Thermocouple Input Module/Channel Isolated RTD Input Module User's Manual (Startup) [SH-081493ENG]	System configuration, specifications, procedures before operation, wiring, and operation examples of the channel isolated thermocouple input module and the channel isolated RTD input module	Print book e-Manual PDF
MELSEC iQ-R Programming Manual (Instructions, Standard Functions/Function Blocks) [SH-081266ENG]	Instructions for the CPU module, dedicated instructions for the intelligent function modules, and standard functions/function blocks	e-Manual PDF

Point

e-Manual refers to the Mitsubishi FA electronic book manuals that can be browsed using a dedicated tool.

e-Manual has the following features:

- Required information can be cross-searched in multiple manuals.
- Other manuals can be accessed from the links in the manual.
- The hardware specifications of each part can be found from the product figures.
- Pages that users often browse can be bookmarked.

TERMS

Unless otherwise specified, this manual uses the following terms.

Term	Description
Buffer memory	A memory in an intelligent function module for storing data (such as setting values and monitored values) to be transferred to the CPU module
Cold junction compensation resistor (RTD)	The abbreviation for the resistance temperature detector (RTD) used for cold junction compensation
Engineering tool	A tool used for setting up programmable controllers, programming, debugging, and maintenance. For the compatible tools, refer to the following. MELSEC iQ-R Module Configuration Manual
Global label	A label that is valid for all the program data when multiple program data are created in the project. There are two types of global label: a module specific label (module label), which is generated automatically by GX Works3, and an optional label, which can be created for any specified device.
Module Label	A label that represents one of memory areas (I/O signals and buffer memory areas) specific to each module in a given character string. For the module used, GX Works3 automatically generates this label, which can be used as a global label.
Normal mode	Setting items of the operation mode setting
Offset/gain setting mode	
Q compatible mode	A mode in which the module operates with the buffer memory map converted to the equivalent one of the MELSEC Q series
R mode	A mode in which the module operates with the buffer memory map that has been newly laid out in the MELSEC iQ-R series
RTD input module	The abbreviation for the MELSEC iQ-R series channel isolated RTD input module
Temperature input module	A generic term for the thermocouple input module and the RTD input module
Thermocouple input module	The abbreviation for the MELSEC iQ-R series channel isolated thermocouple input module
Watchdog timer error	An error that occurs if the internal processing of a temperature input module is abnormal. Watchdog timer enables the module to monitor its own internal processing.
Remote head module	The abbreviation for the RJ72GF15-T2 CC-Link IE Field Network remote head module

1 FUNCTIONS

This chapter describes the functions of a temperature input module and the setting procedures for those functions. For details on the I/O signals and the buffer memory, refer to the following.

☞ Page 91 I/O Signals
☞ Page 100 Buffer Memory Areas

Point

- This chapter describes buffer memory addresses for CH1. For details on the buffer memory addresses after CH2, refer to the following.

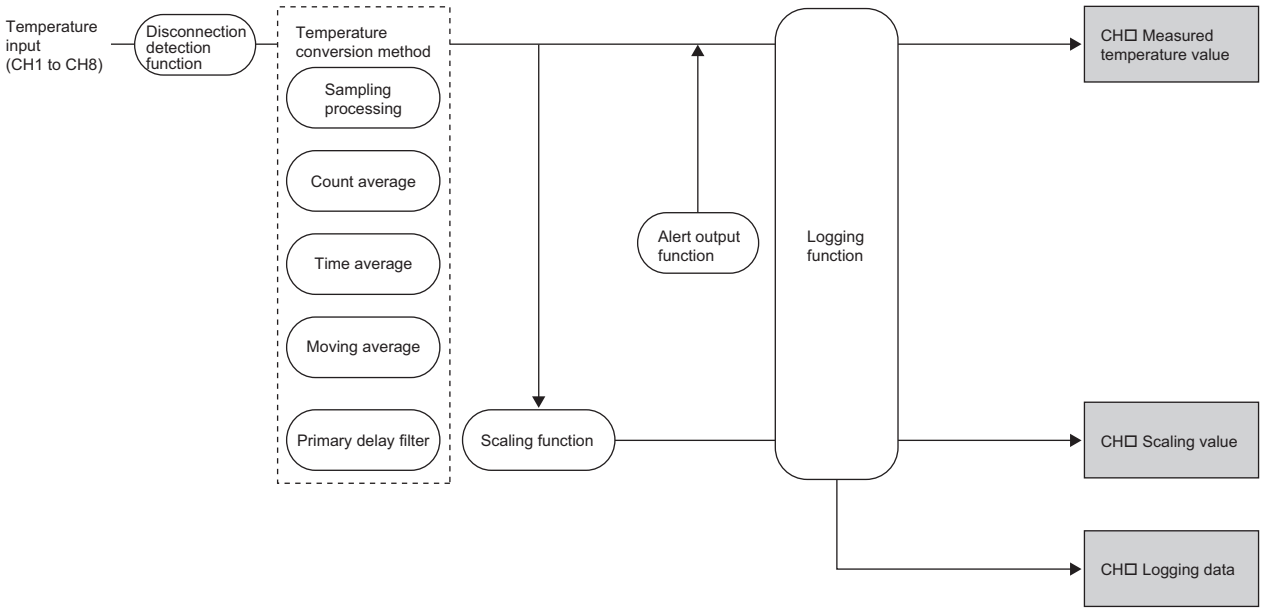
☞ Page 100 List of buffer memory areas

- Numerical values corresponding to the channel where an error has occurred and the error description fit in the □ and △ of an error code and alarm code described in this chapter. For details on the numerical values, refer to the following.

☞ Page 84 List of Error Codes
☞ Page 88 List of Alarm Codes

1.1 Processing of Each Function

The functions are processed in the order shown below. If multiple functions are enabled, the output of the first processed function is used as the input of the next function.



Measured temperature value

These values are the values after the sampling processing, each averaging processing, or primary delay filter has been performed.

Scaling value

These values are obtained after scale conversion of measured temperature values using the scaling function. When the scaling function is not used, the same value as the measured temperature value is stored.

Logging data

When the logging function is used, measured temperature values or scaling values are collected.

1.2 Input Range Setting Function

This function allows to select the thermocouple type or resistance temperature detector type to be used as well as the measuring range for each channel.

Available input range

Set an input range using buffer memory. The following tables list available input range by each module.

• Thermocouple input module

Buffer memory area	Thermocouple type	Available measuring range
'CH1 Range setting (Thermocouple type)' (Un\G598)	K thermocouple (0)	-270 to 1370℃
	E thermocouple (1)	-270 to 1000℃
	J thermocouple (2)	-210 to 1200℃
	T thermocouple (3)	-270 to 400℃
	B thermocouple (4)	0 to 1820℃
	R thermocouple (5)	-50 to 1760℃
	S thermocouple (6)	-50 to 1760℃
	N thermocouple (7)	-270 to 1300℃

• RTD input module

Buffer memory area	Resistance temperature detector type	Available measuring range
'CH1 Range setting (Resistance temperature detector type)' (Un\G598)	Pt100 (-200 to 850℃) (0)	-200 to 850℃
	Pt100 (-20 to 120℃) (1)	-20 to 120℃
	JPt100 (-180 to 600℃) (2)	-180 to 600℃
	JPt100 (-20 to 120℃) (3)	-20 to 120℃
	Pt100 (0 to 200℃) (4)	0 to 200℃
	JPt100 (0 to 200℃) (5)	0 to 200℃
	Ni100 (-60 to 250℃) (8)	-60 to 250℃
	Pt50 (-200 to 650℃) (9)	-200 to 650℃

User range setting

To use the user range setting configured with the offset/gain setting, set User range setting (1) in 'CH1 Range setting (Offset/gain setting)' (Un\G599).

For the offset/gain setting, refer to the following.

MELSEC iQ-R Channel Isolated Thermocouple Input Module/Channel Isolated RTD Input Module User's Manual (Startup)

Setting procedure

■For the thermocouple input module

1. When using the thermocouple input module, set "Thermocouple type setting".

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Basic setting] ⇨ [Thermocouple type selection function]

2. Set "Offset/gain setting" to "Factory default setting" or "User range setting".

■For the RTD input module

1. When using the RTD input module, set "RTD type setting".

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Basic setting] ⇨ [RTD type selection function]

2. Set "Offset/gain setting" to "Factory default setting" or "User range setting".

1.3 Conversion Enable/Disable Setting Function

This function sets whether to enable or disable the temperature conversion for each channel. Disabling the conversion on unused channels reduces the conversion cycles.

Setting procedure

Set "Conversion enable/disable setting" to "Conversion enable".

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Basic setting] ⇨ [Conversion enable/disable setting function]

1.4 Temperature Conversion Method

This function sets a temperature conversion method for each channel.

Sampling processing

A temperature input module executes the conversion of temperature input values sequentially and stores the converted values in buffer memory areas as measured temperature values.

Point

The sampling cycle is "Conversion speed × Number of channels where the conversion is enabled". The conversion speed is 30ms for the thermocouple input module, 10ms for the RTD input module.
Whether to enable or disable the conversion can be set for each channel. Disabling the conversion on unused channels reduces the sampling cycle.
When two channels (CH1, CH4) for the thermocouple input module are set to be conversion enabled, for instance, the conversion cycle becomes 60ms (30ms × 2).

Averaging processing

A temperature input module performs the averaging processing on measured temperature values for each channel. The calculated values are stored in the buffer memory areas.
The following three types of averaging processing are provided.

- Time average
- Count average
- Moving average

■Time average

A temperature input module executes the conversion for set time and averages the total value excluding the maximum value and the minimum value. The calculated value is stored in the buffer memory area.
The number of processing times within the set time varies depending on the number of channels where the conversion is enabled.
The setting range of the time is 120 to 5000ms for the thermocouple input module, 40 to 5000ms for the RTD input module.

$$\text{Number of processing times} = \frac{\text{Setting time}}{(\text{Number of conversion enabled channels} \times \text{Conversion speed})}$$

Ex.

How to calculate the processing times for the thermocouple input module is shown using the settings in the table below.

Item	Setting
Number of channels where temperature conversion is enabled	Four channels (CH1 to CH4)
Setting time	750ms

$$\frac{750}{(4 \times 30)} = 6.25^{*1}$$

*1 Values after the decimal point are omitted.

Conversion is processed 6 times and the mean value is output.

Point

The valid lower limit setting value for the time average is calculated by the formula "Minimum processing times (4 times) × Number of conversion enabled channels × Conversion speed". If the processing times becomes less than 4 times owing to the invalid setting time, a time average setting range error (error code: 192☐) occurs, and the measured temperature value becomes zero.

■Count average

A temperature input module executes the conversion for a set number of times and averages the total value excluding the maximum value and the minimum value. The calculated value is stored in the buffer memory area.

The time taken to store the average value obtained by the processing in the buffer memory area varies depending on the number of channels where the conversion is enabled.

Processing time = Set number of times × (Number of conversion enabled channels × Conversion speed)

Ex.

How to calculate the processing time for the thermocouple input module is shown using the settings in the table below.

Item	Setting
Number of channels where temperature conversion is enabled	Four channels (CH1 to CH4)
Set number of times	Five times

5 (times) × 4 (CH) × 30 (ms) = 600 (ms)

A mean value is output every 600ms.

Point

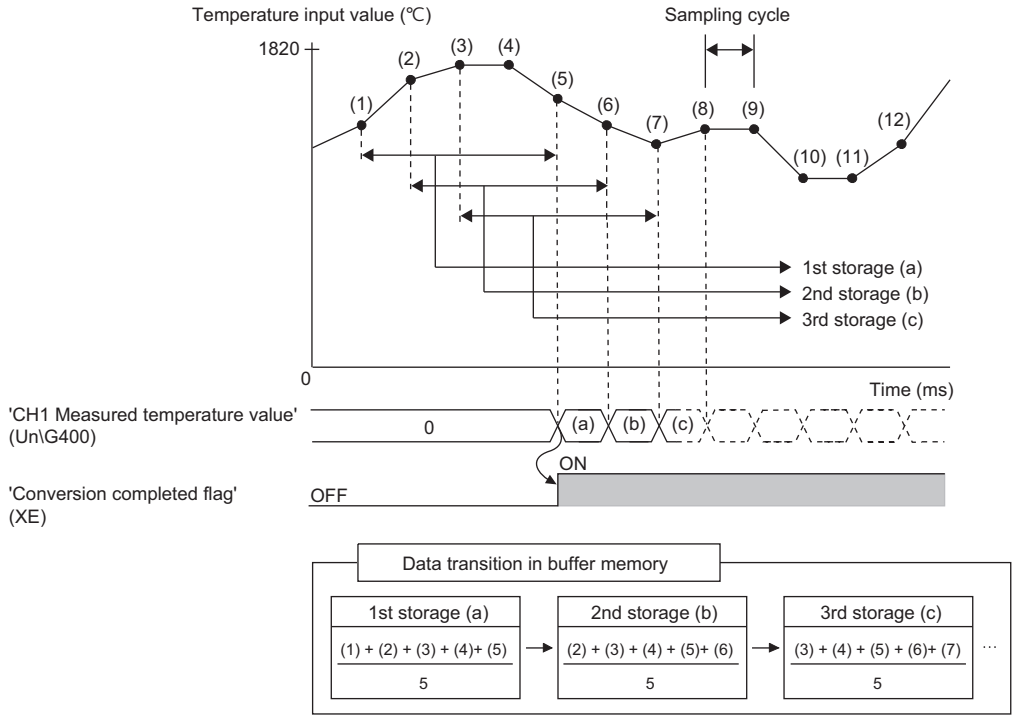
Because the count average requires a sum of at least two counts excluding the maximum and minimum values, the set number of times should be four or more.

■Moving average

A temperature input module averages measured temperature values taken at every sampling cycle for a specified number of times, and stores the averaged value in the buffer memory area.

Because the target range for averaging processing is moved in response to every sampling processing, the latest measured temperature value is constantly obtained.

The following figure shows the moving average processing of when the set number of times is five.



Primary delay filter

A temperature input module performs the conversion where the transient noise of temperature input is smoothed depending on the set time constant. The smoothed measured temperature value is stored in the buffer memory area.

Time constant is the time taken for the measured temperature value to reach 63.2% of the steady-state value. The degree of smoothing changes depending on the setting of a time constant. A time constant is calculated by the following formula.

- Time constant = Conversion speed × Setting value of 'CH1 Time average/Count average/Moving average/Primary delay filter constant setting' (Un\G502)

The following table lists the relational expressions of time constants, measured temperature values, and present number of sampling (n).

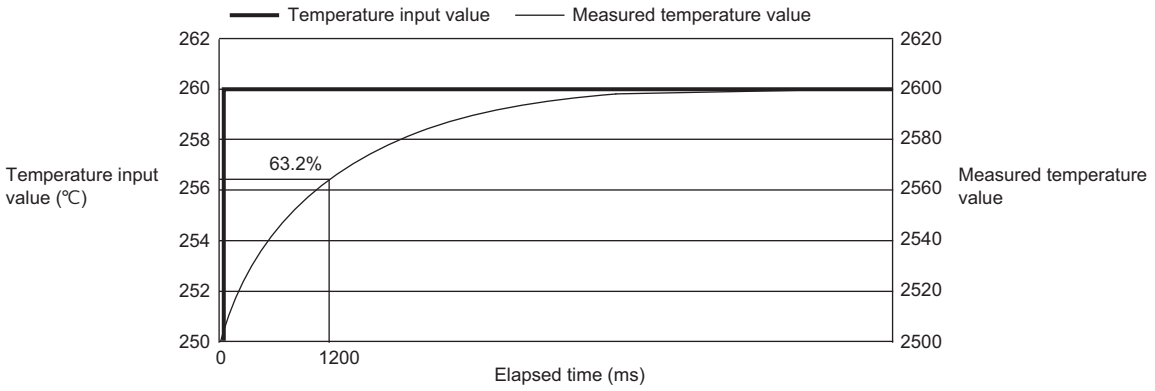
Present number of sampling	Relational expression	Element
n = 1	Yn = 0	Y_n: Present measured temperature value Y_{n-1}: Last measured temperature value n: Number of sampling X_n: Measured temperature value before smoothing X_{n-1}: Last measured temperature value before smoothing Δt: Conversion time TA: Time constant
n = 2	$Y_n = X_{n-1} + \frac{\Delta t}{\Delta t + TA}(X_n - X_{n-1})$	
n ≥ 3	$Y_n = Y_{n-1} + \frac{\Delta t}{\Delta t + TA}(X_n - Y_{n-1})$	

'Conversion completed flag' (XE) turns on when n ≥ 2.

Ex.

Measured temperature value when a temperature input value of the thermocouple input module is changed from 250.0℃ to 260.0℃

The following figure shows the change of the measured temperature value with the time constant set to be 40 times (1200ms). After 1200ms from when the temperature input value becomes 260.0℃, the measured temperature value reaches 63.2% of its change range from the value when the sampling processing is selected.



Setting procedure

■Sampling processing

Set "Average processing setting" to "Sampling processing".

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Basic setting] ⇨ [Temperature conversion system]

■Averaging processing and primary delay filter

1. Set "Average processing setting" to "Time average", "Count average", "Moving average", or "Primary delay filter".

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Basic setting] ⇨ [Temperature conversion system]

2. Set a value for "Time average/Count average/Moving average/Primary delay filter constant setting".

Item	Setting range
Time average	Thermocouple input module: 120 to 5000 (ms) RTD input module: 40 to 5000 (ms)
Count average	4 to 500 (times)
Moving average	2 to 200 (times)
Primary delay filter	1 to 500 (times)

1.5 Scaling Function

A temperature input module performs scale conversion from a measured temperature value to a value calculated using the ratio (%) of the set scaling width to the set scaling range. The converted value is stored in the buffer memory area. The calculation of a value is performed using a scaling range upper limit value, scaling range lower limit value, scaling width upper limit value, and scaling width lower limit value, all of which are set arbitrarily.
The value after the scale conversion is stored in 'CH1 Scaling value' (Un\G402).

Concept of scaling setting

The concepts of each setting item are described below.

■Scaling range upper limit value, scaling range lower limit value

Set the upper and lower limit values of a measured temperature value to be scale converted. Set the values in increments of 0.1℃.

Ex.

When 5000 (500.0℃) is set in Scaling range upper limit value and -1000 (-100.0℃) is set in Scaling range lower limit value, a measured temperature value between -100.0 and 500.0℃ are scale converted. If a value greater than 500.0℃ or smaller than -100.0℃ is set, a value set in Scaling width upper limit value or Scaling width lower limit value is stored in 'CH1 Scaling value' (Un\G402).

■Scaling width upper limit value, scaling width lower limit value

Set the range of a measured temperature value after scale conversion. A value within this range is stored in 'CH1 Scaling value' (Un\G402).

- For Scaling width upper limit value, set a value corresponding to the scaling range upper limit value of the measured temperature value.
- For Scaling width lower limit value, set a value corresponding to the scaling range lower limit value of the measured temperature value.

Ex.

The scaling value with the following conditions

- A value of 5000 (500.0℃) is set in Scaling range upper limit value, and -1000 (-100.0℃) is set in Scaling range lower limit value.
- A value of 100 is set in Scaling width upper limit value, and 0 is set in Scaling width lower limit value.

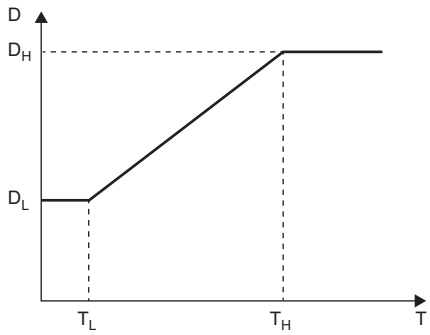
When a measured temperature value is 5000 (500.0℃), 100 is stored in 'CH1 Scaling value' (Un\G402). And when a measured temperature value is -1000 (-100.0℃), 0 is stored.

Calculating the scaling value

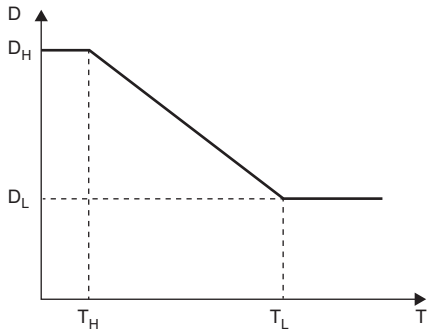
The scale conversion is based on the following formulae. (In scale conversion, values are rounded off to the nearest whole number.)

The calculation formula for a scaling value varies depending on the relationship of a scaling range upper limit value and scaling range lower limit value.

• For scaling range lower limit value < scaling range upper limit value

Relational expression	Element	Conceptual graph
$D = D_L$ (for $T < T_L$) $\frac{(D_H - D_L) \times (T - T_L)}{(T_H - T_L)} + D_L$ (for $T_L \leq T \leq T_H$) $D = D_H$ (for $T > T_H$)	T: Measured temperature value D: Scaling value T_L: Scaling range lower limit value T_H: Scaling range upper limit value D_L: Scaling width lower limit value D_H: Scaling width upper limit value	

• For scaling range lower limit value > scaling range upper limit value

Relational expression	Element	Conceptual graph
$D = D_H$ (for $T < T_H$) $\frac{(D_L - D_H) \times (T - T_H)}{(T_L - T_H)} + D_H$ (for $T_H \leq T \leq T_L$) $D = D_L$ (for $T > T_L$)	T: Measured temperature value D: Scaling value T_L: Scaling range lower limit value T_H: Scaling range upper limit value D_L: Scaling width lower limit value D_H: Scaling width upper limit value	

Setting procedure

1. Set "Scaling enable/disable setting" to "Enable".

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Application setting] ⇨ [Scaling function]

2. Set values for "Scaling range upper limit value" and "Scaling range lower limit value".

Item	Setting range
Scaling range upper limit value	-3276.8 to 3276.7 (℃)
Scaling range lower limit value	

3. Set values for "Scaling width upper limit value" and "Scaling width lower limit value".

Item	Setting range
Scaling width upper limit value	-32768 to 32767
Scaling width lower limit value	

Point

- Set different values for "Scaling range upper limit value" and "Scaling range lower limit value". If same values are set, a scaling setting range error (error code: 1A3☐H) occurs.
- Set different values for "Scaling width upper limit value" and "Scaling width lower limit value". If same values are set, a scaling setting range error (error code: 1A3☐H) occurs.

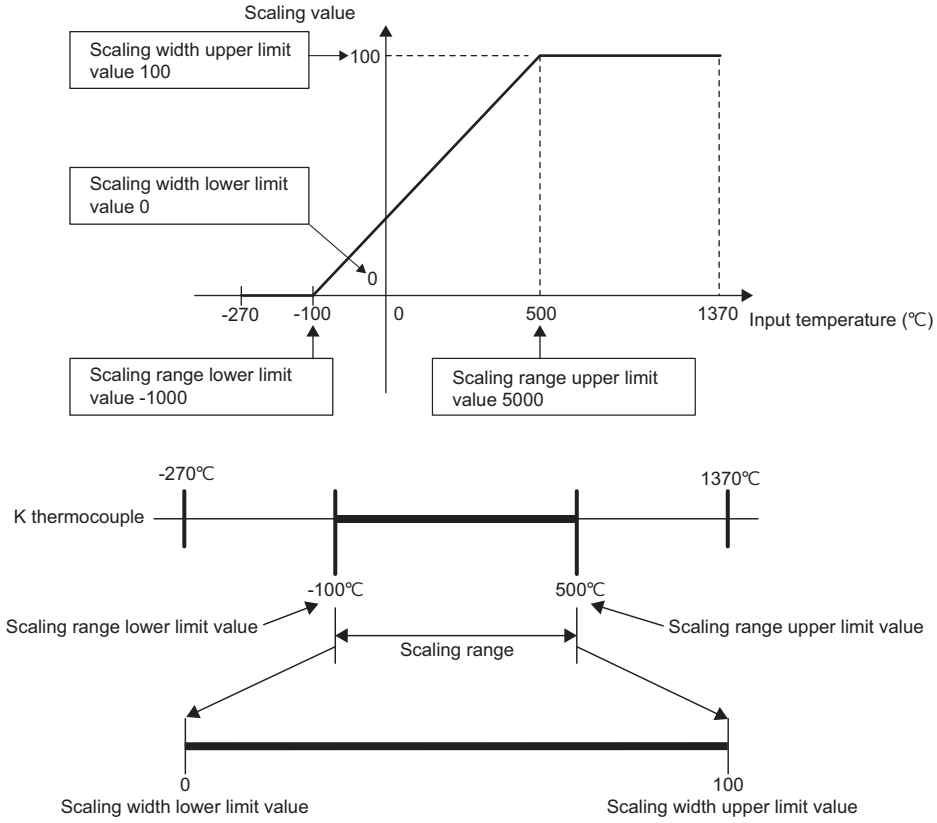
Setting example

■Example 1

This example assumes that the thermocouple input module is used with the following settings for the channel where a K thermocouple (-270 to 1370℃) is connected.

- "Scaling enable/disable setting": "Enable"
- "Scaling range upper limit value": 5000
- "Scaling range lower limit value": -1000
- "Scaling width upper limit value": 100
- "Scaling width lower limit value": 0

A measured temperature value and scaling value become as follows.



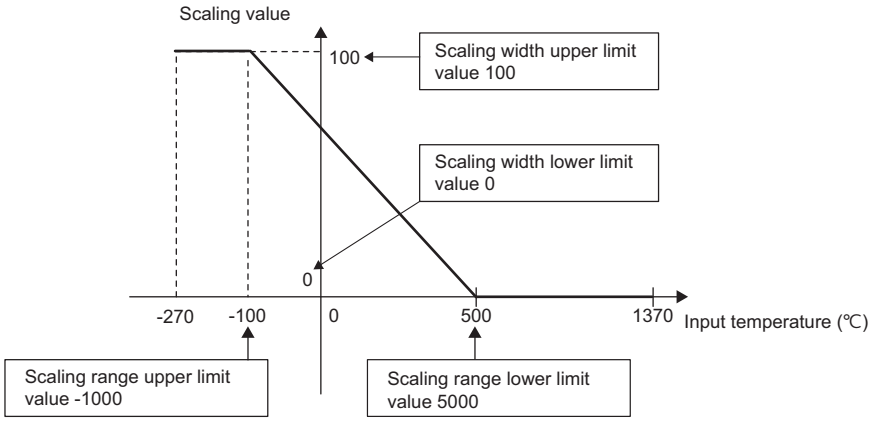
Temperature input value	Measured temperature value	Scaling value
-100.1℃ or lower	-1001 or lower	0
-100.0℃	-1000	0
50.0℃	500	25
200.0℃	2000	50
350.0℃	3500	75
500.0℃	5000	100
500.1℃ or higher	5001 or higher	100

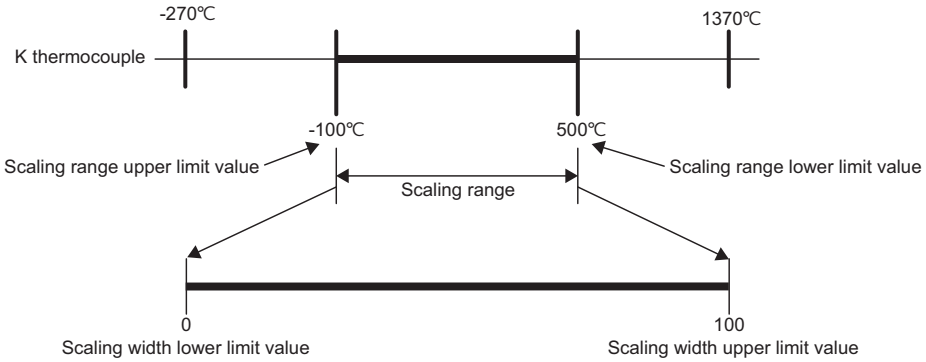
■Example 2

This example assumes that the thermocouple input module is used with the following settings for the channel where a K thermocouple (-270 to 1370℃) is connected.

- "Scaling enable/disable setting": "Enable"
- "Scaling range upper limit value": -1000
- "Scaling range lower limit value": 5000
- "Scaling width upper limit value": 100
- "Scaling width lower limit value": 0

A measured temperature value and scaling value become as follows.





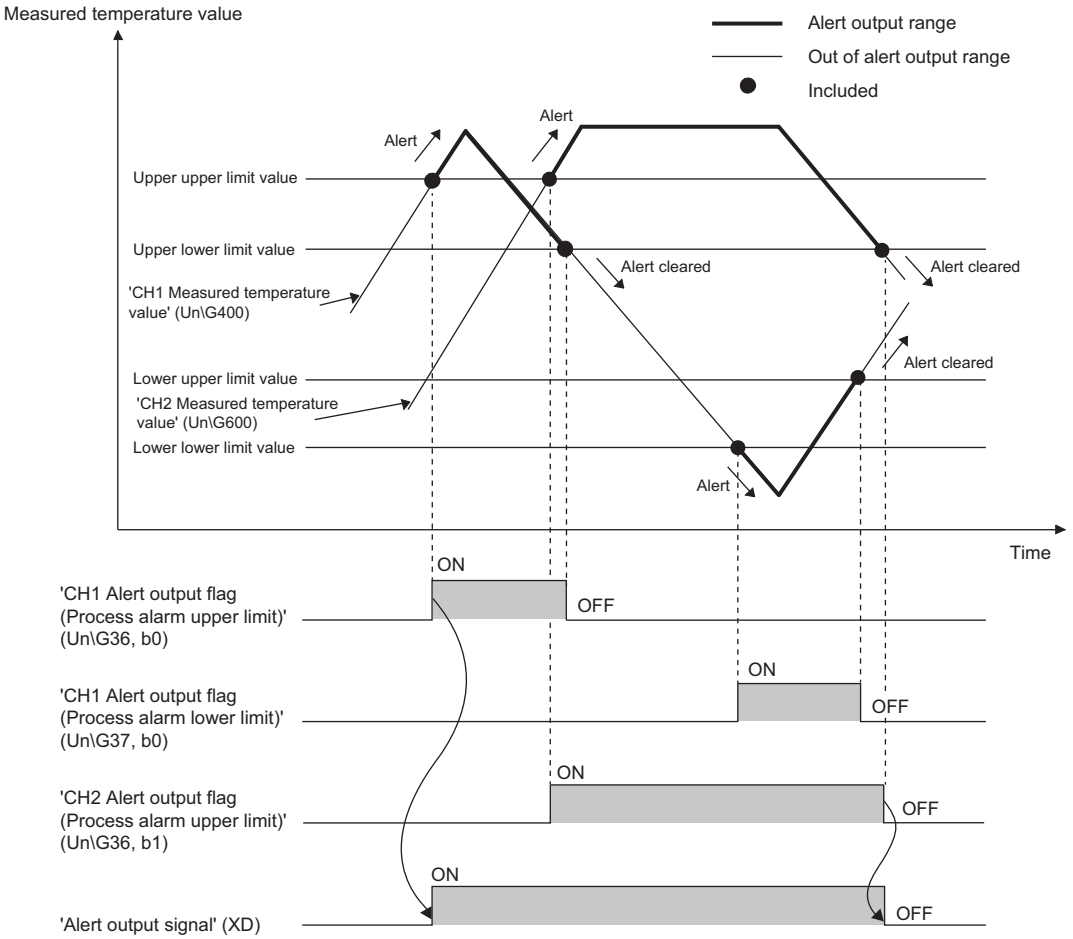
Temperature input value	Measured temperature value	Scaling value
-100.1℃ or lower	-1001 or lower	100
-100.0℃	-1000	100
50.0℃	500	75
200.0℃	2000	50
350.0℃	3500	25
500.0℃	5000	0
500.1℃ or higher	5001 or higher	0

1.6 Alert Output Function

This section describes process alarms and rate alarms used for the alert output function.

Process alarm

This function outputs an alert when a measured temperature value enters the preset alert output range.



Operation

■Operation performed when an alert is output

When a measured temperature value is equal to or greater than the process alarm upper upper limit value, or the value is equal to or smaller than the process alarm lower lower limit value and the value enters the alarm output range, an alert is output as follows.

- Alarm ON (1) is stored in 'Alert output flag (Process alarm upper limit)' (Un\G36) or 'Alert output flag (Process alarm lower limit)' (Un\G37).
- 'Alert output signal' (XD) turns on.
- The ALM LED turns on.
- An alarm code is stored in 'Latest alarm code' (Un\G2). (☞ Page 88 List of Alarm Codes)

Point

The temperature conversion on a channel where an alert was output continues.

■Operation after an alert was output

After an alert was output, if the measured temperature value becomes smaller than the process alarm upper lower limit value or greater than the process alarm lower upper limit value, Normal (0) is stored in a bit position corresponding to the channel number of 'Alert output flag (Process alarm upper limit)' (Un\G36) or 'Alert output flag (Process alarm lower limit)' (Un\G37). In addition, when Normal (0) is stored in all the bits of 'Alert output flag (Process alarm upper limit)' (Un\G36) and 'Alert output flag (Process alarm lower limit)' (Un\G37), 'Alert output signal' (XD) turns off and the ALM LED turns off. However, the alarm code stored in 'Latest alarm code' (Un\G2) is not cleared. Turn on and off 'Error clear request' (YF) to clear the alarm code.

Detection cycle

When time average is specified, the function works at every interval of the time (for averaging). When count average is specified, the function works at every count (for averaging).
When the sampling processing, moving average, and primary delay filter is specified, this function works at every sampling cycle.

Detection target for outputting an alert

'CH1 Measured temperature value' (Un\G400) is a target for outputting an alert. The target is the same for when the scaling function is enabled.

Operation performed when disconnection is detected

At disconnection detection, a process alarm may occurs as well because 'CH1 Measured temperature value' (Un\G400) changes according to 'CH1 Conversion setting at disconnection detection' (Un\G531).

Setting procedure

1. Set "Warning output setting (Process alarm)" to "Enable".

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Application setting] ⇨ [Warning output function (Process alarm)]

2. Set values for "Process alarm upper upper limit value", "Process alarm upper lower limit value", "Process alarm lower upper limit value", and "Process alarm lower lower limit value". The setting range varies depending on a temperature input module and input range used.

• Thermocouple input module

Item	Input range	Setting range	Accuracy guaranteed range
Process alarm upper upper limit value Process alarm upper lower limit value Process alarm lower upper limit value Process alarm lower lower limit value	K thermocouple	-270.0 to 1370.0 (℃)	-200.0 to 1200.0 (℃)
	E thermocouple	-270.0 to 1000.0 (℃)	-200.0 to 900.0 (℃)
	J thermocouple	-210.0 to 1200.0 (℃)	-40.0 to 750.0 (℃)
	T thermocouple	-270.0 to 400.0 (℃)	-200.0 to 350.0 (℃)
	B thermocouple	0.0 to 1820.0 (℃)	600.0 to 1700.0 (℃)
	R thermocouple	-50.0 to 1760.0 (℃)	0.0 to 1600.0 (℃)
	S thermocouple	-50.0 to 1760.0 (℃)	0.0 to 1600.0 (℃)
	N thermocouple	-270.0 to 1300.0 (℃)	-200.0 to 1250.0 (℃)

• RTD input module

Item	Input range	Setting range
Process alarm upper upper limit value Process alarm upper lower limit value Process alarm lower upper limit value Process alarm lower lower limit value	Pt100 (-200 to 850℃)	200.0 to 850.0 (℃)
	Pt100 (-20 to 120℃)	20.0 to 120.0 (℃)
	Pt100 (0 to 200℃)	0.0 to 200.0 (℃)
	JPt100 (-180 to 600℃)	180.0 to 600.0 (℃)
	JPt100 (-20 to 120℃)	20.0 to 120.0 (℃)
	JPt100 (0 to 200℃)	0.0 to 200.0 (℃)
	Ni100 (-60 to 250℃)	60.0 to 250.0 (℃)
	Pt50 (-200 to 650℃)	200.0 to 650.0 (℃)

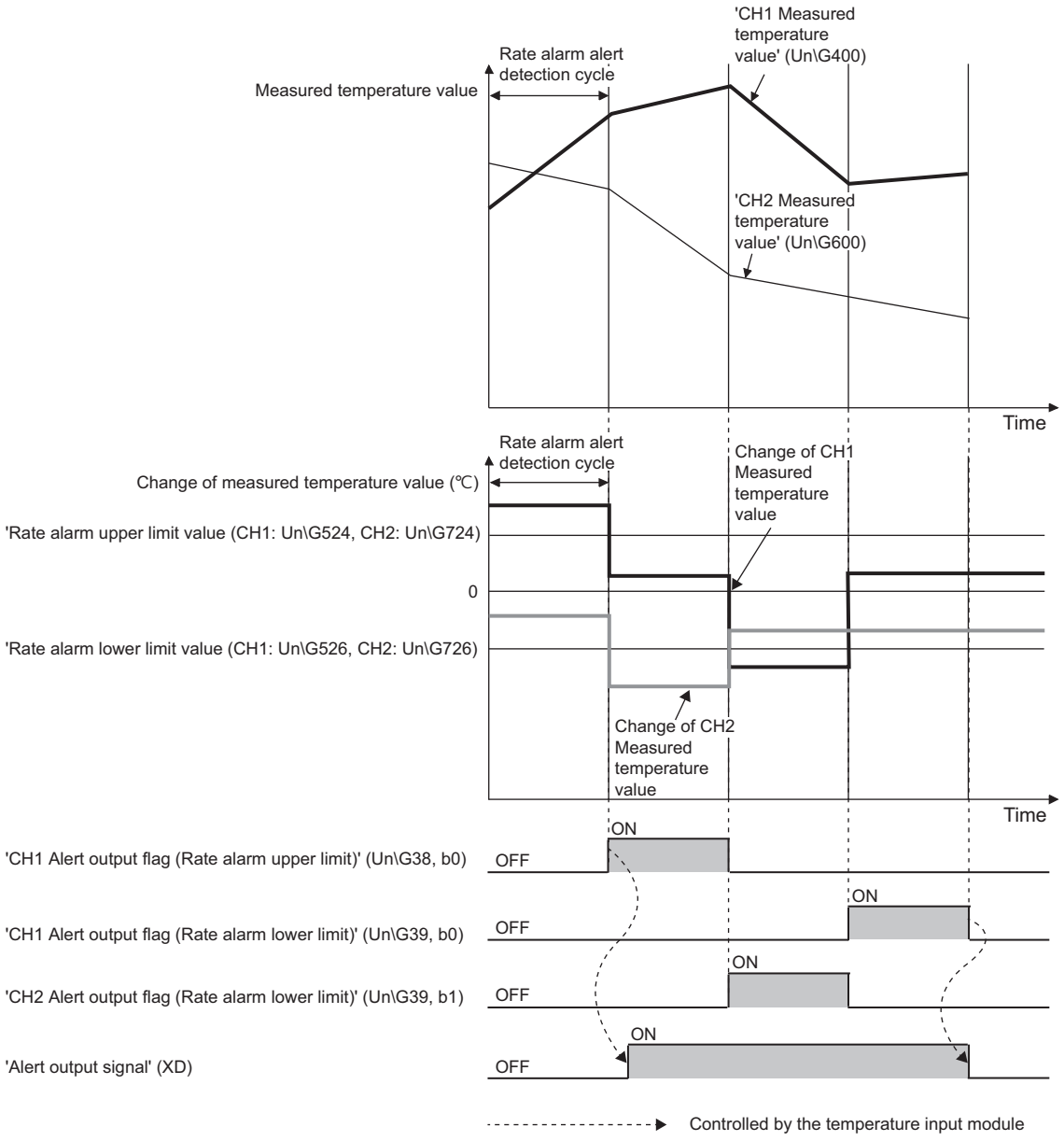
Point

Set the alert output function (process alarm) to satisfy the following condition. If a value out of the range is set, a process alarm upper lower limit value setting range error (error code: 1B△□H) occurs.

Process alarm upper upper limit value ≥ Process alarm upper lower limit value ≥ Process alarm lower upper limit value ≥ Process alarm lower lower limit value

Rate alarm

This function outputs an alert when the change of a measured temperature value is equal to or greater than the rate alarm upper limit value, or equal to or smaller than the rate alarm lower limit value.



Operation

■Operation performed when an alert is output

Measured temperature values are monitored on the rate alarm alert detection cycle. When a change rate of a measured temperature value (from a previous value) is equal to or more than the rate alarm upper limit value, or the rate is equal to or less than the rate alarm lower limit value, an alert is output as follows.

- Alarm ON (1) is stored in 'Alert output flag (Rate alarm upper limit)' (Un\G38) or 'Alert output flag (Rate alarm lower limit)' (Un\G39).
- 'Alert output signal' (XD) turns on.
- The ALM LED turns on.
- An alarm code is stored in 'Latest alarm code' (Un\G2). (☞ Page 88 List of Alarm Codes)

Point

The temperature conversion on a channel where an alert was output continues.

■Operation after an alert was output

After an alert was output, if the measured temperature value becomes smaller than the rate alarm upper limit value or greater than the rate alarm lower limit value, Normal (0) is stored in a bit position corresponding to the channel number of 'Alert output flag (Rate alarm upper limit)' (Un\G38) or 'Alert output flag (Rate alarm lower limit)' (Un\G39).

In addition, when Normal (0) is stored in all the bits of 'Alert output flag (Rate alarm upper limit)' (Un\G38) and 'Alert output flag (Rate alarm lower limit)' (Un\G39), 'Alert output signal' (XD) turns off and the ALM LED turns off. However, the alarm code stored in 'Latest alarm code' (Un\G2) is not cleared. Turn on and off 'Error clear request' (YF) to clear the alarm code.

Detection cycle

The rate alarm alert detection cycle is calculated by the following formula.

- Rate alarm alert detection cycle = Conversion speed × Number of conversion enabled channels × Setting value of 'CH1 Rate alarm alert detection cycle setting' (Un\G522)

Ex.

Rate alarm alert detection cycle for the thermocouple input module with the following conditions

- Conversion enabled: CH1, CH2, CH3
- 'CH1 Rate alarm alert detection cycle setting' (Un\G522): 5 (times)

The rate alarm alert detection cycle is 450ms. (30ms × 3 (CH) × 5 (times))

Judgment of rate alarm

A change rate is judged with the following formulae every rate alarm alert detection cycle.

• For alert outputting of rate alarm upper limit

Measured temperature value of this time - Measured temperature value of previous detection cycle ≥ Rate alarm upper limit value

• For alert outputting of rate alarm lower limit

Measured temperature value of this time - Measured temperature value of previous detection cycle ≤ Rate alarm lower limit value

Ex.

Judgment of rate alarm for the thermocouple input module, with the following conditions

• Conversion enabled channel: CH1
• CH1 Range setting (Thermocouple type): K thermocouple
• CH1 Averaging process specification: Sampling processing
• Rate alarm alert detection cycle setting: 5 (times)
• CH1 Rate alarm upper limit value: 10000 (1000.0℃)
• CH1 Rate alarm lower limit value: 3200 (320.0℃)

A measured temperature value of this time is compared to the previous value (measured temperature value 150ms before), every rate alarm alert detection cycle of 150ms (30ms × 5). From the comparison, whether the increase in the measured temperature value is 10000 (1000.0℃) or more, or 3200 (320.0℃) or less is judged.

Detection target for outputting an alert

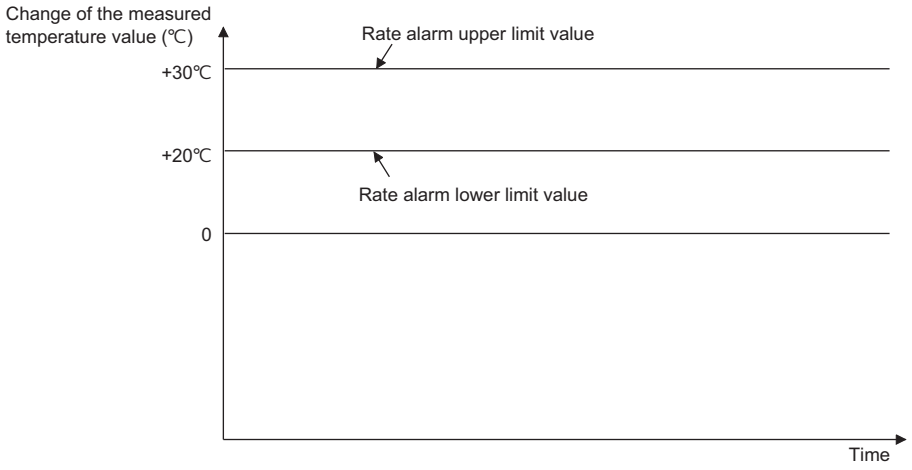
'CH1 Measured temperature value' (Un\G400) is a target for outputting an alert. The target is the same for when the scaling function is enabled.

Application examples of rate alarms

A rate alarm serves to monitor the change of a measured temperature value in a limited range as shown below.

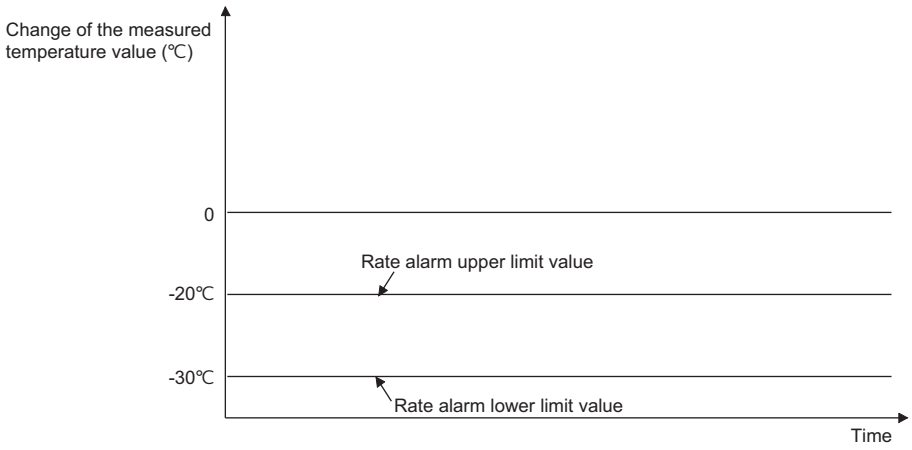
Ex.

To monitor that an increase rate of a measured temperature value is within the specified range



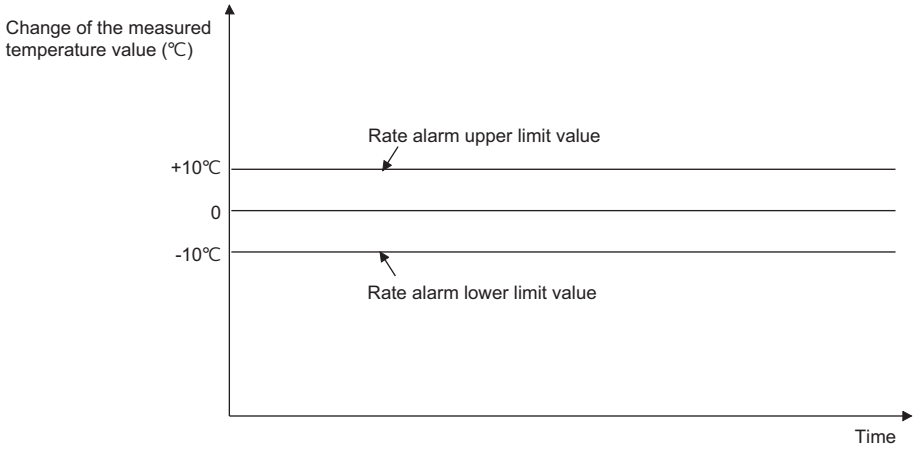
Ex.

To monitor that a decrease rate of a measured temperature value is within the specified range



Ex.

To monitor that a change rate of a measured temperature value is within the specified range



Operation performed when disconnection is detected

- At disconnection detection, a rate alarm may occurs as well because 'CH1 Measured temperature value' (Un\G400) changes according to 'CH1 Conversion setting at disconnection detection' (Un\G531).
- At recovery time from disconnection, previous information (value) of rate alarm is cleared. Therefore, at the restart of temperature conversion, even if the change rate of the measured temperature value (from before restart to after restart) is out of the limit range, an alert is not output.

