Paperless Recorder TR30 Series

PAPERLESS RECORDER

Model: TR30-G

USERS MANUAL

MG CO., LTD. www.mgco.jp
5-2-55 Minamitsumori, Nishinari-ku, Osaka 557-0063 JAPAN

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1. Introduction

Thank you for choosing us.
Before use, please check the following information.

1.1 User manual compatible versions

The versions compatible with this User Manual are as follows.

■UNIT VERSION

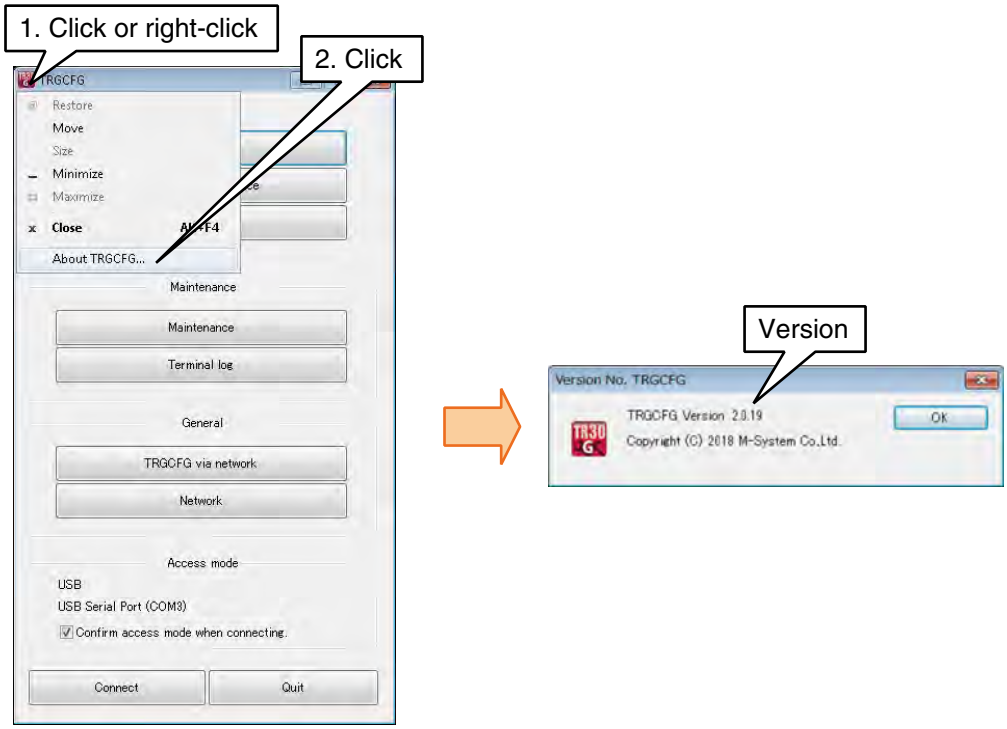
This User Manual is compatible with model TR30-G Unit version 2.6 or later.
Refer to the section on [Maintenance] for the method to confirm the unit version.
➔ 6.1.2 Maintenance 'Unit version'

■CONFIGURATOR SOFTWARE (TRGCFG) VERSION

This User Manual is compatible with model TRGCFG version 2.4 or later.
The TRGCFG version can be confirmed using the following method.

(1) Click (or right click) on  at the top left of the initial screen.

(2) Click on [About TRGCFG (A) ...] to display the version information dialog.



1.2 Precautions

■CONFORMITY WITH EU DIRECTIVES

- The equipment must be mounted inside the instrument panel of a metal enclosure.
- The actual installation environments such as panel configurations, connected devices and connected wires may affect the protection level of this unit when it is integrated in a panel system. The user may have to review the CE requirements in regard to the whole system and employ additional protective measures to ensure CE conformity.