Setting procedure

1. Set "Warning output setting (Rate alarm)" to "Enable".

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Application setting] ⇨ [Warning output function (Rate alarm)]

2. Set a value in "Rate alarm detection cycle setting".

Item	Setting range
Rate alarm detection cycle setting	1 to 32000 (times)

3. Set values for "Rate alarm upper limit value" and "Rate alarm lower limit value".

Item	Setting range
Rate alarm upper limit value	-3276.8 to 3276.7 (℃)
Rate alarm lower limit value	

Point

Set the alert output function (rate alarm) to satisfy the following condition. If a value out of the range is set, a rate alarm upper/lower limit setting value inversion error (error code: 1BA□H) occurs.
Rate alarm upper limit value > Rate alarm lower limit value

1.7 Disconnection Detection Function

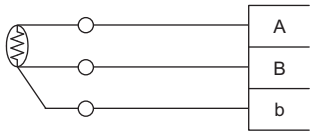
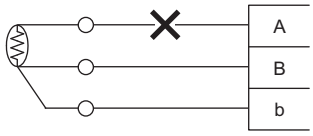
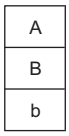
This function detects disconnection of a thermocouple, compensation lead wire, or resistance temperature detector.

Notification of disconnection

- Disconnection detection (1) is stored in a bit position corresponding to the channel number of 'Disconnection detection flag' (Un\G41).
- 'Disconnection detection signal' (XC) turns on.
- The ALM LED flashes.
- An alarm code is stored in 'Latest alarm code' (Un\G2). (☞ Page 88 List of Alarm Codes)
- A value specified in 'CH1 Conversion setting at disconnection detection' (Un\G531) (Value just before disconnection, Upscale, Downscale, or Any value) is stored in 'CH1 Measured temperature value' (Un\G400).

Relationship of disconnection detection and conversion enable/disable setting

The disconnection detection is executed only for a channel where conversion is set to be enabled. The following table shows the relationship of disconnection detection and state of conversion enable/disable setting.

Connection status	State of conversion enable/disable setting	Disconnection detection flag
 No disconnection	Conversion enable	OFF
	Conversion disable	
 Disconnection	Conversion enable	ON
	Conversion disable	OFF
 No connection	Conversion enable	ON
	Conversion disable	OFF

Recovery from disconnection

When the cause of the disconnection is eliminated and the connection of external devices is established, the operation after this recovery varies depending on the setting of 'Disconnection detection automatic clear enable/disable setting' (Un\G303).

■Enable (0) is set

Normal (0) is stored in the bit corresponding to 'Disconnection detection flag' (Un\G41) of the recovered channel. After Normal (0) is stored in all the bits of 'Disconnection detection flag' (Un\G41), 'Disconnection detection signal' (XC) automatically turns off and the ALM LED turns off. However, the alarm code stored in 'Latest alarm code' (Un\G2) is not cleared. Turn on and off 'Error clear request' (YF) to clear the alarm code.

■Disable (1) is set

'Disconnection detection flag' (Un\G41), 'Disconnection detection signal' (XC), and the ALM LED hold the status at the time of the disconnection detection. To return to the normal status, make a recovery from disconnection of all the channels, and turn on and off 'Error clear request' (YF).

■Measured temperature value after the recovery

A correct measured temperature value is stored in the buffer memory area at the next temperature conversion after Normal (0) is stored in 'Disconnection detection flag' (Un\G41). For averaging processing, a correct measured temperature value is stored in the buffer memory area after Normal (0) is stored in 'Disconnection detection flag' (Un\G41) and the averaging process cycle has elapsed.

Detection cycle

Disconnection detection is executed every sampling cycle.

Conversion setting at disconnection detection

A value stored in 'CH1 Measured temperature value' (Un\G400) at the time of the disconnection detection can be specified by setting 'CH1 Conversion setting at disconnection detection' (Un\G531). This enables disconnection detection only by checking 'CH1 Measured temperature value' (Un\G400), without checking 'Disconnection detection signal' (XC). The default value of 'CH1 Conversion setting at disconnection detection' (Un\G531) is Downscale (1). Change the setting value if necessary.

Conversion setting at disconnection detection	Operation performed when disconnection is detected
Upscale (0)	An upscale value of the presently set input range (upper limit value + 5% of input rage) is stored in 'CH1 Measured temperature value' (Un\G400).
Downscale (1)	A downscale value of the presently set input range (lower limit value - 5% of input rage) is stored in 'CH1 Measured temperature value' (Un\G400).
Any value (2)	A value set in 'CH1 Conversion setting value at disconnection detection' (Un\G532) is stored in 'CH1 Measured temperature value' (Un\G400).
Value just before disconnection (3)	'CH1 Measured temperature value' (Un\G400) holds a value just before the disconnection is detected.

■Upscale, downscale

An upscale value (upper limit value + 5% of input rage) or a downscale value (lower limit value - 5% of input rage) of the set input range is stored in 'CH1 Measured temperature value' (Un\G400) at the time of the disconnection detection. The following tables list a value stored in 'CH1 Measured temperature value' (Un\G400) at the disconnection detection, when the upscale or downscale is selected.

• Thermocouple input module

Input range	Temperature measuring range	Downscale	Upscale
K thermocouple	-270 to 1370℃	-352.0℃	1452.0℃
E thermocouple	-270 to 1000℃	-333.5℃	1063.5℃
J thermocouple	-210 to 1200℃	-280.5℃	1270.5℃
T thermocouple	-270 to 400℃	-303.5℃	433.5℃
B thermocouple	0 to 1820℃	-91.0℃	1911.0℃
R thermocouple	-50 to 1760℃	-140.5℃	1850.5℃
S thermocouple	-50 to 1760℃	-140.5℃	1850.5℃
N thermocouple	-270 to 1300℃	-348.5℃	1378.5℃

• RTD input module

Input range	Temperature measuring range	Downscale	Upscale
Pt100 (-200 to 850℃)	-200 to 850℃	-252.5℃	902.5℃
Pt100 (-20 to 120℃)	-20 to 120℃	-27.0℃	127.0℃
Pt100 (0 to 200℃)	0 to 200℃	-10.0℃	210.0℃
JPt100 (-180 to 600℃)	-180 to 600℃	-219.0℃	639.0℃
JPt100 (-20 to 120℃)	-20 to 120℃	-27.0℃	127.0℃
JPt100 (0 to 200℃)	0 to 200℃	-10.0℃	210.0℃
Ni100 (-60 to 250℃)	-60 to 250℃	-75.5℃	265.5℃
Pt50 (-200 to 650℃)	-200 to 650℃	-242.5℃	692.5℃

■Any value

At the time of the disconnection detection, a value set in 'CH1 Conversion setting value at disconnection detection' (Un\G532) is stored in 'CH1 Measured temperature value' (Un\G400). The default value of 'CH1 Conversion setting value at disconnection detection' (Un\G532) is 0. The value can be changed to any value although using 0 is no problem.

Point

When the scaling function is used, a value according to the setting of 'CH1 Conversion setting at disconnection detection' (Un\G531) is scale converted and then stored as a scaling value.

Setting procedure

1. Set "Disconnection detection function enable/disable setting" to "Enable".

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Application setting] ⇨ [Disconnection detection function]

2. Set "Disconnection detection Automatic clear enable/disable setting" to "Enable" or "Disable".

3. Using "Conversion setting for disconnection detection", set what value is to be stored in 'CH1 Measured temperature value' (Un\G400) at the time of the disconnection detection.

Item	Setting range
Conversion setting at disconnection detection	• Upscale • Downscale • Given Value • Value immediately before disconnection

4. When "Given Value" is set, set "Conversion setting value for disconnection detection".

Item	Setting range
Conversion setting value for disconnection detection	-3276.8 to 3276.7 (℃)

1.8 Cold Junction Compensation Setting Function

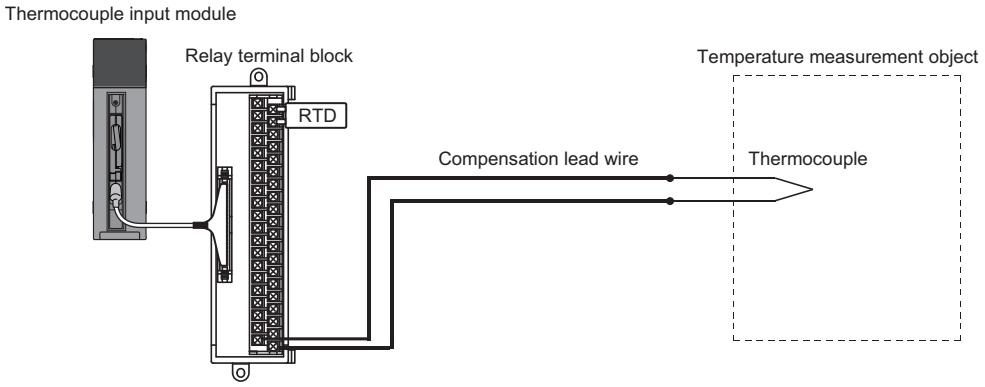
This function enables two types of cold junction compensation (using a cold junction compensation resistor or an external method (cooling bath)) by setting whether to use a cold junction compensation resistor. Only the thermocouple input module can use the function.

Operation

The operations of cold junction compensation using a cold junction compensation resistor or using an external method are described below.

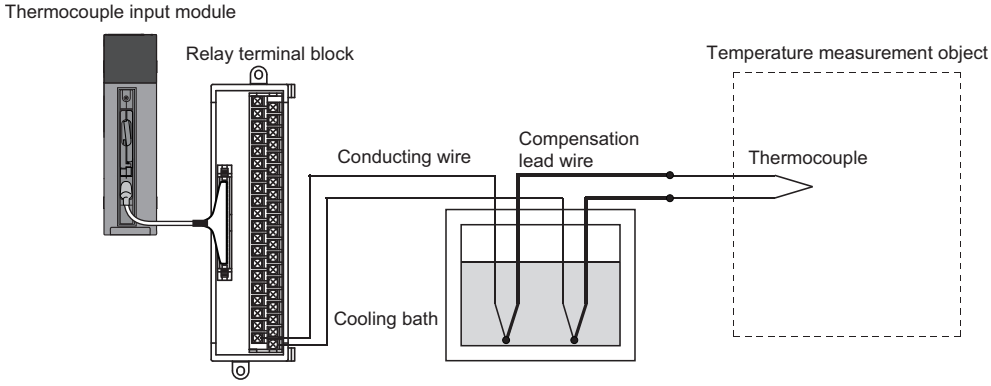
■Cold junction compensation using a cold junction compensation resistor

Cold junction compensation using a cold junction compensation resistor is automatically executed by setting With cold junction compensation (0) in 'Cold junction compensation with/without setting' (Un\G298).
Connect provided cold junction compensation resistor (RTD) to the relay terminal block as shown below.



■Cold junction compensation using an external method

Set Without cold junction compensation (other than 0) in 'Cold junction compensation with/without setting' (Un\G298), and externally install a cooling bath (high-precision). Because the thermoelectromotive force generated at reference junction of the thermocouple conducts to the thermocouple input module without change, the cold junction compensation accuracy is improved. Use this type of compensation to perform highly accurate temperature measurement where an error generated by the compensation using a cold junction compensation resistor (RTD) is not allowed.
Wire the module as shown below. Note that the connection of the cold junction compensation resistor (RTD) to the relay terminal block is not required.



Point

The cooling bath has a structure where a thermocouple and a conducting wire is connected inside the bath which temperature is controlled to be 0℃. Therefore, the thermoelectromotive force generated by the thermocouple at the contact site of the thermocouple and the conducting wire becomes 0V. This prevents unnecessary thermoelectromotive force that causes an error.

Setting procedure

1. Set "Cold junction temperature compensation with/without setting" to "With cold junction temperature compensation" or "Without cold junction temperature compensation".

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Basic setting] ⇨ [Cold junction temperature compensation with/without setting function]

1.9 Cold Junction Compensation Resistor Disconnection Detection Function

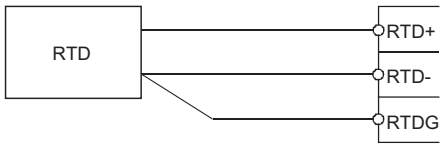
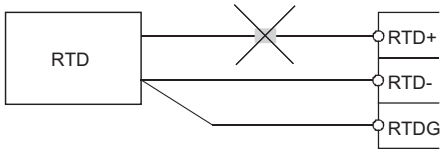
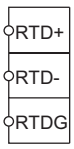
This function outputs an error when disconnection of a cold junction compensation resistor (RTD) is detected. Only the thermocouple input module can use the function.

Notification of disconnection

- 'Error flag' (XF) turns on.
- The ERR LED turns on.
- An error code is stored in 'Latest error code' (Un\G0). (☞ Page 84 List of Error Codes)
- The temperature conversion stops for all the channels where conversion is enabled. At that time, 'Conversion completed flag' turns off for all the channels.
- 'CH1 Measured temperature value' (Un\G400) holds a value just before the disconnection.

Relationship of disconnection detection and conversion enable/disable setting

Disconnection detection is executed when With cold junction compensation (0) is set in 'Cold junction compensation with/without setting' (Un\G298) and the conversion is enabled for one channel or more. The following table shows the relationship of disconnection detection and setting state of each item.

Connection status	Cold junction compensation with/without setting	State of conversion enable/disable setting	'Error flag' (XF)
 No disconnection	With cold junction compensation	Conversion enabled for one or more channel	OFF
		Conversion disabled for all channels	
	Without cold junction compensation	Conversion enabled for one or more channel	
		Conversion disabled for all channels	
 Disconnection	With cold junction compensation	Conversion enabled for one or more channel	ON
		Conversion disabled for all channels	OFF
	Without cold junction compensation	Conversion enabled for one or more channel	
		Conversion disabled for all channels	
 No connection	With cold junction compensation	Conversion enabled for one or more channel	ON
		Conversion disabled for all channels	OFF
	Without cold junction compensation	Conversion enabled for one or more channel	
		Conversion disabled for all channels	

Point

Disconnection is not detected when the conversion is disabled for all channels.

Recovery from disconnection

Even if the connection of a cold junction compensation resistor (RTD) is re-established, the temperature conversion is not restarted. Turn on and off 'Error clear request' (YF) to restart the temperature conversion.

1.10 Logging Function

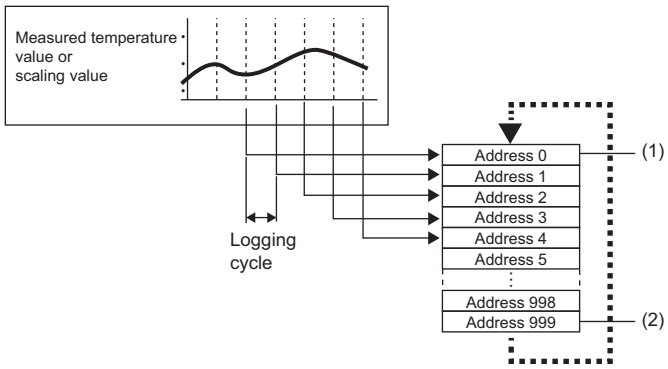
This function stores 1000 points of measured temperature values or scaling values per channel in the buffer memory area. In addition, the data collection can be stopped by using the status change of the data as a trigger. This function also helps the error analysis since the data before and after the occurrence of an error is held.
Using module function blocks enables saving the data stored in the buffer memory as a CSV file.

Logging function

■Collecting logging data

Logging data is collected as follows.

- For each channel, 1000 points of the latest measured temperature values or scaling values can be always collected.
- For the thermocouple input module, the data can be collected at intervals of 30ms at minimum and of 3600s at maximum. For the RTD input module, the data can be collected at intervals of 10ms at minimum and of 3600s at maximum.



(1) Head pointer
The address of the oldest data in logging data can be checked.

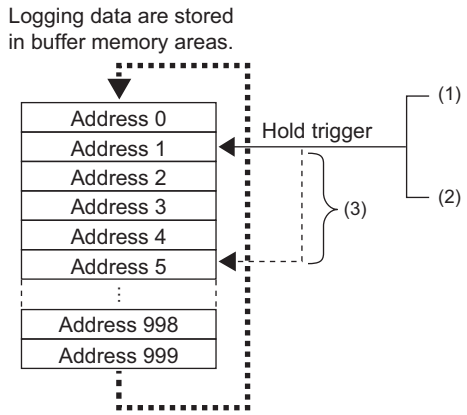
(2) Latest pointer
The address of the latest data in logging data can be checked.

Logging data are stored in the buffer memory area. When the number of stored data points is 1001 or greater, data is sequentially overwritten from address 0 with new data.

■Stopping the logging operation

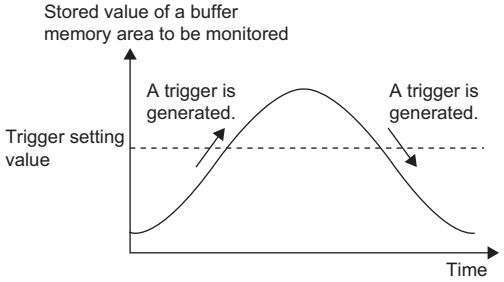
The logging data is refreshed at high speed during logging. Stop logging when the logging data needs to be referred without paying attention to the refreshing cycle.
Logging can be stopped by the hold trigger.

- A hold trigger allows two options: Logging hold request or Level trigger.
- The number of data points to be collected after a hold trigger occurs can be set.



(1) Logging hold request
A hold trigger is generated from a program at any timing.

(2) Level trigger
A hold trigger is generated when a stored value in a buffer memory area is monitored and the set condition is satisfied as follows.
Example: When the stored value exceeds or falls below the set value, a hold trigger is generated.



(3) Post-trigger logging points
When the set points of data is collected after a hold trigger is generated, the logging operation is stopped.

■Saving logging data into a CSV file

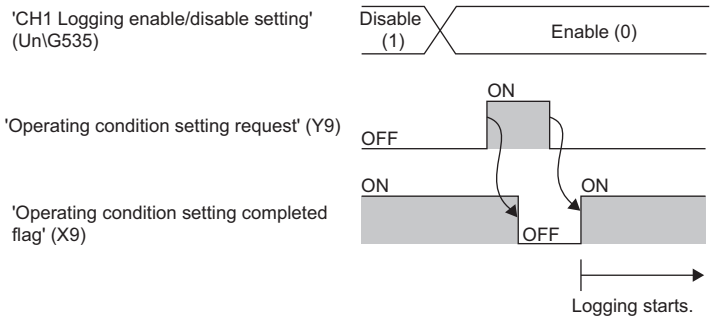
The data in CH1 Logging data (Un\G10000 to Un\G10999) disappears when the module is powered off. However, the data can be saved in a CSV file by using module function blocks.

Operation of logging

■Starting logging data collection

Logging data collection starts when Enable (0) is set in 'CH1 Logging enable/disable setting' (Un\G535)' and 'Operating condition setting request' (Y9) is turned on and off.

The data in 'CH1 Measured temperature value' (Un\G400) or 'CH1 Scaling value' (Un\G402) is stored in CH1 Logging data (Un\G10000 to Un\G10999) on the set logging cycle.



■Logging data

Logging data are stored in the following buffer memory areas.

When the number of stored data points is 1001 or greater, the data is overwritten with new data from the head of the storage area of the corresponding channel.

Channel	Storage area for logging data
CH1	Un\G10000 to Un\G10999
CH2	Un\G11000 to Un\G11999
CH3	Un\G12000 to Un\G12999
CH4	Un\G13000 to Un\G13999
CH5	Un\G14000 to Un\G14999
CH6	Un\G15000 to Un\G15999
CH7	Un\G16000 to Un\G16999
CH8	Un\G17000 to Un\G17999

If logging has been performed even once, all the logging data above are cleared to 0 at the timing when 'Operating condition setting request' (Y9) is turned off and on.

■Logging data setting

Select a data type to be collected with 'CH1 Logging data setting' (Un\G536).

- Measured temperature value (0)
- Scaling value (1)

Logging cycle

■Logging cycle setting

Set the logging cycle with 'CH1 Logging cycle setting value' (Un\G537) and 'CH1 Logging cycle unit setting' (Un\G538).
The following table lists the setting range for each cycle.

Setting value of 'CH1 Logging cycle unit setting' (Un\G538)	Setting range of 'CH1 Logging cycle setting value' (Un\G537)
ms (1)	• 30 to 32767 (for the thermocouple input module) • 10 to 32767 (for the RTD input module)
s (2)	1 to 3600

The logging cycle must be an integral multiple of the conversion cycle. Even if the setting is not an integral multiple, the actual logging cycle is adjusted to the integral multiple of the conversion cycle within a limit of the set logging cycle.
The following table lists the conversion cycle for each temperature conversion method.

Temperature conversion method	Conversion cycle
Sampling processing	Conversion speed*2 × Number of channels where the temperature conversion is enabled
Time average	$\left(\frac{\text{Time set in Time average/Count average/Moving average/Primary delay filter constant setting}}{\text{Number of conversion enabled channels} \times \text{Conversion speed}}\right)^{*1} \times \text{Number of conversion enabled channels} \times \text{Conversion speed}^{*2}$
Count average	(The count set to CH1 Time average/Count average/Moving average/Primary delay filter constant setting) × (Conversion speed*2 × Number of conversion enabled channels)
Moving average	Conversion speed*2 × Number of channels where the temperature conversion is enabled
Primary delay filter	Conversion speed*2 × Number of channels where the temperature conversion is enabled

*1 Values after the decimal point are omitted.
*2 The conversion speed is 30ms for the thermocouple input module, 10ms for the RTD input module.

Ex.
With the thermocouple input module having the following settings, the conversion cycle is 240ms and the actual logging is performed every 6960ms (integral multiple of 240ms) cycle.

- Conversion enabled channel: CH1 to CH8
- CH1 Averaging process specification: Sampling processing
- CH1 Logging cycle setting value: 7000
- CH1 Logging cycle unit setting: ms

The following values are stored in 'CH1 Logging cycle monitor value' (Un\G441, Un\G442).

Buffer memory address	Item		Stored value
441	'CH1 Logging cycle monitor value' (Un\G441, Un\G442)	s	6
442		ms	960

■When the logging function becomes disabled

The logging is not performed when even one of the following errors occurs after the logging function is enabled and 'Operating condition setting request' (Y9) is turned on and off.

- Error code (192□H to 195□H): Setting errors of 'CH1 Time average/Count average/Moving average/Primary delay filter constant setting' (Un\G502)
- Error code (1D0□H to 1D6□H): Setting errors of the logging function
- Error code (1D8□H, 1D9□H): Setting errors of the logging read function

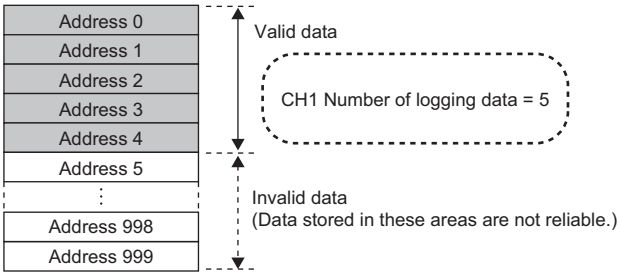
Point

When 'Operating condition setting request' (Y9) is turned on and off on the condition that the logging cycle determined by 'CH1 Logging cycle setting value' (Un\G537) and 'CH1 Logging cycle unit setting' (Un\G538) is shorter than the conversion cycle, an error occurs and logging does not start. A logging cycle setting disable error (error code: 1D2□H) is stored in 'Latest error code' (Un\G0), 'Error flag' (XF) and the ERR LED turn on.

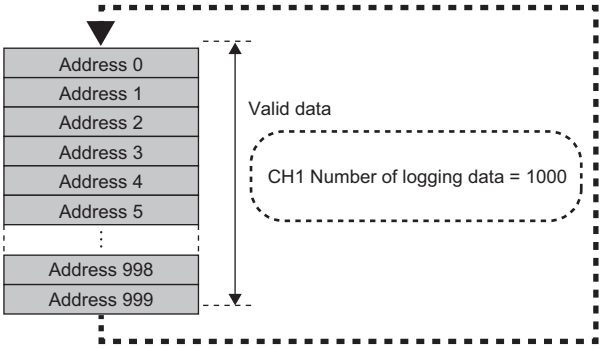
■Number of logging data

With 'CH1 Number of logging data' (Un\G436), the number of valid data in 'CH1 Logging data' (Un\G10000 to Un\G10999) can be checked.

• When the number of collected data points is less than 1000



• When the number of collected data points is 1001 or greater



The number of logging data increases by one each time new data is stored.

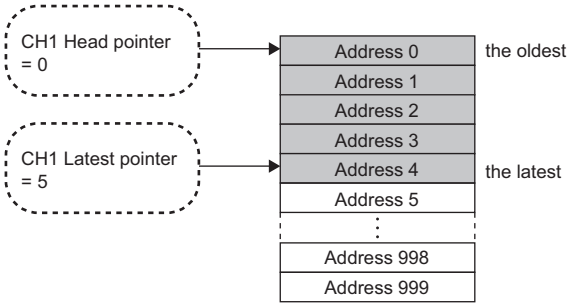
When CH1 Logging data (Un\G10000 to Un\G10999) becomes full (Number of logging data = 1000), the next data is stored in the head address of CH1 Logging data (Un\G10000 to Un\G10999), and the logging operation continues overwriting the existing data. In this case, the number of logging data is fixed to 1000.

■Head pointer and latest pointer

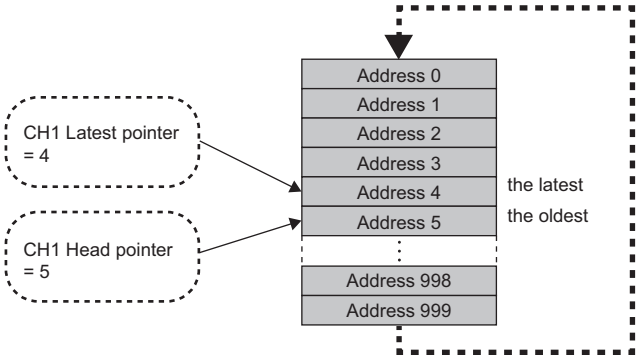
The storage location of the oldest data and the latest data in CH1 Logging data (Un\G10000 to Un\G10999) can be checked with the following buffer memory areas.

Buffer memory area	Description
CH1 Head pointer (Un\G434)	The buffer memory address of the oldest data in CH1 Logging data (Un\G10000 to Un\G10999) can be checked with this buffer memory area. The offset value (0 to 999) counted from the start address of CH1 Logging data (Un\G10000 to Un\G10999) is stored.
CH1 Latest pointer (Un\G435)	The buffer memory address of the latest data in CH1 Logging data (Un\G10000 to Un\G10999) can be checked with this buffer memory area. The offset value (0 to 999) counted from the start address of CH1 Logging data (Un\G10000 to Un\G10999) is stored.

- When the number of collected data points is less than 1000



- When the number of collected data points is 1001 or greater



The head pointer does not change until CH1 Logging data (Un\G10000 to Un\G10999) becomes full after the logging start (fixed to 0).

The head pointer moves by one point when CH1 Logging data (Un\G10000 to Un\G10999) becomes full and overwriting the data starts from the start address.

■Checking logging data without stopping the logging operation

Logging data can be checked during the logging operation with 'CH1 Head pointer' (Un\G434), 'CH1 Latest pointer' (Un\G435), and 'CH1 Number of logging data' (Un\G436).

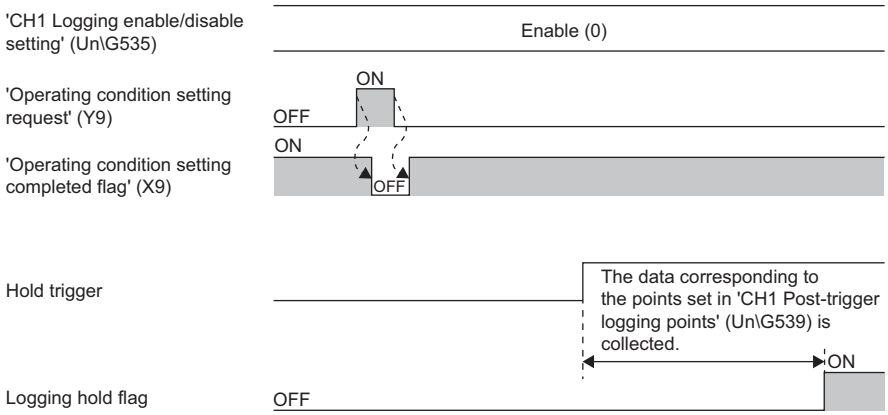
To check logging data during logging operation, follow the precautions below because logging data may be refreshed while data is being read out.

- Set the cycle to 'CH1 Logging cycle setting value' (Un\G537) so that data checking and reading surely complete before logging data is refreshed. If the logging cycle is short, logging data may be refreshed during data checking and reading.
- After obtaining the logging data which needs to be checked, monitor the variation of the head pointer and the number of logging data, and obtain logging data just after the stored value has changed.
- If the data refreshed and the data being checked do not synchronize due to the relationship between the logging cycle and the scan time of the CPU module, adjust the logging cycle.

Stop the logging operation when the logging data needs to be checked without paying attention to the logging cycle. (☞ Page 47 Stopping the logging operation)

Stopping the logging operation

Logging operation stops (holds) when the preset trigger condition is satisfied and the set points of the data are collected.
A trigger that is generated when the condition is satisfied is called a hold trigger.
To generate a hold trigger, the following two methods are available.
☞ Page 50 Logging hold request
☞ Page 51 Level trigger
When a hold trigger is detected during data collection, the logging operation stops after the points of the data set in 'CH1 Post-trigger logging points' (Un\G539) are collected.



Post-trigger logging points

Set the number of data collected in the period from the detection of a hold trigger to logging operation stop to 'CH1 Post-trigger logging points' (Un\G539).

Checking that the logging has stopped

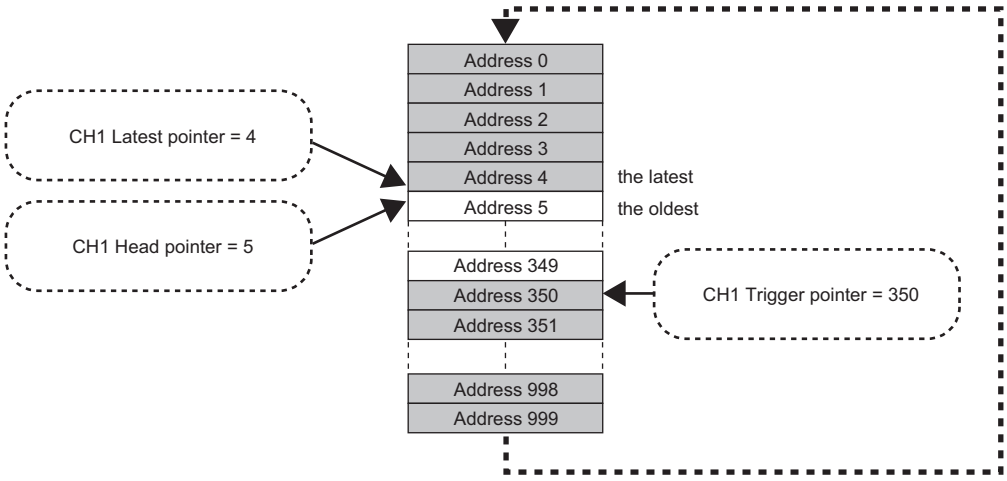
Check that 'CH1 Logging hold flag' (Un\G409) is ON (1).

Checking data when a hold trigger has occurred

The storage location of the data when a hold trigger has occurred can be checked with 'CH1 Trigger pointer' (Un\G437). The offset value counted from the start address of CH1 Logging data (Un\G10000 to Un\G10999) is stored in 'CH1 Trigger pointer' (Un\G437).

Ex.
The value stored in Trigger pointer when the logging operation stops under the following conditions

- 'CH1 Post-trigger logging points' (Un\G539): 655 points
- The data location where a hold trigger has occurred: 350th data



■Checking the trigger generation time

The trigger generation time can be checked with 'CH1 Trigger generation time' (Un\G444 to Un\G448).

Ex.

When 'CH1 Trigger generation time' (Un\G444 to Un\G448) is monitored

	b15 to b8	b7 to b0
'CH1 Trigger generation time (First/Last two digits of the year)' (Un\G444)	First two digits of the year	Last two digits of the year
'CH1 Trigger generation time (Month/Day)' (Un\G445)	Month	Day
'CH1 Trigger generation time (Hour/Minute)' (Un\G446)	Hour	Minute
'CH1 Trigger generation time (Second/Day of the week)' (Un\G447)	Second	Day of the week
'CH1 Trigger generation time (Millisecond)' (Un\G448)	Millisecond (higher-order digits)	Millisecond (lower-order digits)

Item	Storage contents	Storage example*1
First two digits of the year/Last two digits of the year	Stored in BCD code.	2015H
Month/Day		0130H
Hour/Minute		1035H
Second		40H
Day of the week	One of the following values is stored in BCD code. • Sunday: 00H • Monday: 01H • Tuesday: 02H • Wednesday: 03H • Thursday: 04H • Friday: 05H • Saturday: 06H	05H
Millisecond (higher-order digits)/Millisecond (lower-order digits)	Stored in BCD code.	0628H

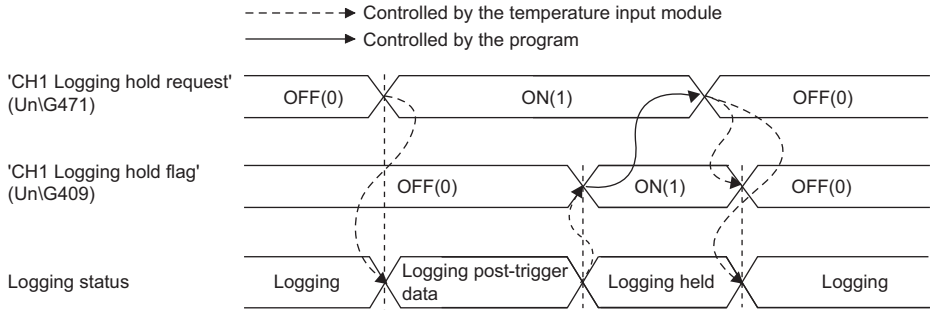
*1 These values assume that a trigger is generated at 10:34 and 40.628 seconds on Friday, January 30th, 2015.

Resuming the logging

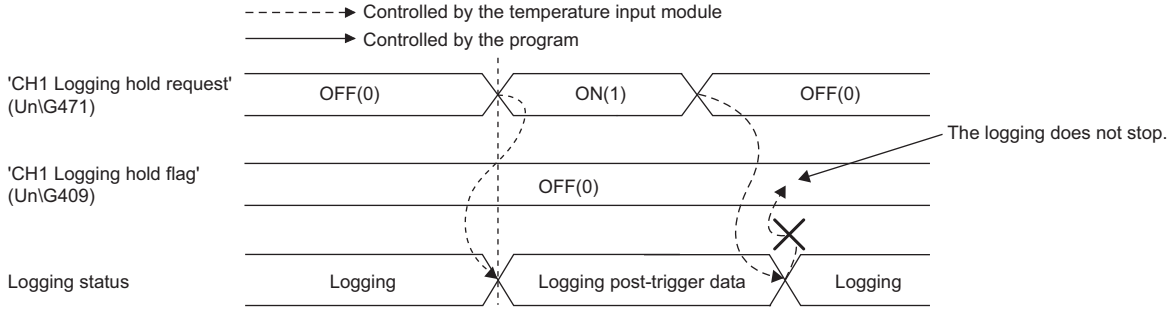
It may take time until ON (1) is stored in 'CH1 Logging hold flag' (Un\G409) after 'CH1 Logging hold request' (Un\G471) is changed from off to on.

To resume logging, check that ON (1) is stored in 'CH1 Logging hold flag' (Un\G409) and change 'CH1 Logging hold request' (Un\G471) from on to off. After logging resumes, the value is stored from the start buffer memory area of CH1 Logging data (Un\G10000 to Un\G10999).

In addition, OFF (0) is stored in 'CH1 Logging hold flag' (Un\G409).



Logging does not stop when 'CH1 Logging hold request' (Un\G471) is changed from on to off before ON (1) is stored in 'CH1 Logging hold flag' (Un\G409).



■Buffer memory area status when logging resumes

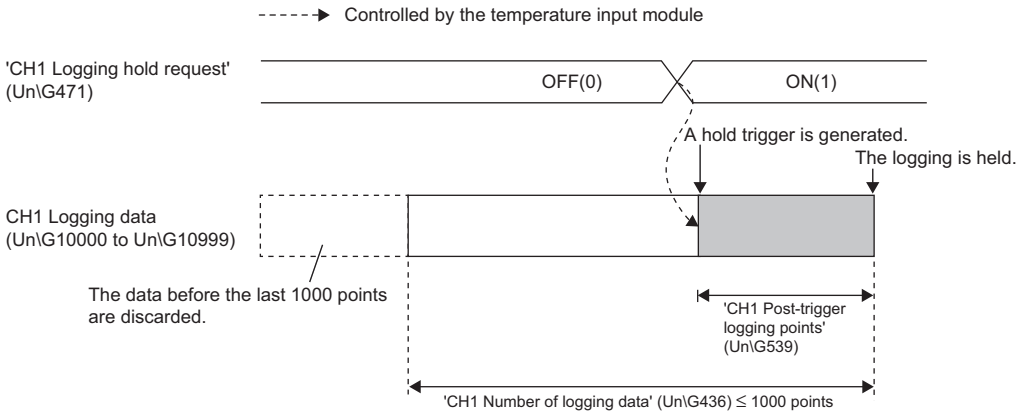
The following table shows the buffer memory area status when logging resumes.

Buffer memory area	Value status
'CH1 Head pointer' (Un\G434)	Values are initialized.
'CH1 Latest pointer' (Un\G435)	
'CH1 Number of logging data' (Un\G436)	
'CH1 Trigger pointer' (Un\G437)	
'CH1 Trigger generation time' (Un\G444 to Un\G448)	
CH1 Logging data (Un\G10000 to Un\G10999)	The values before logging resumes are not initialized. After logging resumes, values are stored from the start address of CH1 Logging data (Un\G10000 to Un\G10999). To refer to the logging data, check which area has valid data with 'CH1 Number of logging data' (Un\G436).

Logging hold request

A hold trigger is generated from a program at any timing.

After ON (1) is set to 'CH1 Logging hold request' (Un\G471), a preset number of data is collected and then the logging stops.



Point

- The following delay time occurs until a temperature input module receives a hold trigger after the value in 'CH1 Logging hold request' (Un\G471) is changed from OFF (0) to ON (1).

Trigger delay = Logging cycle (Cycle at which logging is actually performed) + Scan time of the CPU module

- When 'CH1 Logging hold request' (Un\G471) is changed from ON (1) to OFF (0) before 'CH1 Logging hold flag' (Un\G409) turns to ON (1), the number of data set in 'CH1 Post-trigger logging points' (Un\G539) is collected, and then logging resumes soon, without stopping.
- If a value other than OFF (0) and ON (1) is set to 'CH1 Logging hold request' (Un\G471), an error occurs. A logging hold request range error (error code: 1D7□H) is stored in 'Latest error code' (Un\G0), 'Error flag' (XF) and the ERR LED turn on.

Checking that the logging has stopped

Check that 'CH1 Logging hold flag' (Un\G409) is ON (1).

Level trigger

When a value in the monitored buffer memory area of a temperature input module satisfies a preset condition, a hold trigger is generated.

A level trigger is monitored on the refreshing cycle of the measured temperature value or the scaling value.

Initial setting of a level trigger

■Setting a target to be monitored

As a condition to generate a hold trigger, set the buffer memory address to be monitored to 'CH1 Trigger data' (Un\G541).

Item	Setting range
'CH1 Trigger data' (Un\G541)	0 to 9999

To monitor a device value of a module other than a temperature input module such as a device of the CPU module, set as follows.

- Set a value between 90 and 99 ('Level data ☐' (Un\G90 to Un\G99)) to 'CH1 Trigger data' (Un\G541).
- Write a value of the monitored device to 'Level data ☐' (Un\G90 to Un\G99) by using the MOV instruction.

Ex.

Application example of 'Level data ☐' (Un\G90 to Un\G99)

To monitor the data register D100 in the CPU module and generate the level trigger in CH1, create a program as follows.

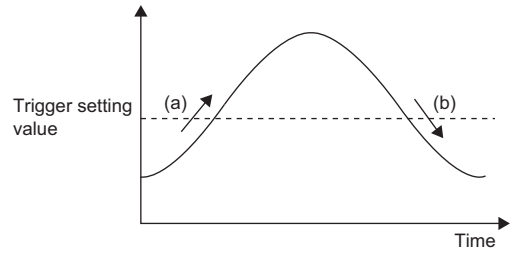
- Set 'CH1 Trigger data' (Un\G541) to 91 (buffer memory address of Level data 1) (when Level data 1 is used).
- Store the storage data of D100 in 'Level data 1' (Un\G91) by the program continuously.

Point

Specify an appropriate data such as 'CH1 Measured temperature value' (Un\G400), 'CH1 Scaling value' (Un\G402), or Level data ☐ (Un\G90 to Un\G99) to 'CH1 Trigger data' (Un\G541). When a setting area or a system area is specified, the normal operation is not guaranteed.

■Setting the monitoring condition

• Set a condition to generate a hold trigger in 'CH1 Level trigger condition setting' (Un\G540).

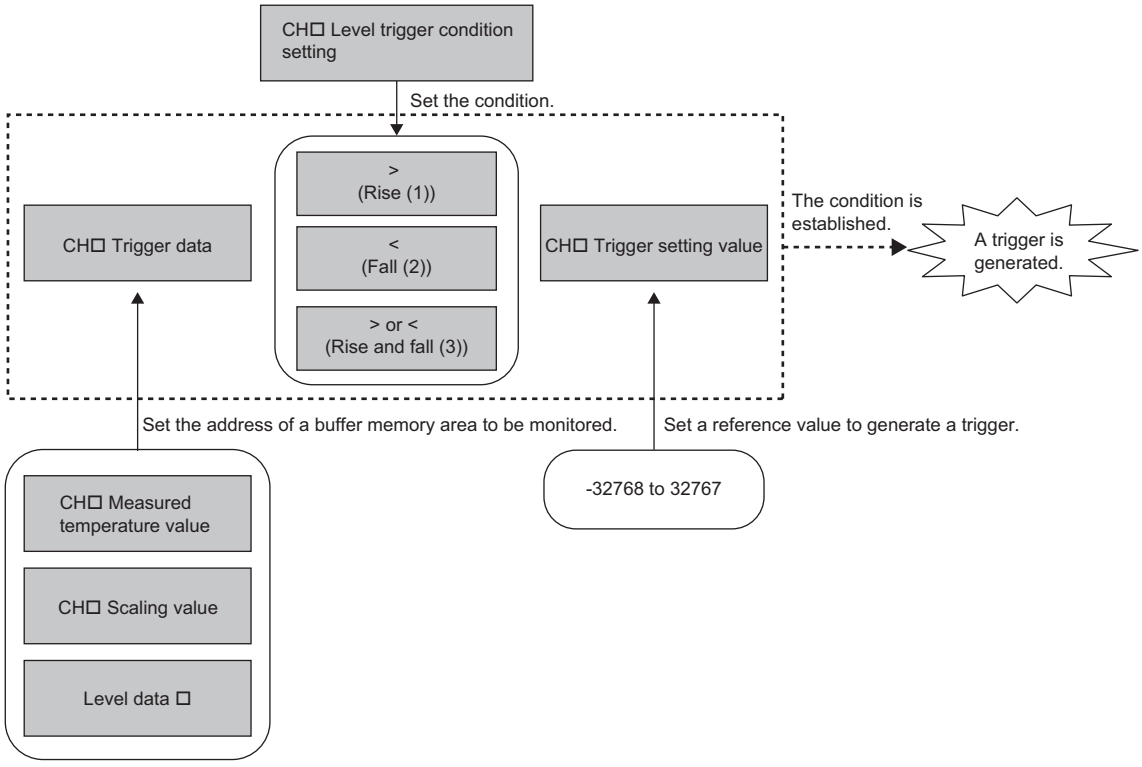
Setting value	Description	
Level trigger (condition: Rise) (1)	Stored value of a buffer memory area to be monitored  (a) A hold trigger is generated when the relation between the values changes from "Stored value of a buffer memory area to be monitored ≤ Trigger setting value" to "Stored value of a buffer memory area to be monitored > Trigger setting value". (b) A hold trigger is generated when the relation between the values changes from "Stored value of a buffer memory area to be monitored ≥ Trigger setting value" to "Stored value of a buffer memory area to be monitored < Trigger setting value".	A hold trigger is generated under the condition (a).
Level trigger (condition: Fall) (2)		A hold trigger is generated under the condition (b).
Level trigger (condition: Rise and fall) (3)		A hold trigger is generated under the condition (a) or (b).

• Set a value where a hold trigger is generated to 'CH1 Trigger setting value' (Un\G542).

Item	Setting range
'CH1 Trigger setting value' (Un\G542)	-32768 to 32767

Point

The following figure shows the relation between setting items to be configured for the initial setting of a level trigger.



To generate a hold trigger when a value in CH1 Measured temperature value is greater than 1000, set as follows.

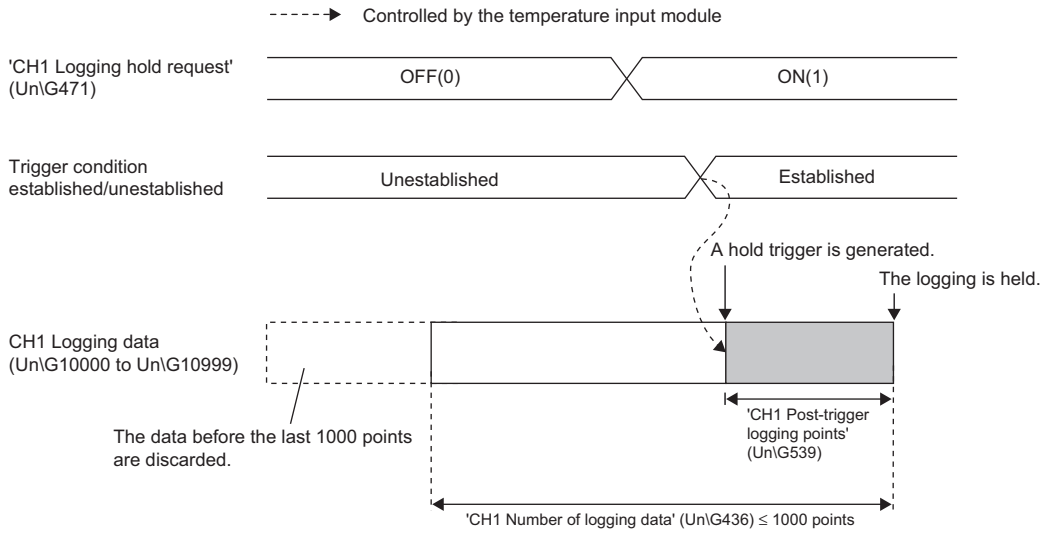
• 'CH1 Level trigger condition setting' (Un\G540): Rise (1)

• 'CH1 Trigger data' (Un\G541): 400

• 'CH1 Trigger setting value' (Un\G542): 1000

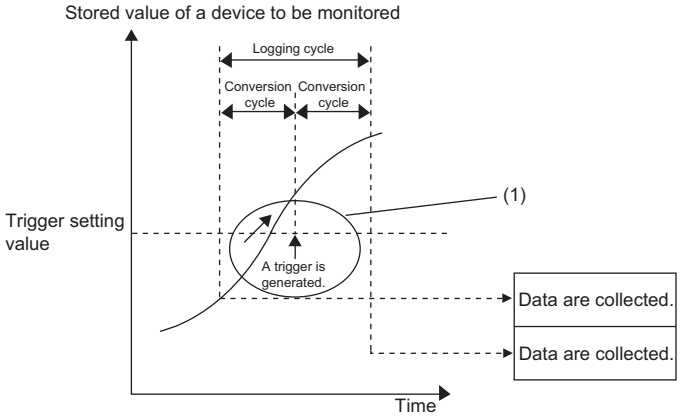
Operation of a level trigger

To use a level trigger, set ON (1) to 'CH1 Logging hold request' (Un\G471) in advance. At the point where ON (1) has been set to 'CH1 Logging hold request' (Un\G471), the module becomes the trigger condition wait status.
After the trigger condition has been satisfied, and the set points of the data have been collected from that point, the logging stops.



Point

A level trigger is detected on the refreshing cycle of the measured temperature value or the scaling value. Therefore, the data when a hold trigger is generated may not be stored in CH1 Logging data (Un\G10000 to Un\G10999) depending on the setting of the logging cycle. To store the data at the timing when a hold trigger is generated in CH1 Logging data (Un\G10000 to Un\G10999), arrange related settings so that the conversion cycle of the monitoring target value (a trigger data) and the logging cycle (actual logging cycle) have the same time period.



(1) The data at the timing when a trigger is generated is not stored in the buffer memory area.

■Checking that the logging has stopped

Check that 'CH1 Logging hold flag' (Un\G409) is ON (1).

Initial settings of the logging function

The following describes the initial setting procedure to use the logging function.

Setting procedure

1. Set "Conversion enable/disable setting" to "Conversion enable".

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Basic setting] ⇨ [Conversion enable/disable setting function]

2. Set "Logging enable/disable setting" to "Enable".

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Application setting] ⇨ [Logging function]

3. Set the target data to be logged in "Logging data setting". Set either of "Measured temperature value" or "Scaling value" for each channel.
4. Set the cycle to store the logging data to "Logging cycle setting value".
5. Select a unit of the logging cycle setting value in "Logging cycle unit setting".
6. Set a condition to generate a hold trigger in "Level trigger condition setting". To use 'CH1 Logging hold request' (Un\G471), set "Disable". To use the level trigger, set either of "Level trigger (Condition: Rise)", "Level trigger (Condition: Fall)", or "Level trigger (Condition: Rise and fall)".
7. Set a number of the data points to be collected for the time period from the occurrence of a hold trigger to logging stop in "Logging points after trigger".
8. Set a buffer memory address to be monitored for a level trigger to "Trigger data".
9. Set whether to enable or disable the logging read function in "Logging loading enable/disable setting".
10. Set a level where a level trigger operates for "Trigger setting value".

Logging read function

More than 1000 points of logging data can be stored by transferring the device data to the file register of the CPU module without stopping logging. This function reduces the takt time in a test demanding high-speed conversion.

Overview of the logging read function

After logging starts, an interrupt request is sent to the CPU module and an interrupt program is executed every time the preset number of data to be read is logged.

A temperature input module has 16 points of the interrupt factor (SI) to correspond to the logging reading of each channel.

For the setting of interrupt pointers, refer to the following.

Setting interrupt pointers

Assign the interrupt factors (SI) of a temperature input module and interrupt pointers of the CPU module using the interrupt pointer setting of the engineering tool.

The interrupt function must be set when the logging read function is used.

Starting the logging read function

To use the logging read function, set Enable (0) to 'CH1 Loading interrupt enable/disable setting' (Un\G544) and set a number of logging points to generate an interrupt in 'CH1 Logging read points setting value' (Un\G545). This function starts when 'Operating condition setting request' (Y9) is turned on and off.

■The number of logging read points

Set a value whose integral multiple is 1000 in 'CH1 Logging read points setting value' (Un\G545). The setting range is from 1 to 1000. When a value whose integral multiple is not 1000 is set, the number of the actual logging read points is forced to become a maximum value whose integral multiple is 1000 within the set value. The value of the number of logging read points is stored in 'CH1 Logging read points monitor value' (Un\G440).

A value of CH1 Logging read points setting value	A value of CH1 Logging read points monitor value
100	100
90	50
110	100
650	500
400	250

Data checking method

■Current logging read pointer

- The head pointer read from CH1 Logging data (Un\G10000 to Un\G10999) with the interrupt processing is stored in 'CH1 Current logging read pointer' (Un\G438).
- The default value of 'CH1 Current logging read pointer' (Un\G438) is -1.
- Every time the same number of data as the value stored in CH1 Logging read points monitor value (Un\G440) is logged, a value calculated by the following formula is stored in 'CH1 Current logging read pointer' (Un\G438).

CH1 Current logging read pointer = CH1 Latest pointer - CH1 Logging read points monitor value + 1

■Previous logging read pointer

- 'CH1 Current logging read pointer' (Un\G438) at the timing when the previous read pointer detection interrupt occurs is stored in 'CH1 Previous logging read pointer' (Un\G439).
- The default value of 'CH1 Previous logging read pointer' (Un\G439) is -1.
- 'CH1 Previous logging read pointer' (Un\G439) is used to detect the overlap of the logging read pointer detection interrupt processing.

Ex.

The values to be stored in each pointer at every detection interrupt when the logging read detection starts with 'CH1 Logging read points setting value' (Un\G545) being set to 1000

Occurrence of read pointer detection interrupts	Previous logging read pointer	Current logging read pointer	Latest pointer
Default value	-1	-1	0
First time	-1	0	99
Second time	0	100	199
Third time	100	200	299
⋮	⋮	⋮	⋮
10th time	800	900	999
11th time	900	0	99
12th time	0	100	199

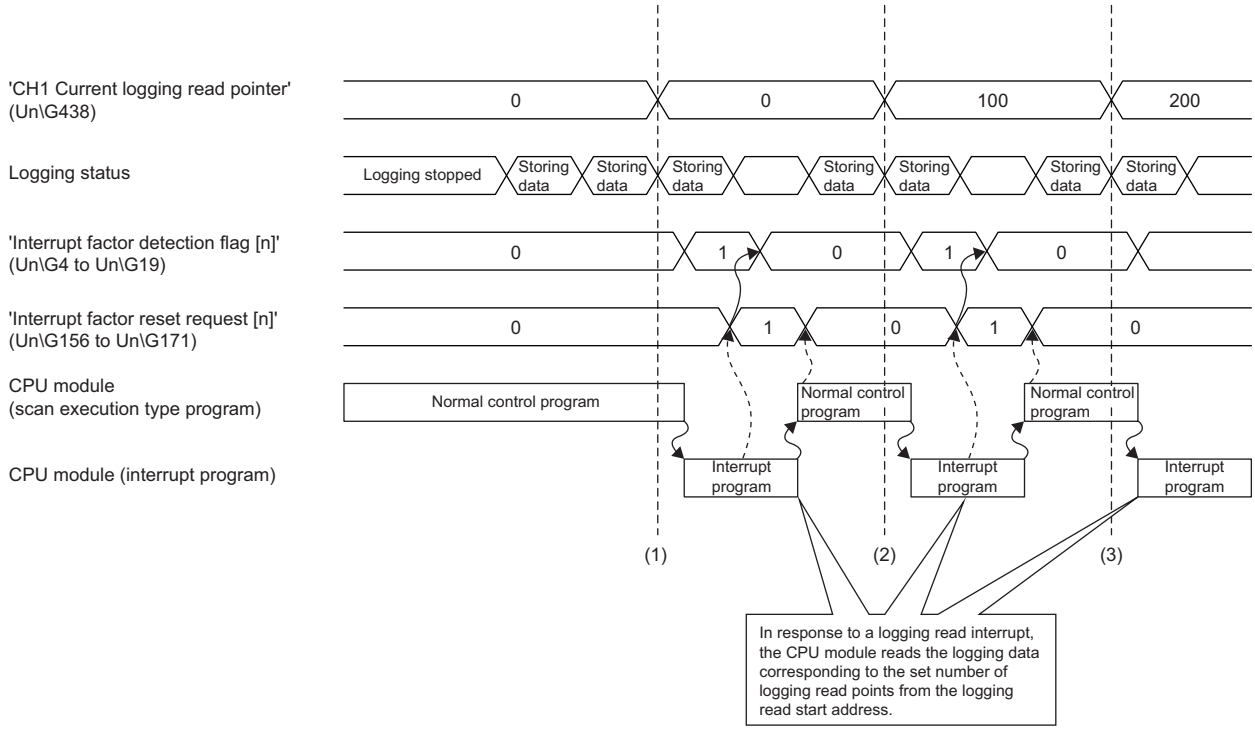
Operation

The logging read function starts by setting interrupt pointers and turning on and off 'Operating condition setting request' (Y9). This function repeats its operation every time the same number of data as the logging read points monitor value is logged.

Ex.

The following figure shows the operation when the logging read function is used under the following conditions.

- Conversion enabled channel: 1CH
- Logging read points setting value: 100 points



(1) The timing that the first interrupt processing occurs

(2) The timing that the second interrupt processing occurs

(3) The timing that the third interrupt processing occurs

Setting procedure

To use the logging read function, both the logging read function and the interrupt setting must be set.

1. Set "Condition target setting" to "Logging read".

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Interrupt setting]

2. Set "Conversion enable/disable setting" to "Conversion enable".

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Basic setting] ⇨ [Conversion enable/disable setting function]

3. Set "Logging enable/disable setting" to "Enable".

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Application setting] ⇨ [Logging function]

4. Set the target data to be logged in "Logging data setting".
5. Set the cycle to store the logging data to "Logging cycle setting value".
6. Set "Logging loading enable/disable setting" to "Enable".
7. Set the number of logging points that generate a read interrupt in "Logging read points setting value".

Setting example

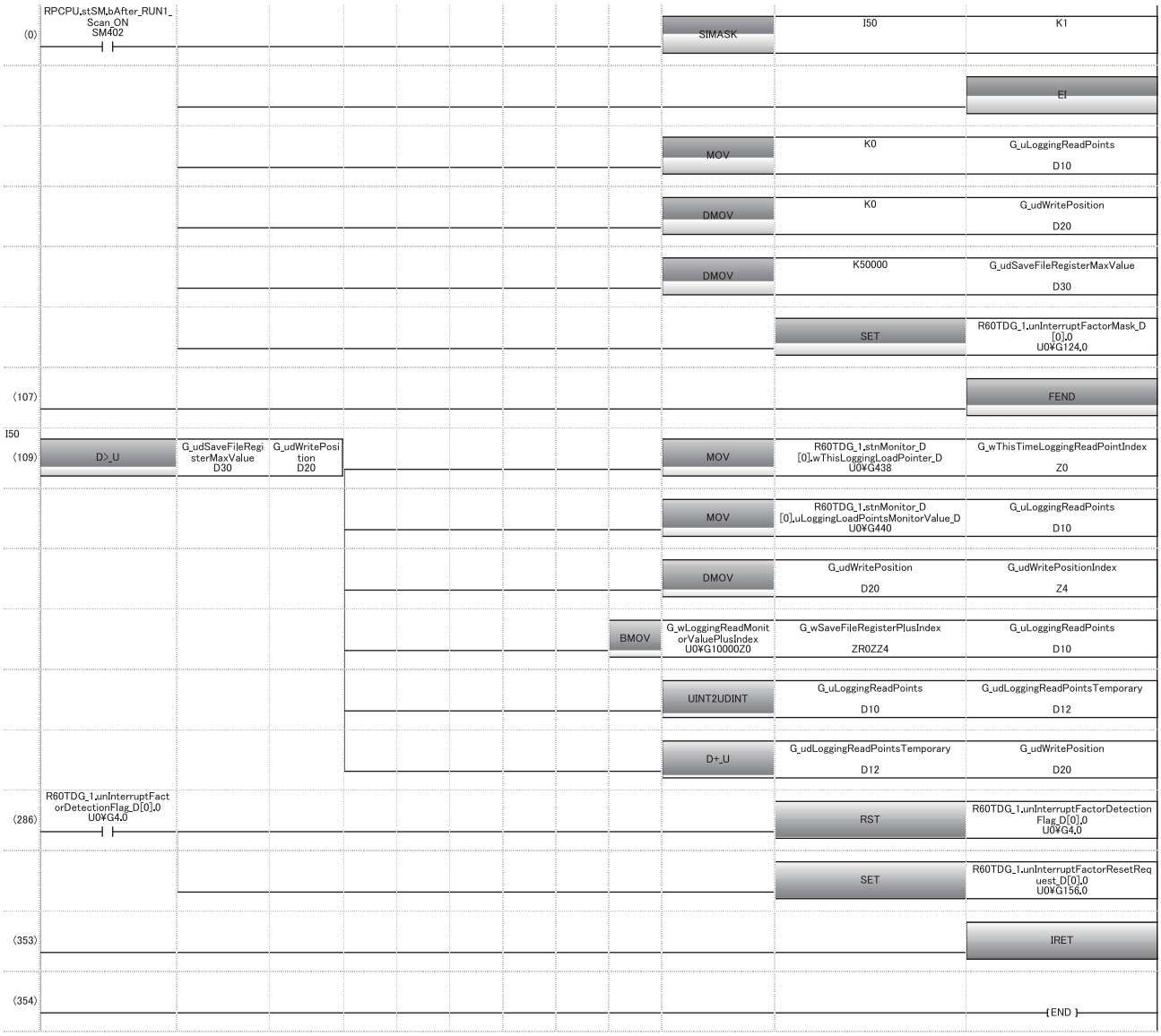
When an interrupt program, which is executed when the data of CH1 Logging read points monitor value is logged, is assigned to the interrupt pointer I50 for the thermocouple input module

• Label settings

Classification	Label name	Description	Device
Module Label	RCPU.stSM.bAlways_ON	Always ON	SM400
	RCPU.stSM.bAfter_RUN1_Scan_ON	ON for one scan after RUN	SM402
	R60TDG_1.unInterruptFactorMask_D[1].0	Interrupt factor mask	U0\G124
	R60TDG_1.unInterruptFactotDetectionFlag	Interrupt factor detection flag	U0\G4
	R60TDG_1.unInterruptFactorResetRequest_D[1].0	Interrupt factor reset request	U0\G156
	R60TDG_1.stnMonitor_D[1].wThisLoggingLoadPointer_D	CH1 Current logging read pointer	U0\G438
	R60TDG_1.stnMonitor_D[1].uLoggingLLoadPointsMonitorValue	CH1 Logging read points monitor value	U0\G440
Labels to be defined	Define global labels as shown below:		

	Label Name	Data Type		Class	Assign (Device/Label)
1	G_uLoggingReadPoints	Word [Unsigned]/Bit String [16-bit]	...	VAR_GLOBAL	D10
2	G_udLoggingReadPointsTemporary	Double Word [Unsigned]/Bit String [32-bit]	...	VAR_GLOBAL	D12
3	G_udWritePosition	Double Word [Unsigned]/Bit String [32-bit]	...	VAR_GLOBAL	D20
4	G_udSaveFileRegisterMaxValue	Double Word [Unsigned]/Bit String [32-bit]	...	VAR_GLOBAL	D30
5	G_wThisTimeLoggingReadPointIndex	Word [Signed]	...	VAR_GLOBAL	Z0
6	G_udWritePositionIndex	Double Word [Unsigned]/Bit String [32-bit]	...	VAR_GLOBAL	Z4
7	G_wLoggingReadMonitorValuePlusIndex	Word [Signed]	...	VAR_GLOBAL	U0¥G10000Z0
8	G_wSaveFileRegisterPlusIndex	Word [Signed]	...	VAR_GLOBAL	ZR0ZZ4

• Program example



(0) Enable only the interrupt pointer I50.
Initialize CH1 Logging read points monitor value and the write position of the save destination file register.
Set the maximum number of stored points of save destination file registers.
Clear Interrupt factor mask [0].

(109) Store CH1 Current logging read pointer in the index register.
Store CH1 Logging read points monitor value in the register.
Store the write position of the save destination file register in the index register.
Store CH1 Logging data for the logging read points monitor value in the save destination file register.
Add the points of the logging read points monitor value to the write position of the save destination file register and store the obtained value as the write position for the next logging.

(286) Turn off Interrupt factor mask [0] when Interrupt factor detection flag turns on.
Turn on Interrupt factor reset request [0].

Saving to a CSV file

The logging data stored in the buffer memory areas can be saved to a CSV file by using module function blocks. The save data is sorted in a time series, where the logging data can be easily checked.
However, module function blocks can be executed only when the logging operation is stopped. During the logging operation, the execution of module function blocks is disabled.

Saving a CSV file

To save a CSV file, an SD memory card is required.
CSV files are saved in an SD memory card installed in the CPU module. CSV files cannot be saved in the built-in memory of the CPU module.

Saving procedure

1. Check that ON (1) is stored in 'CH1 Logging hold flag' (Un\G409).
2. Execute the module function block.

Point

If the execution state of the module function block is maintained, logging data can be saved in the CSV file every time logging stops.

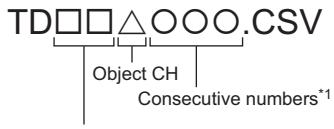
Data to be saved in a CSV file

The logging data stored in the buffer memory areas is saved.
For how to check the logging data, refer to the following.
☞ Page 47 Checking data when a hold trigger has occurred

CSV file name

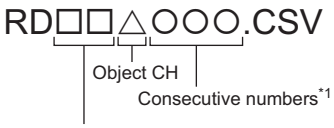
The name of the CSV file saved with the module function block varies depending on a module.

- Thermocouple input module



First two digits of the start I/O number of the thermocouple input module (expressed in four hexadecimal digits)

- RTD input module



First two digits of the start I/O number of the RTD input module (expressed in four hexadecimal digits)

*1 The maximum number of the consecutive numbers can be set with the input label i_Max_Number (maximum number of saving files) of the module function block.

Ex.

The file name under the following condition is TD453006.CSV.

- Start I/O number of the thermocouple input module: 0450H
- Target channel: 3
- Saving to a CSV file: 6th time.

Displaying logging data

The CSV file output with the logging function can be displayed graphically by reading the file through GX LogViewer.
For how to display the logging data with GX LogViewer, refer to the following.
GX LogViewer Version 1 Operating Manual

1.11 Interrupt Function

This function executes an interrupt program of the CPU module when an interrupt factor such as alert output or disconnection is detected.
For a temperature input module, the maximum number of interrupt pointers available is 16 per module.

Operation

■Detecting an interrupt factor

When an interrupt factor occurs, an interrupt request is sent to the CPU module at the same time as 'Interrupt factor detection flag [n]' (Un\G4 to Un\G19) turns to Interrupt factor (1).

■How to reset an interrupt factor

When Reset request (1) is set to 'Interrupt factor reset request [n]' (Un\G156 to Un\G171) corresponding to the interrupt factor, the specified interrupt factor is reset and 'Interrupt factor detection flag [n]' (Un\G4 to Un\G19) changes to No interrupt factor (0).

Setting procedure

To use the interrupt function, set "Condition target setting", "Condition target channel setting", "Interrupt factor transaction setting", and "Interrupt pointer" in the engineering tool. After completing the settings, write the project to enable the settings.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Interrupt setting]

Item	Description
Condition target setting	Select a factor of the target for the interrupt detection.
Condition target channel setting	Select a target channel when the condition target setting for the interrupt detection is channel specification.
Interrupt factor transaction setting	Set an interrupt request for when the same interrupt factor occurs during the interrupt factor detection.
Interrupt pointer	Specify the number of an interrupt pointer that is initiated at the detection of an interrupt factor.

■Condition target setting

Select a factor of the condition target setting for the interrupt detection.

Setting value	Description
Disable	The interrupt detection is not executed.
Error flag	The rise (OFF to ON) of 'Error flag' (XF) is detected.
Warning output flag (Process alarm)	The rise (OFF to ON) of Alert output flag (Process alarm) is detected. (The channel must be specified.)
Warning output flag (Rate alarm)	The rise (OFF to ON) of Alert output flag (Rate alarm) is detected. (The channel must be specified.)
Disconnection detection flag	The rise (OFF to ON) of Disconnection detection flag is detected. (The channel must be specified.)
Conversion completed flag	The ON state of Conversion completed flag is detected. (The channel must be specified.)*1
Logging hold flag	The rise (OFF to ON) of Logging hold flag is detected. (The channel must be specified.)
Logging read	The logging completion of data amount equivalent to logging read points is detected. (The channel must be specified.)

*1 For the thermocouple input module, power-on with the cold junction compensation resistor disconnected results in an interrupt being detected since conversion of every channel is complete.

■Condition target channel setting

Select a target channel when the condition target setting for the interrupt detection is channel specification.

■Interrupt factor transaction setting

Set an interrupt request for when the same interrupt factor occurs during the interrupt factor detection.

- With "Interrupt reissue requests", if the same interrupt factor occurs during the interrupt factor detection, an interrupt request is sent to the CPU module again.
- With "No interrupt reissue request", if the same interrupt factor occurs during the interrupt factor detection, an interrupt request is not sent to the CPU module.

■Interrupt pointer

Specify the number of an interrupt pointer that is initiated at the detection of an interrupt factor. For details on the interrupt pointers, refer to the following.

MELSEC iQ-R CPU Module User's Manual (Application)

Precautions

- If 'Condition target setting [n]' (Un\G232 to Un\G247) is Disable (0), an interrupt request is not sent to the CPU module.
- To reset the interrupt factor, set Reset request (1) until 'Interrupt factor detection flag [n]' (Un\G4 to Un\G19) changes to No interrupt factor (0).
- Resetting interrupt factors is executed only when 'Interrupt factor reset request [n]' (Un\G156 to Un\G171) changes from No reset request (0) to Reset request (1).
- Multiple interrupt pointers can also share the same setting of 'Condition target setting [n]' (Un\G232 to Un\G247). When interrupts with the same settings in 'Condition target setting [n]' (Un\G232 to Un\G247) occur, the interrupt program is executed in order of the priority of the interrupt pointers. For the priority of the interrupt pointers, refer to the following.

MELSEC iQ-R CPU Module User's Manual (Application)

- When All channels (0) is set for 'Condition target channel setting [n]' (Un\G264 to Un\G279) and an interrupt detection target is set for each channel of 'Condition target setting [n]' (Un\G232 to Un\G247), the interrupt requests that have the same interrupt factor are sent to the CPU module if alerts are issued in multiple channels. In this case, the CPU module executes multiple interrupt programs and judges that the program cannot be normally finished due to the scan monitoring function, and a CPU module error may occur. When a CPU error occurs, refer to the following.

MELSEC iQ-R CPU Module User's Manual (Application)

Setting example

Ex.

To execute the interrupt program (I51) at the disconnection detection in any channel of the thermocouple input module

• Parameter setting

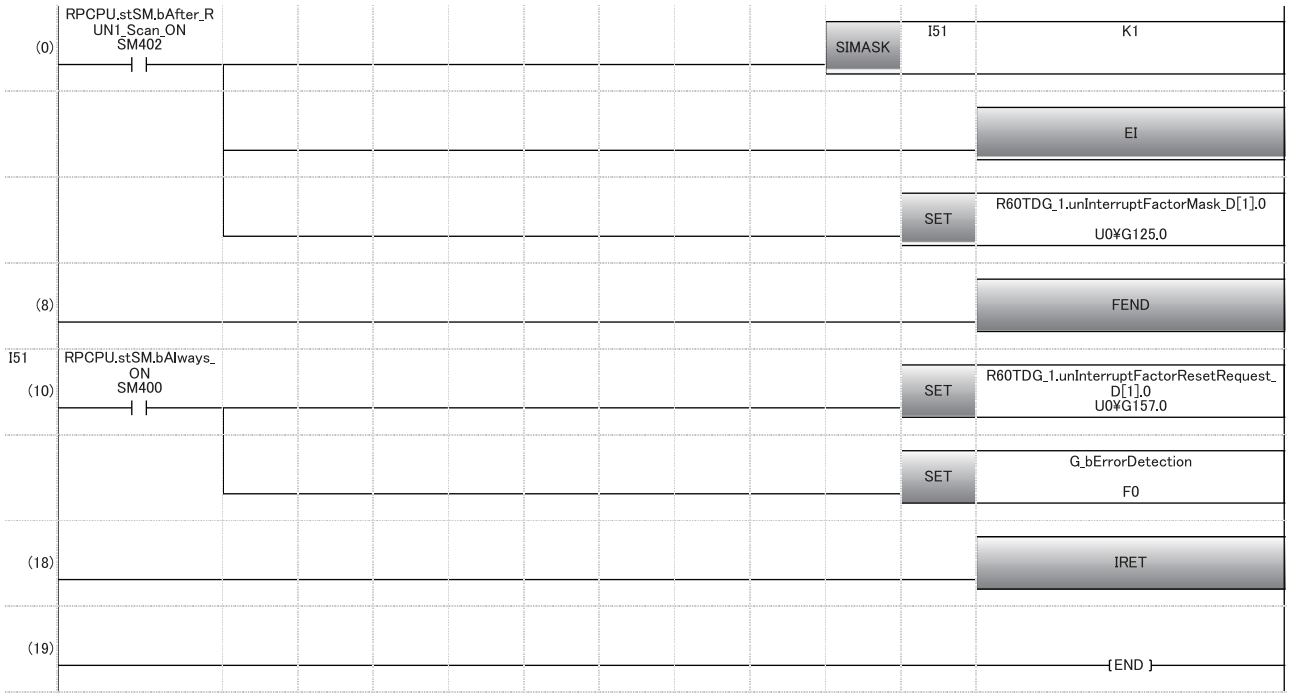
Set "Interrupt setting" of [Module Parameter] as follows.

No.	Condition target setting	Condition target channel setting	Interrupt pointer
2	Disconnection detection flag	All CH specification	I51

• Label settings

Classification	Label name	Description	Device
Module Label	RCPU.stSM.bAlways_ON	Always ON	SM400
	RCPU.stSM.bAfter_RUN1_Scan_ON	ON for one scan after RUN	SM402
	R60TDG_1.unInterruptFactorMask_D[1].0	Interrupt factor mask	U0\G125.0
	R60TDG_1.unInterruptFactorResetRequest_D[1].0	Interrupt factor reset request	U0\G157.0
Labels to be defined	Define global labels as shown below:		

	Label Name	Data Type		Class	Assign (Device/Label)
1	G_bErrorDetection	Bit	...	VAR_GLOBAL	F0



(0) Enable only the interrupt pointer I51.

(10) Turn on 'Interrupt factor reset request [1]' (U0\G157).
Perform the processing of when disconnection is detected.

1.12 Error History Function

This function records up to 16 errors and alarms that occurred in a temperature input module to store them in the buffer memory areas.

Operation of the error history function

When an error occurs, the error code and the error time are stored from Error history 1 (Un\G3600 to Un\G3605) in order. When an alarm occurs, the alarm code and the alarm time are stored from Alarm history 1 (Un\G3760 to Un\G3765) in order. The error time and alarm time are stored as shown below.

Ex.

The following figures are examples of Error history 1 and Alarm history 1.

- Error history detail

	b15 to b8	b7 to b0
Un\G3600	Error code	
Un\G3601	First two digits of the year	Last two digits of the year
Un\G3602	Month	Day
Un\G3603	Hour	Minute
Un\G3604	Second	Day of the week
Un\G3605	Millisecond (higher-order digits)	Millisecond (lower-order digits)
Un\G3606 to Un\G3609	System area	

- Alarm history detail

	b15 to b8	b7 to b0
Un\G3760	Alarm code	
Un\G3761	First two digits of the year	Last two digits of the year
Un\G3762	Month	Day
Un\G3763	Hour	Minute
Un\G3764	Second	Day of the week
Un\G3765	Millisecond (higher-order digits)	Millisecond (lower-order digits)
Un\G3766 to Un\G3769	System area	

Item	Storage contents	Storage example*1
First two digits of the year/Last two digits of the year	Stored in BCD code.	2015H
Month/Day		0130H
Hour/Minute		1035H
Second		40H
Day of the week	One of the following values is stored in BCD code. • Sunday: 00H • Monday: 01H • Tuesday: 02H • Wednesday: 03H • Thursday: 04H • Friday: 05H • Saturday: 06H	05H
Millisecond (higher-order digits)/Millisecond (lower-order digits)	Stored in BCD code.	0628H

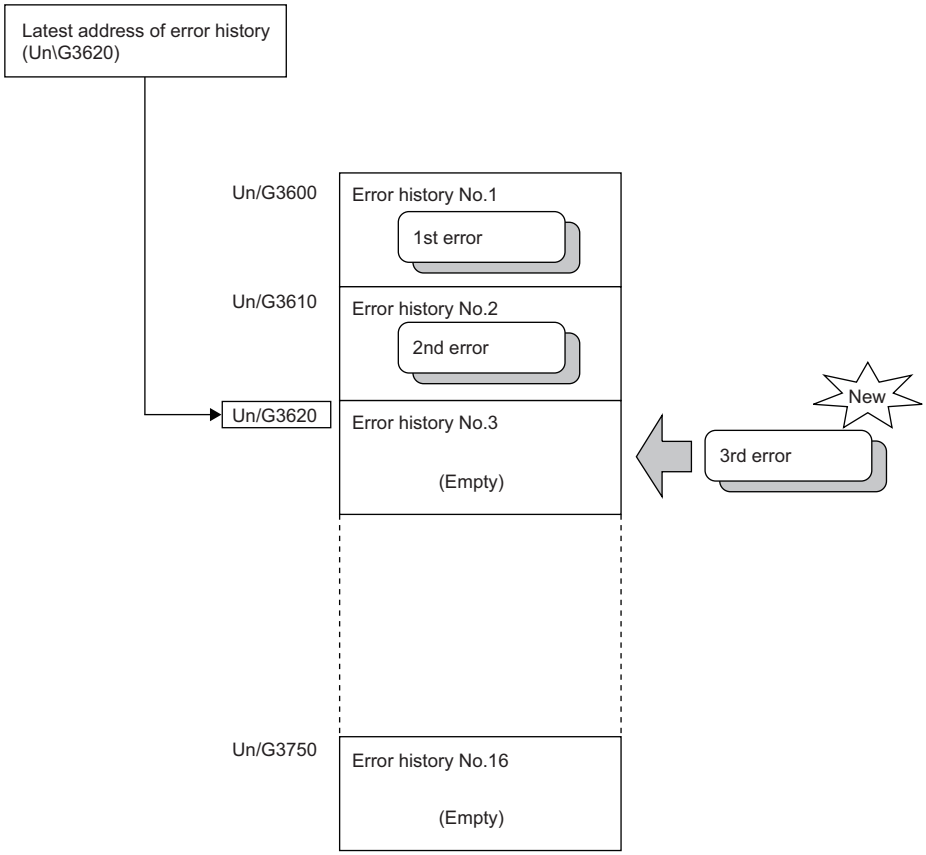
*1 These values assume that an error or alarm occur at 10:35 and 40.628 seconds on Friday, January 30th, 2015.

Checking

The start address of Error history where the latest error is stored can be checked in 'Latest address of error history' (Un\G1). The start address of Alarm history where the latest alarm is stored can be checked in 'Latest address of alarm history' (Un\G3).

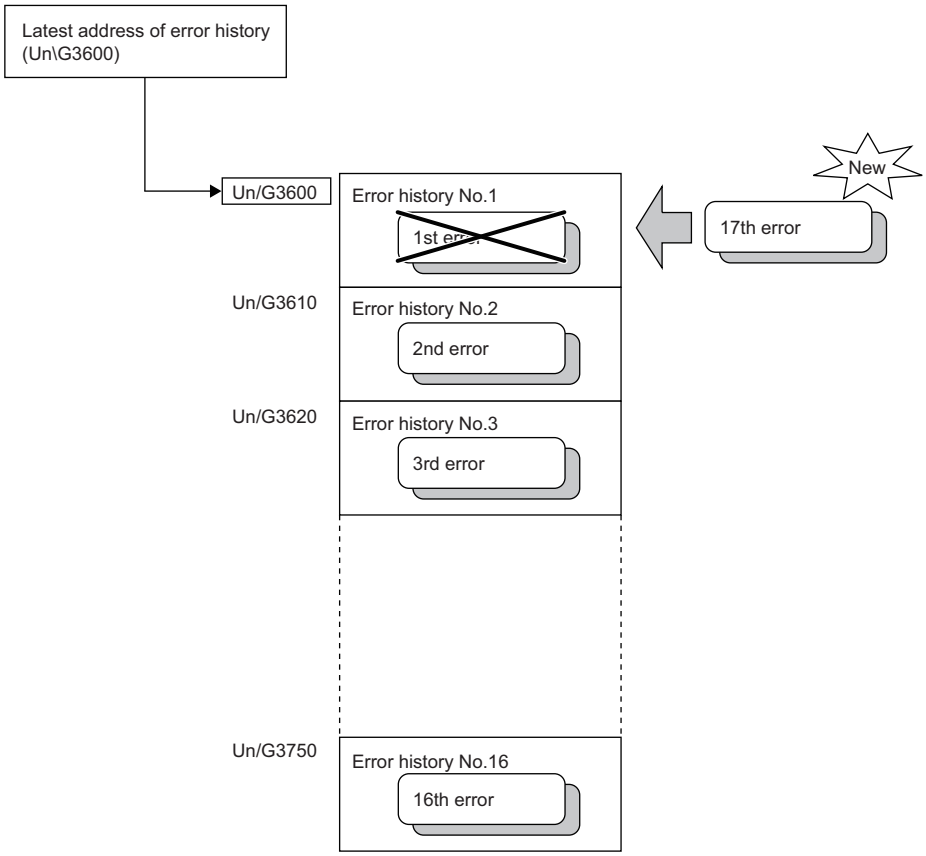
Ex.

The figure below shows the example of when the third error has occurred. The third error is stored in Error history 3, and the value 3620 (start address of Error history 3) is stored in 'Latest address of error history' (Un\G1).



Ex.

The figure below shows the example of when the 17th error has occurred. The 17th error is stored in Error history 1, and 'Latest address of error history' (Un\G1) is overwritten with the value 3600 (start address of Error history 1).



Point

- Once the error history storage area becomes full, subsequent error information will overwrite the existing data, starting from Error history 1 (Un\G3600 to Un\G3609), and continues sequentially thereafter. The overwritten history is deleted.
- The same processing is performed for Alarm history when an alarm occurs.
- The stored error history is cleared when a temperature input module is powered off, or when the CPU module is reset.

1.13 Event History Function

This function collects occurred errors and alarms, and performed operations in a temperature input module, and stores them as event information into the CPU module.
The CPU module collects the event information occurred in a temperature input module and keeps them in the data memory inside of the CPU module. The event information collected by the CPU module can be displayed on an engineering tool to check the occurrence history in a time series.

Event type	Classification	Description
System	Error	An error detected by the self diagnostics in each module.
	Warning	A warning (alarm) detected in each module.
	Information	The operation by the normal detection of the system that is not classified as Error or Warning, or the operation performed automatically by the system.
Security	Warning	Operation that is judged as an unauthorized access to each module.
	Information	Operation that is hard to be judged as an unauthorized access, such as the success of unlocking passwords.
Operation	Warning	Deleting (data clear) operations that may change the action. (These operations are not judged as errors by the self diagnostics.)
	Information	Operations performed by users to change the system operation or configuration in the offset/gain setting.

Setting procedure

The event history function can be set from the event history setting window of the engineering tool. For the setting procedure, refer to the following.
MELSEC iQ-R CPU Module User's Manual (Application)

Displaying event history

Access to the menu window of the engineering tool. For details on the operating procedure and how to view the contents, refer to the following.
GX Works3 Operating Manual

List of event history data

The following table lists the events that would occur in a temperature input module when the event type is set to "Operation"

Event code	Event type	Event name	Event detail
20010	Information	Offset/gain setting execution	Offset/gain values have been set.
20100	Information	Error clear	An error clear request has been issued.

1.14 Backing up, Saving, and Restoring Offset/Gain Values

The offset/gain values of the user range setting can be backed up, saved, and restored for a temperature input module.

- Backup: Creates a module-specific backup parameter and saves offset/gain values in it.
- Save: Saves the offset/gain information, registered in this module by making the offset/gain setting, in the CPU module.
- Restoration: Writes the information backed up and saved in the CPU module to this module.

In the event that a temperature input module fails and needs to be replaced, the offset/gain values of the failed temperature input module can be restored onto the replaced temperature input module.

However, if the offset/gain values are saved and restored, the accuracy after the restoration decreases by approximately three times compared to that before the restoration. Reconfigure the offset/gain setting when required. Only when the model where the offset/gain values are to be saved and the model where the offset/gain values are to be restored are the same, the offset/gain values can be saved and restored.

Each procedure varies depending on whether to use a module-specific backup parameter or not.

When a module-specific backup parameter is used

The offset/gain values are automatically restored when the module replacement is complete using online module change.

For details on online module change, refer to the following.

MELSEC iQ-R Online Module Change Manual

Module-specific backup parameter

A module-specific backup parameter is a file created in the data memory or SD memory card of a control CPU.

The data in this file is offset/gain values in the user range that is saved in the non-volatile memory of a temperature input module.

The file of module-specific backup parameter is named using a start I/O number of a temperature input module as follows.

UBPmmmnn.BPR

- "mmm" indicates a value obtained from "I/O number of a module ÷ 10H (three hexadecimal digits)".
- "nn" indicates a consecutive number of a module-specific backup parameter given for each module, and fixed to 00.

Creating and refreshing a module-specific backup parameter

A module-specific backup parameter is created or refreshed at the refresh timing of offset/gain values stored in the non-volatile memory of a temperature input module.

Timing of creating or refreshing the backup data	Description
Completion of offset/gain setting using "Offset/gain setting" of the engineering tool	A module-specific backup parameter is created or refreshed at the completion of "Offset/gain setting" of the engineering tool.
Turning on 'User range write request' (YA) in the offset/gain setting mode	A module-specific backup parameter is created or refreshed when offset/gain values in the user range have been changed in the offset/gain setting mode.
Turning on 'User range write request' (YA) in the normal mode	Turning on 'User range write request' (YA) in the normal mode restores offset/gain values in the user range using data in buffer memory areas (CH1 Factory default setting offset value (L) to CH8 User range setting gain value (H)). A module-specific backup parameter is refreshed at this timing.
Executing the G(P).OGSTOR in the normal mode	Executing the G(P).OGSTOR in the normal mode restores offset/gain values in the user range. A module-specific backup parameter is refreshed at this timing.
Recognizing a new module during online module change	During online module change, when a new module is installed and recognized, offset/gain values in the user range are restored. A module-specific backup parameter is refreshed at this timing.

When the creation of a module-specific backup parameter is required using the current offset/gain setting because the parameter does not exist in the data memory of a control CPU, shift a temperature input module to the offset/gain setting mode, and then turn on 'User range write request' (YA). This operation creates a module-specific backup parameter using a current data of flash memory.

■Precautions

If a control CPU runs out of free space on the data memory, or module-specific backup parameter creation fails because the creation was attempted in use of the backup parameter, a module-specific backup parameter creation error (error code: 17E1H) occurs.

Reading a module-specific backup parameter

To read a module-specific backup parameter and restore offset/gain values, set "Auto restore of Offset/gain setting with the module change" of [Module Parameter] to "Enable" in advance.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Application setting] ⇨ [Online module change]

■Read timing

A module-specific backup parameter is read at the timing when a new module is installed and recognized during online module change. A module-specific backup parameter is not read if a module is replaced with the programmable controller being powered off.

■Precautions

When the module-specific backup parameter corresponding to the target slot does not exist in the data memory or SD memory card of a control CPU, the subsequent restoration of offset/gain values is not performed. When offset/gain values have not been restored even if the module-specific backup parameter exists, a module-specific backup parameter restoration error (error code: 17E0H) occurs.

Restoring offset/gain values in the user range

When the read of the module-specific backup parameter has been completed normally, the read data is converted (restored) to the offset/gain values in the user range for the new module, and saved in the non-volatile memory. At the same time, the module-specific backup parameter in the data memory of the control CPU is refreshed with the setting of the new module.

Restrictions on a module-specific backup parameter

The data cannot be backed up and restored with a module-specific backup parameter under the following conditions.

- A module other than a Process CPU is used as a control CPU.
- A temperature input module is replaced with the programmable controller being powered off.
- "Auto restore of Offset/gain setting with the module change" of [Module Parameter] is set to "Disable".

Under these conditions, save and restore offset/gain values with the following methods.

☞ Page 70 When a module-specific backup parameter is not used

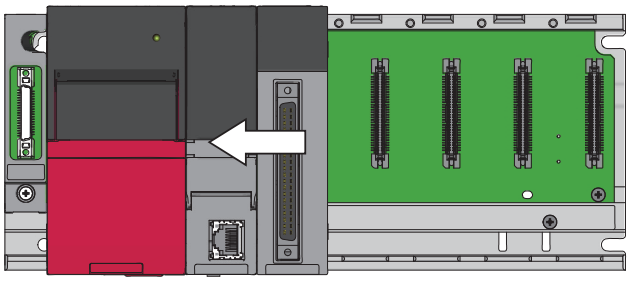
When a module-specific backup parameter is not used

When not using a module-specific backup parameter, save and restore offset/gain values with the following methods.

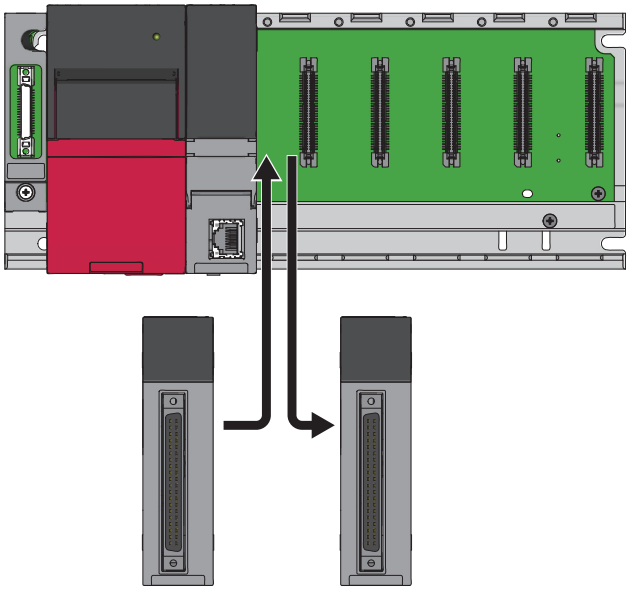
- Saving and restoring by dedicated instructions
- Saving and restoring by reading from and writing to the buffer memory

Using the above methods, restoration of offset/gain values to a new module or application of offset/gain values set in one module to the other modules in the same system is also possible.

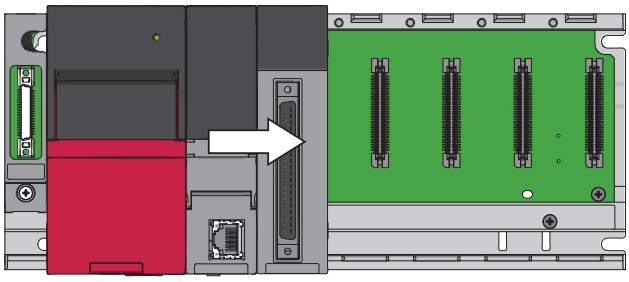
- To restore offset/gain values onto a new replaced module:



1. Save the offset/gain values.



2. Power off the programmable controller and replace a temperature input module.

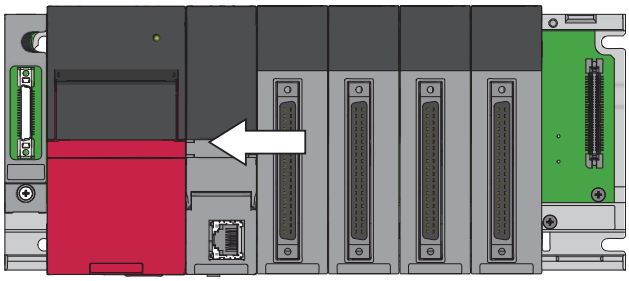


3. Restore the offset/gain values.

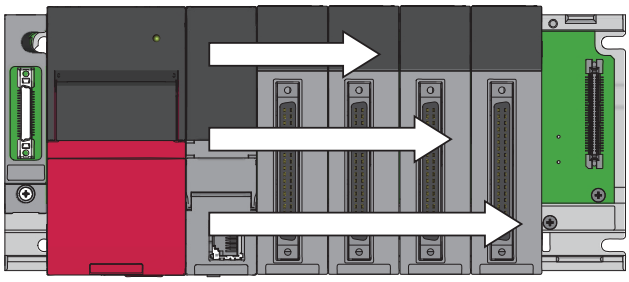
• To apply the offset/gain values set in one module to the other modules in the same system:

Ex.

When the offset/gain values in module No.1 are applied to modules No.2 to No.4



1. Save the offset/gain values of module No.1.



2. Apply the offset/gain values to modules No.2 to No.4.

Saving and restoring by dedicated instructions

Use the dedicated instruction G(P).OGLOAD to temporarily save the offset/gain values of the source temperature input module to the internal device of the CPU module, then use G(P).OGSTOR to write the values to the destination temperature input module.

Prevent the saved offset/gain setting data from being deleted, by one of the following methods before replacing the modules:

• Use latch settings for the internal device of the destination module.
• Save the data onto an SD memory card. (For data write: Use the SP.FWRITE instruction. For data read: Use the SP.FREAD instruction.)
• Record the saved data.

For use of dedicated instructions, refer to the following.

MELSEC iQ-R Programming Manual (Instructions, Standard Functions/Function Blocks)

Saving and restoring by reading from and writing to the buffer memory

Use buffer memory areas of CH1 Factory default setting offset value (L) to CH8 User range setting gain value (H), and 'User range write request' (YA) to read the offset/gain values from the source temperature input module. Use the buffer memory areas again to write the values to the destination temperature input module.
The following describes the procedure with using the buffer memory.

■To restore offset/gain values onto a new replaced module:

Operation to the source temperature input module

1. Save the stored values of CH1 Factory default setting offset value (L) to CH8 User range setting gain value (H).

When the power of the module is off

2. Replace the temperature input module.

Operation to the destination temperature input module

3. Write the data saved in CH1 Factory default setting offset value (L) to CH8 User range setting gain value (H).
4. Turn on 'User range write request' (YA).
5. Check that 'Offset/gain setting mode status flag' (XA) is on.
6. Turn off 'User range write request' (YA).
7. Check that the destination temperature input module operates with the offset/gain values that are restored.

Point

When replacing modules, prevent the saved offset/gain setting data from being deleted, by one of the following methods before powering off the module.

- Use latch settings for the internal device of the destination module.
- Save the data onto an SD memory card. (For data write: Use the SP.FWRITE instruction. For data read: Use the SP.FREAD instruction.)
- Record the saved data.

■To apply the offset/gain values set in one module to the other modules in the same system:

Operation to the source temperature input module

1. Save the stored values of CH1 Factory default setting offset value (L) to CH8 User range setting gain value (H).

Operation to the destination temperature input module

2. Write the data saved in CH1 Factory default setting offset value (L) to CH8 User range setting gain value (H).
3. Turn on 'User range write request' (YA).
4. Check that 'Offset/gain setting mode status flag' (XA) is on.
5. Turn off 'User range write request' (YA).
6. Check that the destination temperature input module operates with the offset/gain values that are restored.

1.15 Q Compatible Mode Function

This function controls operations of the temperature input module with its buffer memory address layout converted to equivalent one to the compatible modules of the MELSEC-Q series.
This compatibility enables the reuse of programs that have proven performance on MELSEC-Q series temperature input modules.
The following table lists the compatible modules of the MELSEC-Q series.

Temperature input module of the MELSEC iQ-R series	Compatible temperature input module
R60TD8-G	Q68TD-G-H01
	Q68TD-G-H02
R60RD8-G	Q68RD3-G

Operation

Only the buffer memory assignment is changed in the Q compatible mode. The I/O signal assignment is the same as that of the R mode. Therefore, when the MELSEC-Q series program is diverted, a significant modification is not required.

Restriction

- When the MELSEC-Q series program is diverted, check measured temperature values and the operation timing and modify the program if necessary because the specifications such as update timing of data are changed.
- When the MELSEC-Q series program is diverted and an error code is set as the operating condition or interlock condition, the program does not operate normally.
- When the Q compatible mode function is enabled, a program that uses a module function block or module label cannot be created. When a module function block or module label is used, create a program in the R mode.

Setting procedure

1. When adding a new module, select the module whose module model name has "(Q)" at the end.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Right-click ⇨ [Add New Module]

2. Configure the same parameter setting as the one of when the R mode is used.

3. Restart the CPU module after the module parameter is written.

Point

- During the module operation, the mode cannot be switched between the R mode and Q compatible mode.