■GENERAL PRECAUTIONS

- Before you remove the unit or mount it, turn off the power supply for safety.
- The unit does not support hot insertion/removal of modules. When the unit is used in combination with R30 I/O modules, hot insertion/removal of module is not supported for R30 I/O modules.
- Before you remove the terminal block or mount it, turn off input signal for safety.

■ENVIRONMENT

- Indoor use.
- When heavy dust or metal particles are present in the air, install the unit inside proper housing with sufficient ventilation.
- Do not install the unit where it is subjected to continuous vibration. Do not subject the unit to physical impact.
- Environmental temperature must be within 0 to 50°C (32 to 122°F) with relative humidity within 10 to 90% RH in order to ensure adequate life span and operation.

■WIRING

- Do not install cables close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.
- Max. wiring length for FE terminal should be 3 meters.
- Be sure to attach the terminal cover for safety.

■ABOUT SD CARDS

- Do not turn off the power of the unit during writing data. Insert or eject SD card according to the specified procedure.
- Confirm the front and back side of the SD card.

■CALENDAR CLOCK

- A backup battery is employed for calendar clock IC. Backup period without power supply is approx. 2 years.
- With power on, the battery is not drained. When total power off period is approx. 2 years, the battery cannot backup the calendar clock. The calendar clock cannot keep correct date and time.
- The battery is not replaceable by customer. When replacement is required, consult us.

■AND ....

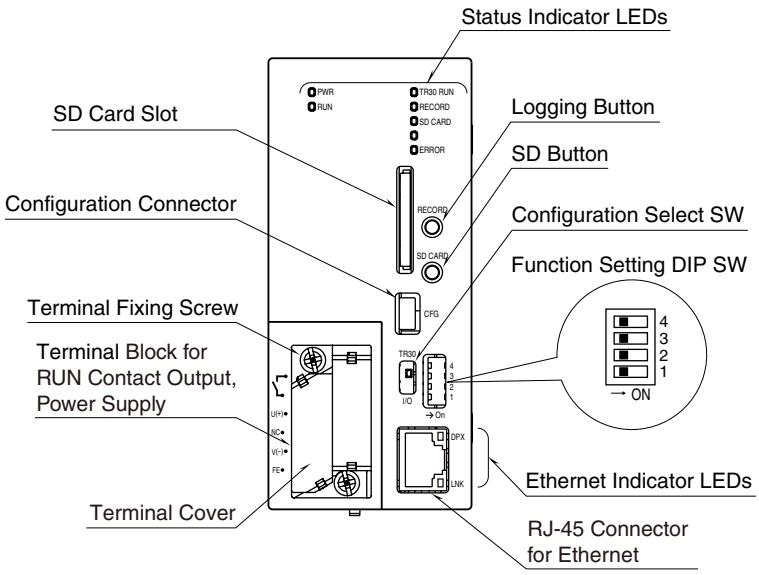
- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

■LOGIN ID & PASSWORD

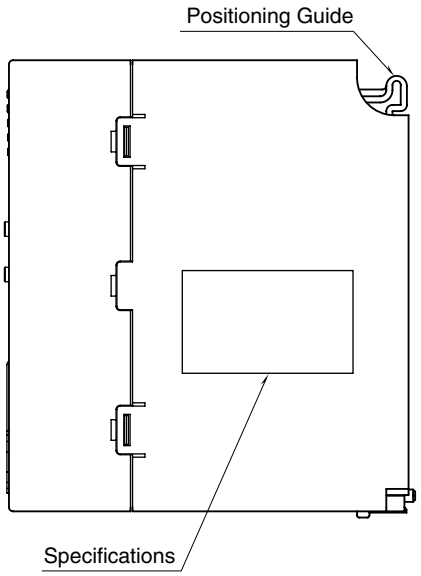
- The Login ID and password of the device are simple functions. They do not guarantee complete security.
- We recommend the user to apply own ID/password setting and not to leave the setting unused or at default values.