2 PARAMETER SETTINGS

Set the parameters of each channel.
Setting parameters here eliminates the need to program them.

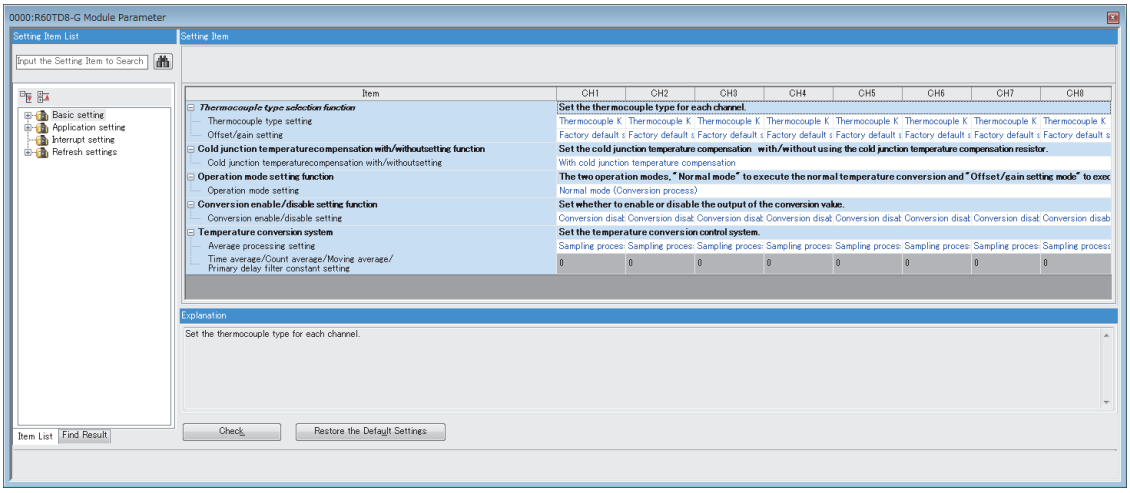
2.1 Basic Setting

Setting procedure

Open "Basic setting" of the engineering tool.

1. Start Module parameter.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Basic setting]



2. Click the item to be changed to enter the setting value.

• Item where a value is selected from the pull-down list

Click [▼] button of the item to be set, and from the pull-down list that appears, select the value.

• Item where a value is entered into the text box

Double-click the item to be set to enter the numeric value.

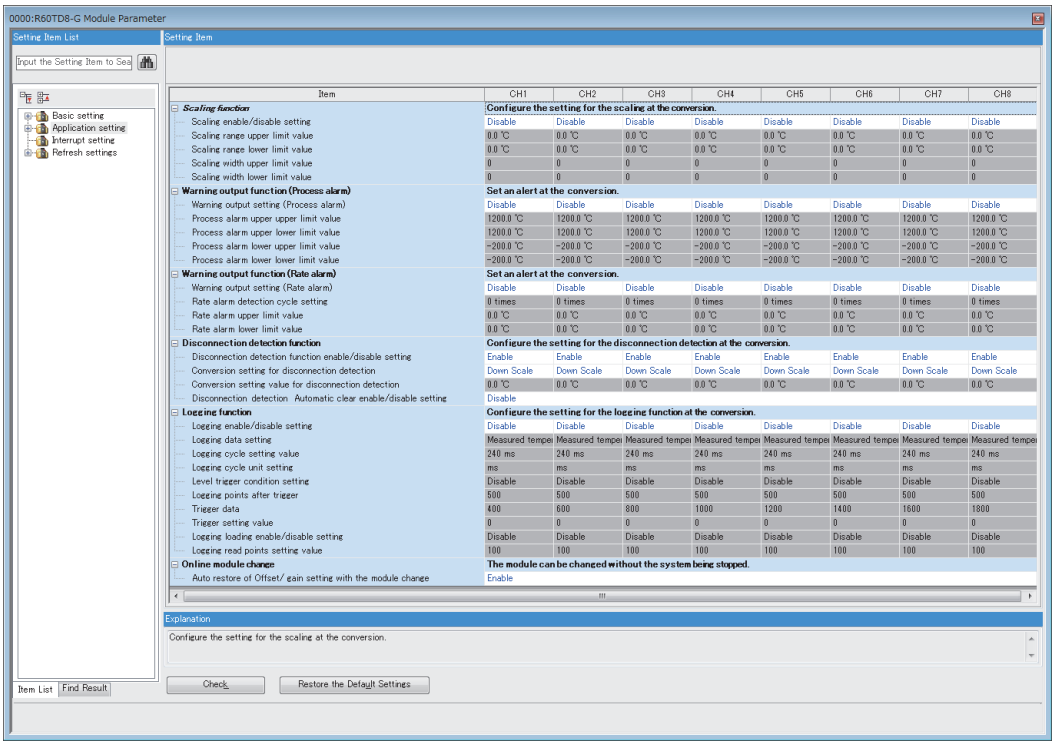
2.2 Application Setting

Setting procedure

Open "Application setting" of the engineering tool.

1. Start Module parameter.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Application setting]



2. Click the item to be changed to enter the setting value.

• Item where a value is selected from the pull-down list

Click [▼] button of the item to be set, and from the pull-down list that appears, select the value.

• Item where a value is entered into the text box

Double-click the item to be set to enter the numeric value.

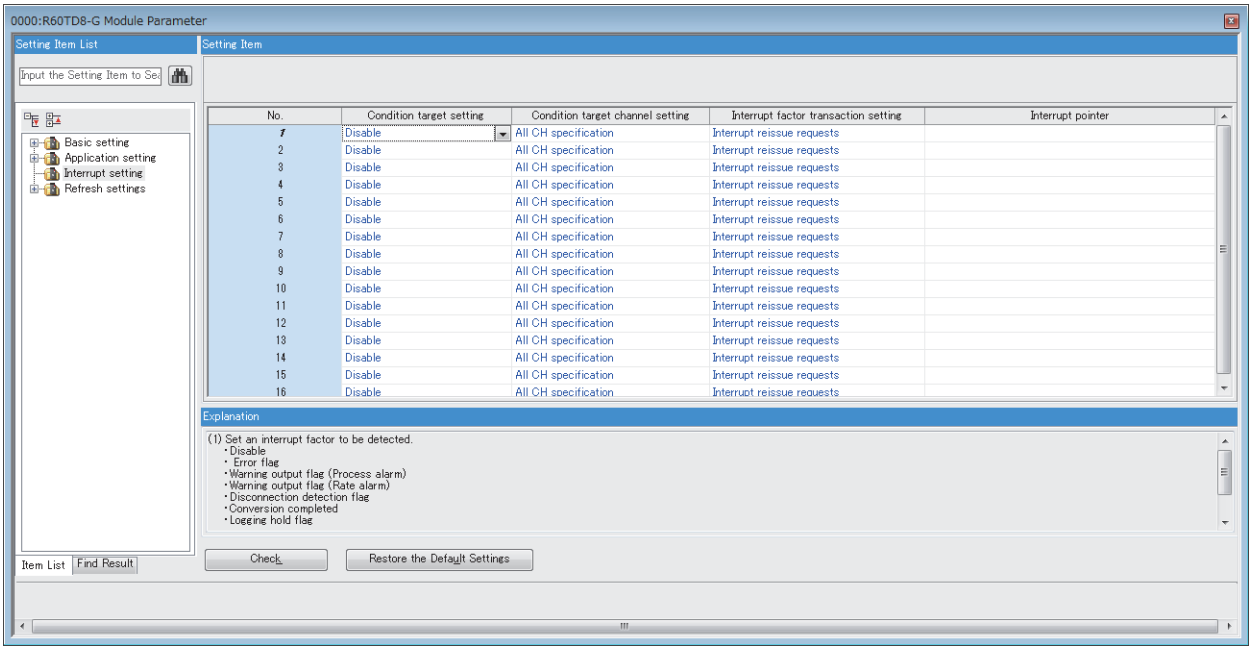
2.3 Interrupt Setting

Setting procedure

Open "Interrupt setting" of the engineering tool.

1. Start Module parameter.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Interrupt setting]



2. Click the interrupt setting number (No.1 to 16) to be changed to enter the setting value.

• Item where a value is selected from the pull-down list

Click [▼] button of the item to be set, and from the pull-down list that appears, select the value.

• Item where a value is entered into the text box

Double-click the item to be set to enter the numeric value.

2.4 Refresh Setting

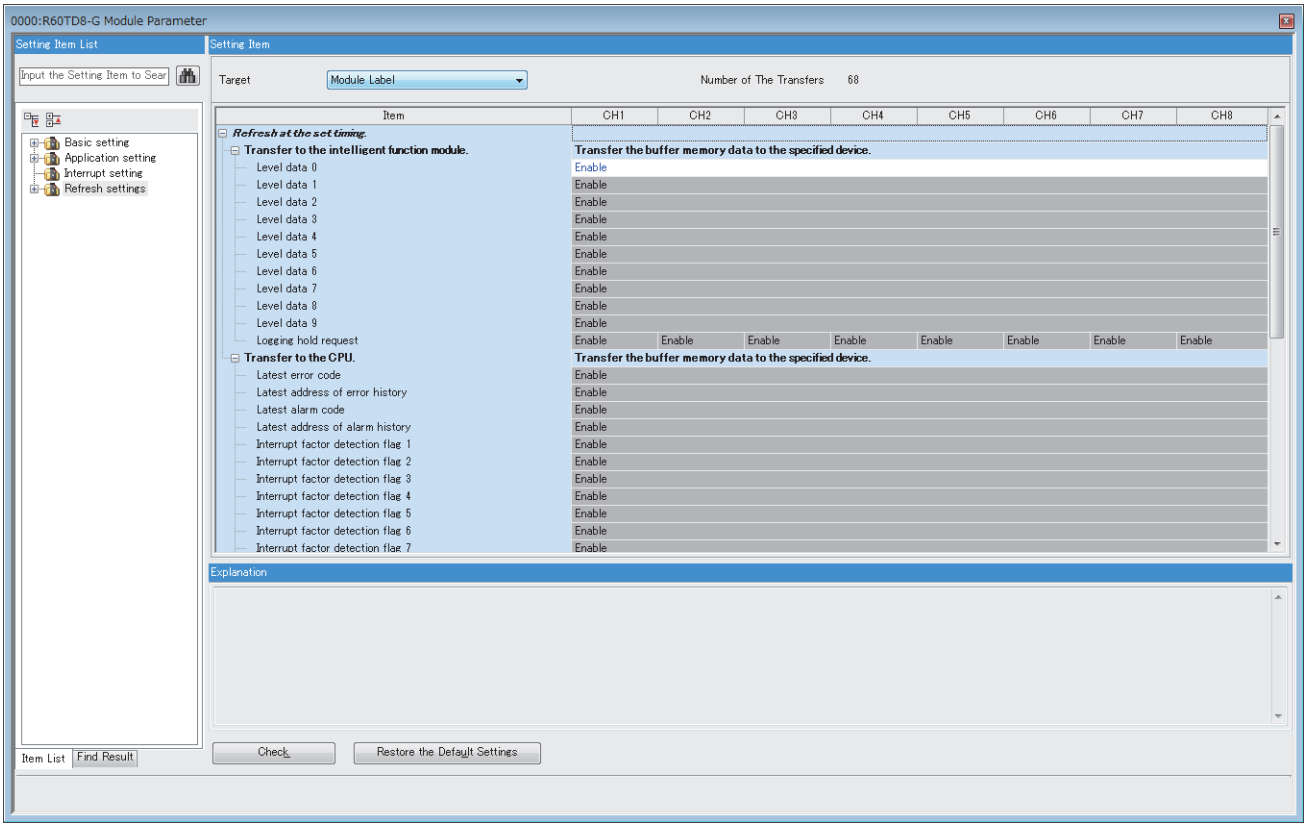
Setting procedure

Set the buffer memory area of a temperature input module to be refreshed.

This refresh setting eliminates the need for reading/writing data by programming.

1. Start Module parameter.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Module model name ⇨ [Module Parameter] ⇨ [Refresh settings]



2. Click "Target", and set the refresh destination.

• When "Target" is "Module Label"

Set whether to enable or disable the refresh by setting "Level data 0" to Enable or Disable.

• When "Target" is "Refresh Data Register (RD)"

The transfer destinations of all items are automatically set by setting the start device to "Top Device Name".

• When "Target" is "Device"

Double-click the item to be set to enter the refresh destination device.

3. Click "Refresh Group" to set the timing to refresh.

Set "Refresh Group" to "At the Execution Time of END Instruction" or "At the Execution Time of Specified Program".

When "At the Execution Time of Specified Program" is set, double-click "Group [n] (n: 1-64)" and set a value of 1 to 64.

Point

With refresh enabled, the value of the refresh destination takes effect at the timing of refresh which is set up by the engineering tool. As this happens, the buffer memory is overwritten with the value of the refresh destination. To change the value of a buffer memory area to be refreshed, change the value of module label or device at the refresh destination in the program.

Refresh processing time

A refresh processing time [μs] is a constituent of the scan time of the CPU module. For details on the scan time, refer to the following.

MELSEC iQ-R CPU Module User's Manual (Application)

The refresh processing time [μs], which is taken for refresh, is given by:

- Refresh processing time [μs] = Refresh read time (time for transferring refresh data to the CPU module) + Refresh write time (time for transferring refresh data to the intelligent function module)

The refresh read time and refresh write time vary depending on the settings of "Target".

When "Target" is "Module Label" or "Refresh Data Register (RD)"

The following table shows the refresh read time and refresh write time with an RnCPU module used.

Model	Classification	When using the refresh settings
R60TD8-G	Refresh read time	26.48μs
	Refresh write time	14.5μs
R60RD8-G	Refresh read time	26.48μs
	Refresh write time	14.5μs
R60TD8-G (Q compatible mode)	Refresh read time	19.79μs
	Refresh write time	10.44μs
R60RD8-G (Q compatible mode)	Refresh read time	19.79μs
	Refresh write time	10.44μs

When "Target" is "Device"

Calculate the refresh read time and refresh write time according to the number of items and the number of their transfer data (in units of word) that are set to be refreshed. For the calculation method, refer to the following.

MELSEC iQ-R CPU Module User's Manual (Application)

3 TROUBLESHOOTING

This chapter describes errors that may occur in the use of a temperature input module and those troubleshooting.

3.1 Troubleshooting with the LEDs

Check the state of the LEDs to narrow down the possible causes of the trouble. This step is the first diagnostics before using the engineering tool.

A state of a temperature input module can be checked with the RUN LED, ERR LED, and ALM LED. The following table shows the relation of these LEDs and a state of a temperature input module.

Name	Description
RUN LED	Indicates the operating status of the module. On: Normal operation Flashing (1s cycle): In offset/gain setting mode Flashing (400ms cycle): The module for online module change selected Off: 5V power supply interrupted or watchdog timer error occurred, module change for online module change possible
ERR LED	Indicates the error status of the module.*1 On: Error occurred Off: Normal operation
ALM LED	Indicates the alarm status of the module.*2 On: Alert (process alarm or rate alarm) issued Flashing: Disconnection detected Off: Normal operation

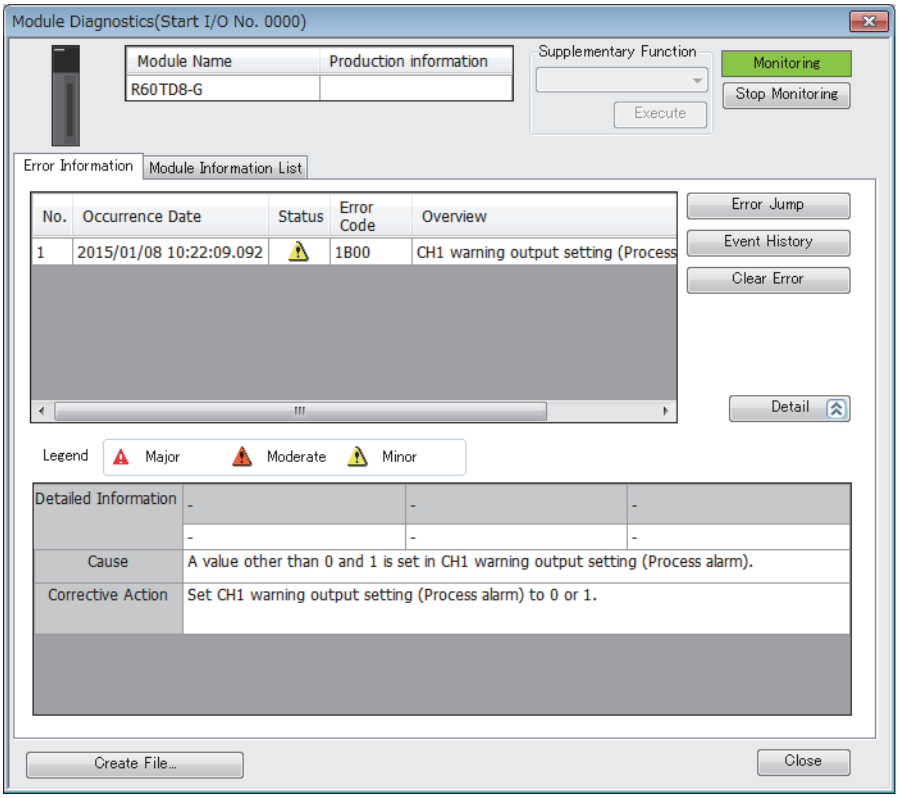
*1 For details, refer to the following.
☞ Page 84 List of Error Codes

*2 For details, refer to the following.
☞ Page 88 List of Alarm Codes

3.2 Checking the State of the Module

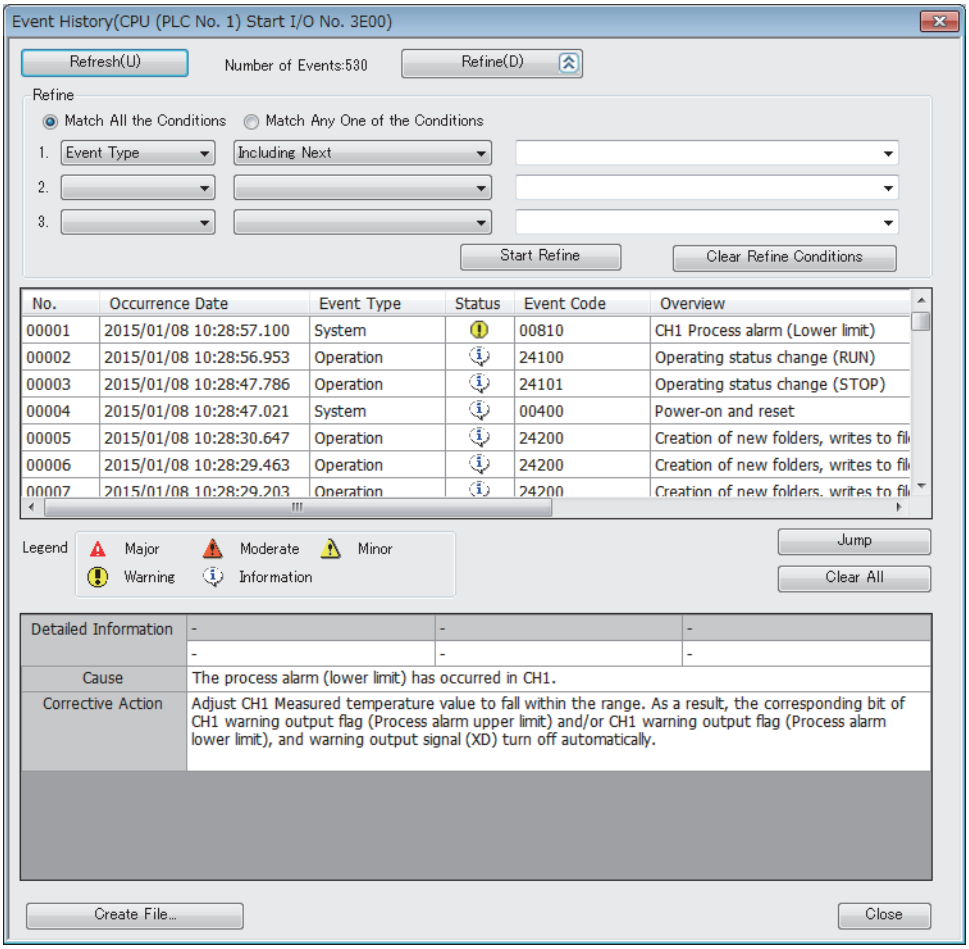
Open the module diagnostics window of the engineering tool to check the error codes of a temperature input module.

[Diagnostics] ⇨ [System Monitor] ⇨ Right-click the module to be checked. ⇨ "Module Diagnostics"



Alarm codes, error history, alarm history can be checked with the event history window of the engineering tool.

[Diagnostics] ⇨ [System Monitor] ⇨ [Event History] button



3.3 Troubleshooting by Symptom

The RUN LED flashes or turns off

When flashing

Check item	Cause	Action
Check whether the module is in offset/gain setting mode.	The programmable controller has been powered off and on, or the CPU module has been reset when the operation mode is set to offset/gain setting mode in the module parameter setting of the engineering tool.	In the module parameter setting of the engineering tool, set the operation mode to normal mode and power off and on the programmable controller, or reset the CPU module.
	The G(P).OFFGAN instruction has been executed with the mode switched to offset/gain setting mode.	Review the program that uses the G(P).OFFGAN instruction to check whether the mode has been switched erroneously.
	The value in the mode switching setting has been changed and the mode has been switched to offset/gain setting mode.	Review the program that uses the mode switching setting to check whether the mode has been switched erroneously.

When it is off

Check item	Action
Check whether the power is supplied.	Check that the supply voltage of the power supply module is within the rated range.
Check whether the capacity of the power supply module is enough.	Calculate the current consumption of mounted modules, such as the CPU module, I/O modules, and intelligent function modules to check that the power capacity is enough.
Check whether the module is mounted properly.	Check the mounting state of the module.
Cases other than the above	A watchdog timer error may have occurred. Reset the CPU module, and check that the RUN LED turns on. If the RUN LED still remains off, the possible cause is a failure of the module. Please consult your local Mitsubishi representative.

The ERR LED turns on

Check item	Action
Check whether any error has occurred.	Check 'Latest error code' (Un\G0) and take actions described in the list of error codes. ☞ Page 84 List of Error Codes

The ALM LED turns on or flashes

When it is on

Check item	Action
Check whether any alert has been issued.	Check Alert output flag (Process alarm upper limit), Alert output flag (Process alarm lower limit), Alert output flag (Rate alarm upper limit), and Alert output flag (Rate alarm lower limit). Take actions described in the list of alarm codes. ☞ Page 88 List of Alarm Codes

When flashing

Check item	Action
Check whether disconnection of a thermocouple or compensation lead wire is detected in the thermocouple input module.	Eliminate the cause of disconnection, by replacing the thermocouple or compensation lead wire for instance, and check 'CH1 Measured temperature value' (Un\G400).
Check whether disconnection is detected in the RTD input module.	Eliminate the cause of disconnection, by replacing the resistance temperature detector for instance, and check 'CH1 Measured temperature value' (Un\G400).

A measured temperature value cannot be read

Check item	Action
Check whether an analog signal line is disconnected from the temperature input module.	Visually check signal lines and correctly connect analog signal lines.
Check whether a thermocouple and compensation lead wire are correctly connected to the thermocouple input module.	Correctly connect a thermocouple or compensation lead wire to the thermocouple input module. The following are the check points. • A shielded cable for the used channel is grounded or not. • The thermocouple and compensation lead wire are reversely connected or not.
Check whether a resistance temperature detector is correctly connected to the RTD input module.	Correctly connect a resistance temperature detector to the RTD input module. The following is the check point. • A shielded cable for the used channel is grounded or not.
Check whether the CPU module is in the STOP state.	Change the state of the CPU module to RUN.
Check whether the offset/gain setting is correct.	Check that the offset/gain setting is correct. If the user range setting is used, change it to the other input range and check that the temperature conversion is performed correctly. When the temperature conversion is correct, perform the offset/gain setting again.
Check whether the input range setting is correct.	Check that the set input range is corresponding to the connected thermocouple or connected resistance temperature detector using the following buffer memory areas. • Thermocouple input module: 'CH1 Range setting monitor (Thermocouple type)' (Un\G430) • RTD input module: 'CH1 Range setting monitor (Resistance temperature detector type)' (Un\G430) If the input range setting is not correct, set "Thermocouple type setting" or "RTD type setting" of Module Parameter again.
Check whether Conversion disable (1) is set in 'CH1 Conversion enable/disable setting' (Un\G500) of the channel to be used.	Check 'CH1 Conversion enable/disable setting' (Un\G500) and correct the value to Conversion enable (0) with the module parameter or a program.
Check whether 'Operating condition setting request' (Y9) has been executed.	Check that the measured temperature value is stored in 'CH1 Measured temperature value' (Un\G400) by turning on and off 'Operating condition setting request' (Y9). If the stored value is correct, check the program to verify the description of 'Operating condition setting request' (Y9).

*1 The temperature conversion does not start when 'Operating condition setting request' (Y9) is on. After turning on this signal (Y9), check that 'Operating condition setting completed flag' (X9) is off, and then turn off the signal (Y9).

A measured temperature value does not change

Check item	Action
Check whether disconnection of a thermocouple or compensation lead wire is detected in the thermocouple input module.	Eliminate the cause of disconnection, by replacing the thermocouple or compensation lead wire for instance, and check 'CH1 Measured temperature value' (Un\G400).
Check whether disconnection of a cold junction compensation resistor (RTD) is detected in the thermocouple input module.	Eliminate the cause of disconnection, by replacing the cold junction compensation resistor (RTD) for instance, and check 'CH1 Measured temperature value' (Un\G400).
Check whether disconnection is detected in the RTD input module.	Eliminate the cause of disconnection, by replacing the resistance temperature detector for instance, and check 'CH1 Measured temperature value' (Un\G400).

A measured temperature value is not converted to an expected value

Check item	Action
Check whether the input range setting is correct.	Check that the set input range is corresponding to the connected thermocouple or connected resistance temperature detector using the following buffer memory areas. • Thermocouple input module: 'CH1 Range setting monitor (Thermocouple type)' (Un\G430) • RTD input module: 'CH1 Range setting monitor (Resistance temperature detector type)' (Un\G430) If the input range setting is not correct, set "Thermocouple type setting" or "RTD type setting" of Module Parameter again.
Check whether the offset/gain setting is correct.	Check that the offset/gain setting is correct. If the user range setting is used, change it to the other input range and check that the temperature conversion is performed correctly. When the temperature conversion is correct, perform the offset/gain setting again.
Check whether the set temperature conversion method is correct.	Check that the set temperature conversion method is correct using 'CH1 Averaging process specification' (Un\G501). If the temperature conversion method is not correct, set "Average processing setting" of Module Parameter again.
Check whether the setting of 'Cold junction compensation with/without setting' (Un\G298) of the thermocouple input module is correct.	Check 'Cold junction compensation setting status' (Un\G61). When performing the cold junction compensation using a cold junction compensation resistor (RTD), set "Cold junction temperature compensation with/without setting" of Module Parameter to "With cold junction temperature compensation". When performing the cold junction compensation using an external method, set "Without cold junction temperature compensation".

A measured temperature value fluctuates

Check item	Action
Check whether a temperature conversion method other than sampling processing is set.	Check if Sampling processing (0) is set in 'CH1 Averaging process specification' (Un\G501). If Sampling processing (0) is set, correct the settings of Module Parameter as described below, and check for fluctuation of values in 'CH1 Measured temperature value' (Un\G400). • Set "Average processing setting" to a value other than "Sampling processing". • Set "Time average/Count average/Moving average/Primary delay filter constant setting" according to the setting of "Average processing setting".

Conversion completed flag does not turn on

Check item	Action
Check whether all channels are set to be conversion disabled.	Check CH□ Conversion enable/disable setting of all channels. If a channel where the conversion is enabled does not exist, set "Conversion enable/disable setting" of any channel of Module Parameter to "Conversion enable".
Check whether disconnection of a cold junction compensation resistor (RTD) is detected in the thermocouple input module.	Eliminate the cause of disconnection, by replacing the cold junction compensation resistor (RTD) for instance, and check 'CH1 Measured temperature value' (Un\G400).

3.4 List of Error Codes

If an error occurs during operation, a temperature input module stores the error code into 'Latest error code' (Un\G0) of the buffer memory. In addition, 'Error flag' (XF) turns on. Turning on 'Error clear request' (YF) clears the error code in 'Latest error code' (Un\G0) and turns off 'Error flag' (XF). Error codes of a temperature input module are classified in minor errors or moderate errors.

- Minor error: This error is caused by the setting failure of programs and parameters. The temperature conversion continues with the parameter setting before the setting change. (1000H to 1FFFH)
- Moderate error: Hardware failures. The temperature conversion does not continue. (3000H to 3FFFH)

☐: This symbol indicates the number of the channel where an error has occurred. A numerical value of 0 to 7 is used to correspond to CH1 to 8.
(CH1: 0, CH2: 1, CH3: 2, CH4: 3, CH5: 4, CH6: 5, CH7: 6, CH8: 7)
△: For what this symbol indicates, refer to Description and cause of error.

Error code	Error name	Description and cause	Action
0000H	—	There is no error.	—
1080H	Number of writes to offset/gain settings reach limit error	The number of the offset/gain settings has exceeded the guaranteed maximum number.	Any further setting of offset/gain values may not be reflected correctly.
17E0H	Module-specific backup parameter restoration error	Offset/gain values have not been restored using the module-specific backup parameter.	The possible cause is a damage of the module-specific backup parameter file. Adjust the user range again.
17E1H	Module-specific backup parameter creation error	A module-specific backup parameter has not been created.	Check the free space on the data memory or SD memory card of the control CPU, and create a module-specific backup parameter again.
180△H	Interrupt factor generation setting range error	A value other than 0 to 1 is set in Interrupt factor generation setting [n]. △ indicates the interrupt setting related to the error as below: Setting 1: 0, Setting 2: 1, Setting 3: 2, Setting 4: 3, Setting 5: 4, Setting 6: 5, Setting 7: 6, Setting 8: 7, Setting 9: 8, Setting 10: 9, Setting 11: A, Setting 12: B, Setting 13: C, Setting 14: D, Setting 15: E, Setting 16: F	Set 0 or 1 in Interrupt factor generation setting [n].
181△H	Condition target setting range error	A value other than 0 to 7 is set in Condition target setting [n]. △ indicates the interrupt setting related to the error as below: Setting 1: 0, Setting 2: 1, Setting 3: 2, Setting 4: 3, Setting 5: 4, Setting 6: 5, Setting 7: 6, Setting 8: 7, Setting 9: 8, Setting 10: 9, Setting 11: A, Setting 12: B, Setting 13: C, Setting 14: D, Setting 15: E, Setting 16: F	Set a value of 0 to 7 in Condition target setting [n].
182△H	Condition target channel setting range error	A value other than 0 to 8 is set in Condition target channel setting [n]. △ indicates the interrupt setting related to the error as below: Setting 1: 0, Setting 2: 1, Setting 3: 2, Setting 4: 3, Setting 5: 4, Setting 6: 5, Setting 7: 6, Setting 8: 7, Setting 9: 8, Setting 10: 9, Setting 11: A, Setting 12: B, Setting 13: C, Setting 14: D, Setting 15: E, Setting 16: F	Set a value of 0 to 8 in Condition target channel setting [n].
1860H	G(P).OGSTOR instruction execution error in offset/gain setting mode	The G(P).OGSTOR instruction has been executed in offset/gain setting mode.	Do not execute the G(P).OGSTOR instruction in the offset/gain setting mode.
1861H	Offset/gain setting continuous write occurrence error	The G(P).OGSTOR instruction has been executed continuously or a setting value has been continuously written to the flash memory 26 times or more in the offset/gain setting.	For the G(P).OGSTOR instruction, execute it only once per module. For the offset/gain setting, write the setting value only once per setting.
1862H	Model mismatch error at the execution of OGSTOR	The G(P).OGSTOR instruction has been executed on a module different from the one on which the G(P).OGLOAD instruction was executed. The G(P).OGSTOR instruction has been executed ahead of the G(P).OGLOAD instruction.	Execute the G(P).OGLOAD and G(P).OGSTOR instructions on the same module. As the other way, execute the G(P).OGLOAD instruction on the module whose data is to be restored, and then execute the G(P).OGSTOR instruction on the module to which the data is to be restored.

Error code	Error name	Description and cause	Action
190☐H	Range setting range error	■For the thermocouple input module • A value out of the range is set in CH☐ Range setting (Thermocouple type). • A value out of the range is set in CH☐ Range setting (Offset/gain setting).	■For the thermocouple input module • Set a value of 0 to 7 in CH☐ Range setting (Thermocouple type). • Set 0 or 1 in CH☐ Range setting (Offset/gain setting).
		■For the RTD input module • A value out of the range is set in CH☐ Range setting (Resistance temperature detector type). • A value out of the range is set in CH☐ Range setting (Offset/gain setting).	■For the RTD input module • Set a value of 0 to 5, 8, or 9 in CH☐ Range setting (Resistance temperature detector type). • Set 0 or 1 in CH☐ Range setting (Offset/gain setting).
191☐H	Averaging process specification setting range error	A value other than 0 to 4 is set in CH☐ Averaging process specification.	Set a value of 0 to 4 in CH☐ Averaging process specification.
192☐H	Time average setting range error	■For the thermocouple input module When Time average is selected in CH☐ Averaging process specification, the following value is set in CH☐ Time average/Count average/Moving average/Primary delay filter constant setting: • A value other than 120 to 5000 • A value smaller than "4 × Number of channels used × Conversion speed" (ms)	■For the thermocouple input module Set the following value in CH☐ Time average/Count average/Moving average/Primary delay filter constant setting: • 120 to 5000 • A value equal to or greater than "4 × Number of channels used × Conversion speed" (ms)
		■For the RTD input module When Time average is selected in CH☐ Averaging process specification, the following value is set in CH☐ Time average/Count average/Moving average/Primary delay filter constant setting: • A value other than 40 to 5000 • A value smaller than "4 × Number of channels used × Conversion speed" (ms)	■For the RTD input module Set the following value in CH☐ Time average/Count average/Moving average/Primary delay filter constant setting: • 40 to 5000 • A value equal to or greater than "4 × Number of channels used × Conversion speed" (ms)
193☐H	Count average setting range error	When Count average is selected in CH☐ Averaging process specification, a value other than 4 to 500 is set in CH☐ Time average/Count average/Moving average/Primary delay filter constant setting.	Set a value of 4 to 500 in CH☐ Time average/Count average/Moving average/Primary delay filter constant setting.
194☐H	Moving average setting range error	When Moving average is selected in CH☐ Averaging process specification, a value other than 2 to 200 is set in CH☐ Time average/Count average/Moving average/Primary delay filter constant setting.	Set a value of 2 to 200 in CH☐ Time average/Count average/Moving average/Primary delay filter constant setting.
195☐H	Primary delay filter constant setting range error	When Primary delay filter is selected in CH☐ Averaging process specification, a value other than 1 to 500 is set in CH☐ Time average/Count average/Moving average/Primary delay filter constant setting.	Set a value of 1 to 500 in CH☐ Time average/Count average/Moving average/Primary delay filter constant setting.
1A0☐H	Scaling enable/disable setting range error	A value other than 0 and 1 is set in CH☐ Scaling enable/disable setting.	Set 0 or 1 in CH☐ Scaling enable/disable setting.
1A3☐H	Scaling setting range error	The values satisfying the following condition are set in CH☐ Scaling range lower limit value and CH☐ Scaling range upper limit value. Scaling range lower limit value = Scaling range upper limit value	Set the values satisfying the following condition in CH☐ Scaling range lower limit value and CH☐ Scaling range upper limit value. Scaling range lower limit value ≠ Scaling range upper limit value
		The values satisfying the following condition are set in CH☐ Scaling width lower limit value and CH☐ Scaling width upper limit value. Scaling width lower limit value = Scaling width upper limit value	Set the values satisfying the following condition in CH☐ Scaling width lower limit value and CH☐ Scaling width upper limit value. Scaling width lower limit value ≠ Scaling width upper limit value
1B0☐H	Alert output setting (Process alarm) range error	A value other than 0 and 1 is set in CH☐ Alert output setting (Process alarm).	Set 0 or 1 in CH☐ Alert output setting (Process alarm).

Error code	Error name	Description and cause	Action
1B△☐H	Process alarm upper lower limit value setting range error	The values not satisfying the following condition are set in CH☐ Process alarm upper upper limit value to CH☐ Process alarm lower lower limit value: Upper upper limit value ≥ Upper lower limit value ≥ Lower upper limit value ≥ Lower lower limit value △ indicates that the set values are as follows: 1: Process alarm lower lower limit value > Process alarm lower upper limit value 2: Process alarm lower upper limit value > Process alarm upper lower limit value 3: Process alarm upper lower limit value > Process alarm upper upper limit value 4: The process alarm lower lower limit value is below the measuring range. 5: The process alarm upper upper limit exceeds the measuring range.	Set CH☐ Process alarm upper upper limit value to CH☐ Process alarm lower lower limit value so that the values satisfy the following condition: Upper upper limit value ≥ Upper lower limit value ≥ Lower upper limit value ≥ Lower lower limit value
			Set values within the measuring range in CH☐ Process alarm lower lower limit value and CH☐ Process alarm upper upper limit value.
1B8☐H	Alert output setting (Rate alarm) range error	A value other than 0 and 1 is set in CH☐ Alert output setting (Rate alarm).	Set 0 or 1 in CH☐ Alert output setting (Rate alarm).
1B9☐H	Rate alarm alert detection cycle setting range error	A value other than 1 to 32000 is set in CH☐ Rate alarm alert detection cycle setting.	Set a value of 1 to 32000 in CH☐ Rate alarm alert detection cycle setting.
1BA☐H	Rate alarm upper/lower limit setting value inversion error	CH☐ Rate alarm upper limit value and CH☐ Rate alarm lower limit value are set as Lower limit value ≥ Upper limit value.	Set CH☐ Rate alarm upper limit value and CH☐ Rate alarm lower limit value as Lower limit value < Upper limit value.
1C5☐H	Disconnection detection enable/disable setting range error	A value other than 0 and 1 is set in CH☐ Disconnection detection enable/disable setting.	Set 0 or 1 in CH☐ Disconnection detection enable/disable setting.
1CA0H	Cold junction compensation resistor disconnection detection error	Disconnection of a cold junction compensation resistor (RTD) has been detected.	Check wiring of the cold junction compensation resistor (RTD).
1D0☐H	Logging enable/disable setting range error	A value other than 0 and 1 is set in CH☐ Logging enable/disable setting.	Set 0 or 1 in CH☐ Logging enable/disable setting.
1D1☐H	Logging cycle setting value range error	A value out of the range is set in CH☐ Logging cycle setting value and/or CH☐ Logging cycle unit setting.	Set the value(s) within the range in one or both of CH☐ Logging cycle setting value and CH☐ Logging cycle unit setting.
1D2☐H	Logging cycle setting disable error	CH☐ Logging cycle setting value and CH☐ Logging cycle unit setting are set so that the set logging cycle falls below the conversion cycle.	Set CH☐ Logging cycle setting value and CH☐ Logging cycle unit setting so that the logging cycle is the conversion cycle of the object to be logged or more.
1D3☐H	Logging data setting range error	A value other than 0 and 1 is set in CH☐ Logging data setting.	Set 0 or 1 in CH☐ Logging data setting.
1D4☐H	Post-trigger logging points setting range error	A value other than 1 to 1000 is set in CH☐ Post-trigger logging points.	Set a value of 1 to 1000 in CH☐ Post-trigger logging points.
1D5☐H	Level trigger condition setting range error	A value other than 0 to 3 is set in CH☐ Level trigger condition setting.	Set a value of 0 to 3 in CH☐ Level trigger condition setting.
1D6☐H	Trigger data setting range error	A value other than 0 to 9999 is set in CH☐ Trigger data.	Set a value of 0 to 9999 in CH☐ Trigger data.
1D7☐H	Logging hold request range error	A value other than 0 and 1 is set in CH☐ Logging hold request.	Set 0 or 1 in CH☐ Logging hold request.
1D8☐H	Loading interrupt enable/disable setting range error	A value other than 0 and 1 is set in CH☐ Loading interrupt enable/disable setting.	Set 0 or 1 in CH☐ Loading interrupt enable/disable setting.
1D9☐H	Logging read points setting value range error	A value other than 1 to 1000 is set in CH☐ Logging read points setting value.	Set a value of 1 to 1000 in CH☐ Logging read points setting value.
1E50H	Offset/gain setting channel specification error	In the offset/gain setting, Setting channel (1) is set for both CH☐ Offset/gain setting mode (offset specification) and CH☐ Offset/gain setting mode (gain specification), or Disable (0) is set for the both buffer memory areas.	Correctly set CH☐ Offset/gain setting mode (offset specification) and CH☐ Offset/gain setting mode (gain specification).
1E51H	User range data invalid (CH identification disabled)	An invalid value is set in the offset/gain setting. The number of the channel in which this error has occurred cannot be identified.	Perform the offset/gain setting again for all channels where the user range is set. If the error occurs again, the possible cause is a failure of the module. Please consult your local Mitsubishi representative.

Error code	Error name	Description and cause	Action
1E6□H	User range data invalid (CH identification enabled, the range setting of the CH where the error occurred is User range)	An invalid value is set for the offset/gain setting of CH□.	Perform the offset/gain setting again for the channels where the error has occurred. If the error occurs again, the possible cause is a failure of the module. Please consult your local Mitsubishi representative.
1E7□H	Offset/gain value setting error	The offset value and gain value to be saved in the flash memory are as follows: Gain value - Offset value ≤ 0.1℃	Perform the offset/gain setting again so that the following condition is satisfied: Gain value - Offset value > 0.1℃
1E8□H	Offset/gain setting channel range error	A value other than 0 and 1 is set in CH□ Offset/gain setting mode (offset specification) and CH□ Offset/gain setting mode (gain specification).	Set 0 or 1 in CH□ Offset/gain setting mode (offset specification) and CH□ Offset/gain setting mode (gain specification).
1E9□H	Offset/gain temperature setting out-of-range error	The offset temperature setting value and gain temperature setting value are as follows: Gain temperature setting value - Offset temperature setting value ≤ 0.1℃	Perform the offset/gain setting again so that the following condition is satisfied: Gain temperature setting value - Offset temperature setting value > 0.1℃
1EB□H	Offset/gain channel change error	The channel where disconnection has occurred or channel where the conversion is disabled is specified when Channel change request (YB) has been turned on.	Check wiring for disconnection, or specify the channel where the conversion is enabled.
1EC□H	Offset/gain temperature setting for specified channel out-of-range error	The offset temperature setting value or gain temperature setting value for the specified channel is out of the measuring range when Channel change request (YB) has been turned on.	Set a value within the measuring range as the offset temperature setting value or gain temperature setting value for the specified channel.
1F00H	Hardware failure (minor)	A hardware failure (minor) has occurred in the module.	The module may be affected by noise. Review and adjust the cable wiring and the installation environment of the programmable controllers. After the adjustment, turn on and off Error clear request (YF) to eliminate this error and resume the conversion. If the error occurs again, the possible cause is a failure of the module. Please consult your local Mitsubishi representative.
3001H	Hardware failure (moderate)	A hardware failure (moderate) has occurred in the module.	Power off and on the module. If the error occurs again, the possible cause is a failure of the module. Please consult your local Mitsubishi representative.
3030H	Flash memory error	The data in the flash memory is abnormal.	Check measured temperature values. If the values are abnormal, please consult your local Mitsubishi representative.

3.5 List of Alarm Codes

If an alarm occurs during operation, a temperature input module stores the alarm code into 'Latest alarm code' (Un\G2) of the buffer memory. Turning on Error clear request (YF) clears the alarm code in 'Latest alarm code' (Un\G2).
The following table lists the alarm codes that may be stored.
☐: This symbol indicates the number of the channel where an alarm has occurred. A numerical value of 0 to 7 is used to correspond to CH1 to 8.
(CH1: 0, CH2: 1, CH3: 2, CH4: 3, CH5: 4, CH6: 5, CH7: 6, CH8: 7)

Alarm code	Alarm name	Description and cause	Action
080☐H	Process alarm (upper limit)	The process alarm (upper limit) has occurred in CH☐.	Adjust CH☐ Measured temperature value to fall within the range. As a result, the corresponding bit of CH☐ Alert output flag (Process alarm upper limit) and/or CH☐ Alert output flag (Process alarm lower limit), and Alert output signal (XD) turn off automatically.
081☐H	Process alarm (lower limit)	The process alarm (lower limit) has occurred in CH☐.	
082☐H	Rate alarm (upper limit)	The rate alarm (upper limit) has occurred in CH☐.	Adjust the change in CH☐ Measured temperature value to fall within the range. As a result, the corresponding bit of CH☐ Alert output flag (Rate alarm upper limit) or CH☐ Alert output flag (Rate alarm lower limit), and Alert output signal (XD) turn off automatically.
083☐H	Rate alarm (lower limit)	The rate alarm (upper limit) has occurred in CH☐.	
0A0☐H	Disconnection detection	Disconnection has been detected in CH☐.	Re-establish the connection and turn on and off Error clear request (YF). As a result, the corresponding bit of Disconnection detection flag, and Disconnection detection signal (XC) turn off, and the alarm code of Latest alarm code is cleared.

APPENDICES

Appendix 1 Module Label

The functions of the temperature input module can be set by using module labels.

Module labels of I/O signals

The module label name of an I/O signal is defined with the following structure:
"Module name"_"Module number".b"Label name" or "Module name"_"Module number".b"Label name"_D

Ex.
R60TDG_1.bModuleREADY

■Module name
The character string of a module model name is given.

■Module number
A number starting from 1 is added to identify modules that have the same module name.

■Label name
The label identifier unique to a module is given.

■_D
This string indicates that the module label is for the direct access input (DX) or direct access output (DY). A module label without the string is for the input (X) or output (Y) of the refresh processing.

Module labels of buffer memory areas

The module label name of a buffer memory area is defined with the following structure:
"Module name"_"Module number"."Data type"_D["(Channel)"]."Data format""Label name"_D

Ex.
R60TDG_1.stnMonitor[0].wMeasuredTemperatureValue_D

■Module name
The character string of a module model name is given.

■Module number
A number starting from 1 is added to identify modules that have the same module name.

■Data type
The data type to sort a buffer memory area is given. Each data type is as follows:

Data type	Description
stnMonitor	Monitor
stnControl	Control
stnSetting	Setting

■Channel
The channel number corresponding to a module label is given. A numerical value of 0 to 7 is used to correspond to CH1 to 8. (CH1: 0, CH2: 1, CH3: 2, CH4: 3, CH5: 4, CH6: 5, CH7: 6, CH8: 7)

■Data format

The string that represents the data size of a buffer memory area is given. Each data format is as follows:

Data format	Description
u	Word [Unsigned]/Bit string [16-bit]
w	Word [Signed]

■Label name

The label identifier unique to a module is given.

■_D

This string indicates that the module label is for the direct access. A module label without the string is for the auto refresh. The following table shows the differences between the auto refresh and direct access.

Type	Description	Access timing	Example
Auto refresh	Values that are read from or written to the module label are reflected in the module collectively at the auto refresh. The run time of the program can be reduced. To use the auto refresh, set "Target" to "Module Label" in "Refresh settings" of "Module Parameter".	At auto refresh	R60TDG_1.stnMonitor[0].wMeasuredTemperatureValue
Direct access	Values that are read from or written to the module label is reflected in the module instantly. Compared with the auto refresh, the run time of the program becomes longer. However, the responsiveness is high.	At reading/writing from/to the module label	R60TDG_1.stnMonitor[0].wMeasuredTemperatureValue_D

Appendix 2 I/O Signals

List of I/O signals

The following table lists the I/O signals of a temperature input module.
For details on the I/O signals, refer to the following.
☞ Page 92 Details of input signals
☞ Page 98 Details of output signals

Point

- The I/O number (X/Y) described below shows the case that the start I/O number of a temperature input module is set to "0".
- Do not use the "Use prohibited" signals shown below because the system uses them. If users use (turn off and on) the signals, the functions of a temperature input module cannot be guaranteed.

Input signal

Device number	Signal name
X0	Module READY
X1 to X8	Use prohibited
X9	Operating condition setting completed flag
XA	Offset/gain setting mode status flag
XB	Channel change completed flag
XC	Disconnection detection signal
XD	Alert output signal
XE	Conversion completed flag
XF	Error flag

Output signal

Device number	Signal name
Y0 to Y8	Use prohibited
Y9	Operating condition setting request
YA	User range write request
YB	Channel change request
YC to YE	Use prohibited
YF	Error clear request

Details of input signals

The following describes the details of the input signals for a temperature input module which are assigned to the CPU module. The I/O numbers (X/Y) described in this section are for the case when the start I/O number of a temperature input module is set to 0.

Point

This section describes buffer memory addresses for CH1. For details on the buffer memory addresses after CH2, refer to the following.

☞ Page 100 Buffer Memory Areas

Module READY

Module READY (X0) turns on to indicate the preparation for the temperature conversion is completed after the power-on or after the reset operation of the CPU module, and the temperature conversion is performed.

In the following cases, 'Module READY' (X0) turns off.

- In the offset/gain setting mode (In this case, the temperature conversion is performed.)
- When a watchdog timer error has occurred in the temperature input module (In this case, the temperature conversion is not performed.)

■Device number

The following shows the device number of this input signal.

Signal name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Module READY	X0							

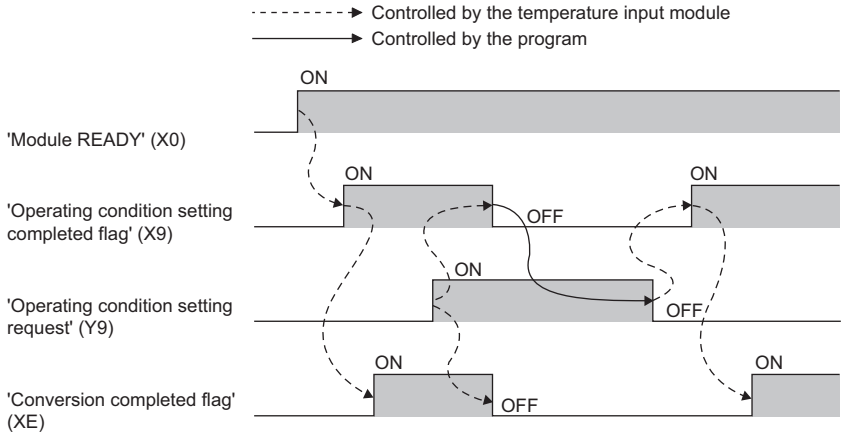
Operating condition setting completed flag

When changing values of the buffer memory, use Operating condition setting completed flag (X9) as an interlock condition to turn on and off 'Operating condition setting request' (Y9). For the buffer memory areas which require turning on and off of 'Operating condition setting request' (Y9) to enable the changed values, refer to the following.

☞ Page 100 Buffer Memory Areas

When 'Operating condition setting completed flag' (X9) is off, the temperature conversion is not performed.

When 'Operating condition setting request' (Y9) is on, 'Operating condition setting completed flag' (X9) turns off.



■Device number

The following shows the device number of this input signal.

Signal name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Operating condition setting completed flag	X9							

Offset/gain setting mode status flag

■In the offset/gain setting mode

When registering the value, which has been adjusted with the offset/gain setting, use Offset/gain setting mode status flag (XA) as an interlock condition to turn on and off 'User range write request' (YA).

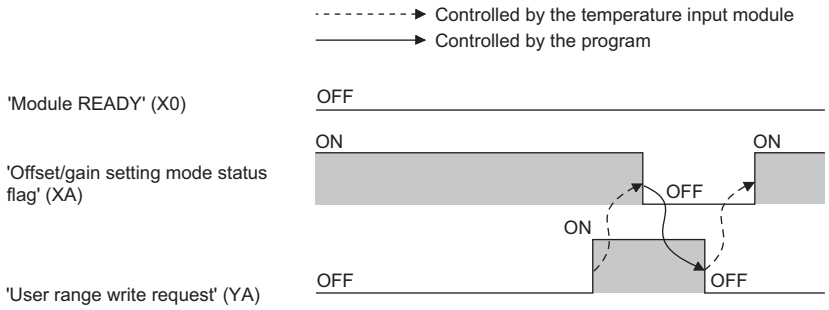
When the offset/gain setting is configured from the offset/gain setting window of an engineering tool, the setting is performed properly on the window. Therefore, a program is not required to perform the setting.

When the offset/gain setting is configured by reusing a program that is used in a temperature input module of MELSEC-Q series, check that this signal is used as the interlock.

For the programs of a temperature input module of MELSEC-Q series, refer to the following.

📖 MELSEC-Q Channel Isolated Thermocouple Input Module User's Manual

📖 MELSEC-Q Channel Isolated RTD Input Module User's Manual

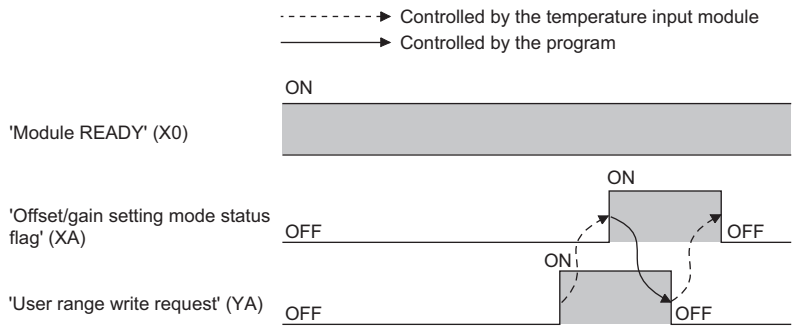


■In the normal mode

In the user range setting restoration, use Offset/gain setting mode status flag (XA) as an interlock condition to turn on and off 'User range write request' (YA).

For user range setting restoration, refer to the following.

☞ Page 67 Backing up, Saving, and Restoring Offset/Gain Values



■Device number

The following shows the device number of this input signal.

Signal name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Offset/gain setting mode status flag	XA							

Channel change completed flag

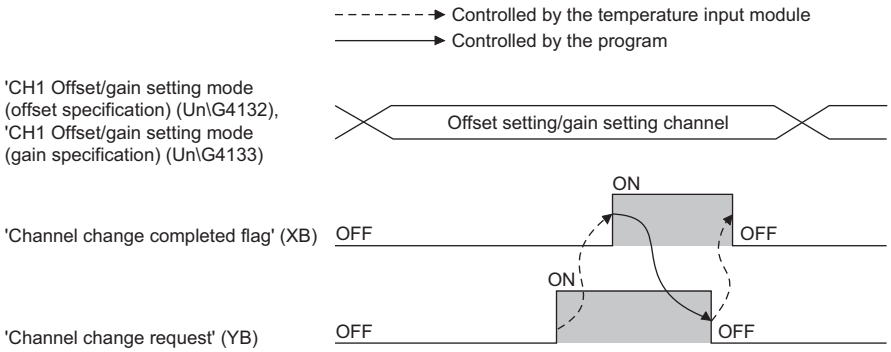
When changing a channel to perform the offset/gain setting, use Channel change completed flag (XB) as an interlock condition to turn on and off 'Channel change request' (YB). When the offset/gain setting is configured from the offset/gain setting window of an engineering tool, the setting is performed properly on the window. Therefore, a program is not required to perform the setting.

When the offset/gain setting is configured by reusing a program that is used in a temperature input module of MELSEC-Q series, check that this signal is used as the interlock.

For the programs of a temperature input module of MELSEC-Q series, refer to the following.

MELSEC-Q Channel Isolated Thermocouple Input Module User's Manual

MELSEC-Q Channel Isolated RTD Input Module User's Manual



■Device number

The following shows the device number of this input signal.

Signal name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Channel change completed flag	XB							

Disconnection detection signal

■Turning on Disconnection detection signal (XC)

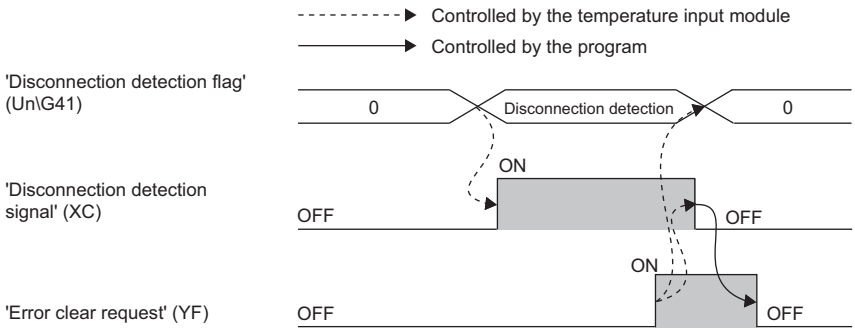
Disconnection detection signal (XC) turns on when disconnection is detected for the channel where Enable (0) is set in 'CH1 Disconnection detection enable/disable setting' (Un\G530) and the temperature conversion is enabled.

When 'Disconnection detection signal' (XC) turns on, the following operations are performed.

- A value is stored in Measured temperature value of the corresponding channel, according to the settings of 'CH1 Conversion setting at disconnection detection' (Un\G531) and 'CH1 Conversion setting value at disconnection detection' (Un\G532).
- The ALM LED flashes.

■Turning off Disconnection detection signal (XC)

The operations related to the turning off of Disconnection detection signal (XC) vary depending on the setting of 'Disconnection detection automatic clear enable/disable setting' (Un\G303).

Setting of 'Disconnection detection automatic clear enable/disable setting' (Un\G303)	Operations related to the turning off of Disconnection detection signal (XC)
Enable (0)	When the cause of disconnection is eliminated and the connection of external devices is established, 'Disconnection detection signal' (XC) automatically turns off and the ALM LED turns off. 
Disable (1)	Turn on and off 'Error clear request' (YF) when the cause of disconnection is eliminated and the connection of external devices is established. Accordingly, 'Disconnection detection signal' (XC) turns off and the ALM LED turns off.

■Device number

The following shows the device number of this input signal.

Signal name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Disconnection detection signal	XC							

Point

Averaging processing starts over after the temperature conversion resumes.

A

Alert output signal

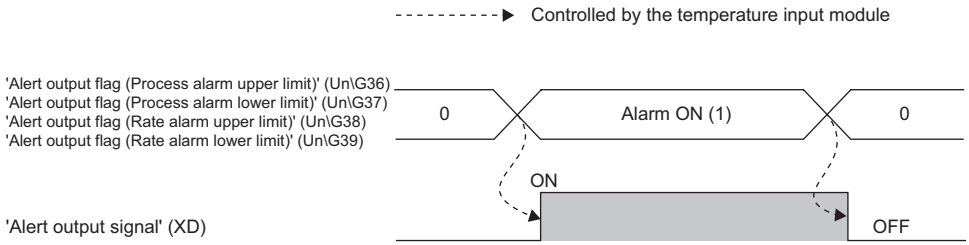
Alert output signal (XD) turns on when the process alarm or rate alarm has been detected. When the alert output function is disabled for all channels, 'Alert output signal' (XD) is always off.

■Process alarm

- Alert output signal (XD) turns on when the measured temperature value exceeds the range set for 'CH1 Process alarm upper upper limit value' (Un\G514) to 'CH1 Process alarm lower lower limit value' (Un\G520). The ALM LED also turns on along with the on of the signal. The target of alert output is the channels only where the alert output function (process alarm) and the temperature conversion are both enabled.
- Alert output signal (XD) turns off when the measured temperature values fall within the setting range for all the temperature conversion enabled channels. The ALM LED also turns off along with the off of the signal.

■Rate alarm

- Alert output signal (XD) turns on when the change of the measured temperature value exceeds the range set for 'CH1 Rate alarm upper limit value' (Un\G524) and 'CH1 Rate alarm lower limit value' (Un\G526). The ALM LED also turns on along with the on of the signal. The target of alert output is the channels only where the alert output function (rate alarm) and the temperature conversion are both enabled.
- Alert output signal (XD) turns off when the measured temperature values fall within the setting range for all the temperature conversion enabled channels. The ALM LED also turns off along with the off of the signal.



■Device number

The following shows the device number of this input signal.

Signal name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Alert output signal	XD							

Conversion completed flag

Conversion completed flag (XE) turns on when the first temperature conversion has been completed for all conversion enabled channels. When reading a measured temperature value, use this signal or 'Conversion completed flag' (Un\G42) as an interlock.

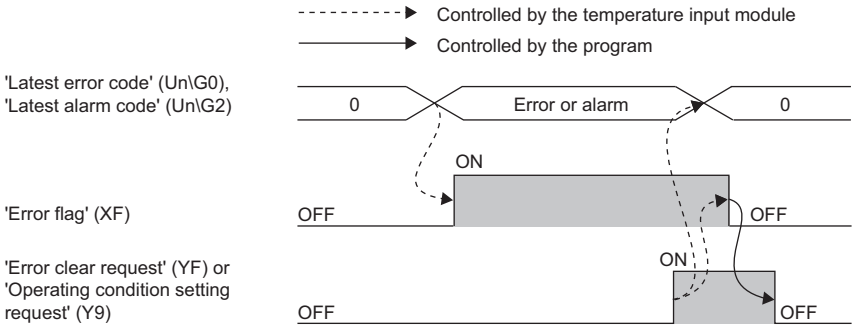
■Device number

The following shows the device number of this input signal.

Signal name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Conversion completed flag	XE							

Error flag

Error flag (XF) turns on when an error has occurred.



■Turning off 'Error flag' (XF)

Error flag (XF) turns off when the error cause is eliminated and either of following operations is performed.

- Turning on and off 'Error clear request' (YF)
- Turning on and off 'Operating condition setting request' (Y9).

'Error flag' (XF), 'Latest error code' (Un\G0), and 'Latest alarm code' (Un\G2) are cleared at the timing when 'Error clear request' (YF) or 'Operating condition setting request' (Y9) is turned on from off. Note that turning on and off 'Operating condition setting request' (Y9) resets the temperature conversion, which resumes from the beginning.

■Device number

The following shows the device number of this input signal.

Signal name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Error flag	XF							

A

Details of output signals

The following describes the details of the output signals for a temperature input module which are assigned to the CPU module.

The I/O numbers (X/Y) described in this section are for the case when the start I/O number of a temperature input module is set to 0.

Point

This section describes buffer memory addresses for CH1. For details on the buffer memory addresses after CH2, refer to the following.

☞ Page 100 Buffer Memory Areas

Operating condition setting request

Turn on and off Operating condition setting request (Y9) to enable the settings of buffer memory areas.

For the timing of turning the signal on and off, refer to the following.

☞ Page 92 Operating condition setting completed flag

For details on the buffer memory areas to be enabled, refer to the following.

☞ Page 100 List of buffer memory areas

■Device number

The following shows the device number of this output signal.

Signal name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Operating condition setting request	Y9							

User range write request

■In the offset/gain setting mode

Turn on and off User range write request (YA) to register values adjusted with the offset/gain setting in a temperature input module. The data is written to the flash memory at the timing when this signal is turned on from off.

For the timing of turning the signal on and off, refer to the following.

☞ Page 93 Offset/gain setting mode status flag

■In the normal mode

Turn on and off User range write request (YA) to restore the user range setting.

For the timing of turning the signal on and off, refer to the following.

☞ Page 93 Offset/gain setting mode status flag

■Device number

The following shows the device number of this output signal.

Signal name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
User range write request	YA							

Channel change request

Turn on and off Channel change request (YB) to change a channel to perform the offset/gain setting.

For the timing of turning the signal on and off, refer to the following.

☞ Page 94 Channel change completed flag

■Device number

The following shows the device number of this output signal.

Signal name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Channel change request	YB							

Error clear request

Turn on and off Error clear request (YF) to clear 'Error flag' (XF), 'Disconnection detection signal' (XC), 'Latest error code' (Un\G0), and 'Latest alarm code' (Un\G2).

For the timing of turning the signal on and off, refer to the following.

- ☞ Page 95 Disconnection detection signal
- ☞ Page 97 Error flag

■Device number

The following shows the device number of this output signal.

Signal name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Error clear request	YF							

Appendix 3 Buffer Memory Areas

List of buffer memory areas

This section lists the buffer memory areas of the temperature input module. For details on the buffer memory, refer to the following.

☞ Page 115 Details of buffer memory addresses

The buffer memory areas of the temperature input module are classified into the data types described below.

Data type	Description	
Setting data	Description	The data to be customized to suit the connected devices and the purpose of the system.
	Read and write attributes	Read and write is possible.
	Setting procedure	Use the engineering tool or a program to set the data.
	When the setting is enabled	After a change of value, turning on and off 'Operating condition setting request' (Y9) allows the change to take effect.
Control data	Description	The data used for controlling the temperature input module.
	Read and write attributes	Read and write is possible.
	Setting procedure	Use the engineering tool or a program to set the data.
	When the setting is enabled	Upon a change of value, the set value becomes effective.
Monitor data	Description	The data used for checking the status of the temperature input module.
	Read and write attributes	Only read is possible and write is not possible.
	Setting procedure	—
	When the setting is enabled	—
User range setting data	Description	The data used for updating the user range setting of the temperature input module.
	Read and write attributes	Read and write is possible.
	Setting procedure	Use the engineering tool or a program to set the data.
	When the setting is enabled	After a change of value, turning on and off 'User range write request' (YA) allows the change to take effect.

Point

Do not write data to the system areas and areas whose data types are monitor in the buffer memory. Writing data into these areas can cause the malfunction of the module.

In R mode

■Un\G0 to Un\G399

Address (decimal)	Address (hexadecimal)	Name	Default value	Data type	Auto refresh
0	0H	Latest error code	0	Monitor	○
1	1H	Latest address of error history	0	Monitor	○
2	2H	Latest alarm code	0	Monitor	○
3	3H	Latest address of alarm history	0	Monitor	○
4 to 19	4H to 13H	Interrupt factor detection flag [n]*1	0	Monitor	○
20 to 35	14H to 23H	System area	—	—	—
36	24H	Alert output flag (Process alarm upper limit)	0000H	Monitor	○
37	25H	Alert output flag (Process alarm lower limit)	0000H	Monitor	○
38	26H	Alert output flag (Rate alarm upper limit)	0000H	Monitor	○
39	27H	Alert output flag (Rate alarm lower limit)	0000H	Monitor	○
40	28H	System area	—	—	—
41	29H	Disconnection detection flag	0000H	Monitor	○
42	2AH	Conversion completed flag	0000H	Monitor	○
43 to 60	2BH to 3CH	System area	—	—	—
61	3DH	Cold junction compensation setting status*2	0	Monitor	×
62 to 89	3EH to 59H	System area	—	—	—
90	5AH	Level data 0	0	Control	○
91	5BH	Level data 1	0	Control	○
92	5CH	Level data 2	0	Control	○
93	5DH	Level data 3	0	Control	○
94	5EH	Level data 4	0	Control	○
95	5FH	Level data 5	0	Control	○
96	60H	Level data 6	0	Control	○
97	61H	Level data 7	0	Control	○
98	62H	Level data 8	0	Control	○
99	63H	Level data 9	0	Control	○
100 to 123	64H to 7BH	System area	—	—	—
124 to 139	7CH to 8BH	Interrupt factor mask [n]*1	0	Control	×
140 to 155	8CH to 9BH	System area	—	—	—
156 to 171	9CH to ABH	Interrupt factor reset request [n]*1	0	Control	×
172 to 199	ACH to C7H	System area	—	—	—
200 to 215	C8H to D7H	Interrupt factor generation setting [n]*1	0	Setting	×
216 to 231	D8H to E7H	System area	—	—	—
232 to 247	E8H to F7H	Condition target setting [n]*1	0	Setting	×
248 to 263	F8H to 107H	System area	—	—	—
264 to 279	108H to 117H	Condition target channel setting [n]*1	0	Setting	×
280 to 295	118H to 127H	System area	—	—	—
296, 297	128H, 129H	Mode switching setting	0	Setting	×
298	12AH	Cold junction compensation with/without setting*2	0	Setting	×
299 to 302	12BH to 12EH	System area	—	—	—
303	12FH	Disconnection detection automatic clear enable/disable setting	1	Setting	×
304 to 399	130H to 18FH	System area	—	—	—

*1 [n] in the table indicates an interrupt setting number. (n = 1 to 16)

*2 For the RTD input module, this area corresponds to System area.

■Un\G400 to Un\G3599

Address Decimal (hexadecimal)								Name	Default value	Data type	Auto refresh
CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8				
400 (190H)	600 (258H)	800 (320H)	1000 (3E8H)	1200 (4B0H)	1400 (578H)	1600 (640H)	1800 (708H)	CH□ Measured temperature value	0	Monitor	○
401 (191H)	601 (259H)	801 (321H)	1001 (3E9H)	1201 (4B1H)	1401 (579H)	1601 (641H)	1801 (709H)	System area	—	—	—
402 (192H)	602 (25AH)	802 (322H)	1002 (3EAH)	1202 (4B2H)	1402 (57AH)	1602 (642H)	1802 (70AH)	CH□ Scaling value	0	Monitor	○
403 to 408 (193H to 198H)	603 to 608 (25BH to 260H)	803 to 808 (323H to 328H)	1003 to 1008 (3EBH to 3F0H)	1203 to 1208 (4B3H to 4B8H)	1403 to 1408 (57BH to 580H)	1603 to 1608 (643H to 648H)	1803 to 1808 (70BH to 710H)	System area	—	—	—
409 (199H)	609 (261H)	809 (329H)	1009 (3F1H)	1209 (4B9H)	1409 (581H)	1609 (649H)	1809 (711H)	CH□ Logging hold flag	0	Monitor	○
410 to 429 (19AH to 1ADH)	610 to 629 (262H to 275H)	810 to 829 (32AH to 33DH)	1010 to 1029 (3F2H to 405H)	1210 to 1229 (4BAH to 4CDH)	1410 to 1429 (582H to 595H)	1610 to 1629 (64AH to 65DH)	1810 to 1829 (712H to 725H)	System area	—	—	—
430 (1AEH)	630 (276H)	830 (33EH)	1030 (406H)	1230 (4CEH)	1430 (596H)	1630 (65EH)	1830 (726H)	CH□ Range setting monitor (Thermocouple type) (for the thermocouple input module)	0000H	Monitor	×
								CH□ Range setting monitor (Resistance temperature detector type) (for the RTD input module)	0000H	Monitor	×
431 (1AFH)	631 (277H)	831 (33FH)	1031 (407H)	1231 (4CFH)	1431 (597H)	1631 (65FH)	1831 (727H)	CH□ Range setting monitor (offset/gain setting)	0000H	Monitor	×
432, 433 (1B0H, 1B1H)	632, 633 (278H, 279H)	832, 833 (340H, 341H)	1032, 1033 (408H, 409H)	1232, 1233 (4D0H, 4D1H)	1432, 1433 (598H, 599H)	1632, 1633 (660H, 661H)	1832, 1833 (728H, 729H)	System area	—	—	—
434 (1B2H)	634 (27AH)	834 (342H)	1034 (40AH)	1234 (4D2H)	1434 (59AH)	1634 (662H)	1834 (72AH)	CH□ Head pointer	0	Monitor	×
435 (1B3H)	635 (27BH)	835 (343H)	1035 (40BH)	1235 (4D3H)	1435 (59BH)	1635 (663H)	1835 (72BH)	CH□ Latest pointer	0	Monitor	×
436 (1B4H)	636 (27CH)	836 (344H)	1036 (40CH)	1236 (4D4H)	1436 (59CH)	1636 (664H)	1836 (72CH)	CH□ Number of logging data	0	Monitor	×
437 (1B5H)	637 (27DH)	837 (345H)	1037 (40DH)	1237 (4D5H)	1437 (59DH)	1637 (665H)	1837 (72DH)	CH□ Trigger pointer	0	Monitor	×
438 (1B6H)	638 (27EH)	838 (346H)	1038 (40EH)	1238 (4D6H)	1438 (59EH)	1638 (666H)	1838 (72EH)	CH□ Current logging read pointer	-1	Monitor	×
439 (1B7H)	639 (27FH)	839 (347H)	1039 (40FH)	1239 (4D7H)	1439 (59FH)	1639 (667H)	1839 (72FH)	CH□ Previous logging read pointer	-1	Monitor	×
440 (1B8H)	640 (280H)	840 (348H)	1040 (410H)	1240 (4D8H)	1440 (5A0H)	1640 (668H)	1840 (730H)	CH□ Logging read points monitor value	0	Monitor	×
441 (1B9H)	641 (281H)	841 (349H)	1041 (411H)	1241 (4D9H)	1441 (5A1H)	1641 (669H)	1841 (731H)	CH□ Logging cycle monitor value (s)	0	Monitor	×
442 (1BAH)	642 (282H)	842 (34AH)	1042 (412H)	1242 (4DAH)	1442 (5A2H)	1642 (66AH)	1842 (732H)	CH□ Logging cycle monitor value (ms)	0	Monitor	×
443 (1BBH)	643 (283H)	843 (34BH)	1043 (413H)	1243 (4DBH)	1443 (5A3H)	1643 (66BH)	1843 (733H)	System area	—	—	—
444 (1BCH)	644 (284H)	844 (34CH)	1044 (414H)	1244 (4DCH)	1444 (5A4H)	1644 (66CH)	1844 (734H)	CH□ Trigger generation time (First/Last two digits of the year)	0	Monitor	×
445 (1BDH)	645 (285H)	845 (34DH)	1045 (415H)	1245 (4DDH)	1445 (5A5H)	1645 (66DH)	1845 (735H)	CH□ Trigger generation time (Month/Day)	0	Monitor	×
446 (1BEH)	646 (286H)	846 (34EH)	1046 (416H)	1246 (4DEH)	1446 (5A6H)	1646 (66EH)	1846 (736H)	CH□ Trigger generation time (Hour/Minute)	0	Monitor	×
447 (1BFH)	647 (287H)	847 (34FH)	1047 (417H)	1247 (4DFH)	1447 (5A7H)	1647 (66FH)	1847 (737H)	CH□ Trigger generation time (Second/Day of the week)	0	Monitor	×

Address Decimal (hexadecimal)								Name	Default value	Data type	Auto refresh
CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8				
448 (1C0H)	648 (288H)	848 (350H)	1048 (418H)	1248 (4E0H)	1448 (5A8H)	1648 (670H)	1848 (738H)	CH□ Trigger generation time (Millisecond)	0	Monitor	×
449 to 470 (1C1H to 1D6H)	649 to 670 (289H to 29EH)	849 to 870 (351H to 366H)	1049 to 1070 (419H to 42EH)	1249 to 1270 (4E1H to 4F6H)	1449 to 1470 (5A9H to 5BEH)	1649 to 1670 (671H to 686H)	1849 to 1870 (739H to 74EH)	System area	—	—	—
471 (1D7H)	671 (29FH)	871 (367H)	1071 (42FH)	1271 (4F7H)	1471 (5BFH)	1671 (687H)	1871 (74FH)	CH□ Logging hold request	0	Control	○
472 to 499 (1D8H to 1F3H)	672 to 699 (2A0H to 2BBH)	872 to 899 (368H to 383H)	1072 to 1099 (430H to 44BH)	1272 to 1299 (4F8H to 513H)	1472 to 1499 (5C0H to 5DBH)	1672 to 1699 (688H to 6A3H)	1871 to 1899 (750H to 76BH)	System area	—	—	—
500 (1F4H)	700 (2BCH)	900 (384H)	1100 (44CH)	1300 (514H)	1500 (5DCH)	1700 (6A4H)	1900 (76CH)	CH□ Conversion enable/disable setting	1	Setting	×
501 (1F5H)	701 (2BDH)	901 (385H)	1101 (44DH)	1301 (515H)	1501 (5DDH)	1701 (6A5H)	1901 (76DH)	CH□ Averaging process specification	0	Setting	×
502 (1F6H)	702 (2BEH)	902 (386H)	1102 (44EH)	1302 (516H)	1502 (5DEH)	1702 (6A6H)	1902 (76EH)	CH□ Time average/Count average/ Moving average/Primary delay filter constant setting	0	Setting	×
503 to 511 (1F7H to 1FFH)	703 to 711 (2BFH to 2C7H)	903 to 911 (387H to 38FH)	1103 to 1111 (44FH to 457H)	1303 to 1311 (517H to 51FH)	1503 to 1511 (5DFH to 5E7H)	1703 to 1711 (6A7H to 6AFH)	1903 to 1911 (76FH to 777H)	System area	—	—	—
512 (200H)	712 (2C8H)	912 (390H)	1112 (458H)	1312 (520H)	1512 (5E8H)	1712 (6B0H)	1912 (778H)	CH□ Alert output setting (Process alarm)	1	Setting	×
513 (201H)	713 (2C9H)	913 (391H)	1113 (459H)	1313 (521H)	1513 (5E9H)	1713 (6B1H)	1913 (779H)	CH□ Alert output setting (Rate alarm)	1	Setting	×
514 (202H)	714 (2CAH)	914 (392H)	1114 (45AH)	1314 (522H)	1514 (5EAH)	1714 (6B2H)	1914 (77AH)	CH□ Process alarm upper upper limit value	12000[*1] 8500[*1]	Setting	×
515 (203H)	715 (2CBH)	915 (393H)	1115 (45BH)	1315 (523H)	1515 (5EBH)	1715 (6B3H)	1915 (77BH)	System area	—	—	—
516 (204H)	716 (2CCH)	916 (394H)	1116 (45CH)	1316 (524H)	1516 (5ECH)	1716 (6B4H)	1916 (77CH)	CH□ Process alarm upper lower limit value	12000[*1] 8500[*1]	Setting	×
517 (205H)	717 (2CDH)	917 (395H)	1117 (45DH)	1317 (525H)	1517 (5EDH)	1717 (6B5H)	1917 (77DH)	System area	—	—	—
518 (206H)	718 (2CEH)	918 (396H)	1118 (45EH)	1318 (526H)	1518 (5EEH)	1718 (6B6H)	1918 (77EH)	CH□ Process alarm lower upper limit value	-2000	Setting	×
519 (207H)	719 (2CFH)	919 (397H)	1119 (45FH)	1319 (527H)	1519 (5EFH)	1719 (6B7H)	1919 (77FH)	System area	—	—	—
520 (208H)	720 (2D0H)	920 (398H)	1120 (460H)	1320 (528H)	1520 (5F0H)	1720 (6B8H)	1920 (780H)	CH□ Process alarm lower lower limit value	-2000	Setting	×
521 (209H)	721 (2D1H)	921 (399H)	1121 (461H)	1321 (529H)	1521 (5F1H)	1721 (6B9H)	1921 (781H)	System area	—	—	—
522 (20AH)	722 (2D2H)	922 (39AH)	1122 (462H)	1322 (52AH)	1522 (5F2H)	1722 (6BAH)	1922 (782H)	CH□ Rate alarm alert detection cycle setting	0	Setting	×
523 (20BH)	723 (2D3H)	923 (39BH)	1123 (463H)	1323 (52BH)	1523 (5F3H)	1723 (6BBH)	1923 (783H)	System area	—	—	—
524 (20CH)	724 (2D4H)	924 (39CH)	1124 (464H)	1324 (52CH)	1524 (5F4H)	1724 (6BCH)	1924 (784H)	CH□ Rate alarm upper limit value	0	Setting	×
525 (20DH)	725 (2D5H)	925 (39DH)	1125 (465H)	1325 (52DH)	1525 (5F5H)	1725 (6BDH)	1925 (785H)	System area	—	—	—
526 (20EH)	726 (2D6H)	926 (39EH)	1126 (466H)	1326 (52EH)	1526 (5F6H)	1726 (6BEH)	1926 (786H)	CH□ Rate alarm lower limit value	0	Setting	×
527 to 529 (20FH to 211H)	727 to 729 (2D7H to 2D9H)	927 to 929 (39FH to 3A1H)	1127 to 1129 (467H to 469H)	1327 to 1329 (52FH to 531H)	1527 to 1529 (5F7H to 5F9H)	1727 to 1729 (6BFH to 6C1H)	1927 to 1929 (787H to 789H)	System area	—	—	—

A

Address Decimal (hexadecimal)								Name	Default value	Data type	Auto refresh
CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8				
530 (212H)	730 (2DAH)	930 (3A2H)	1130 (46AH)	1330 (532H)	1530 (5FAH)	1730 (6C2H)	1930 (78AH)	CH□ Disconnection detection enable/disable setting	0	Setting	×
531 (213H)	731 (2DBH)	931 (3A3H)	1131 (46BH)	1331 (533H)	1531 (5FBH)	1731 (6C3H)	1931 (78BH)	CH□ Conversion setting at disconnection detection	1	Setting	×
532 (214H)	732 (2DCH)	932 (3A4H)	1132 (46CH)	1332 (534H)	1532 (5FCH)	1732 (6C4H)	1932 (78CH)	CH□ Conversion setting value at disconnection detection	0	Setting	×
533, 534 (215H, 216H)	733, 734 (2DDH, 2DEH)	933, 934 (3A5H, 3A6H)	1133, 1134 (46DH, 46EH)	1333, 1334 (535H, 536H)	1533, 1534 (5FDH, 5FEH)	1733, 1734 (6C5H, 6C6H)	1933, 1934 (78DH, 78EH)	System area	—	—	—
535 (217H)	735 (2DFH)	935 (3A7H)	1135 (46FH)	1335 (537H)	1535 (5FFH)	1735 (6C7H)	1935 (78FH)	CH□ Logging enable/disable setting	1	Setting	×
536 (218H)	736 (2E0H)	936 (3A8H)	1136 (470H)	1336 (538H)	1536 (600H)	1736 (6C8H)	1936 (790H)	CH□ Logging data setting	0	Setting	×
537 (219H)	737 (2E1H)	937 (3A9H)	1137 (471H)	1337 (539H)	1537 (601H)	1737 (6C9H)	1937 (791H)	CH□ Logging cycle setting value	240[*2] 80[*2]	Setting	×
538 (21AH)	738 (2E2H)	938 (3AAH)	1138 (472H)	1338 (53AH)	1538 (602H)	1738 (6CAH)	1938 (792H)	CH□ Logging cycle unit setting	1	Setting	×
539 (21BH)	739 (2E3H)	939 (3ABH)	1139 (473H)	1339 (53BH)	1539 (603H)	1739 (6CBH)	1939 (793H)	CH□ Post-trigger logging points	500	Setting	×
540 (21CH)	740 (2E4H)	940 (3ACH)	1140 (474H)	1340 (53CH)	1540 (604H)	1740 (6CCH)	1940 (794H)	CH□ Level trigger condition setting	0	Setting	×
541 (21DH)	741 (2E5H)	941 (3ADH)	1141 (475H)	1341 (53DH)	1541 (605H)	1741 (6CDH)	1941 (795H)	CH□ Trigger data	[*3]	Setting	×
542 (21EH)	742 (2E6H)	942 (3AEH)	1142 (476H)	1342 (53EH)	1542 (606H)	1742 (6CEH)	1942 (796H)	CH□ Trigger setting value	0	Setting	×
543 (21FH)	743 (2E7H)	943 (3AFH)	1143 (477H)	1343 (53FH)	1543 (607H)	1743 (6CFH)	1943 (797H)	System area	—	—	—
544 (220H)	744 (2E8H)	944 (3B0H)	1144 (478H)	1344 (540H)	1544 (608H)	1744 (6D0H)	1944 (798H)	CH□ Loading interrupt enable/ disable setting	1	Setting	×
545 (221H)	745 (2E9H)	945 (3B1H)	1145 (479H)	1345 (541H)	1545 (609H)	1745 (6D1H)	1945 (799H)	CH□ Logging read points setting value	100	Setting	×
546 (222H)	746 (2EAH)	946 (3B2H)	1146 (47AH)	1346 (542H)	1546 (60AH)	1746 (6D2H)	1946 (79AH)	CH□ Scaling enable/disable setting	1	Setting	×
547 (223H)	747 (2EBH)	947 (3B3H)	1147 (47BH)	1347 (543H)	1547 (60BH)	1747 (6D3H)	1947 (79BH)	System area	—	—	—
548 (224H)	748 (2ECH)	948 (3B4H)	1148 (47CH)	1348 (544H)	1548 (60CH)	1748 (6D4H)	1948 (79CH)	CH□ Scaling range upper limit value	0	Setting	×
549 (225H)	749 (2EDH)	949 (3B5H)	1149 (47DH)	1349 (545H)	1549 (60DH)	1749 (6D5H)	1949 (79DH)	System area	—	—	—
550 (226H)	750 (2EEH)	950 (3B6H)	1150 (47EH)	1350 (546H)	1550 (60EH)	1750 (6D6H)	1950 (79EH)	CH□ Scaling range lower limit value	0	Setting	×
551 (227H)	751 (2EFH)	951 (3B7H)	1151 (47FH)	1351 (547H)	1551 (60FH)	1751 (6D7H)	1951 (79FH)	System area	—	—	—
552 (228H)	752 (2F0H)	952 (3B8H)	1152 (480H)	1352 (548H)	1552 (610H)	1752 (6D8H)	1952 (7A0H)	CH□ Scaling width upper limit value	0	Setting	×
553 (229H)	753 (2F1H)	953 (3B9H)	1153 (481H)	1353 (549H)	1553 (611H)	1753 (6D9H)	1953 (7A1H)	System area	—	—	—
554 (22AH)	754 (2F2H)	954 (3BAH)	1154 (482H)	1354 (54AH)	1554 (612H)	1754 (6DAH)	1954 (7A2H)	CH□ Scaling width lower limit value	0	Setting	×
555 to 561 (22BH to 231H)	755 to 761 (2F3H to 2F9H)	955 to 961 (3BBH to 3C1H)	1155 to 1161 (483H to 489H)	1355 to 1361 (54BH to 551H)	1555 to 1561 (613H to 619H)	1755 to 1761 (6DBH to 6E1H)	1955 to 1961 (7A3H to 7A9H)	System area	—	—	—
562 (232H)	762 (2FAH)	962 (3C2H)	1162 (48AH)	1362 (552H)	1562 (61AH)	1762 (6E2H)	1962 (7AAH)	CH□ Offset temperature setting value	0	Setting	×
563 (233H)	763 (2FBH)	963 (3C3H)	1163 (48BH)	1363 (553H)	1563 (61BH)	1763 (6E3H)	1963 (7ABH)	System area	—	—	—

Address Decimal (hexadecimal)								Name	Default value	Data type	Auto refresh
CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8				
564 (234H)	764 (2FCH)	964 (3C4H)	1164 (48CH)	1364 (554H)	1564 (61CH)	1764 (6E4H)	1964 (7ACH)	CH☐ Gain temperature setting value	0	Setting	×
565 to 597 (235H to 255H)	765 to 797 (2FDH to 31DH)	965 to 997 (3C5H to 3E5H)	1165 to 1197 (48DH to 4ADH)	1365 to 1397 (555H to 575H)	1565 to 1597 (61DH to 63DH)	1765 to 1797 (6E5H to 705H)	1965 to 1997 (7ADH to 7CDH)	System area	—	—	—
598 (256H)	798 (31EH)	998 (3E6H)	1198 (4AEH)	1398 (576H)	1598 (63EH)	1798 (706H)	1998 (7CEH)	CH☐ Range setting (Thermocouple type) (for the thermocouple input module)	0	Setting	×
								CH☐ Range setting (Resistance temperature detector type) (for the RTD input module)	0	Setting	×
599 (257H)	799 (31FH)	999 (3E7H)	1199 (4AFH)	1399 (577H)	1599 (63FH)	1799 (707H)	1999 (7CFH)	CH☐ Range setting (offset/gain setting)	0	Setting	×
2000 to 3599 (7D0H to E0FH)								System area	—	—	—

*1 The default value is 12000 for the thermocouple input module; 8500 for the RTD input module.

*2 The default value is 240 for the thermocouple input module; 80 for the RTD input module.

*3 The following shows the default values.
CH1: 400, CH2: 600, CH3: 800, CH4: 1000, CH5: 1200, CH6: 1400, CH7: 1600, CH8: 1800

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■Error history (Un\G3600 to Un\G3759)

Address (decimal)	Address (hexadecimal)	Name				Default value	Data type	Auto refresh
3600	E10H	Error history 1	Error code			0	Monitor	×
3601	E11H		Error time	First two digits of the year	Last two digits of the year			
3602	E12H			Month	Day			
3603	E13H			Hour	Minute			
3604	E14H			Second	Day of the week			
3605	E15H			Millisecond				
3606 to 3609	E16H to E19H	System area				—	—	—
3610 to 3615	E1AH to E1FH	Error history 2	Same as error history 1			0	Monitor	×
3616 to 3619	E20H to E23H	System area				—	—	—
3620 to 3625	E24H to E29H	Error history 3	Same as error history 1			0	Monitor	×
3626 to 3629	E2AH to E2DH	System area				—	—	—
3630 to 3635	E2EH to E33H	Error history 4	Same as error history 1			0	Monitor	×
3636 to 3639	E34H to E37H	System area				—	—	—
3640 to 3645	E38H to E3DH	Error history 5	Same as error history 1			0	Monitor	×
3646 to 3649	E3EH to E41H	System area				—	—	—
3650 to 3655	E42H to E47H	Error history 6	Same as error history 1			0	Monitor	×
3656 to 3659	E48H to E4BH	System area				—	—	—
3660 to 3665	E4CH to E51H	Error history 7	Same as error history 1			0	Monitor	×
3666 to 3669	E52H to E55H	System area				—	—	—
3670 to 3675	E56H to E5BH	Error history 8	Same as error history 1			0	Monitor	×
3676 to 3679	E5CH to E5FH	System area				—	—	—
3680 to 3685	E60H to E65H	Error history 9	Same as error history 1			0	Monitor	×
3686 to 3689	E66H to E69H	System area				—	—	—
3690 to 3695	E6AH to E6FH	Error history 10	Same as error history 1			0	Monitor	×
3696 to 3699	E70H to E73H	System area				—	—	—
3700 to 3705	E74H to E79H	Error history 11	Same as error history 1			0	Monitor	×
3706 to 3709	E7AH to E7DH	System area				—	—	—
3710 to 3715	E7EH to E83H	Error history 12	Same as error history 1			0	Monitor	×
3716 to 3719	E84H to E87H	System area				—	—	—
3720 to 3725	E88H to E8DH	Error history 13	Same as error history 1			0	Monitor	×
3726 to 3729	E8EH to E91H	System area				—	—	—
3730 to 3735	E92H to E97H	Error history 14	Same as error history 1			0	Monitor	×
3736 to 3739	E98H to E9BH	System area				—	—	—
3740 to 3745	E9CH to EA1H	Error history 15	Same as error history 1			0	Monitor	×
3746 to 3749	EA2H to EA5H	System area				—	—	—
3750 to 3755	EA6H to EABH	Error history 16	Same as error history 1			0	Monitor	×
3756 to 3759	EACH to EAFH	System area				—	—	—

■Alarm history (Un\G3760 to Un\G3999)

Address (decimal)	Address (hexadecimal)	Name				Default value	Data type	Auto refresh
3760	EB0H	Alarm history 1	Alarm code			0	Monitor	×
3761	EB1H		Alarm time	First two digits of the year	Last two digits of the year			
3762	EB2H			Month	Day			
3763	EB3H			Hour	Minute			
3764	EB4H			Second	Day of the week			
3765	EB5H			Millisecond				
3766 to 3769	EB6H to EB9H	System area				—	—	—
3770 to 3775	EBAH to EBFH	Alarm history 2	Same as alarm history 1			0	Monitor	×
3776 to 3779	EC0H to EC3H	System area				—	—	—
3780 to 3785	EC4H to EC9H	Alarm history 3	Same as alarm history 1			0	Monitor	×
3786 to 3789	ECAH to ECDH	System area				—	—	—
3790 to 3795	ECEH to ED3H	Alarm history 4	Same as alarm history 1			0	Monitor	×
3796 to 3799	ED4H to ED7H	System area				—	—	—
3800 to 3805	ED8H to EDDH	Alarm history 5	Same as alarm history 1			0	Monitor	×
3806 to 3809	EDEH to EE1H	System area				—	—	—
3810 to 3815	EE2H to EE7H	Alarm history 6	Same as alarm history 1			0	Monitor	×
3816 to 3819	EE8H to EEBH	System area				—	—	—
3820 to 3825	EECH to EF1H	Alarm history 7	Same as alarm history 1			0	Monitor	×
3826 to 3829	EF2H to EF5H	System area				—	—	—
3830 to 3835	EF6H to EFBH	Alarm history 8	Same as alarm history 1			0	Monitor	×
3836 to 3839	EFCH to EFFH	System area				—	—	—
3840 to 3845	F00H to F05H	Alarm history 9	Same as alarm history 1			0	Monitor	×
3846 to 3849	F06H to F09H	System area				—	—	—
3850 to 3855	F0AH to F0FH	Alarm history 10	Same as alarm history 1			0	Monitor	×
3856 to 3859	F10H to F13H	System area				—	—	—
3860 to 3865	F14H to F19H	Alarm history 11	Same as alarm history 1			0	Monitor	×
3866 to 3869	F1AH to F1DH	System area				—	—	—
3870 to 3875	F1EH to F23H	Alarm history 12	Same as alarm history 1			0	Monitor	×
3876 to 3879	F24H to F27H	System area				—	—	—
3880 to 3885	F28H to F2DH	Alarm history 13	Same as alarm history 1			0	Monitor	×
3886 to 3889	F2EH to F31H	System area				—	—	—
3890 to 3895	F32H to F37H	Alarm history 14	Same as alarm history 1			0	Monitor	×
3896 to 3899	F38H to F3BH	System area				—	—	—
3900 to 3905	F3CH to F41H	Alarm history 15	Same as alarm history 1			0	Monitor	×
3906 to 3909	F42H to F45H	System area				—	—	—
3910 to 3915	F46H to F4BH	Alarm history 16	Same as alarm history 1			0	Monitor	×
3916 to 3999	F4CH to F9FH	System area				—	—	—

■Offset/gain setting (Un\G4000 to Un\G9999)

Address Decimal (hexadecimal)								Name	Default value	Data type	Auto refresh
CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8				
4000 to 4003 (FA0H to FA3H)								System area	—	—	—
4004 (FA4H)	4016 (FB0H)	4028 (FBCH)	4040 (FC8H)	4052 (FD4H)	4064 (FE0H)	4076 (FECH)	4088 (FF8H)	CH□ Factory default setting offset value (L)	0	User range setting	×
4005 (FA5H)	4017 (FB1H)	4029 (FBDH)	4041 (FC9H)	4053 (FD5H)	4065 (FE1H)	4077 (FEDH)	4089 (FF9H)	CH□ Factory default setting offset value (H)	0	User range setting	×
4006 (FA6H)	4018 (FB2H)	4030 (FBEH)	4042 (FCAH)	4054 (FD6H)	4066 (FE2H)	4078 (FEEH)	4090 (FFAH)	CH□ Factory default setting gain value (L)	0	User range setting	×
4007 (FA7H)	4019 (FB3H)	4031 (FBFH)	4043 (FCBH)	4055 (FD7H)	4067 (FE3H)	4079 (FEFH)	4091 (FFBH)	CH□ Factory default setting gain value (H)	0	User range setting	×
4008 (FA8H)	4020 (FB4H)	4032 (FC0H)	4044 (FCCH)	4056 (FD8H)	4068 (FE4H)	4080 (FF0H)	4092 (FFCH)	CH□ User range setting offset value (L)	0	User range setting	×
4009 (FA9H)	4021 (FB5H)	4033 (FC1H)	4045 (FCDH)	4057 (FD9H)	4069 (FE5H)	4081 (FF1H)	4093 (FFDH)	CH□ User range setting offset value (H)	0	User range setting	×
4010 (FAAH)	4022 (FB6H)	4034 (FC2H)	4046 (FCEH)	4058 (FDAH)	4070 (FE6H)	4082 (FF2H)	4094 (FFEH)	CH□ User range setting gain value (L)	0	User range setting	×
4011 (FABH)	4023 (FB7H)	4035 (FC3H)	4047 (FCFH)	4059 (FDBH)	4071 (FE7H)	4083 (FF3H)	4095 (FFFH)	CH□ User range setting gain value (H)	0	User range setting	×
4012 (FACH)	4024 (FB8H)	4036 (FC4H)	4048 (FD0H)	4060 (FDCH)	4072 (FE8H)	4084 (FF4H)	4096 (1000H)	CH□ User range setting thermoelectromotive force offset value (L) (for the thermocouple input module) CH□ User range setting offset resistance value (L) (for the RTD input module)	0	User range setting	×
4013 (FADH)	4025 (FB9H)	4037 (FC5H)	4049 (FD1H)	4061 (FDDH)	4073 (FE9H)	4085 (FF5H)	4097 (1001H)	CH□ User range setting thermoelectromotive force offset value (H) (for the thermocouple input module) CH□ User range setting offset resistance value (H) (for the RTD input module)	0	User range setting	×
4014 (FAEH)	4026 (FBAH)	4038 (FC6H)	4050 (FD2H)	4062 (FDEH)	4074 (FEAH)	4086 (FF6H)	4098 (1002H)	CH□ User range setting thermoelectromotive force gain value (L) (for the thermocouple input module) CH□ User range setting gain resistance value (L) (for the RTD input module)	0	User range setting	×
4015 (FAFH)	4027 (FBBH)	4039 (FC7H)	4051 (FD3H)	4063 (FDFH)	4075 (FEBH)	4087 (FF7H)	4099 (1003H)	CH□ User range setting thermoelectromotive force gain value (H) (for the thermocouple input module) CH□ User range setting gain resistance value (H) (for the RTD input module)	0	User range setting	×
4100 to 4131 (1004H to 1023H)								System area	—	—	—

Address Decimal (hexadecimal)								Name	Default value	Data type	Auto refresh
CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8				
4132 (1024H)	4134 (1026H)	4136 (1028H)	4138 (102AH)	4140 (102CH)	4142 (102EH)	4144 (1030H)	4146 (1032H)	CH□ Offset/gain setting mode (offset specification)	0	Setting	×
4133 (1025H)	4135 (1027H)	4137 (1029H)	4139 (102BH)	4141 (102DH)	4143 (102FH)	4145 (1031H)	4147 (1033H)	CH□ Offset/gain setting mode (gain specification)	0	Setting	×
4148 to 9999 (1034H to 270FH)								System area	—	—	—

■Logging data (Un\G10000 to Un\G17999)

Address Decimal (hexadecimal)								Name	Default value	Data type	Auto refresh
CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8				
10000 to 10999 (2710H to 2AF7H)	11000 to 11999 (2AF8H to 2EDFH)	12000 to 12999 (2EE0H to 32C7H)	13000 to 13999 (32C8H to 36AFH)	14000 to 14999 (36B0H to 3A97H)	15000 to 15999 (3A98H to 3E7FH)	16000 to 16999 (3E80H to 4267H)	17000 to 17999 (4268H to 464FH)	CH□ Logging data	0	Monitor	×

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In Q compatible mode

Address Decimal (hexadecimal)								Name	Default value	Data type	Auto refresh
CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8				
0 (0H)								Conversion enable/disable setting	00FFH	Setting	×
1 (1H)	2 (2H)	3 (3H)	4 (4H)	5 (5H)	6 (6H)	7 (7H)	8 (8H)	CH□ Time average/Count average/ Moving average/Primary delay filter constant setting	0	Setting	×
9 (9H)								System area	—	—	—
10 (AH)								Conversion completed flag	0	Monitor	○
11 (BH)	12 (CH)	13 (DH)	14 (EH)	15 (FH)	16 (10H)	17 (11H)	18 (12H)	CH□ Measured temperature value	0	Monitor	○
19 (13H)								Latest error code	0	Monitor	○
20 (14H)				21 (15H)				Range setting monitor (Thermocouple type) (for the thermocouple input module)	0000H	Monitor	×
								Range setting monitor (Resistance temperature detector type) (for the RTD input module)			
22 (16H)								Range setting monitor (offset/gain setting)	0000H	Monitor	×
23 (17H)								System area	—	—	—
24 (18H)				25 (19H)				Averaging process setting	0	Setting	×
26 (1AH)								Offset/gain setting mode (offset specification)	0	Setting	×
27 (1BH)								Offset/gain setting mode (gain specification)	0	Setting	×
28 (1CH)	30 (1EH)	32 (20H)	34 (22H)	36 (24H)	38 (26H)	40 (28H)	42 (2AH)	CH□ Offset temperature setting value	0	Setting	×
29 (1DH)	31 (1FH)	33 (21H)	35 (23H)	37 (25H)	39 (27H)	41 (29H)	43 (2BH)	CH□ Gain temperature setting value	0	Setting	×
44 (2CH)								System area	—	—	—
45 (2DH)								Cold junction compensation setting status[*1]	0	Monitor	×
46 (2EH)								Alert output setting (Process alarm) Alert output setting (Rate alarm)	FFFFH	Setting	×
47 (2FH)								Alert output flag (Process alarm)	0	Monitor	○
48 (30H)								Alert output flag (Rate alarm)	0	Monitor	○
49 (31H)								Disconnection detection flag	0	Monitor	○
50 (32H)	51 (33H)	52 (34H)	53 (35H)	54 (36H)	55 (37H)	56 (38H)	57 (39H)	CH□ Scaling value	0	Monitor	○
58 (3AH)								Scaling enable/disable setting	00FFH	Setting	×
59 to 61 (3BH to 3DH)								System area	—	—	—
62 (3EH)	64 (40H)	66 (42H)	68 (44H)	70 (46H)	72 (48H)	74 (4AH)	76 (4CH)	CH□ Scaling range lower limit value	0	Setting	×
63 (3FH)	65 (41H)	67 (43H)	69 (45H)	71 (47H)	73 (49H)	75 (4BH)	77 (4DH)	CH□ Scaling range upper limit value	0	Setting	×
78 (4EH)	80 (50H)	82 (52H)	84 (54H)	86 (56H)	88 (58H)	90 (5AH)	92 (5CH)	CH□ Scaling width lower limit value	0	Setting	×
79 (4FH)	81 (51H)	83 (53H)	85 (55H)	87 (57H)	89 (59H)	91 (5BH)	93 (5DH)	CH□ Scaling width upper limit value	0	Setting	×
94 (5EH)	98 (62H)	102 (66H)	106 (6AH)	110 (6EH)	114 (72H)	118 (76H)	122 (7AH)	CH□ Process alarm lower lower limit value	-2000	Setting	×
95 (5FH)	99 (63H)	103 (67H)	107 (6BH)	111 (6FH)	115 (73H)	119 (77H)	123 (7BH)	CH□ Process alarm lower upper limit value	-2000	Setting	×
96 (60H)	100 (64H)	104 (68H)	108 (6CH)	112 (70H)	116 (74H)	120 (78H)	124 (7CH)	CH□ Process alarm upper lower limit value	12000[*2] 8500[*2]	Setting	×
97 (61H)	101 (65H)	105 (69H)	109 (6DH)	113 (71H)	117 (75H)	121 (79H)	125 (7DH)	CH□ Process alarm upper upper limit value	12000[*2] 8500[*2]	Setting	×

Address Decimal (hexadecimal)								Name	Default value	Data type	Auto refresh
CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8				
126 (7EH)	127 (7FH)	128 (80H)	129 (81H)	130 (82H)	131 (83H)	132 (84H)	133 (85H)	CH☐ Rate alarm alert detection cycle setting	0	Setting	×
134 (86H)	136 (88H)	138 (8AH)	140 (8CH)	142 (8EH)	144 (90H)	146 (92H)	148 (94H)	CH☐ Rate alarm upper limit value	0	Setting	×
135 (87H)	137 (89H)	139 (8BH)	141 (8DH)	143 (8FH)	145 (91H)	147 (93H)	149 (95H)	CH☐ Rate alarm lower limit value	0	Setting	×
150 to 156 (96H to 9CH)								System area	—	—	—
157 (9DH)								Disconnection detection automatic clear enable/disable setting	1	Setting	×
158, 159 (9EH, 9FH)								Mode switching setting	0	Setting	×
160, 161 (A0H, A1H)								System area	—	—	—
162 (A2H)								Disconnection detection enable/ disable setting	0	Setting	×
163 (A3H)								System area	—	—	—
164, 165 (A4H, A5H)								Conversion setting at disconnection detection	1111H	Setting	×
166 (A6H)	167 (A7H)	168 (A8H)	169 (A9H)	170 (AAH)	171 (ABH)	172 (ACH)	173 (ADH)	CH☐ Conversion setting value at disconnection detection	0	Setting	×
174 to 189 (AEH to BDH)								System area	—	—	—
190 (BEH)	202 (CAH)	214 (D6H)	226 (E2H)	238 (EEH)	250 (FAH)	262 (106H)	274 (112H)	CH☐ Factory default setting offset value (L)	0	User range setting	×
191 (BFH)	203 (CBH)	215 (D7H)	227 (E3H)	239 (EFH)	251 (FBH)	263 (107H)	275 (113H)	CH☐ Factory default setting offset value (H)	0	User range setting	×
192 (C0H)	204 (CCH)	216 (D8H)	228 (E4H)	240 (F0H)	252 (FCH)	264 (108H)	276 (114H)	CH☐ Factory default setting gain value (L)	0	User range setting	×
193 (C1H)	205 (CDH)	217 (D9H)	229 (E5H)	241 (F1H)	253 (FDH)	265 (109H)	277 (115H)	CH☐ Factory default setting gain value (H)	0	User range setting	×
194 (C2H)	206 (CEH)	218 (DAH)	230 (E6H)	242 (F2H)	254 (FEH)	266 (10AH)	278 (116H)	CH☐ User range setting offset value (L)	0	User range setting	×
195 (C3H)	207 (CFH)	219 (DBH)	231 (E7H)	243 (F3H)	255 (FFH)	267 (10BH)	279 (117H)	CH☐ User range setting offset value (H)	0	User range setting	×
196 (C4H)	208 (D0H)	220 (DCH)	232 (E8H)	244 (F4H)	256 (100H)	268 (10CH)	280 (118H)	CH☐ User range setting gain value (L)	0	User range setting	×
197 (C5H)	209 (D1H)	221 (DDH)	233 (E9H)	245 (F5H)	257 (101H)	269 (10DH)	281 (119H)	CH☐ User range setting gain value (H)	0	User range setting	×
198 (C6H)	210 (D2H)	222 (DEH)	234 (EAH)	246 (F6H)	258 (102H)	270 (10EH)	282 (11AH)	CH☐ User range setting thermoelectromotive force offset value (L) (for the thermocouple input module) CH☐ User range setting offset resistance value (L) (for the RTD input module)	0	User range setting	×
199 (C7H)	211 (D3H)	223 (DFH)	235 (EBH)	247 (F7H)	259 (103H)	271 (10FH)	283 (11BH)	CH☐ User range setting thermoelectromotive force offset value (H) (for the thermocouple input module) CH☐ User range setting offset resistance value (H) (for the RTD input module)	0	User range setting	×

A

Address Decimal (hexadecimal)								Name	Default value	Data type	Auto refresh
CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8				
200 (C8H)	212 (D4H)	224 (E0H)	236 (ECH)	248 (F8H)	260 (104H)	272 (110H)	284 (11CH)	CH□ User range setting thermoelectromotive force gain value (L) (for the thermocouple input module)	0	User range setting	×
								CH□ User range setting gain resistance value (L) (for the RTD input module)			
201 (C9H)	213 (D5H)	225 (E1H)	237 (EDH)	249 (F9H)	261 (105H)	273 (111H)	285 (11DH)	CH□ User range setting thermoelectromotive force gain value (H) (for the thermocouple input module)	0	User range setting	×
								CH□ User range setting gain resistance value (H) (for the RTD input module)			
286 to 401 (11EH to 191H)								System area	—	—	—
402 (192H)				403 (193H)				Range setting (Thermocouple type) (for the thermocouple input module)	0	Setting	×
								Range setting (Resistance temperature detector type) (for the RTD input module)			
404 (194H)								Range setting (offset/gain setting)	0	Setting	×
405 (195H)								Cold junction compensation with/ without setting[*1]	0	Setting	×
406 to 999 (196H to 3E7H)								System area	—	—	—
1000 (3E8H)	1001 (3E9H)	1002 (3EAH)	1003 (3EBH)	1004 (3ECH)	1005 (3EDH)	1006 (3EEH)	1007 (3EFH)	CH□ Logging enable/disable setting	1	Setting	×
1008 (3F0H)	1009 (3F1H)	1010 (3F2H)	1011 (3F3H)	1012 (3F4H)	1013 (3F5H)	1014 (3F6H)	1015 (3F7H)	CH□ Logging hold request	0	Control	○
1016 (3F8H)	1017 (3F9H)	1018 (3FAH)	1019 (3FBH)	1020 (3FCH)	1021 (3FDH)	1022 (3FEH)	1023 (3FFH)	CH□ Logging hold flag	0	Monitor	○
1024 (400H)	1025 (401H)	1026 (402H)	1027 (403H)	1028 (404H)	1029 (405H)	1030 (406H)	1031 (407H)	CH□ Logging data setting	0	Setting	×
1032 (408H)	1033 (409H)	1034 (40AH)	1035 (40BH)	1036 (40CH)	1037 (40DH)	1038 (40EH)	1039 (40FH)	CH□ Logging cycle setting value	240[*3] 80[*3]	Setting	×
1040 (410H)	1041 (411H)	1042 (412H)	1043 (413H)	1044 (414H)	1045 (415H)	1046 (416H)	1047 (417H)	CH□ Logging cycle unit setting	1	Setting	×
1048 (418H)	1049 (419H)	1050 (41AH)	1051 (41BH)	1052 (41CH)	1053 (41DH)	1054 (41EH)	1055 (41FH)	CH□ Post-trigger logging points	500	Setting	×
1056 (420H)	1057 (421H)	1058 (422H)	1059 (423H)	1060 (424H)	1061 (425H)	1062 (426H)	1063 (427H)	CH□ Level trigger condition setting	0	Setting	×
1064 (428H)	1065 (429H)	1066 (42AH)	1067 (42BH)	1068 (42CH)	1069 (42DH)	1070 (42EH)	1071 (42FH)	CH□ Trigger data	[*4]	Setting	×
1072 to 1081 (430H to 439H)								Level data 0 to 9	0	Control	○
1082 (43AH)	1083 (43BH)	1084 (43CH)	1085 (43DH)	1086 (43EH)	1087 (43FH)	1088 (440H)	1089 (441H)	CH□ Trigger setting value	0	Setting	×
1090 (442H)	1091 (443H)	1092 (444H)	1093 (445H)	1094 (446H)	1095 (447H)	1096 (448H)	1097 (449H)	CH□ Head pointer	0	Monitor	×
1098 (44AH)	1099 (44BH)	1100 (44CH)	1101 (44DH)	1102 (44EH)	1103 (44FH)	1104 (450H)	1105 (451H)	CH□ Latest pointer	0	Monitor	×
1106 (452H)	1107 (453H)	1108 (454H)	1109 (455H)	1110 (456H)	1111 (457H)	1112 (458H)	1113 (459H)	CH□ Number of logging data	0	Monitor	×
1114 (45AH)	1115 (45BH)	1116 (45CH)	1117 (45DH)	1118 (45EH)	1119 (45FH)	1120 (460H)	1121 (461H)	CH□ Trigger pointer	0	Monitor	×
1122 (462H)	1125 (465H)	1128 (468H)	1131 (46BH)	1134 (46EH)	1137 (471H)	1140 (474H)	1143 (477H)	CH□ Logging cycle monitor value (s)	0	Monitor	×
1123 (463H)	1126 (466H)	1129 (469H)	1132 (46CH)	1135 (46FH)	1138 (472H)	1141 (475H)	1144 (478H)	CH□ Logging cycle monitor value (ms)	0	Monitor	×
1124 (464H)	1127 (467H)	1130 (46AH)	1133 (46DH)	1136 (470H)	1139 (473H)	1142 (476H)	1145 (479H)	System area	—	—	—

Address Decimal (hexadecimal)								Name	Default value	Data type	Auto refresh
CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8				
1146 to 1153 (47AH to 481H)								System area	—	—	—
1154 (482H)	1158 (486H)	1162 (48AH)	1166 (48EH)	1170 (492H)	1174 (496H)	1178 (49AH)	1182 (49EH)	CH□ Trigger generation time (First/ Last two digits of the year)	0	Monitor	×
1155 (483H)	1159 (487H)	1163 (48BH)	1167 (48FH)	1171 (493H)	1175 (497H)	1179 (49BH)	1183 (49FH)	CH□ Trigger generation time (Month/Day)	0	Monitor	×
1156 (482H)	1160 (488H)	1164 (48CH)	1168 (490H)	1172 (494H)	1176 (498H)	1180 (49CH)	1184 (4A0H)	CH□ Trigger generation time (Hour/ Minute)	0	Monitor	×
1157 (485H)	1161 (489H)	1165 (48DH)	1169 (491H)	1173 (495H)	1177 (499H)	1181 (49DH)	1185 (4A1H)	CH□ Trigger generation time (Second/Day of the week)	0	Monitor	×
1186 (4A2H)	1187 (4A3H)	1188 (4A4H)	1189 (4A5H)	1190 (4A6H)	1191 (4A7H)	1192 (4A8H)	1193 (4A9H)	CH□ Trigger generation time (Millisecond)	0	Monitor	×
1194 to 1199 (4AAH to 4AFH)								System area	—	—	—
1200 (4B0H)	1201 (4B1H)	1202 (4B2H)	1203 (4B3H)	1204 (4B4H)	1205 (4B5H)	1206 (4B6H)	1207 (4B7H)	CH□ Loading interrupt enable/ disable setting	1	Setting	×
1208 (4B8H)	1209 (4B9H)	1210 (4BAH)	1211 (4BBH)	1212 (4BCH)	1213 (4BDH)	1214 (4BEH)	1215 (4BFH)	CH□ Logging read points setting value	1000	Setting	×
1216 (4C0H)	1217 (4C1H)	1218 (4C2H)	1219 (4C3H)	1220 (4C4H)	1221 (4C5H)	1222 (4C6H)	1223 (4C7H)	CH□ Current logging read pointer	-1	Monitor	×
1224 (4C8H)	1225 (4C9H)	1226 (4CAH)	1227 (4CBH)	1228 (4CCH)	1229 (4CDH)	1230 (4CEH)	1231 (4CFH)	CH□ Previous logging read pointer	-1	Monitor	×
1232 (4D0H)	1233 (4D1H)	1234 (4D2H)	1235 (4D3H)	1236 (4D4H)	1237 (4D5H)	1238 (4D6H)	1239 (4D7H)	CH□ Logging read points monitor value	0	Monitor	×
1240 to 1799 (4D8H to 707H)								System area	—	—	—
1800 (708H)								Latest address of error history	0	Monitor	○
1801 to 1809 (709H to 711H)								System area	—	—	—
1810 to 1819 (712H to 71BH)								Error history 1	0	Monitor	×
1820 to 1829 (71CH to 725H)								Error history 2	0	Monitor	×
1830 to 1839 (726H to 72FH)								Error history 3	0	Monitor	×
1840 to 1849 (730H to 739H)								Error history 4	0	Monitor	×
1850 to 1859 (73AH to 743H)								Error history 5	0	Monitor	×
1860 to 1869 (744H to 74DH)								Error history 6	0	Monitor	×
1870 to 1879 (74EH to 757H)								Error history 7	0	Monitor	×
1880 to 1889 (758H to 761H)								Error history 8	0	Monitor	×
1890 to 1899 (762H to 76BH)								Error history 9	0	Monitor	×
1900 to 1909 (76CH to 775H)								Error history 10	0	Monitor	×
1910 to 1919 (776H to 77FH)								Error history 11	0	Monitor	×
1920 to 1929 (780H to 789H)								Error history 12	0	Monitor	×
1930 to 1939 (78AH to 793H)								Error history 13	0	Monitor	×
1940 to 1949 (794H to 79DH)								Error history 14	0	Monitor	×
1950 to 1959 (79EH to 7A7H)								Error history 15	0	Monitor	×
1960 to 1969 (7A8H to 7B1H)								Error history 16	0	Monitor	×
1970 to 3749 (7B2H to EA5H)								System area	—	—	—
3750 (EA6H)								Latest alarm code	0	Monitor	○
3751 (EA7H)								Latest address of alarm history	0	Monitor	○
3752 to 3759 (EA8H to EAFH)								System area	—	—	—
3760 to 3769 (EB0H to EB9H)								Alarm history 1	0	Monitor	×
3770 to 3779 (EBAH to EC3H)								Alarm history 2	0	Monitor	×
3780 to 3789 (EC4H to ECDH)								Alarm history 3	0	Monitor	×
3790 to 3799 (ECEH to ED7H)								Alarm history 4	0	Monitor	×
3800 to 3809 (ED8H to EE1H)								Alarm history 5	0	Monitor	×
3810 to 3819 (EE2H to EEBH)								Alarm history 6	0	Monitor	×
3820 to 3829 (EECH to EF5H)								Alarm history 7	0	Monitor	×
3830 to 3839 (EF6H to EFFH)								Alarm history 8	0	Monitor	×
3840 to 3849 (F00H to F09H)								Alarm history 9	0	Monitor	×

Address Decimal (hexadecimal)								Name	Default value	Data type	Auto refresh
CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8				
3850 to 3859 (F0AH to F13H)								Alarm history 10	0	Monitor	×
3860 to 3869 (F14H to F1DH)								Alarm history 11	0	Monitor	×
3870 to 3879 (F1EH to F27H)								Alarm history 12	0	Monitor	×
3880 to 3889 (F28H to F31H)								Alarm history 13	0	Monitor	×
3890 to 3899 (F32H to F3BH)								Alarm history 14	0	Monitor	×
3900 to 3909 (F3CH to F45H)								Alarm history 15	0	Monitor	×
3910 to 3919 (F46H to F4FH)								Alarm history 16	0	Monitor	×
3920 to 3999 (F50H to F9FH)								System area	—	—	—
4000 to 4015 (FA0H to FAFH)								Interrupt factor detection flag [n]*5	0	Monitor	○
4016 to 4031 (FB0H to FBFH)								System area	—	—	—
4032 to 4047 (FC0H to FCFH)								Interrupt factor mask [n]*5	0	Control	×
4048 to 4063 (FD0H to FDFH)								System area	—	—	—
4064 to 4079 (FE0H to FEFH)								Interrupt factor reset request [n]*5	0	Control	×
4080 to 4095 (FF0H to FFFH)								System area	—	—	—
4096 to 4111 (1000H to 100FH)								Interrupt factor generation setting [n]*5	0	Setting	×
4112 to 4127 (1010H to 101FH)								System area	—	—	—
4128 to 4143 (1020H to 102FH)								Condition target setting [n]*5	0	Setting	×
4144 to 4159 (1030H to 103FH)								System area	—	—	—
4160 to 4175 (1040H to 104FH)								Condition target channel setting [n]*5	0	Setting	×
4176 to 4999 (1050H to 1387H)								System area	—	—	—
5000 to 5999 (1388H to 176FH)								CH1 Logging data	0	Monitor	×
6000 to 6999 (1770H to 1B57H)								CH2 Logging data	0	Monitor	×
7000 to 7999 (1B58H to 1F3FH)								CH3 Logging data	0	Monitor	×
8000 to 8999 (1F40H to 2327H)								CH4 Logging data	0	Monitor	×
9000 to 9999 (2328H to 270FH)								CH5 Logging data	0	Monitor	×
10000 to 10999 (2710H to 2AF7H)								CH6 Logging data	0	Monitor	×
11000 to 11999 (2AF8H to 2EDFH)								CH7 Logging data	0	Monitor	×
12000 to 12999 (2EE0H to 32C7H)								CH8 Logging data	0	Monitor	×
13000 to 17999 (32C8H to 464FH)								System area	—	—	—

*1 For the RTD input module, this area corresponds to System area.
*2 The default value is 12000 for the thermocouple input module; 8500 for the RTD input module.
*3 The default value is 240 for the thermocouple input module; 80 for the RTD input module.
*4 The following shows the default values.
CH1: 11, CH2: 12, CH3: 13, CH4: 14, CH5: 15, CH6: 16, CH7: 17, CH8: 18
*5 [n] in the table indicates an interrupt setting number. (n = 1 to 16)

Details of buffer memory addresses

This section describes the details on the buffer memory addresses of the temperature input module.

Point

This section describes buffer memory addresses for CH1.

Latest error code

The latest error code detected in the temperature input module is stored. For details on the error codes, refer to the following.

☞ Page 84 List of Error Codes

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Latest error code	0							
Latest error code (in Q compatible mode)	19							

■Clearing an error

Turn on and off 'Error clear request' (YF) or 'Operating condition setting request' (Y9). Note that turning on and off 'Operating condition setting request' (Y9) resets the temperature conversion, which resumes from the beginning.

Latest address of error history

Of Error history ☐ (Un\G3600 to Un\G3759), a buffer memory address that stores the latest error code is stored.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Latest address of error history	1							
Latest address of error history (in Q compatible mode)	1800							

Latest alarm code

The latest alarm code detected in the temperature input module is stored. For details on the alarm codes, refer to the following.

☞ Page 88 List of Alarm Codes

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Latest alarm code	2							
Latest alarm code (in Q compatible mode)	3750							

■Clearing an error

Turn on and off 'Error clear request' (YF) or 'Operating condition setting request' (Y9). Note that turning on and off 'Operating condition setting request' (Y9) resets the temperature conversion, which resumes from the beginning.

Latest address of alarm history

Of Alarm history ☐ (Un\G3760 to Un\G3919), a buffer memory address that stores the latest alarm code is stored.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Latest address of alarm history	3							
Latest address of alarm history (in Q compatible mode)	3751							

Interrupt factor detection flag [n]

The detection status of the interrupt factor is stored.

Monitor value	Description
0	No interrupt factor
1	Interrupt factor

When an interrupt factor occurs, an interrupt request is sent to the CPU module at the same time as 'Interrupt factor detection flag [n]' (Un\G4 to Un\G19) turns to Interrupt factor (1).
"n" indicates an interrupt setting number. (n = 1 to 16)

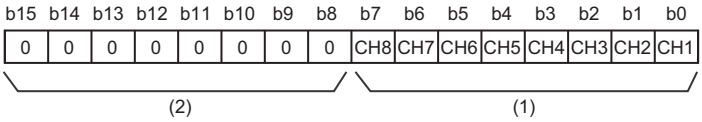
■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Interrupt factor detection flag [n]	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Interrupt factor detection flag [n] (in Q compatible mode)	4000	4001	4002	4003	4004	4005	4006	4007	4008	4009	4010	4011	4012	4013	4014	4015

Alert output flag (Process alarm upper limit)

The upper limit alarm of the process alarm can be checked for each channel.



(1) 0: Normal, 1: Alarm ON

(2) The values of b8 to b15 are fixed to 0.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Alert output flag (Process alarm upper limit)	36							

■Alert output flag status

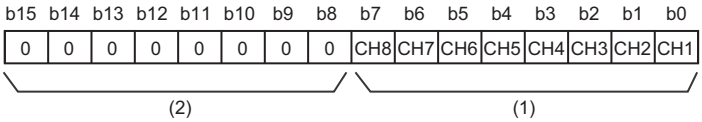
- If the limit specified by the process alarm upper upper limit value is exceeded, Alarm ON (1) is stored in 'Alert output flag (Process alarm upper limit)' (Un\G36) of the corresponding channel.
- If an alert is detected even in one channel, of the channels where conversion is enabled and the alert output setting (Process alarm) is enabled, 'Alert output signal' (XD) also turns on.

■Clearing Alert output flag

- As the measured temperature value returns to the setting range, the flag is automatically cleared.
- Turning on and off 'Operating condition setting request' (Y9) allows the flag to be cleared.

Alert output flag (Process alarm lower limit)

The lower limit alarm of the process alarm can be checked for each channel.



(1) 0: Normal, 1: Alarm ON

(2) The values of b8 to b15 are fixed to 0.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Alert output flag (Process alarm lower limit)	37							

■Alert output flag status

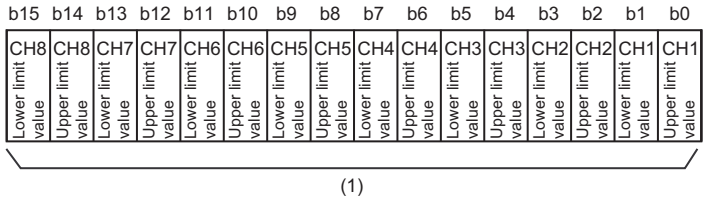
- If the limit specified by the process alarm lower lower limit value is exceeded, Alarm ON (1) is stored in 'Alert output flag (Process alarm lower limit)' (Un\G37) of the corresponding channel.
- If an alert is detected even in one channel, of the channels where conversion is enabled and the alert output setting (Process alarm) is enabled, 'Alert output signal' (XD) also turns on.

■Clearing Alert output flag

- As the measured temperature value returns to the setting range, the flag is automatically cleared.
- Turning on and off 'Operating condition setting request' (Y9) allows the flag to be cleared.

Alert output flag (Process alarm) [Q compatibility]

When the Q compatible mode function is used, the upper/lower limit alarm of the process alarm can be checked.



(1) 0: Normal, 1: Alarm ON

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Alert output flag (Process alarm) (in Q compatible mode)	47							

■Alert output flag status

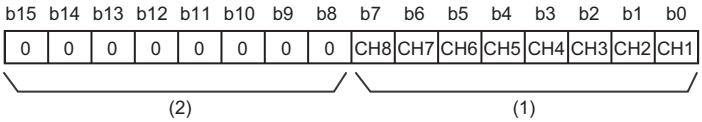
- When the value is out of the range specified in the process alarm upper upper limit value or process alarm lower lower limit value, Alarm ON (1) is stored in Alert output flag (Process alarm) corresponding to each channel.
- If an alert is detected even in one channel, of the channels where conversion is enabled and the alert output setting (Process alarm) is enabled, 'Alert output signal' (XD) also turns on.

■Clearing Alert output flag

- As the measured temperature value returns to the setting range, the flag is automatically cleared.
- Turning on and off 'Operating condition setting request' (Y9) allows the flag to be cleared.

Alert output flag (Rate alarm upper limit)

The upper limit alarm of the rate alarm can be checked for each channel.



(1) 0: Normal, 1: Alarm ON

(2) The values of b8 to b15 are fixed to 0.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Alert output flag (Rate alarm upper limit)	38							

■Alert output flag status

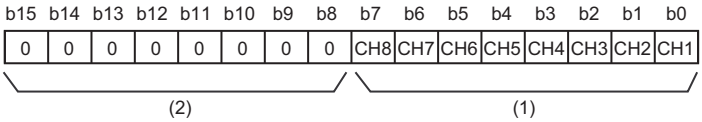
- If the limit specified in the rate alarm upper limit value is exceeded, Alarm ON (1) is stored in 'Alert output flag (Rate alarm upper limit)' (Un\G38) of the corresponding channel.
- If an alert is detected even in one channel, of the channels where conversion is enabled and the alert output setting (Rate alarm) is enabled, 'Alert output signal' (XD) also turns on.

■Clearing Alert output flag

- As the variation in the temperature measured value returns to the setting range, the flag is automatically cleared.
- Turning on and off 'Operating condition setting request' (Y9) allows the flag to be cleared.

Alert output flag (Rate alarm lower limit)

The lower limit alarm of the rate alarm can be checked for each channel.



(1) 0: Normal, 1: Alarm ON

(2) The values of b8 to b15 are fixed to 0.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Alert output flag (Rate alarm lower limit)	39							

■Alert output flag status

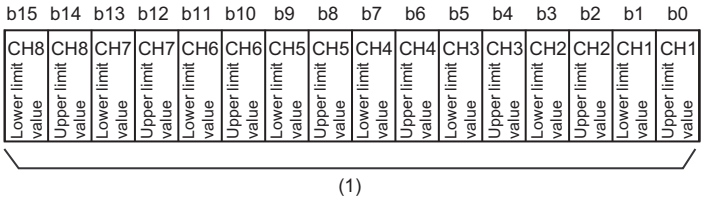
- When the value is out of the range specified in the rate alarm lower limit value, Alarm ON (1) is stored in 'Alert output flag (Rate alarm lower limit)' (Un\G39) corresponding to each channel.
- If an alert is detected even in one channel, of the channels where conversion is enabled and the alert output setting (Rate alarm) is enabled, 'Alert output signal' (XD) also turns on.

■Clearing Alert output flag

- As the variation in the temperature measured value returns to the setting range, the flag is automatically cleared.
- Turning on and off 'Operating condition setting request' (Y9) allows the flag to be cleared.

Alert output flag (Rate alarm) [Q compatibility]

When the Q compatible mode function is used, the upper/lower limit alarm of the rate alarm can be checked.



(1) 0: Normal, 1: Alarm ON

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Alert output flag (Rate alarm) (in Q compatible mode)	48							

■Alert output flag status

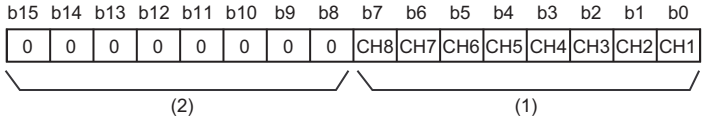
- When the value is out of the range specified in the rate alarm upper limit value or rate alarm lower limit value, Alarm ON (1) is stored in Alert output flag (Rate alarm) corresponding to each channel.
- If an alert is detected even in one channel, of the channels where conversion is enabled and the alert output setting (Process alarm) is enabled, 'Alert output signal' (XD) also turns on.

■Clearing Alert output flag

- As the variation in the temperature measured value returns to the setting range, the flag is automatically cleared.
- Turning on and off 'Operating condition setting request' (Y9) allows the flag to be cleared.

Disconnection detection flag

The status of disconnection can be checked for each channel.



(1) 0: Normal, 1 Disconnection detection

(2) The values of b8 to b15 are fixed to 0.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Disconnection detection flag	41							
Disconnection detection flag (in Q compatible mode)	49							

■Status of Disconnection detection flag

If a disconnection is detected in the signal lines from outside, thermocouples, compensation lead wires, cold junction compensation resistors or Resistance Temperature Detectors, Disconnection detection flag, which corresponds to the channel where the disconnection is detected, turns to disconnection detection (1) When the cause of the disconnection is eliminated and the connection of external devices is established, the operation after this recovery varies depending on the setting of 'Disconnection detection automatic clear enable/disable setting' (Un\G303).

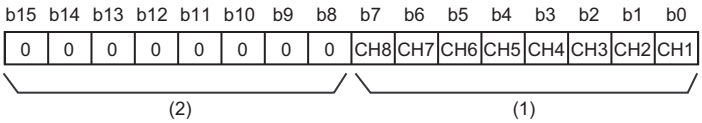
- With 'Disconnection detection automatic clear enable/disable setting' (Un\G303) set to Enable (0), Normal (0) is stored in the bit corresponding to 'Disconnection detection flag' (Un\G41) of the recovered channel.
- With 'Disconnection detection automatic clear enable/disable setting' (Un\G303) set to Disable (1), 'Disconnection detection flag' (Un\G41) holds the status at the time of the disconnection detection. To return to the normal status, make a recovery from disconnection of all the channels, and turn on and off 'Error clear request' (YF).
- If an error is detected even in one channel, of the channels where conversion is enabled and disconnection detection is enabled, 'Disconnection detection signal' (XC) turns on.

■Clearing Disconnection detection flag by means of 'Operating condition setting request' (Y9)

Turning on and off 'Operating condition setting request' (Y9) allows the flag to be cleared.

Conversion completed flag

The status of the temperature conversion can be checked.



(1) 0: During conversion or unused, 1: Conversion completed

(2) The values of b8 to b15 are fixed to 0.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Conversion completed flag	42							
Conversion completed flag (in Q compatible mode)	10							

■The status of Conversion completed flag

When the first temperature conversion is completed in the channel where conversion is enabled, the flag turns to Conversion completed (1). Upon completion of temperature conversion of all the channels where conversion is enabled, 'Conversion completed flag' (XE) turns on.

■Clearing Conversion completed flag

Turning on and off 'Operating condition setting request' (Y9) turns the flag back to the default (During conversion or unused (0)), and when the first conversion is completed, the flag turns to Conversion completed (1) again.

Cold junction compensation setting status

The setting of cold junction compensation, which is set in 'Cold junction compensation with/without setting' (Un\G298), can be checked.

Monitor value	Description
0H	With the cold junction compensation setting
1H	Without the cold junction compensation setting

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Cold junction compensation setting status	61							
Cold junction compensation setting status (in Q compatible mode)	45							

Point

- This area is not capable of changing the setting of cold junction compensation. Perform the setting of cold junction compensation in 'Cold junction compensation with/without setting' (Un\G298).
- 'Cold junction compensation with/without setting' (Un\G298) permits a value of 0 to FH to be set. Setting a value of 1 to FH results in With cold junction compensation setting (1) being stored in this area.

Level data 0 to 9

This area stores data to be monitored when a level trigger of the logging function is used. Ten types of data are available: 'Level data 0' (Un\G90) to 'Level data 9' (Un\G99). These are useful, for example, to generate triggers while monitoring the values of devices other than the temperature input module.

For details on the logging function, refer to the following.

☞ Page 42 Logging Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	0	1	2	3	4	5	6	7	8	9
Level data□	90	91	92	93	94	95	96	97	98	99
Level data□ (in Q compatible mode)	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081

■Setting range

The possible range is from -32768 to 32767.

■Default value

The default value is 0 for all the channels.

Interrupt factor mask [n]

Set Interrupt factor mask to be used.

Setting value	Setting content
0	Mask (Interrupt unused)
1	Mask clear (Interrupt used)

When 'Interrupt factor mask [n]' (Un\G124 to Un\G139) is changed to Mask clear (Interrupt used) (1) and an interrupt factor occurs, an interrupt request is sent to the CPU module. When the set value is two or larger, the setting is regarded as Mask clear (Interrupt used) (1).

"n" indicates an interrupt setting number. (n = 1 to 16)

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Interrupt factor mask [n]	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139
Interrupt factor mask [n] (in Q compatible mode)	4032	4033	4034	4035	4036	4037	4038	4039	4040	4041	4042	4043	4044	4045	4046	4047

■Default value

The default value is Mask (Interrupt unused) (0) for all the channels.

Interrupt factor reset request [n]

An interrupt factor reset request is sent.

Setting value	Setting content
0	No reset request
1	Reset request

When Reset request (1) is set to 'Interrupt factor reset request [n]' (Un\G156 to Un\G171) corresponding to the interrupt factor, the interrupt factor corresponding to the specified interrupt is reset. After that, 'Interrupt factor reset request [n]' (Un\G156 to Un\G171) turns to No reset request (0). When the set value is two or larger, the setting is regarded as Reset request (1).
Interrupt factors can also be reset by turning on and off 'Operating condition setting request' (Y9).
"n" indicates an interrupt setting number. (n = 1 to 16)

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Interrupt factor reset request [n]	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171
Interrupt factor reset request [n] (in Q compatible mode)	4064	4065	4066	4067	4068	4069	4070	4071	4072	4073	4074	4075	4076	4077	4078	4079

■Default value

The default value is No request (0) for all the channels.

Interrupt factor generation setting [n]

Set an interrupt request for when the same interrupt factor occurs during the interrupt factor detection.

Setting value	Setting content
0	Interrupt resend request
1	No interrupt resend request

- With 'Interrupt factor generation setting [n]' (Un\G200 to Un\G215) set to Interrupt resend request (0) and an interrupt factor being detected, an occurrence of the same interrupt factor results in an interrupt request being sent to the CPU module again.
- With 'Interrupt factor generation setting [n]' (Un\G200 to Un\G215) set to No interrupt resend request (1) and an interrupt factor being detected, an occurrence of the same interrupt factor does not result in an interrupt request being sent to the CPU module. To send an interrupt request to the CPU module, set 'Interrupt factor reset request [n]' (Un\G156 to Un\G171) to Reset request (1) and reset the interrupt factor before sending it.

Setting a value other than the above causes an interrupt factor generation setting range error (error code: 180△H).
"n" indicates an interrupt setting number. (n = 1 to 16)

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Interrupt factor generation setting [n]	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215
Interrupt factor generation setting [n] (in Q compatible mode)	4096	4097	4098	4099	4100	4101	4102	4103	4104	4105	4106	4107	4108	4109	4110	4111

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Interrupt resend request (0) for all the channels.

Condition target setting [n]

Set an interrupt factor to be detected.

Setting value	Setting content
0	Disable
1	Error flag (XF)
2	Alert output flag (Process alarm) (CH specification)
3	Alert output flag (Rate alarm) (CH specification)
4	Disconnection detection (CH specification)
5	Conversion completed flag (CH specification)*1
6	Logging hold flag (CH specification)
7	Logging read (CH specification)

Setting a value other than the above causes a condition target setting range error (error code: 181△H).

When an input signal (X) or a buffer memory area set to 'Condition target setting [n]' (Un\G232 to Un\G247) turns off and on, an interrupt request is sent to the CPU module. However, with the setting of Conversion completed flag (5), an interrupt request is sent, provided that 'Conversion completed flag' (Un\G42) is on.

"n" indicates an interrupt setting number. (n = 1 to 16)

*1 For the thermocouple input module, power-on with the cold junction compensation resistor disconnected results in an interrupt being detected since conversion of every channel is complete.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Condition target setting [n]	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247
Condition target setting [n] (in Q compatible mode)	4128	4129	4130	4131	4132	4133	4134	4135	4136	4137	4138	4139	4140	4141	4142	4143

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Disable (0) for all the channels.

Condition target channel setting [n]

Set a channel where an interrupt is detected.

Setting value	Setting content
0	All channels
1	CH1
2	CH2
3	CH3
4	CH4
5	CH5
6	CH6
7	CH7
8	CH8

When a factor for the channel specification is set to 'Condition target setting [n]' (Un\G232 to Un\G247), an interrupt factor in the channel set by this area is monitored. When a factor of the input signal (X) is set, the setting in this area is ignored.
Setting a value other than the above causes a condition target channel setting range error (error code: 182△H).
"n" indicates an interrupt setting number. (n = 1 to 16)

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Condition target channel setting [n]	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279
Condition target channel setting [n] (in Q compatible mode)	4160	4161	4162	4163	4164	4165	4166	4167	4168	4169	4170	4171	4172	4173	4174	4175

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is All channels (0) for all the channels.

Mode switching setting

Set a setting value for the mode to be switched.

Switching mode	Setting value	
Buffer memory address	296	297
Normal mode	5260H	4144H
Offset/gain setting mode	4144H	5260H

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Mode switching setting	296, 297							
Mode switching setting (in Q compatible mode)	158, 159							

■Enabling the setting

Turn off and on 'Operating condition setting request' (Y9) to enable the setting.

■After the mode is switched

When the mode is switched, this area is cleared to 0 and 'Operating condition setting completed flag' (X9) turns off.
After checking that 'Operating condition setting completed flag' (X9) is off, turn off 'Operating condition setting request' (Y9).

Point

When a value out of the above is written and 'Operating condition setting request' (Y9) is turned on and off, the mode setting is not performed and only the operating condition is changed.

Cold junction compensation with/without setting

Set whether or not to apply cold junction compensation with a cold junction compensation resistor.

Setting value	Description
0	With cold junction compensation
Other than 0	Without cold junction compensation

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Cold junction compensation with/without setting	298							
Cold junction compensation with/without setting (in Q compatible mode)	405							

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is With cold junction compensation (0) for all the channels.

Disconnection detection automatic clear enable/disable setting

Set whether to enable or disable an automatic clear of disconnection detection of the disconnection detection function.

Setting value	Description
0	Enable
1	Disable

Setting a value other than in the table above results in operation with Disable (1).

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Disconnection detection automatic clear enable/ disable setting	303							
Disconnection detection automatic clear enable/ disable setting (in Q compatible mode)	157							

■Enabling the setting

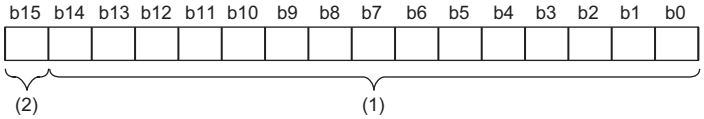
Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Disable (1) for all the channels.

CH1 Measured temperature value

The converted measured temperature value is stored in 16-bit signed binary.



(1) Data section

(2) Sign bit 0: Positive, 1: Negative

■Buffer memory address

The following shows the buffer memory address of this area.

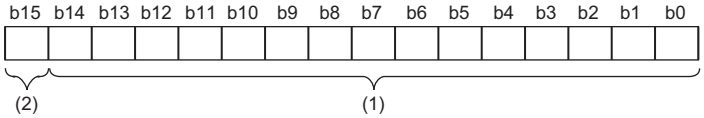
Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Measured temperature value	400	600	800	1000	1200	1400	1600	1800
CH☐ Measured temperature value (in Q compatible mode)	11	12	13	14	15	16	17	18

■Refreshing cycle

If averaging processing is performed, values are updated at every averaging process cycle, but if not performed, values are updated at every sampling cycle.

CH1 Scaling value

The value after scale conversion by means of the scaling function is stored in 16-bit signed binary.



(1) Data section

(2) Sign bit 0: Positive, 1: Negative

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Scaling value	402	602	802	1002	1202	1402	1602	1802
CH☐ Scaling value (in Q compatible mode)	50	51	52	53	54	55	56	57

Point

With no scaling function used, the same value as 'CH1 Measured temperature value' (Un\G400) is stored.

CH1 Logging hold flag

The logging holding status can be checked.

For details on the logging function, refer to the following.

☞ Page 42 Logging Function

Monitor value	Description
0	OFF
1	ON

As data collection in 'CH1 Logging data' (Un\G10000 to Un\G10999) comes to a halt, this flag turns to ON (1).

When logging restarts by changing 'CH1 Logging hold request' (Un\G471) from ON (1) to OFF (0), 'CH1 Logging hold flag' (Un\G409) is turned to OFF (0).

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Logging hold flag	409	609	809	1009	1209	1409	1609	1809
CH☐ Logging hold flag (in Q compatible mode)	1016	1017	1018	1019	1020	1021	1022	1023

CH1 Range setting monitor (Thermocouple type)

The value of thermocouple type set in 'CH1 Range setting (Thermocouple type)' (Un\G598) can be checked. This description is specific to the thermocouple input module.

Monitor value	Description
0	K thermocouple
1	E thermocouple
2	J thermocouple
3	T thermocouple
4	B thermocouple
5	R thermocouple
6	S thermocouple
7	N thermocouple

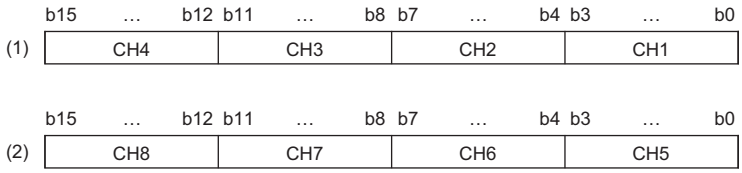
■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Range setting monitor (Thermocouple type)	430	630	830	1030	1230	1430	1630	1830

Range setting monitor (Thermocouple type) [Q compatibility]

With the Q compatible mode function used, the value of thermocouple type, which is set in the input range setting, can be checked. This description is specific to the thermocouple input module.



(1) Range setting monitor (Thermocouple type) (Un\G20) (setting range CH1 to CH4)

(2) Range setting monitor (Thermocouple type) (Un\G21) (setting range CH5 to CH8)

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Range setting monitor (Thermocouple type)	20				21			

The monitor values in the thermocouple type setting are the same as those of R mode.

CH1 Range setting monitor (Resistance temperature detector type)

The value of resistance temperature detector type set in 'CH1 Range setting (Resistance temperature detector type)' (Un\G598) can be checked. This description is specific to the RTD input module.

Monitor value	Description
0	Pt100 (-200 to 850℃)
1	Pt100 (-20 to 120℃)
2	JPt100 (-180 to 600℃)
3	JPt100 (-20 to 120℃)
4	Pt100 (0 to 200℃)
5	JPt100 (0 to 200℃)
8	Ni100 (-60 to 250℃)
9	Pt50 (-200 to 650℃)

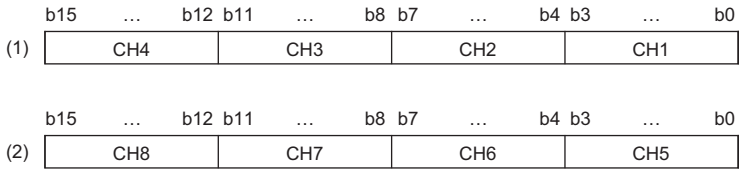
■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Range setting monitor (Resistance temperature detector type)	430	630	830	1030	1230	1430	1630	1830

Range setting monitor (Resistance temperature detector type) [Q compatibility]

With the Q compatible mode function used, the value of resistance temperature detector type, which is set in the input range setting, can be checked. This description is specific to the RTD input module.



(1) Range setting monitor (Resistance temperature detector type) (Un\G20) (setting range CH1 to CH4)

(2) Range setting monitor (Resistance temperature detector type) (Un\G21) (setting range CH5 to CH8)

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Range setting monitor (Resistance temperature detector type)	20				21			

The monitor values in the resistance temperature detector type setting are the same as those of R mode.

CH1 Range setting monitor (offset/gain setting)

The offset/gain values set in 'CH1 Range setting (Thermocouple type)' (Un\G598) or 'CH1 Range setting (Resistance temperature detector type)' (Un\G598) can be checked.

Monitor value	Description
0	Factory default setting
1	User range setting

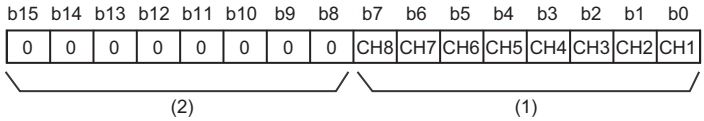
■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH□ Range setting monitor (offset/gain setting)	431	631	831	1031	1231	1431	1631	1831

Range setting monitor (offset/gain setting) [Q compatibility]

With the Q compatible mode function used, offset/gain values, which are set in the input range setting, can be checked.



(1) 0: Factory default setting, 1: User range setting

(2) The values of b8 to b15 are fixed to 0.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Range setting monitor (offset/gain setting)	22							

The monitor values are the same as those of R mode.

A

CH1 Head pointer

The buffer memory address of the oldest data in CH1 Logging data (Un\G10000 to Un\G10999) can be checked with this buffer memory area.

The offset value at the start address of CH1 Logging data (Un\G10000 to Un\G10999) is stored.

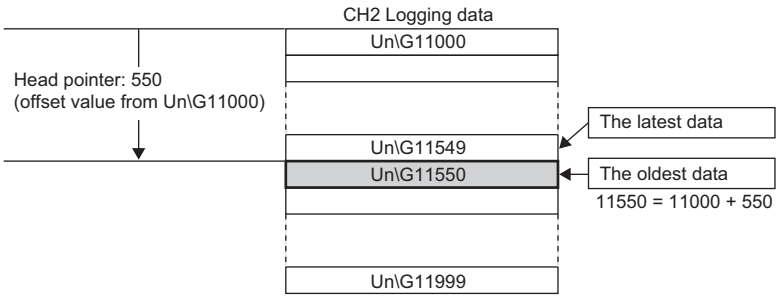
■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Head pointer	434	634	834	1034	1234	1434	1634	1834
CH☐ Head pointer (in Q compatible mode)	1090	1091	1092	1093	1094	1095	1096	1097

Ex.

When the value of 'CH2 Head pointer' (Un\G634) is 8550



Point

- Until the first 1000 points of data is logged from the beginning of logging, the value in 'CH1 Head pointer' (Un\G434) is fixed to 0 since the oldest data is stored in the start address of CH1 Logging data (Un\G10000 to Un\G10999). On and after the 1001st data, 'CH1 Head pointer' (Un\G434) increases one by one each time data is stored.
- When 'CH1 Logging hold request' (Un\G471) is turned on and off, 'CH1 Head pointer' (Un\G434) is cleared to 0.

CH1 Latest pointer

The buffer memory address of the latest data in CH1 Logging data (Un\G10000 to Un\G10999) can be checked with this buffer memory area.

The offset value at the start address of CH1 Logging data (Un\G10000 to Un\G10999) is stored.

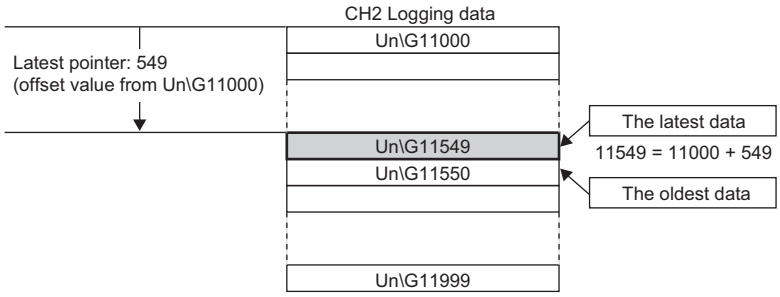
■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Latest pointer	435	635	835	1035	1235	1435	1635	1835
CH☐ Latest pointer (in Q compatible mode)	1098	1099	1100	1101	1102	1103	1104	1105

Ex.

When the value of CH2 Latest pointer (Un\G635) is 8549



Point

- 'CH1 Latest pointer' (Un\G435) increases one by one each time data is stored from beginning of the logging.
- When 'CH1 Logging hold request' (Un\G471) is turned on and off, 'CH1 Latest pointer' (Un\G435) is cleared to 0.

CH1 Number of logging data

The number of data stored in the logging data storage area can be checked during the logging.

'CH1 Number of logging data' (Un\G436) increases one by one each time data is stored from beginning of the logging.

When the value in the logging data storage area reaches 1000, 'CH1 Number of logging data' (Un\G436) is fixed to 1000 since the value is overwritten from the head again.

For details on the logging function, refer to the following.

☞ Page 42 Logging Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Number of logging data	436	636	836	1036	1236	1436	1636	1836
CH☐ Number of logging data (in Q compatible mode)	1106	1107	1108	1109	1110	1111	1112	1113

Point

When 'CH1 Logging hold request' (Un\G471) is turned on and off, 'CH1 Number of logging data' (Un\G436) is cleared to 0.

CH1 Trigger pointer

Of CH1 Logging data (Un\G10000 to Un\G10999), the buffer memory address where the data at the time of a hold trigger event is stored can be checked.

The difference between the buffer memory address where the data at the time of a hold trigger event and the start address in CH1 Logging data (Un\G10000 to Un\G10999) is stored.

For details on the logging function, refer to the following.

☞ Page 42 Logging Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Trigger pointer	437	637	837	1037	1237	1437	1637	1837
CH☐ Trigger pointer (in Q compatible mode)	1114	1115	1116	1117	1118	1119	1120	1121

Point

When 'CH1 Logging hold request' (Un\G471) is turned on and off, 'CH1 Trigger pointer' (Un\G437) is cleared to 0.

CH1 Current logging read pointer

Each time an amount equivalent to the logging read points monitor value is logged, a value calculated by the following formula is stored.

CH1 Current logging read pointer = CH1 Latest pointer - CH1 Logging read points monitor value + 1

For details on the logging function, refer to the following.

☞ Page 42 Logging Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Current logging read pointer	438	638	838	1038	1238	1438	1638	1838
CH☐ Current logging read pointer (in Q compatible mode)	1216	1217	1218	1219	1220	1221	1222	1223

CH1 Previous logging read pointer

At the time of generating an interrupt to the CPU module, the current logging read pointer just before the update by the interrupt is stored.

For details on the logging function, refer to the following.

☞ Page 42 Logging Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Previous logging read pointer	439	639	839	1039	1239	1439	1639	1839
CH☐ Previous logging read pointer (in Q compatible mode)	1224	1225	1226	1227	1228	1229	1230	1231

CH1 Logging read points monitor value

The number of the actual logging read points is stored.

When 'Operating condition setting request' (Y9) is turned on and off, a value is not stored in the channel where the logging read function is disabled.

For details on the logging function, refer to the following.

☞ Page 42 Logging Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Logging read points monitor value	440	640	840	1040	1240	1440	1640	1840
CH☐ Logging read points monitor value (in Q compatible mode)	1232	1233	1234	1235	1236	1237	1238	1239

CH1 Logging cycle monitor value

This area stores the actual logging cycle which is calculated from the refreshing cycle of data to be logged.

When 'Operating condition setting request' (Y9) is turned on and off, the actual logging cycle is stored in Logging cycle monitor value in the corresponding channel where the logging function is enabled.

For details on the logging function, refer to the following.

☞ Page 42 Logging Function

The following values are stored in 'CH1 Logging cycle monitor value' (Un\G441 to Un\G442).

	b15 to b0
'CH1 Logging cycle monitor value (s)' (Un\G441)	s
'CH1 Logging cycle monitor value (ms)' (Un\G442)	ms

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Logging cycle monitor value (s)	441	641	841	1041	1241	1441	1641	1841
CH☐ Logging cycle monitor value (ms)	442	642	842	1042	1242	1442	1642	1842
CH☐ Logging cycle monitor value (s) (in Q compatible mode)	1122	1125	1128	1131	1134	1137	1140	1143
CH☐ Logging cycle monitor value (ms) (in Q compatible mode)	1123	1126	1129	1132	1135	1138	1141	1144

CH1 Trigger generation time

The time when a trigger is generated is recorded.

For details on the logging function, refer to the following.

☞ Page 42 Logging Function

	b15 to b8	b7 to b0
'CH1 Trigger generation time (First/Last two digits of the year)' (Un\G444)	First two digits of the year	Last two digits of the year
'CH1 Trigger generation time (Month/Day)' (Un\G445)	Month	Day
'CH1 Trigger generation time (Hour/Minute)' (Un\G446)	Hour	Minute
'CH1 Trigger generation time (Second/Day of the week)' (Un\G447)	Second	Day of the week
'CH1 Trigger generation time (Millisecond)' (Un\G448)	Millisecond (higher-order digits)	Millisecond (lower-order digits)

Item	Storage contents	Storage example*1
First two digits of the year/Last two digits of the year	Stored in BCD code.	2015H
Month/Day		0130H
Hour/Minute		1035H
Second		40H
Day of the week	One of the following values is stored in BCD code. Sunday: 0, Monday: 1, Tuesday: 2, Wednesday: 3 Thursday: 4, Friday: 5, Saturday: 6	5H
Millisecond (upper)	Stored in BCD code.	06H
Millisecond (lower)		28H

*1 These values assume that a trigger is generated at 10:35 and 40.628 seconds on Friday, January 30th, 2015.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Trigger generation time (First/Last two digits of the year)	444	644	844	1044	1244	1444	1644	1844
CH☐ Trigger generation time (Month/Day)	445	645	845	1045	1245	1445	1645	1845
CH☐ Trigger generation time (Hour/Minute)	446	646	846	1046	1246	1446	1646	1846
CH☐ Trigger generation time (Second/Day of the week)	447	647	847	1047	1247	1447	1647	1847
CH☐ Trigger generation time (Millisecond)	448	648	848	1048	1248	1448	1648	1848
CH☐ Trigger generation time (First/Last two digits of the year) (in Q compatible mode)	1154	1158	1162	1166	1170	1174	1178	1182
CH☐ Trigger generation time (Month/Day) (in Q compatible mode)	1155	1159	1163	1167	1171	1175	1179	1183
CH☐ Trigger generation time (Hour/Minute) (in Q compatible mode)	1156	1160	1164	1168	1172	1176	1180	1184
CH☐ Trigger generation time (Second/Day of the week) (in Q compatible mode)	1157	1161	1165	1169	1173	1177	1181	1185
CH☐ Trigger generation time (Millisecond) (in Q compatible mode)	1186	1187	1188	1189	1190	1191	1192	1193

Point

- Time units shorter than one millisecond are not recorded.
- When 'CH1 Logging hold request' (Un\G471) is turned on and off, 'CH1 Trigger generation time' (Un\G444 to Un\G448) is cleared to 0.

CH1 Logging hold request

Use this buffer memory area as a trigger to hold (stop) logging at any timing during the logging.

For details on the logging function, refer to the following.

☞ Page 42 Logging Function

Logging hold request	Setting value
OFF	0
ON	1

Setting a value other than the above causes a logging hold request range error (error code: 1D7☐H).

When 'CH1 Logging enable/disable setting' (Un\G535) is set to Disable (1), the setting for 'CH1 Logging hold request' (Un\G471) is ignored.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Logging hold request	471	671	871	1071	1271	1471	1671	1871
CH☐ Logging hold request (in Q compatible mode)	1008	1009	1010	1011	1012	1013	1014	1015

■Operation of the logging hold processing

- When Disable (0) is set to 'CH1 Level trigger condition setting' (Un\G540), the logging hold processing starts by turning off and on 'CH1 Logging hold request' (Un\G471).
- When a value other than Disable (0) is set to 'CH1 Hold trigger condition setting' (Un\G540), the logging hold processing starts after 'CH1 Logging hold request' (Un\G471) is turned off and on and the set trigger condition is satisfied. When the level trigger is enabled, use this buffer memory area as an interlock condition to operate the level trigger.
- If 'CH1 Logging hold request' (Un\G471) is turned on and off during the logging hold processing, the hold (stop) status is cleared and the logging restarts.

■Default value

The default value is OFF (0) for all the channels.

Point

The stop status of the logging can be checked with 'CH1 Logging hold flag' (Un\G409).

CH1 Conversion enable/disable setting

Set whether to enable or disable the temperature conversion.

For details on the conversion enable/disable setting function, refer to the following.

☞ Page 18 Conversion Enable/Disable Setting Function

Setting value	Setting content
0	Conversion enable
1	Conversion disable

Setting a value other than the above results in Conversion disable (1).

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Conversion enable/disable setting	500	700	900	1100	1300	1500	1700	1900

■Enabling the setting

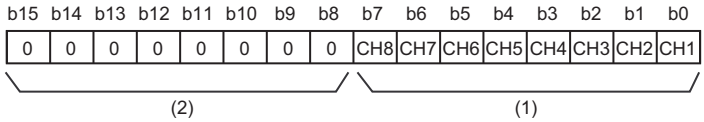
Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Conversion disable (1) for all the channels.

Conversion enable/disable setting [Q compatibility]

Set whether to enable or disable the temperature conversion with the Q compatible mode function used.



(1) 0: Conversion enable, 1: Conversion disable

(2) The values of b8 to b15 are fixed to 0.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Conversion enable/disable setting (in Q compatible mode)	0							

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Conversion disable (1) for all the channels.

CH1 Averaging process specification

Select processing to be performed among the sampling processing, averaging processing, and filter processing.

Averaging processing consists of time average, count average, and moving average.

Setting value	Setting content
0	Sampling processing
1	Time average
2	Count average
3	Moving average
4	Primary delay filter

Setting a value other than the above causes an averaging process specification setting range error (error code: 191□H).

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH□ Averaging process specification	501	701	901	1101	1301	1501	1701	1901

■Enabling the setting

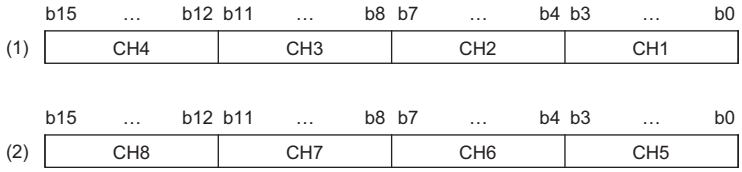
Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Sampling processing (0) for all the channels.

Averaging process specification [Q compatibility]

For Q compatible mode, set which processing to use, sampling processing, averaging processing, or filter processing.



(1) Averaging process specification (Un\G24) (setting range CH1 to CH4)

(2) Averaging process specification (Un\G25) (setting range CH5 to CH8)

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Averaging process setting	24				25			

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Sampling processing (0) for all the channels.

CH1 Time average/Count average/Moving average/Primary delay filter constant setting

Configure the time (for averaging), count (for averaging), moving average count, and primary delay filter constant for each channel where the averaging processing is specified.

The following table lists the setting ranges.

Setting value	Setting content
Thermocouple input module: 120 to 5000 (ms) RTD input module: 40 to 5000 (ms)	Time average
4 to 500 (times)	Count average
2 to 200 (times)	Moving average
1 to 500 (times)	Primary delay filter constant

Setting a value other than the above causes either of the following: a time average setting range error (error code: 192☐H), count average setting range error (error code: 193☐H), moving average setting range error (error code: 194☐H), or primary delay filter constant setting range error (error code: 195☐H). The temperature conversion processing is performed with the settings before the occurrence of the error.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Time average/Count average/Moving average/Primary delay filter constant setting	502	702	902	1102	1302	1502	1702	1902
CH☐ Time average/Count average/Moving average/Primary delay filter constant setting (in Q compatible mode)	1	2	3	4	5	6	7	8

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is 0 for all the channels.

Point

- Set a primary delay filter constant for the primary delay filter. The value of the time constant (ms) is the product of the primary delay filter constant and the sampling cycle.
- Since the default value is 0, change the setting value according to the processing method.
- The setting for this area is ignored in the channel where Sampling processing (0) is set to 'CH1 Averaging process specification' (Un\G501).

CH1 Alert output setting (Process alarm)

Set whether to enable or disable the alert output of the process alarm.

For details on the alert output function, refer to the following.

☞ Page 27 Alert Output Function

Setting value	Setting content
0	Enable
1	Disable

Setting a value other than the above causes an alert output setting (Process alarm) range error (error code: 1B0☐H).

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Alert output setting (Process alarm)	512	712	912	1112	1312	1512	1712	1912

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Disable (1) for all the channels.

CH1 Alert output setting (Rate alarm)

Set whether to enable or disable the alert output of the rate alarm.

For details on the alert output function, refer to the following.

☞ Page 27 Alert Output Function

Setting value	Setting content
0	Enable
1	Disable

Setting a value other than the above causes an alert output setting (Rate alarm) range error (error code: 1B8☐H).

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Alert output setting (Rate alarm)	513	713	913	1113	1313	1513	1713	1913

■Enabling the setting

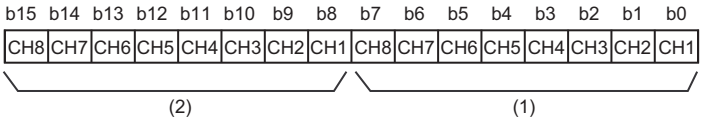
Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Disable (1) for all the channels.

Alert output setting [Q compatibility]

When the Q compatible mode function is used, set whether to enable or disable the alert output of process alarms and rate alarms.



(1) 0: Process alarm enabled, 1: Process alarm disabled

(2) 0: Rate alarm enabled, 1: Rate alarm disabled

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Alert output setting (Process alarm)/Alert output setting (Rate alarm)	46							

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Disable (1) for all the channels.

CH1 Process alarm upper upper limit value

Set an upper upper limit value of the alert output function (Process alarm).

For details on the alert output function, refer to the following.

☞ Page 27 Alert Output Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Process alarm upper upper limit value	514	714	914	1114	1314	1514	1714	1914
CH☐ Process alarm upper upper limit value (in Q compatible mode)	97	101	105	109	113	117	121	125

■Setting range

• Thermocouple input module

Input range	Setting range	Accuracy guaranteed range
K thermocouple	-2700 to 13700 (-270.0 to 1370.0℃)	-2000 to 12000 (-200.0 to 1200.0℃)
E thermocouple	-2700 to 10000 (-270.0 to 1000.0℃)	-2000 to 9000 (-200.0 to 900.0℃)
J thermocouple	-2100 to 12000 (-210.0 to 1200.0℃)	-400 to 7500 (-40.0 to 750.0℃)
T thermocouple	-2700 to 4000 (-270.0 to 400.0℃)	-2000 to 3500 (-200.0 to 350.0℃)
B thermocouple	0 to 18200 (0.0 to 1820.0℃)	6000 to 17000 (600.0 to 1700.0℃)
R thermocouple	-500 to 17600 (-50.0 to 1760.0℃)	0 to 16000 (0.0 to 1600.0℃)
S thermocouple	-500 to 17600 (-50.0 to 1760.0℃)	0 to 16000 (0.0 to 1600.0℃)
N thermocouple	-2700 to 13000 (-270.0 to 1300.0℃)	-2000 to 12500 (-200.0 to 1250.0℃)

• RTD input module

Input range	Setting range
Pt100 (-200 to 850℃)	-2000 to 8500 (-200.0 to 850.0℃)
Pt100 (-20 to 120℃)	-200 to 1200 (-20.0 to 120.0℃)
Pt100 (0 to 200℃)	0 to 2000 (0.0 to 200.0℃)
JPt100 (-180 to 600℃)	-1800 to 6000 (-180.0 to 600.0℃)
JPt100 (-20 to 120℃)	-200 to 1200 (-20.0 to 120.0℃)
JPt100 (0 to 200℃)	0 to 2000 (0.0 to 200.0℃)
Ni100 (-60 to 250℃)	-600 to 2500 (-60.0 to 250.0℃)
Pt50 (-200 to 650℃)	-2000 to 6500 (-200.0 to 650.0℃)

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

- Thermocouple input module: The default value is 12000 (1200.0℃) for all the channels.
- RTD input module: The default value is 8500 (850.0℃) for all the channels.

CH1 Process alarm upper lower limit value

Set an upper lower limit value of the alert output function (Process alarm).

For details on the alert output function, refer to the following.

☞ Page 27 Alert Output Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Process alarm upper lower limit value	516	716	916	1116	1316	1516	1716	1916
CH☐ Process alarm upper lower limit value (in Q compatible mode)	96	100	104	108	112	116	120	124

■Setting range

- Thermocouple input module

Input range	Setting range	Accuracy guaranteed range
K thermocouple	-2700 to 13700 (-270.0 to 1370.0℃)	-2000 to 12000 (-200.0 to 1200.0℃)
E thermocouple	-2700 to 10000 (-270.0 to 1000.0℃)	-2000 to 9000 (-200.0 to 900.0℃)
J thermocouple	-2100 to 12000 (-210.0 to 1200.0℃)	-400 to 7500 (-40.0 to 750.0℃)
T thermocouple	-2700 to 4000 (-270.0 to 400.0℃)	-2000 to 3500 (-200.0 to 350.0℃)
B thermocouple	0 to 18200 (0.0 to 1820.0℃)	6000 to 17000 (600.0 to 1700.0℃)
R thermocouple	-500 to 17600 (-50.0 to 1760.0℃)	0 to 16000 (0.0 to 1600.0℃)
S thermocouple	-500 to 17600 (-50.0 to 1760.0℃)	0 to 16000 (0.0 to 1600.0℃)
N thermocouple	-2700 to 13000 (-270.0 to 1300.0℃)	-2000 to 12500 (-200.0 to 1250.0℃)

- RTD input module

Input range	Setting range
Pt100 (-200 to 850℃)	-2000 to 8500 (-200.0 to 850.0℃)
Pt100 (-20 to 120℃)	-200 to 1200 (-20.0 to 120.0℃)
Pt100 (0 to 200℃)	0 to 2000 (0.0 to 200.0℃)
JPt100 (-180 to 600℃)	-1800 to 6000 (-180.0 to 600.0℃)
JPt100 (-20 to 120℃)	-200 to 1200 (-20.0 to 120.0℃)
JPt100 (0 to 200℃)	0 to 2000 (0.0 to 200.0℃)
Ni100 (-60 to 250℃)	-600 to 2500 (-60.0 to 250.0℃)
Pt50 (-200 to 650℃)	-2000 to 6500 (-200.0 to 650.0℃)

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

- Thermocouple input module: The default value is 12000 (1200.0℃) for all the channels.
- RTD input module: The default value is 8500 (850.0℃) for all the channels.

CH1 Process alarm lower upper limit value

Set a lower upper limit value of the alert output function (Process alarm).

For details on the alert output function, refer to the following.

☞ Page 27 Alert Output Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Process alarm lower upper limit value	518	718	918	1118	1318	1518	1718	1918
CH☐ Process alarm lower upper limit value (in Q compatible mode)	95	99	103	107	111	115	119	123

■Setting range

• Thermocouple input module

Input range	Setting range	Accuracy guaranteed range
K thermocouple	-2700 to 13700 (-270.0 to 1370.0℃)	-2000 to 12000 (-200.0 to 1200.0℃)
E thermocouple	-2700 to 10000 (-270.0 to 1000.0℃)	-2000 to 9000 (-200.0 to 900.0℃)
J thermocouple	-2100 to 12000 (-210.0 to 1200.0℃)	-400 to 7500 (-40.0 to 750.0℃)
T thermocouple	-2700 to 4000 (-270.0 to 400.0℃)	-2000 to 3500 (-200.0 to 350.0℃)
B thermocouple	0 to 18200 (0.0 to 1820.0℃)	6000 to 17000 (600.0 to 1700.0℃)
R thermocouple	-500 to 17600 (-50.0 to 1760.0℃)	0 to 16000 (0.0 to 1600.0℃)
S thermocouple	-500 to 17600 (-50.0 to 1760.0℃)	0 to 16000 (0.0 to 1600.0℃)
N thermocouple	-2700 to 13000 (-270.0 to 1300.0℃)	-2000 to 12500 (-200.0 to 1250.0℃)

• RTD input module

Input range	Setting range
Pt100 (-200 to 850℃)	-2000 to 8500 (-200.0 to 850.0℃)
Pt100 (-20 to 120℃)	-200 to 1200 (-20.0 to 120.0℃)
Pt100 (0 to 200℃)	0 to 2000 (0.0 to 200.0℃)
JPt100 (-180 to 600℃)	-1800 to 6000 (-180.0 to 600.0℃)
JPt100 (-20 to 120℃)	-200 to 1200 (-20.0 to 120.0℃)
JPt100 (0 to 200℃)	0 to 2000 (0.0 to 200.0℃)
Ni100 (-60 to 250℃)	-600 to 2500 (-60.0 to 250.0℃)
Pt50 (-200 to 650℃)	-2000 to 6500 (-200.0 to 650.0℃)

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is -2000 (-200.0℃) for all the channels.

CH1 Process alarm lower lower limit value

Set a lower lower limit value of the alert output function (Process alarm).

For details on the alert output function, refer to the following.

☞ Page 27 Alert Output Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH□ Process alarm lower lower limit value	520	720	920	1120	1320	1520	1720	1920
CH□ Process alarm lower lower limit value (in Q compatible mode)	94	98	102	106	110	114	118	122

■Setting range

• Thermocouple input module

Input range	Setting range	Accuracy guaranteed range
K thermocouple	-2700 to 13700 (-270.0 to 1370.0℃)	-2000 to 12000 (-200.0 to 1200.0℃)
E thermocouple	-2700 to 10000 (-270.0 to 1000.0℃)	-2000 to 9000 (-200.0 to 900.0℃)
J thermocouple	-2100 to 12000 (-210.0 to 1200.0℃)	-400 to 7500 (-40.0 to 750.0℃)
T thermocouple	-2700 to 4000 (-270.0 to 400.0℃)	-2000 to 3500 (-200.0 to 350.0℃)
B thermocouple	0 to 18200 (0.0 to 1820.0℃)	6000 to 17000 (600.0 to 1700.0℃)
R thermocouple	-500 to 17600 (-50.0 to 1760.0℃)	0 to 16000 (0.0 to 1600.0℃)
S thermocouple	-500 to 17600 (-50.0 to 1760.0℃)	0 to 16000 (0.0 to 1600.0℃)
N thermocouple	-2700 to 13000 (-270.0 to 1300.0℃)	-2000 to 12500 (-200.0 to 1250.0℃)

• RTD input module

Input range	Setting range
Pt100 (-200 to 850℃)	-2000 to 8500 (-200.0 to 850.0℃)
Pt100 (-20 to 120℃)	-200 to 1200 (-20.0 to 120.0℃)
Pt100 (0 to 200℃)	0 to 2000 (0.0 to 200.0℃)
JPt100 (-180 to 600℃)	-1800 to 6000 (-180.0 to 600.0℃)
JPt100 (-20 to 120℃)	-200 to 1200 (-20.0 to 120.0℃)
JPt100 (0 to 200℃)	0 to 2000 (0.0 to 200.0℃)
Ni100 (-60 to 250℃)	-600 to 2500 (-60.0 to 250.0℃)
Pt50 (-200 to 650℃)	-2000 to 6500 (-200.0 to 650.0℃)

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is -2000 (-200.0℃) for all the channels.

Point

- When using the process alarm, configure the 4-step settings for the process alarm upper upper limit value, upper lower limit value, lower upper limit value, and lower lower value.
- A channel where the set values do not satisfy the condition "Upper upper limit value ≥ Upper lower limit value ≥ Lower upper limit value ≥ Lower lower limit value" causes a process alarm upper lower limit value setting range error (error code: 1B△□H).
- Even when the scaling function is used, the measured temperature value is subject to an alert.

CH1 Rate alarm alert detection cycle setting

Set the cycle at which the change rate of measured temperature values is checked.

The value of the cycle to detect a rate alarm alert is the product of the value in 'CH1 Rate alarm alert detection cycle setting' (Un\G522) and the conversion cycle.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Rate alarm alert detection cycle setting	522	722	922	1122	1322	1522	1722	1922
CH☐ Rate alarm alert detection cycle setting (in Q compatible mode)	126	127	128	129	130	131	132	133

■Setting range

The possible range is from 1 to 32000 (times).

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is 0 for all the channels.

Point

- A channel where the set value is out of the range causes a rate alarm detection cycle setting range error (error code: 1B9☐H).
- Since the default value is 0, change the setting value when setting the rate alarm function.

CH1 Rate alarm upper limit value

Set an upper limit on the change rate of measured temperature values to detect a rate alarm.

For details on the alert output function, refer to the following.

☞ Page 27 Alert Output Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Rate alarm upper limit value	524	724	924	1124	1324	1524	1724	1924
CH☐ Rate alarm upper limit value (in Q compatible mode)	134	136	138	140	142	144	146	148

■Setting range

The possible range is from -32768 to 32767 (-3276.8 to 3276.7℃). (can be set in a unit of 0.1℃)

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is 0 for all the channels.

CH1 Rate alarm lower limit value

Set a lower limit on the change rate of measured temperature values for rate alarm detection.

For details on the alert output function, refer to the following.

☞ Page 27 Alert Output Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Rate alarm lower limit value	526	726	926	1126	1326	1526	1726	1926
CH☐ Rate alarm lower limit value (in Q compatible mode)	135	137	139	141	143	145	147	149

■Setting range

The possible range is from -32768 to 32767 (-3276.8 to 3276.7℃). (can be set in a unit of 0.1℃)

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is 0 for all the channels.

Point

- When using the rate alarm, configure the 2-step settings for the rate alarm upper limit value and lower limit value.
- A channel where the set values do not satisfy the condition "Rate alarm lower limit value ≥ Rate alarm upper limit value" causes a rate alarm upper/lower limit setting value inversion error (error code: 1BA☐H).
- Since the default value is 0, change the setting value.

CH1 Disconnection detection enable/disable setting

Set whether to enable or disable the disconnection detection function.

For details on the disconnection detection function, refer to the following.

☞ Page 35 Disconnection Detection Function

Setting value	Setting content
0	Enable
1	Disable

Setting a value other than the above causes a disconnection detection enable/disable setting range error (error code: 1C5☐H).

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Disconnection detection enable/disable setting	530	730	930	1130	1330	1530	1730	1930

■Enabling the setting

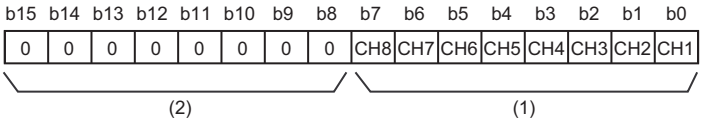
Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Disable (0) for all the channels.

Disconnection detection enable/disable setting [Q compatibility]

Set whether to enable or disable the disconnection detection function with the Q compatible mode function used.



(1) 0: Disconnection detection enable, 1: Disconnection detection disable

(2) The values of b8 to b15 are fixed to 0.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Disconnection detection enable/disable setting	162							

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Disable (0) for all the channels.

CH1 Conversion setting at disconnection detection

Set what value is to be stored in 'CH1 Measured temperature value' (Un\G400) at the time of disconnection detection.

For details on the disconnection detection function, refer to the following.

☞ Page 35 Disconnection Detection Function

Setting value	Setting content
0	Upscale
1	Downscale
2	Any value
3	Value just before disconnection

Setting a value other than the above results in operation with Downscale (1).

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH□ Conversion setting at disconnection detection	531	731	931	1131	1331	1531	1731	1931

■Enabling the setting

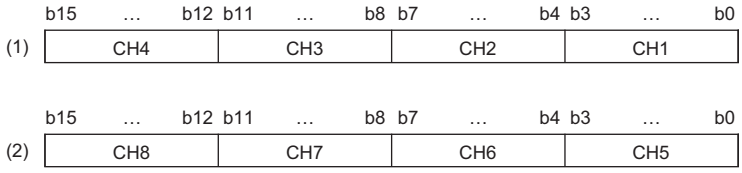
Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Downscale (1) for all the channels.

Conversion setting at disconnection detection [Q compatibility]

Set what value is to be stored in 'CH1 Measured temperature value' (Un\G11) at the time of disconnection detection with the Q compatible mode function used.



(1) Conversion setting at disconnection detection (Un\G164) (setting range CH1 to CH4)

(2) Conversion setting at disconnection detection (Un\G165) (setting range CH5 to Ch8)

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Conversion setting at disconnection detection	164				165			

The setting values are the same as those of R mode.

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Downscale (1) for all the channels.

CH1 Conversion setting value at disconnection detection

When 'CH1 Conversion setting at disconnection detection' (Un\G531) is set to Any value (2), the value set in this area is stored in 'CH1 Measured temperature value' (Un\G400) at the time of disconnection detection.

For details on the disconnection detection function, refer to the following.

☞ Page 35 Disconnection Detection Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH□ Conversion setting value at disconnection detection	532	732	932	1132	1332	1532	1732	1932
CH□ Conversion setting value at disconnection detection (in Q compatible mode)	166	167	168	169	170	171	172	173

■Setting range

The possible range is from -32768 to 32767 (-3276.8 to 3276.7℃). (can be set in a unit of 0.1℃)

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is 0 for all the channels.

CH1 Logging enable/disable setting

Set whether to enable or disable the logging function.

For details on the logging function, refer to the following.

☞ Page 42 Logging Function

Setting value	Setting content
0	Enable
1	Disable

Setting a value other than the above causes a logging enable/disable setting range error (error code: 1D0☐H).

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Logging enable/disable setting	535	735	935	1135	1335	1535	1735	1935
CH☐ Logging enable/disable setting (in Q compatible mode)	1000	1001	1002	1003	1004	1005	1006	1007

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Disable (1) for all the channels.

CH1 Logging data setting

Set which data is to be collected, measured temperature value or scaling value.

For details on the logging function, refer to the following.

☞ Page 42 Logging Function

Setting value	Setting content
0	Measured temperature value
1	Scaling value

Setting a value other than the above causes a logging data setting range error (error code: 1D3☐H).

When 'CH1 Logging enable/disable setting' (Un\G535) is set to Disable (1), the setting for 'CH1 Logging data setting' (Un\G536) is ignored.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Logging data setting	536	736	936	1136	1336	1536	1736	1936
CH☐ Logging data setting (in Q compatible mode)	1024	1025	1026	1027	1028	1029	1030	1031

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Measured temperature value (0) for all the channels.

CH1 Logging cycle setting value

Set a cycle for storing the logging data.

For details on the logging function, refer to the following.

☞ Page 42 Logging Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Logging cycle setting value	537	737	937	1137	1337	1537	1737	1937
CH☐ Logging cycle setting value (in Q compatible mode)	1032	1033	1034	1035	1036	1037	1038	1039

■Setting range

The setting range varies depending on the setting in 'CH1 Logging cycle unit setting' (Un\G538).

CH1 Logging cycle unit setting (Un\G538)	Setting range
ms (1)	30 to 32767 (for the thermocouple input module) 10 to 32767 (for the RTD input module)
s (2)	1 to 3600

- Setting a value out of the above range causes a logging cycle setting value range error (error code: 1D1☐H). Logging cannot be performed.
- If the set logging cycle is below the update cycle of data to be logged, a logging cycle setting disable error (error code: 1D2☐H) occurs. Logging cannot be performed.

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

- Thermocouple input module: The default value is 240 for all the channels.
- RTD input module: The default value is 80 for all the channels.

CH1 Logging cycle unit setting

Set a cycle unit for storing the logging data.

For details on the logging function, refer to the following.

☞ Page 42 Logging Function

Setting value	Setting content
1	ms
2	s

- Setting a value out of the above range causes a logging cycle setting value range error (error code: 1D1☐H). Logging cannot be performed.
- If the set logging cycle is below the update cycle of data to be logged, a logging cycle setting disable error (error code: 1D2☐H) occurs. Logging cannot be performed.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Logging cycle unit setting	538	738	938	1138	1338	1538	1738	1938
CH☐ Logging cycle unit setting (in Q compatible mode)	1040	1041	1042	1043	1044	1045	1046	1047

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default is ms (1) for all the channels.

CH1 Post-trigger logging points

Set a number of data points collected for the time period from the occurrence of a hold trigger to the logging stop.

For details on the logging function, refer to the following.

☞ Page 42 Logging Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Post-trigger logging points	539	739	939	1139	1339	1539	1739	1939
CH☐ Post-trigger logging points (in Q compatible mode)	1048	1049	1050	1051	1052	1053	1054	1055

■Setting range

The possible range is from 1 to 1000.

Setting a value out of the range causes a post-trigger logging points setting range error (error code: 1D4☐H). Logging cannot be performed.

When 'CH1 Logging enable/disable setting' (Un\G535) is set to Disable (1), the setting for 'CH1 Post-trigger logging points' (Un\G539) is ignored.

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is 500 for all the channels.

CH1 Level trigger condition setting

Set the condition for the occurrence of a hold trigger when using the level trigger in the logging function.

To use the level trigger, set Level trigger condition setting to either level of Level trigger (condition: Rise) (1), Level trigger (condition: Fall) (2), or Level trigger (condition: Rise and fall) (3).

For details on the logging function, refer to the following.

☞ Page 42 Logging Function

Setting value	Setting content
0	Disable
1	Level trigger (condition: Rise)
2	Level trigger (condition: Fall)
3	Level trigger (condition: Rise and fall)

Setting a value other than the above causes a level trigger condition setting range error (error code: 1D5☐H).

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Level trigger condition setting	540	740	940	1140	1340	1540	1740	1940
CH☐ Level trigger condition setting (in Q compatible mode)	1056	1057	1058	1059	1060	1061	1062	1063

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Disable (0) for all the channels.

CH1 Trigger data

Set a buffer memory address to be monitored using a level trigger.

Set the buffer memory address where the target data for monitoring is stored.

For details on the logging function, refer to the following.

☞ Page 42 Logging Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Trigger data	541	741	941	1141	1341	1541	1741	1941
CH☐ Trigger data (in Q compatible mode)	1064	1065	1066	1067	1068	1069	1070	1071

■Setting range

The possible range is from 0 to 9999.

Setting a value out of the range causes a trigger data setting range error (error code: 1D6☐H). Logging cannot be performed.

When 'CH1 Logging enable/disable setting' (Un\G535) is set to Disable (1), the setting for 'CH1 Post-trigger logging points' (Un\G539) is ignored.

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default values are set as shown below.

Channel	In R mode		In Q compatible mode	
	Default value	Buffer memory area to be monitored	Default value	Buffer memory area to be monitored
CH1	400	CH1 Measured temperature value (Un\G400)	11	CH1 Measured temperature value (Un\G11)
CH2	600	CH2 Measured temperature value (Un\G600)	12	CH2 Measured temperature value (Un\G12)
CH3	800	CH3 Measured temperature value (Un\G800)	13	CH3 Measured temperature value (Un\G13)
CH4	1000	CH4 Measured temperature value (Un\G1000)	14	CH4 Measured temperature value (Un\G14)
CH5	1200	CH5 Measured temperature value (Un\G1200)	15	CH5 Measured temperature value (Un\G15)
CH6	1400	CH6 Measured temperature value (Un\G1400)	16	CH6 Measured temperature value (Un\G16)
CH7	1600	CH7 Measured temperature value (Un\G1600)	17	CH7 Measured temperature value (Un\G17)
CH8	1800	CH8 Measured temperature value (Un\G1800)	18	CH8 Measured temperature value (Un\G18)

CH1 Trigger setting value

Set a level at which a level trigger is generated.

For details on the logging function, refer to the following.

☞ Page 42 Logging Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Trigger setting value	542	742	942	1142	1342	1542	1742	1942
CH☐ Trigger setting value (in Q compatible mode)	1082	1083	1084	1085	1086	1087	1088	1089

■Setting range

The possible range is from -32768 to 32767.

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is 0 for all the channels.

CH1 Loading interrupt enable/disable setting

Set whether to enable or disable the logging read function.

For details on the logging function, refer to the following.

☞ Page 42 Logging Function

Setting value	Setting content
0	Enable
1	Disable

- Setting a value other than the above causes a read interrupt enable/disable setting error (error code: 1D8☐H). Logging cannot be performed.
- When CH1 Logging read enable/disable setting (Un\G544) is set to Enable (0), an interrupt is generated and sent to the CPU module by setting a read pointer each time an amount equivalent to the logging read points setting value is logged.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Loading interrupt enable/disable setting	544	744	944	1144	1344	1544	1744	1944
CH☐ Loading interrupt enable/disable setting (in Q compatible mode)	1200	1201	1202	1203	1204	1205	1206	1207

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Disable (1) for all the channels.

Point

Interrupt pointers are predetermined for use, but can be changed. To change the interrupt pointers, set the corresponding interrupt pointers with the engineering tool.

CH1 Logging read points setting value

An interrupt is generated to the CPU module each time the number of data logging reaches a predetermined number of points.

For details on the logging function, refer to the following.

☞ Page 42 Logging Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Logging read points setting value	545	745	945	1145	1345	1545	1745	1945
CH☐ Logging read points setting value (in Q compatible mode)	1208	1209	1210	1211	1212	1213	1214	1215

■Setting range

The possible range is from 1 to 1000.

Setting a value out of the range causes a logging read points setting value range error (error code: 1D9☐H). Logging cannot be performed.

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is 100 for all the channels.

CH1 Scaling enable/disable setting

Set whether to enable or disable the scaling.

For details on the scaling function, refer to the following.

☞ Page 23 Scaling Function

Setting value	Setting content
0	Enable
1	Disable

Setting a value other than the above causes a scaling enable/disable setting range error (error code: 1A0☐H).

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Scaling enable/disable setting	546	746	946	1146	1346	1546	1746	1946

■Enabling the setting

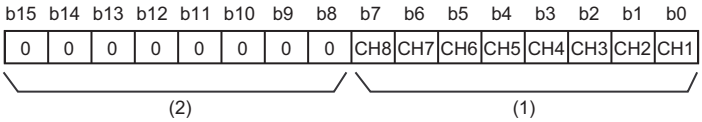
Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Disable (1) for all the channels.

Scaling enable/disable setting [Q compatibility]

When the Q compatible mode function is used, set whether to enable or disable the scaling.



(1) 0: Scaling enabled, 1: Scaling disabled

(2) The values of b8 to b15 are fixed to 0.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Scaling enable/disable setting (in Q compatible mode)	58							

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Disable (1) for all the channels.

CH1 Scaling range upper limit value

Set an upper limit value for the range of the scale conversion.

For details on the scaling function, refer to the following.

☞ Page 23 Scaling Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Scaling range upper limit value	548	748	948	1148	1348	1548	1748	1948
CH☐ Scaling range upper limit value (in Q compatible mode)	63	65	67	69	71	73	75	77

■Setting range

The possible range is from -32768 to 32767 (-3276.8 to 3276.7℃). (can be set in a unit of 0.1℃)

A channel where the set values do not satisfy the condition "Scaling upper limit value ≠ Scaling lower limit value" causes a scaling setting range error (error code: 1A3☐H).

When 'CH1 Scaling enable/disable setting' (Un\G546) is set to Disable (1), the setting for 'CH1 Scaling range upper limit value' (Un\G548) is ignored.

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is 0 for all the channels.

CH1 Scaling range lower limit value

Set a lower limit value for the range of the scale conversion.

For details on the scaling function, refer to the following.

☞ Page 23 Scaling Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Scaling range lower limit value	550	750	950	1150	1350	1550	1750	1950
CH☐ Scaling range lower limit value (in Q compatible mode)	62	64	66	68	70	72	74	76

■Setting range

The possible range is from -32768 to 32767 (-3276.8 to 3276.7℃). (can be set in a unit of 0.1℃)

A channel where the set values do not satisfy the condition "Scaling upper limit value ≠ Scaling lower limit value" causes a scaling setting range error (error code: 1A3☐H).

When 'CH1 Scaling enable/disable setting' (Un\G546) is set to Disable (1), the setting for 'CH1 Scaling lower limit value' (Un\G550) is ignored.

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is 0 for all the channels.

CH1 Scaling width upper limit value

Set an upper limit on the width of scale conversion.

For details on the scaling function, refer to the following.

☞ Page 23 Scaling Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Scaling width upper limit value	552	752	952	1152	1352	1552	1752	1952
CH☐ Scaling width upper limit value (in Q compatible mode)	79	81	83	85	87	89	91	93

■Setting range

The possible range is from -32768 to 32767.

A channel where the set values do not satisfy the condition "Scaling upper limit value ≠ Scaling lower limit value" causes a scaling setting range error (error code: 1A3☐H).

When 'CH1 Scaling enable/disable setting' (Un\G546) is set to Disable (1), the setting for 'CH1 Scaling width upper limit value' (Un\G552) is ignored.

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is 0 for all the channels.

CH1 Scaling width lower limit value

Set a lower limit on the width of scale conversion.

For details on the scaling function, refer to the following.

☞ Page 23 Scaling Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Scaling width lower limit value	554	754	954	1154	1354	1554	1754	1954
CH☐ Scaling width lower limit value (in Q compatible mode)	78	80	82	84	86	88	90	92

■Setting range

The possible range is from -32768 to 32767.

A channel where the set values do not satisfy the condition "Scaling upper limit value ≠ Scaling lower limit value" causes a scaling setting range error (error code: 1A3☐H).

When 'CH1 Scaling enable/disable setting' (Un\G546) is set to Disable (1), the setting for 'CH1 Scaling lower limit value' (Un\G550) is ignored.

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is 0 for all the channels.

CH1 Offset temperature setting value

As Channel change request (YB) is turned on and off in offset/gain setting mode, the measured temperature value is corrected by a value written in this area.
Specify the value of a 16-bit signed binary number.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Offset temperature setting value	562	762	962	1162	1362	1562	1762	1962
CH☐ Offset temperature setting value (in Q compatible mode)	28	30	32	34	36	38	40	42

■Setting range

• Thermocouple input module

Input range	Setting range
K thermocouple	-2700 to 13700
E thermocouple	-2700 to 10000
J thermocouple	-2100 to 12000
T thermocouple	-2700 to 4000
B thermocouple	0 to 18200
R thermocouple	-500 to 17600
S thermocouple	-500 to 17600
N thermocouple	-2700 to 13000

• RTD input module

Input range	Setting range
Pt100 (-200 to 850℃)	-2000 to 8500
Pt100 (-20 to 120℃)	-200 to 1200
Pt100 (0 to 200℃)	0 to 2000
JPt100 (-180 to 600℃)	-1800 to 6000
JPt100 (-20 to 120℃)	-200 to 1200
JPt100 (0 to 200℃)	0 to 2000
Ni100 (-60 to 250℃)	-600 to 2500
Pt50 (-200 to 650℃)	-2000 to 6500

Setting a value out of the range causes an offset/gain temperature setting value range error (error code: 1EC☐H).
'CH1 Offset temperature setting value' (Un\G562) and 'CH1 Gain temperature setting value' (Un\G564) must be set to be within the following temperature input range:

• Gain temperature set value - Offset temperature set value > 0.1℃

A channel where the set value is out of the above range causes an offset/gain temperature setting error (error code: 1E9☐H).

■Default value

The default value is 0 for all the channels.

Point

- An effective way to achieve high accuracy is to set up error correction in 'CH1 Offset temperature setting value' (Un\G562) and 'CH1 Gain temperature setting value' (Un\G564) assuming the minimum and maximum temperatures of the used range.
- Configure 'CH1 Offset temperature setting value' (Un\G562) and 'CH1 Gain temperature setting value' (Un\G564) while reading out measured temperature values.

CH1 Gain temperature setting value

As Channel change request (YB) is turned on and off in offset/gain setting mode, the measured temperature value is corrected by a value written in this area.

Specify the value of a 16-bit signed binary number.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Gain temperature setting value	564	764	964	1164	1364	1564	1764	1964
CH☐ Gain temperature setting value (in Q compatible mode)	29	31	33	35	37	39	41	43

■Setting range

• Thermocouple input module

Input range	Setting range
K thermocouple	-2700 to 13700
E thermocouple	-2700 to 10000
J thermocouple	-2100 to 12000
T thermocouple	-2700 to 4000
B thermocouple	0 to 18200
R thermocouple	-500 to 17600
S thermocouple	-500 to 17600
N thermocouple	-2700 to 13000

• RTD input module

Input range	Setting range
Pt100 (-200 to 850℃)	-2000 to 8500
Pt100 (-20 to 120℃)	-200 to 1200
Pt100 (0 to 200℃)	0 to 2000
JPt100 (-180 to 600℃)	-1800 to 6000
JPt100 (-20 to 120℃)	-200 to 1200
JPt100 (0 to 200℃)	0 to 2000
Ni100 (-60 to 250℃)	-600 to 2500
Pt50 (-200 to 650℃)	-2000 to 6500

Setting a value out of the range causes an offset/gain temperature setting value range error (error code: 1EC☐H).

'CH1 Offset temperature setting value' (Un\G562) and 'CH1 Gain temperature setting value' (Un\G564) must be set to be within the following temperature input range:

• Gain temperature set value - Offset temperature set value > 0.1℃

A channel where the set value is out of the above range causes an offset/gain temperature setting error (error code: 1E9☐H).

■Default value

The default value is 0 for all the channels.

Point

- An effective way to achieve high accuracy is to set up error correction in 'CH1 Offset temperature setting value' (Un\G562) and 'CH1 Gain temperature setting value' (Un\G564) assuming the minimum and maximum temperatures of the used range.
- Configure 'CH1 Offset temperature setting value' (Un\G562) and 'CH1 Gain temperature setting value' (Un\G564) while reading out measured temperature values.

CH1 Range setting (Thermocouple type)

This area is used to set up the type of thermocouple. Set up the type according to the thermocouple in use. This description is specific to the thermocouple input module.

Setting value	Description
0	K thermocouple
1	E thermocouple
2	J thermocouple
3	T thermocouple
4	B thermocouple
5	R thermocouple
6	S thermocouple
7	N thermocouple

A channel where the set value is out of the above range causes a range setting range error (error code: 190☐H).

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Range setting (Thermocouple type)	598	798	998	1198	1398	1598	1798	1998

■Enabling the setting

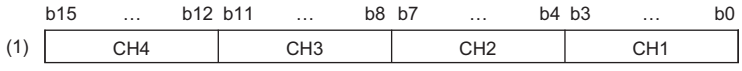
Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

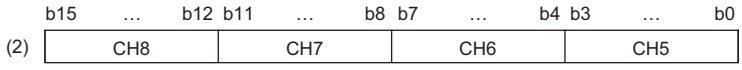
■Default value

The default value is K thermocouple (0) for all the channels.

Range setting (Thermocouple type) [Q compatibility]

With the Q compatible mode function used, this area is used to set up the type of thermocouple. Set up the type according to the thermocouple in use. This description is specific to the thermocouple input module.





(1) Range setting (Thermocouple type) (Un\G402) (setting range CH1 to CH4)

(2) Range setting (Thermocouple type) (Un\G403) (setting range CH5 to CH8)

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Range setting (Thermocouple type)	402				403			

The setting values in the thermocouple type are the same as those of R mode.

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is K thermocouple (0) for all the channels.

CH1 Range setting (Resistance temperature detector type)

This area is used to set up the type of resistance temperature detector. Set up the type according to the resistance temperature detector in use. This description is specific to the RTD input module.

Setting value	Description
0	Pt100 (-200 to 850℃)
1	Pt100 (-20 to 120℃)
2	JPt100 (-180 to 600℃)
3	JPt100 (-20 to 120℃)
4	Pt100 (0 to 200℃)
5	JPt100 (0 to 200℃)
8	Ni100 (-60 to 250℃)
9	Pt50 (-200 to 650℃)

A channel where the set value is out of the above range causes a range setting range error (error code: 190□H).

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH□ Range setting (Resistance temperature detector type)	598	798	998	1198	1398	1598	1798	1998

■Enabling the setting

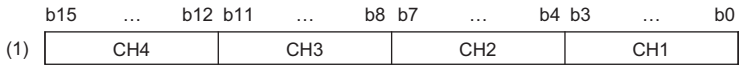
Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

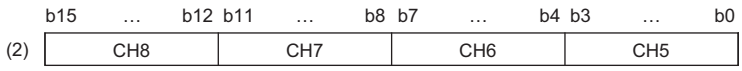
■Default value

The default value is Pt100 (-200 to 850℃) (0) for all the channels.

Range setting (Resistance temperature detector type) [Q compatibility]

With the Q compatible mode function used, this area is used to set up the type of resistance temperature detector. Set up the type according to the resistance temperature detector in use. This description is specific to the RTD input module.





(1) Range setting (Resistance temperature detector type) (Un\G402) (setting range CH1 to CH4)
(2) Range setting (Resistance temperature detector type) (Un\G403) (setting range CH5 to CH8)

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Range setting monitor (Resistance temperature detector type)	402				403			

The setting values in the resistance temperature detector type are the same as those of R mode.

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Pt100 (-200 to 850℃) (0) for all the channels.

CH1 Range setting (offset/gain setting)

This area is used to set up the offset/gain setting.

Setting value	Description
0	Factory default setting
1	User range setting

Setting a value other than the above causes a range setting range error (error code: 190☐H).

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Range setting (offset/gain setting)	599	799	999	1199	1399	1599	1799	1999

■Enabling the setting

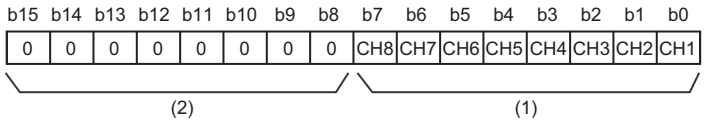
Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Factory default setting (0) for all the channels.

Range setting (offset/gain setting) [Q compatibility]

With the Q compatible mode function used, offset/gain values, which are set in the input range setting, can be checked.



(1) 0: Factory default setting, 1: User range setting

(2) The values of b8 to b15 are fixed to 0.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Range setting (offset/gain setting)	404							

The setting values in the offset/gain setting are the same as those of R mode.

■Enabling the setting

Turn on and off 'Operating condition setting request' (Y9) to enable the setting.

■Default value

The default value is Factory default setting (0) for all the channels.

Error history

Up to 16 errors that occurred in the module are recorded.

	b15 to b8	b7 to b0
Un\G3600	Error code	
Un\G3601	First two digits of the year	Last two digits of the year
Un\G3602	Month	Day
Un\G3603	Hour	Minute
Un\G3604	Second	Day of the week
Un\G3605	Millisecond (higher-order digits)	Millisecond (lower-order digits)
Un\G3606 ⋮ Un\G3609	System area	

Item	Storage contents	Storage example*1
First two digits of the year/Last two digits of the year	Stored in BCD code.	2015H
Month/Day		0130H
Hour/Minute		1035H
Second		40H
Day of the week	One of the following values is stored in BCD code. Sunday: 0, Monday: 1, Tuesday: 2, Wednesday: 3 Thursday: 4, Friday: 5, Saturday: 6	5H
Millisecond (upper)	Stored in BCD code.	06H
Millisecond (lower)		28H

*1 These values assume that an error occurs at 10:35 and 40.628 seconds on Friday, January 30th, 2015.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	No.1 to No.16
Error history	3600 to 3759
Error history (in Q compatible mode)	1810 to 1969

A

Alarm history

Up to 16 alarms that occurred in the module are recorded.

	b15 to b8	b7 to b0
Un\G3760	Alarm code	
Un\G3761	First two digits of the year	Last two digits of the year
Un\G3762	Month	Day
Un\G3763	Hour	Minute
Un\G3764	Second	Day of the week
Un\G3765	Millisecond (higher-order digits)	Millisecond (lower-order digits)
Un\G3766 ⋮ Un\G3769	System area	

Item	Storage contents	Storage example*1
First two digits of the year/Last two digits of the year	Stored in BCD code.	2015H
Month/Day		0130H
Hour/Minute		1035H
Second		40H
Day of the week	One of the following values is stored in BCD code. Sunday: 0, Monday: 1, Tuesday: 2, Wednesday: 3 Thursday: 4, Friday: 5, Saturday: 6	5H
Millisecond (upper)	Stored in BCD code.	06H
Millisecond (lower)		28H

*1 These values assume that an error occurs at 10:35 and 40.628 seconds on Friday, January 30th, 2015.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	No.1 to No.16
Alarm history	3760 to 3919
Alarm history (in Q compatible mode)	3760 to 3919

CH1 Factory default setting

This area restores the offset/gain setting value in user range setting. For details, refer to the following.

☞ Page 163 CH1 User range setting

CH1 User range setting

This area restores the offset/gain setting value in user range setting.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Factory default setting offset value (L)	4004	4016	4028	4040	4052	4064	4076	4088
CH☐ Factory default setting offset value (H)	4005	4017	4029	4041	4053	4065	4077	4089
CH☐ Factory default setting gain value (L)	4006	4018	4030	4042	4054	4066	4078	4090
CH☐ Factory default setting gain value (H)	4007	4019	4031	4043	4055	4067	4079	4091
CH☐ User range setting offset value (L)	4008	4020	4032	4044	4056	4068	4080	4092
CH☐ User range setting offset value (H)	4009	4021	4033	4045	4057	4069	4081	4093
CH☐ User range setting gain value (L)	4010	4022	4034	4046	4058	4070	4082	4094
CH☐ User range setting gain value (H)	4011	4023	4035	4047	4059	4071	4083	4095
CH☐ User range setting thermoelectromotive force offset value (L) (for the thermocouple input module)	4012	4024	4036	4048	4060	4072	4084	4096
CH☐ User range setting offset resistance value (L) (for the RTD input module)								
CH☐ User range setting thermoelectromotive force offset value (H) (for the thermocouple input module)	4013	4025	4037	4049	4061	4073	4085	4097
CH☐ User range setting offset resistance value (H) (for the RTD input module)								
CH☐ User range setting thermoelectromotive force gain value (L) (for the thermocouple input module)	4014	4026	4038	4050	4062	4074	4086	4098
CH☐ User range setting gain resistance value (L) (for the RTD input module)								
CH☐ User range setting thermoelectromotive force gain value (H) (for the thermocouple input module)	4015	4027	4039	4051	4063	4075	4087	4099
CH☐ User range setting gain resistance value (H) (for the RTD input module)								
CH☐ Factory default setting offset value (L) (in Q compatible mode)	190	202	214	226	238	250	262	274
CH☐ Factory default setting offset value (H) (in Q compatible mode)	191	203	215	227	239	251	263	275
CH☐ Factory default setting gain value (L) (in Q compatible mode)	192	204	216	228	240	252	264	276
CH☐ Factory default setting gain value (H) (in Q compatible mode)	193	205	217	229	241	253	265	277
CH☐ User range setting offset value (L) (in Q compatible mode)	194	206	218	230	242	254	266	278
CH☐ User range setting offset value (H) (in Q compatible mode)	195	207	219	231	243	255	267	279
CH☐ User range setting gain value (L) (in Q compatible mode)	196	208	220	232	244	256	268	280
CH☐ User range setting gain value (H) (in Q compatible mode)	197	209	221	233	245	257	269	281
CH☐ User range setting thermoelectromotive force offset value (L) (in Q compatible mode) (for the thermocouple input module)	198	210	222	234	246	258	270	282
CH☐ User range setting offset resistance value (L) (for the RTD input module)								

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ User range setting thermoelectromotive force offset value (H) (in Q compatible mode) (for the thermocouple input module)	199	211	223	235	247	259	271	283
CH☐ User range setting offset resistance value (H) (in Q compatible mode) (for the RTD input module)								
CH☐ User range setting thermoelectromotive force gain value (L) (in Q compatible mode) (for the thermocouple input module)	200	212	224	236	248	260	272	284
CH☐ User range setting gain resistance value (L) (in Q compatible mode) (for the RTD input module)								
CH☐ User range setting thermoelectromotive force gain value (H) (in Q compatible mode) (for the thermocouple input module)	201	213	225	237	249	261	273	285
CH☐ User range setting gain resistance value (H) (in Q compatible mode) (for the RTD input module)								

When the following operations are performed, the data to be used is stored (saved).

- Writing the initial setting by engineering tool
- Turning off and on 'Operating condition setting request' (Y9) (Data is not saved when the mode is switched from the normal mode to the offset/gain setting mode by the mode switching setting.)
- Writing an offset/gain value in the offset/gain setting mode (When 'User range write request' (YA) is turned off and on)

To restore offset/gain set values in the user range setting, set the data so that data saved in this area is the same as that of the corresponding area of the temperature input module of the restore destination.

■Default value

The default value is 0 for all the channels.

CH1 Offset/gain setting mode

Specify the channel where the offset/gain setting is adjusted.

- Offset/gain setting mode (offset specification): Channel to adjust the offset
- Offset/gain setting mode (gain specification): Channel to adjust the gain

Setting	Setting content
0	Disable
1	Setting channel

Set one of the offset specification or gain specification to the Setting channel (0), and the other to Disable (0). Setting a value other than 0 and 1 causes an offset/gain setting channel range error (error code: 1E8☐H).

Multiple channels can be set at the same time. In that case, set the offset specification and gain specification separately. The offset specification and gain specification cannot be set at the same time.

In the following cases, an offset/gain setting channel specification error (error code: 1E50H) occurs.

- When both the offset specification and gain specification of the same channel are set to Setting channel (1)
- When Disable (0) is set for all channels
- When both the offset specification and gain specification of multiple channels are set to Setting channel (1) at the same time

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Offset/gain setting mode (offset specification)	4132	4134	4136	4138	4140	4142	4144	4146
CH☐ Offset/gain setting mode (gain specification)	4133	4135	4137	4139	4141	4143	4145	4147

■Enabling the setting

Turn off and on 'Channel change request' (YB).

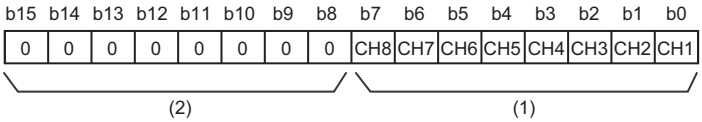
■Default value

The default value is Disable (0) for all the channels.

A

Offset/gain setting mode [Q compatibility]

When the Q compatible mode function is used, specify the channel where the offset/gain setting is adjusted.



(1) 0: Disable, 1: Setting channel

(2) The values of b8 to b15 are fixed to 0.

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Offset/gain setting mode (offset specification) (in Q compatible mode)	26							
Offset/gain setting mode (gain specification) (in Q compatible mode)	27							

■Enabling the setting

Turn off and on 'Channel change request' (YB).

■Default value

The default value is Disable (0) for all the channels.

Point

When the offset/gain setting is configured from the offset/gain setting window of an engineering tool, the setting is performed properly on the window. Therefore, a program is not required to perform the setting.
When the offset/gain setting is configured by reusing a program that is used in a temperature input module of MELSEC-Q series, check that a value is properly set in this area.
For the programs of a temperature input module of MELSEC-Q series, refer to the following.
📖 MELSEC-Q Channel Isolated Thermocouple Input Module User's Manual
📖 MELSEC-Q Channel Isolated RTD Input Module User's Manual

CH1 Logging data

This area stores the data logged by the logging function.
Up to 1000 points of data can be stored per channel. After the number of stored data points reaches 1000, data collection continues with the data overwritten from the head.
For details on the logging function, refer to the following.
☞ Page 42 Logging Function

■Buffer memory address

The following shows the buffer memory address of this area.

Buffer memory name	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
CH☐ Logging data	10000 to 10999	11000 to 11999	12000 to 12999	13000 to 13999	14000 to 14999	15000 to 15999	16000 to 16999	17000 to 17999
CH☐ Logging data (in Q compatible mode)	5000 to 5999	6000 to 6999	7000 to 7999	8000 to 8999	9000 to 9999	10000 to 10999	11000 to 11999	12000 to 12999

Point

- Turning off and on 'Operating condition setting request' (Y9) allows the logging data in all the channels to be cleared.
- Turning on and off Logging hold request while Logging hold flag is on allows logging to resume. In this case, the logged data is not cleared.

Appendix 4 Dedicated Instructions

Instruction list

The following table lists the dedicated instructions that can be used in a temperature input module.

Instruction	Description
G(P).OFFGAN	Switches normal mode to offset/gain setting mode. Switches offset/gain setting mode to normal mode.
G(P).OGLOAD	Reads out the offset/gain setting value in the user range setting to write it into the CPU module.
G(P).OGSTOR	Restores the offset/gain setting value in the user range setting stored in the CPU module into a temperature input module.

For details on the dedicated instructions, refer to the following.

MELSEC iQ-R Programming Manual (Instructions, Standard Functions/Function Blocks)

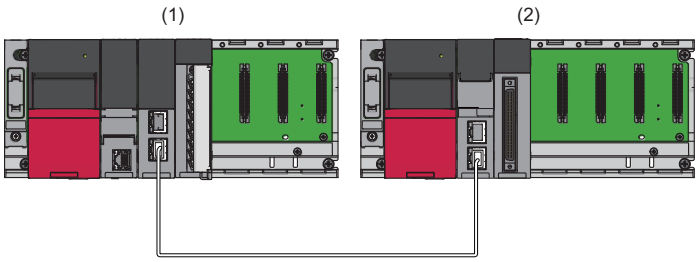
MEMO

Appendix 5 Operation Examples of When the Remote Head Module Is Mounted

This section describes operation examples of when the remote head module is mounted

System configuration example

The following system configuration is used to explain an example of operation.



(1) Master station (Network number 1, station number 0)

- Power supply module: R61P
- CPU module: R04CPU
- Master/local module: RJ71GF11-T2 (Start I/O number: 0000H to 001FH)
- Input module: RX10 (Start I/O number: 0020H to 002FH)

(2) Intelligent device station (Network number 1, station number 1)

- Power supply module: R61P
- Remote head module: RJ72GF15-T2
- Temperature input module: R60TD8-G (Start I/O number: 0000H to 000FH*1)

*1 In the RX/RY setting of the master station, set 1000H to 100FH as the start I/O number of the temperature input module.

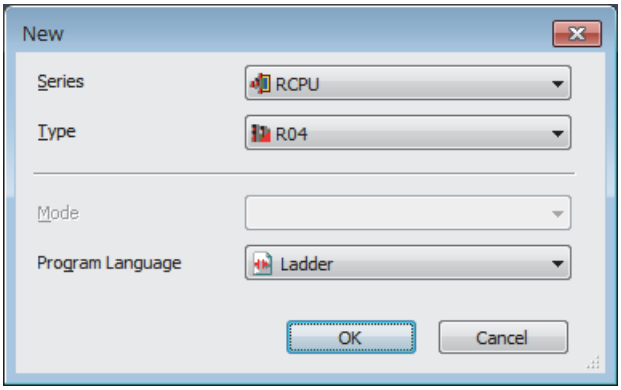
A

Setting in the master station

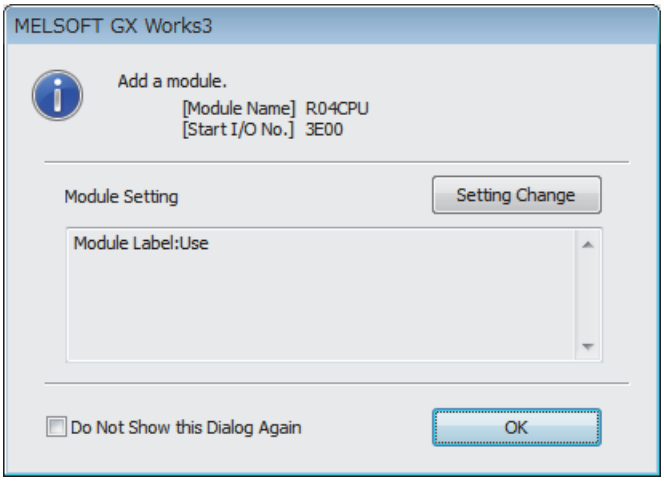
Connect the engineering tool to the CPU module of the master station and set parameters.

1. Create the project with the following settings.

[Project] ⇨ [New]

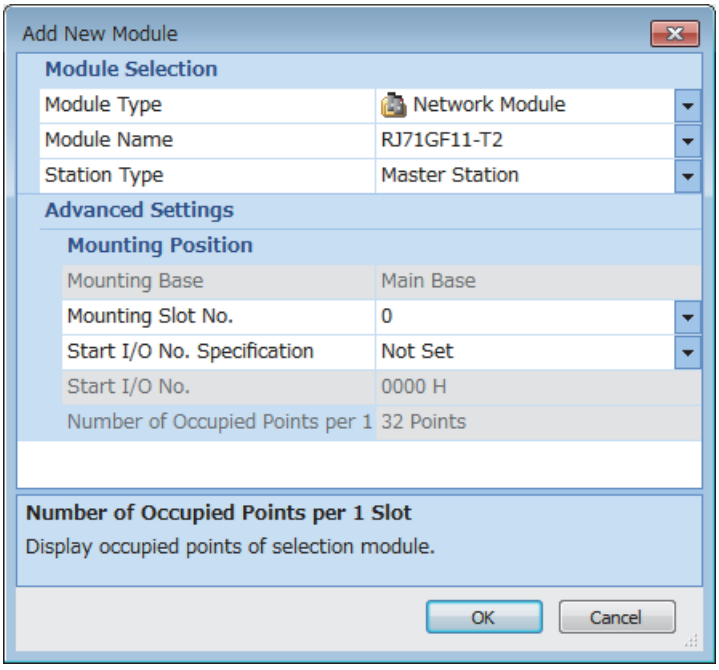


2. Configure the setting to use the module labels and add the module labels of the CPU module.

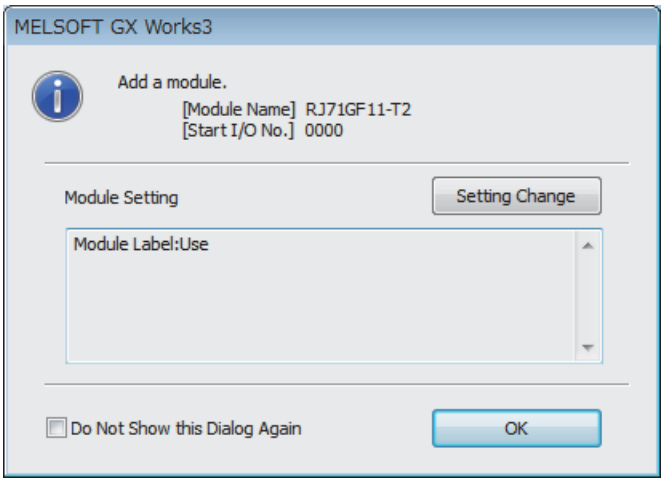


3. Add the master/local module with the following settings.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Right-click ⇨ [Add New Module]



4. Configure the setting to use the module labels and add the module labels of the master/local module.



5. Set "Required Settings" of "Module Parameter" of the master/local module as shown below.

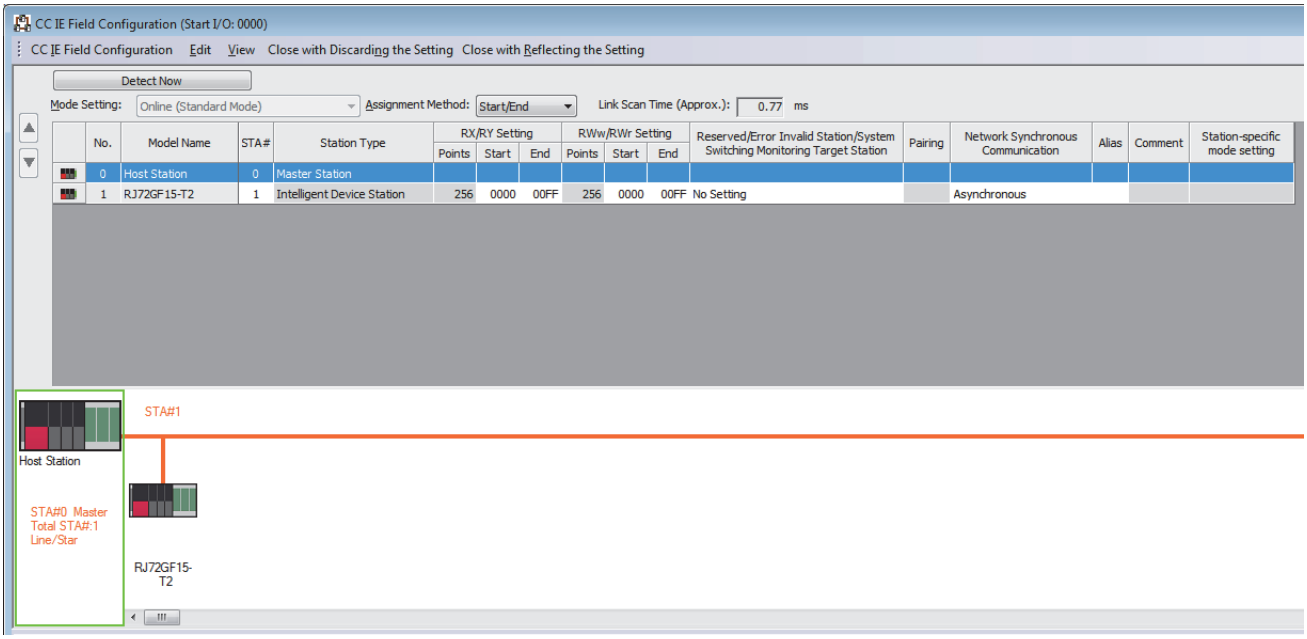
[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GF11-T2] ⇨ [Module Parameter] ⇨ [Required Settings]

Item	Setting
Station Type	
Station Type	Master Station
Network Number	
Network Number	1
Station Number	
Setting Method	Parameter Editor
Station No.	0
Parameter Setting Method	
Setting Method of Basic/Application Settings	Parameter Editor

A

6. Set "Network Configuration Settings" of "Module Parameter" of the master/local module as shown below.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GF11-T2] ⇨ [Module Parameter] ⇨ [Basic Settings] ⇨ [Network Configuration Settings]



7. Set "Refresh Setting" of "Module Parameter" of the master/local module as shown below.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GF11-T2] ⇨ [Module Parameter] ⇨ [Basic Settings] ⇨ [Refresh Setting]

No.	Link Side					CPU Side				
	Device Name	Points	Start	End		Target	Device Name	Points	Start	End
-	SB	512	00000	001FF		Module Label				
-	SW	512	00000	001FF		Module Label				
1	RX	256	00000	000FF		Specify Device	X	256	01000	010FF
2	RY	256	00000	000FF		Specify Device	Y	256	01000	010FF
3	RWw	256	00000	000FF		Specify Device	W	256	00000	000FF
4	RWr	256	00000	000FF		Specify Device	W	256	01000	010FF
5										

8. Write the set parameters to the CPU module on the master station. Then reset the CPU module or power off and on the system.

[Online] ⇨ [Write to PLC]

Point

For parameters of the master/local module which are not described in this procedure, set default values. For details on parameters of the master/local module, refer to the following.

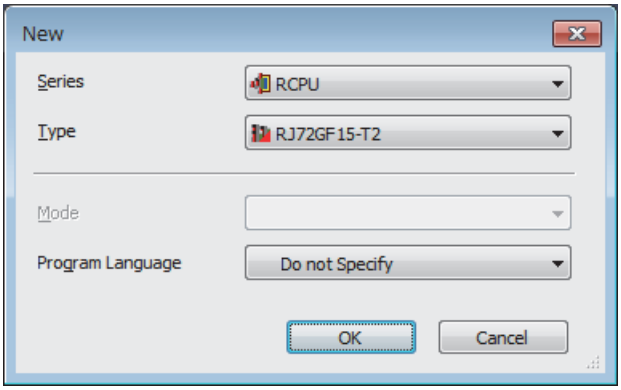
MELSEC iQ-R CC-Link IE Field Network User's Manual (Application)

Setting in the intelligent device station

Connect the engineering tool to the remote head module of the intelligent device station and set parameters.

1. Create the project with the following settings.

[Project] ⇨ [New]



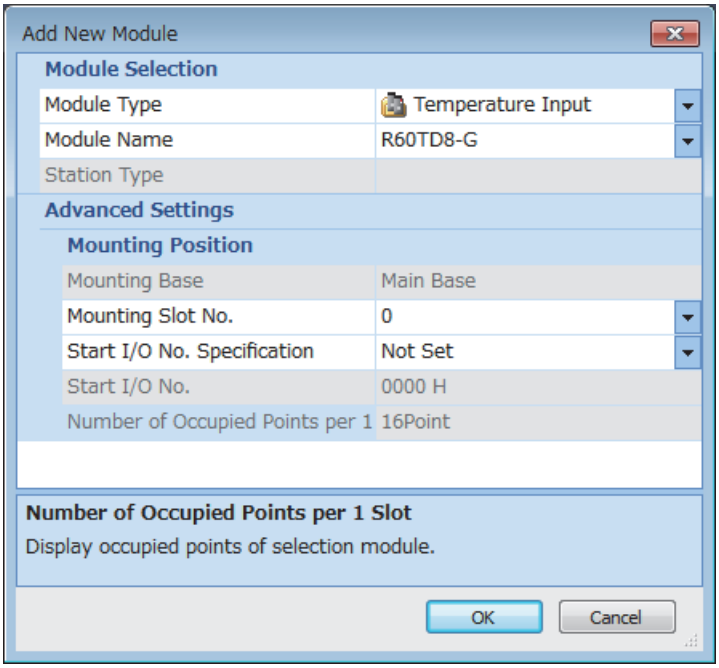
2. Set "Network Required Setting" of "CPU Parameter" of the remote head module as shown below.

[Navigation window] ⇨ [Parameter] ⇨ [RJ72GF15-T2] ⇨ [CPU Parameter] ⇨ [Network Required Setting]

Item	Setting
Network Number	
Network Number	1
Station Number	
Station No.	1

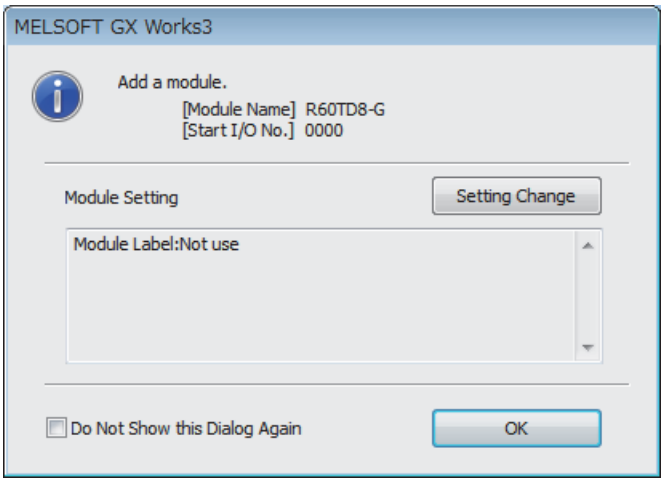
3. Add the temperature input module with the following settings.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Right-click ⇨ [Add New Module]



A

4. Configure the setting not to use the module labels.



5. Set "Basic setting" of "Module Parameter" of the temperature input module as shown below.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [R60TD8-G] ⇨ [Module Parameter] ⇨ [Basic setting]

Item	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Thermocouple type selection function	**Set the thermocouple type for each channel.**							
Thermocouple type setting	Thermocouple K	Thermocouple K	Thermocouple E	Thermocouple K	Thermocouple J	Thermocouple K	Thermocouple T	Thermocouple K
Offset/gain setting	Factory default setting	Factory default setting	Factory default setting	Factory default setting	User range setting	Factory default setting	User range setting	Factory default setting
Cold junction temperature compensation with/w	**Set the cold junction temperature compensation with/without using the cold junction temperature compensation resistor.**							
Cold junction temperature compensation with/with	With cold junction temperature compensation							
Operation mode setting function	**The two operation modes, "Normal mode" to execute the normal temperature conversion and "Offset/gain setting mode" to execute the offset/gain setting, can be set.**							
Operation mode setting	Normal mode (Conversion process)							
Conversion enable/disable setting function	**Set whether to enable or disable the output of the conversion value.**							
Conversion enable/disable setting	Conversion enable	Conversion disable	Conversion enable	Conversion disable	Conversion enable	Conversion disable	Conversion enable	Conversion disable
Temperature conversion system	**Set the temperature conversion control system.**							
Average processing setting	Sampling processing	Sampling processing	Count average	Sampling processing	Moving average	Sampling processing	Sampling processing	Sampling processing
Time average/Count average/Moving average/ Primary delay filter constant setting	0	0	50 times	0	10 times	0	0	0

6. Set "Application setting" of "Module Parameter" of the temperature input module as shown below.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [R60TD8-G] ⇨ [Module Parameter] ⇨ [Application setting]

Item	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Scaling function	**Configure the setting for the scaling at the conversion.**							
Scaling enable/disable setting	Disable	Disable	Disable	Disable	Enable	Disable	Disable	Disable
Scaling range upper limit value	0.0 °C	0.0 °C	0.0 °C	0.0 °C	500.0 °C	0.0 °C	0.0 °C	0.0 °C
Scaling range lower limit value	0.0 °C	0.0 °C	0.0 °C	0.0 °C	-100.0 °C	0.0 °C	0.0 °C	0.0 °C
Scaling width upper limit value	0	0	0	0	100	0	0	0
Scaling width lower limit value	0	0	0	0	0	0	0	0
Warning output function (Process alarm)	**Set an alert at the conversion.**							
Warning output setting (Process alarm)	Disable	Disable	Enable	Disable	Disable	Disable	Disable	Disable
Process alarm upper upper limit value	1200.0 °C	1200.0 °C	900.0 °C	1200.0 °C	1200.0 °C	1200.0 °C	1200.0 °C	1200.0 °C
Process alarm upper lower limit value	1200.0 °C	1200.0 °C	700.0 °C	1200.0 °C	1200.0 °C	1200.0 °C	1200.0 °C	1200.0 °C
Process alarm lower upper limit value	-200.0 °C	-200.0 °C	400.0 °C	-200.0 °C	-200.0 °C	-200.0 °C	-200.0 °C	-200.0 °C
Process alarm lower lower limit value	-200.0 °C	-200.0 °C	0.0 °C	-200.0 °C	-200.0 °C	-200.0 °C	-200.0 °C	-200.0 °C
Warning output function (Rate alarm)	**Set an alert at the conversion.**							
Warning output setting (Rate alarm)	Enable	Disable	Disable	Disable	Disable	Disable	Disable	Disable
Rate alarm detection cycle setting	40 times	0 times	0 times	0 times	0 times	0 times	0 times	0 times
Rate alarm upper limit value	25.0 °C	0.0 °C	0.0 °C	0.0 °C	0.0 °C	0.0 °C	0.0 °C	0.0 °C
Rate alarm lower limit value	-5.0 °C	0.0 °C	0.0 °C	0.0 °C	0.0 °C	0.0 °C	0.0 °C	0.0 °C
Disconnection detection function	**Configure the setting for the disconnection detection at the conversion.**							
Disconnection detection function enable/disable setting	Disable	Disable	Disable	Disable	Disable	Disable	Enable	Disable
Conversion setting for disconnection detection	Down Scale	Down Scale	Down Scale	Down Scale	Down Scale	Down Scale	Value immediate	Down Scale
Conversion setting value for disconnection detection	0.0 °C	0.0 °C	0.0 °C	0.0 °C	0.0 °C	0.0 °C	0.0 °C	0.0 °C
Disconnection detection Automatic clear enable/disable setting	Disable							
Logging function	**Configure the setting for the logging function at the conversion.**							
Logging enable/disable setting	Disable	Disable	Disable	Disable	Disable	Disable	Disable	Disable
Logging data setting	Measured tempe	Measured tempe	Measured tempe	Measured tempe	Measured tempe	Measured tempe	Measured tempe	Measured tempe
Logging cycle setting value	240 ms	240 ms	240 ms	240 ms	240 ms	240 ms	240 ms	240 ms
Logging cycle unit setting	ms	ms	ms	ms	ms	ms	ms	ms
Level trigger condition setting	Disable	Disable	Disable	Disable	Disable	Disable	Disable	Disable
Logging points after trigger	500	500	500	500	500	500	500	500
Trigger data	400	600	800	1000	1200	1400	1600	1800
Trigger setting value	0	0	0	0	0	0	0	0
Logging loading enable/disable setting	Disable	Disable	Disable	Disable	Disable	Disable	Disable	Disable
Logging read points setting value	100	100	100	100	100	100	100	100
Online module change	**The module can be changed without the system being stopped.**							

7. Set "Refresh settings" of "Module Parameter" of the temperature input module as shown below.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [R60TD8-G] ⇨ [Module Parameter] ⇨ [Refresh settings]

Item	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Refresh at the set timing.								
Transfer to the intelligent function module.	**Transfer the buffer memory data to the specified device.**							
Transfer to the CPU.	**Transfer the buffer memory data to the specified device.**							
Latest error code	W1000							
Latest address of error history								
Latest alarm code	W1001							
Latest address of alarm history								
Interrupt factor detection flag 1								
Interrupt factor detection flag 2								
Interrupt factor detection flag 3								
Interrupt factor detection flag 4								
Interrupt factor detection flag 5								
Interrupt factor detection flag 6								
Interrupt factor detection flag 7								
Interrupt factor detection flag 8								
Interrupt factor detection flag 9								
Interrupt factor detection flag 10								
Interrupt factor detection flag 11								
Interrupt factor detection flag 12								
Interrupt factor detection flag 13								
Interrupt factor detection flag 14								
Interrupt factor detection flag 15								
Interrupt factor detection flag 16								
Warning output flag (Process alarm upper limit)	W1002							
Warning output flag (Process alarm lower limit)	W1003							
Warning output flag (Rate alarm upper limit)	W1004							
Warning output flag (Rate alarm lower limit)	W1005							
Disconnection detection flag	W1006							
Conversion completed flag	W1007							
Measured temperature value	W1008		W1009		W1010		W1011	
Scaling value	W1012		W1013		W1014		W1015	
Logging hold flag								

8. Write the set parameters to the remote head module on the intelligent device station. Then reset the remote head module or power off and on the system.

[Online] ⇨ [Write to PLC]

Point

For parameters of the remote head module which are not described in this procedure, set default values. For details on parameters of the remote head module, refer to the following.

• MELSEC iQ-R CC-Link IE Field Network Remote Head Module User's Manual (Application)

Checking the network status

After setting parameters to the master station and the intelligent device station, check whether data link is normally performed between the master station and the intelligent device station. Check the network status using the CC-Link IE Field Network diagnostics of the engineering tool.

For how to perform the CC-Link IE Field Network diagnostics from the master station, refer to the following.

MELSEC iQ-R CC-Link IE Field Network User's Manual (Application)

Program examples

For the program examples, the module labels of the master/local module are used.

Write the programs to the CPU module on the master station.

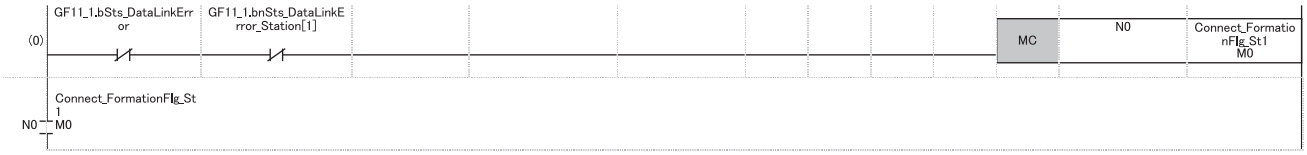
Classification	Label name	Description	Device
Module label	GF11_1.bSts_DataLinkError	Data link error status of own station	SB0049
	GF11_1.bnSts_DataLinkError_Station[1]	Data link status of each station (station number 1)	SW00B0.0
Label to be defined	Define global labels as shown below:		

Label Name	Data Type		Class	Assign (Device/Label)
Connect_FormationFlg_St1	Bit	...	VAR_GLOBAL	M0
CH1_TemperatureVal	Word [Signed]	...	VAR_GLOBAL	D11
CH3_TemperatureVal	Word [Signed]	...	VAR_GLOBAL	D12
CH5_ScalingVal	Word [Signed]	...	VAR_GLOBAL	D13
CH7_TemperatureVal	Word [Signed]	...	VAR_GLOBAL	D14
ModuleREADY	Bit	...	VAR_GLOBAL	X1000
DisconnectionDetectionSignal	Bit	...	VAR_GLOBAL	X100C
ConversionCompletedFlag	Bit	...	VAR_GLOBAL	X100E
OperatingConditionSettingRequest	Bit	...	VAR_GLOBAL	Y1009
ErrorFlag	Bit	...	VAR_GLOBAL	X100F
DigitOutVALSig	Bit	...	VAR_GLOBAL	X20
CH1_ConversionCompletedFlag	Bit	...	VAR_GLOBAL	W1007.0
CH3_ConversionCompletedFlag	Bit	...	VAR_GLOBAL	W1007.2
CH5_ConversionCompletedFlag	Bit	...	VAR_GLOBAL	W1007.4
CH7_ConversionCompletedFlag	Bit	...	VAR_GLOBAL	W1007.6
CH1_MeasuredTemperatureValue	Word [Signed]	...	VAR_GLOBAL	W1008
CH3_MeasuredTemperatureValue	Word [Signed]	...	VAR_GLOBAL	W1009
CH5_ScalingValue	Word [Signed]	...	VAR_GLOBAL	W1014
CH7_MeasuredTemperatureValue	Word [Signed]	...	VAR_GLOBAL	W1011
CH3_ProcessAlarmUpperLimit	Bit	...	VAR_GLOBAL	W1002.2
CH3_ProcessAlarmLowerLimit	Bit	...	VAR_GLOBAL	W1003.2
CH1_RateAlarmUpperLimit	Bit	...	VAR_GLOBAL	W1004.0
CH1_RateAlarmLowerLimit	Bit	...	VAR_GLOBAL	W1005.0
CH7_DisconnectionDetectionFlag	Bit	...	VAR_GLOBAL	W1006.6
CH3_ProcAlmUpLimit	Bit	...	VAR_GLOBAL	F0
CH3_ProcAlmLowLimit	Bit	...	VAR_GLOBAL	F1
CH1_RateAlmUpLimit	Bit	...	VAR_GLOBAL	F2
CH1_RateAlmLowLimit	Bit	...	VAR_GLOBAL	F3
CH7_Disconnection	Bit	...	VAR_GLOBAL	F4
ErrResetSig	Bit	...	VAR_GLOBAL	X23
ErrorClearRequest	Bit	...	VAR_GLOBAL	Y100F

A

Common program

The following figure shows an example of the program to check the data link status of the remote head module (station number 1).

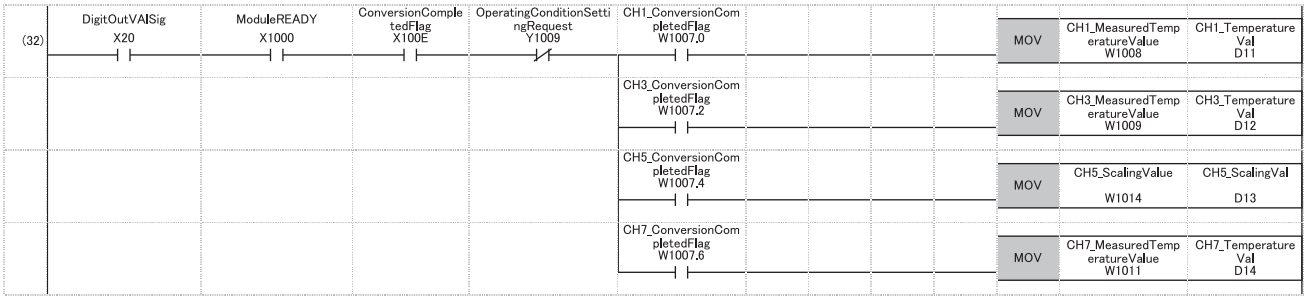


(0) Checks the data link status of the remote head module (station number 1).

Add the MCR instruction shown below to the last of the program.

Program example 1

The following figure shows an example of the program to read measured temperature values of CH1, CH3, and CH7 and scaling values of CH5 and save them.



(32) Reads values of CH1 Measured temperature value, CH3 Measured temperature value, CH5 Scaling value, and CH7 Measured temperature value.

Program example 2

The following figure shows an example of the program to perform operations reacting to an alert if an alert (process alarm upper/lower limit) occurs in CH3.

(91) Performs a processing of when an alert (process alarm upper limit) has occurred in CH3.

(119) Performs a processing of when an alert (process alarm lower limit) has occurred in CH3.

Program example 3

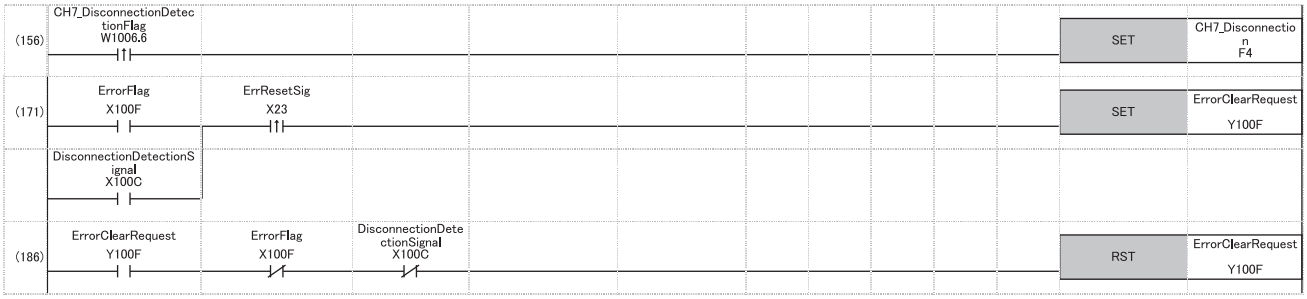
The following figure shows an example of the program to perform operations reacting to an alert if an alert (rate alarm upper/lower limit) occurs in CH1.

(124) Performs a processing of when an alert (rate alarm upper limit) has occurred in CH1.

(151) Performs a processing of when an alert (rate alarm lower limit) has occurred in CH1.

Program example 4

The following figure shows an example of the program to clear Disconnection detection flag, Error flag, and Latest error code if disconnection is detected in CH7 or an error occurs in any of the channels.



(156) Performs a processing of when disconnection was detected in CH7.

(171) Turns on 'Error clear request' (Y100F).

(186) Turns off 'Error clear request' (Y100F).

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REVISIONS

*The manual number is given on the bottom left of the back cover.

Revision date	*Manual number	Description
January 2015	SH(NA)-081495ENG-A	First edition
May 2016	SH(NA)-081495ENG-B	■Added or modified parts RELEVANT MANUALS, TERMS, Section 2.4, Appendix 3, 5

Japanese manual number: SH-081494-B

WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.

However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place. Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

(1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

(2) Even within the gratis warranty term, repairs shall be charged for in the following cases.

1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
2. Failure caused by unapproved modifications, etc., to the product by the user.
3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

(2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:

(1) Damages caused by any cause found not to be the responsibility of Mitsubishi.

(2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.

(3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.

(4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

TRADEMARKS

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MODEL: R60TDG-R60RDG-U-OU-E
MODEL CODE: 13JX34

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