1.3 Component identification

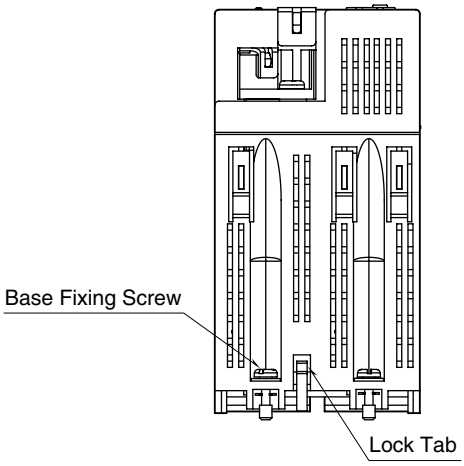
■ **FRONT VIEW**



■ **SIDE VIEW**



■ **BOTTOM VIEW**



■STATUS INDICATOR LED

LED	COLOR	FUNCTION
PWR	Green	ON when the power supply is on. OFF when the power supply is off.
RUN	Green	ON in normal operation *1 OFF in abnormality (internal memory error, SD card error, R30 module error) *1
TR30 RUN	Green	Blinking while the TR30 module is booting up. ON after boot-up OFF in abnormality
RECORD	Green	ON while logging OFF when logging is stopped.
SD CARD	Green	ON when SD card is recognized. Blinking while accessing to the SD card. OFF when SD card is not recognized or removed.
ERROR	Red	Blinking in abnormality (internal memory error, SD card error, SLMP or Modbus/TCP timeout, R30 module error) *1 OFF in abnormality *1

*1. RUN contact output turns on in normal operation, off when the power is not supplied or in abnormality (internal memory error, SD card error, R30 module error).

■ETHERNET INDICATOR LED

LED	COLOR	FUNCTION
DPX	Green	ON during full duplex transmission
LNK	Amber	ON while link is established.

■CONFIGURATOR SELECT SW

SW POSITION	CONFIGURATION OBJECT
TR30	Configuring the TR30 (*)
I/O	Configuring the R30 series I/O modules

(*) Factory setting

■DIP SW

SW1	TR30 CONFIGURATION USB CONNECTION
OFF	TRGCFG (*)
ON	While checking the status by the terminal software and the TRGCFG [terminal log].

SW2	EVENT REPORTING E-MAIL
OFF	Enable (*)
ON	Disable

SW4	CALENDAR CLOCK BATTERY BACKUP
OFF	Disable (*)
ON	Enable

(*) Factory setting
Note 1: Be sure to set unused SW3 to OFF.
Note 2: In order to prevent battery drain, battery backup is at off when the TR30 is shipped from factory.
Turn it on prior to start using the unit.

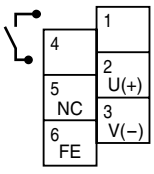
■LOGGING BUTTON

Pressing and holding the button for 1 second starts and stops logging.

■SD BUTTON

Pressing and holding the button for 4 seconds turns SD CARD LED off to make the card safely removed.

■TERMINAL ASSIGNMENT



NO.	ID	FUNCTION
1	RUN contact output	RUN contact output
2	U(+)	Power supply (24 V DC)
3	V(–)	Power supply (0 V DC)
4	RUN contact output	RUN contact output
5	NC	Not used
6	FE	Functional earth

2. Installation

2.1 Preparations

Other than model TR30-G logging module (referred hereafter to as “TR30,” “unit” or “device” in this manual), model R30BS base and R30 series I/O modules, please have the following items ready.

- PC
- USB cable (USB (A) male - USB (mini B) male)
- SD card (Please see [7.3.4 SD card] for specified SD cards.)
- TR30-G configurator software (Model: TRGCFG) *1
- R30 configurator software (Model: R30CFG) *1
- User Manual for each of the above *1

*1. The software programs are available for downloading at our web site.
In addition, depending on the system configuration, a Wi-Fi router or a fixed IP address contract is necessary.

2.2 Installation and wiring

Mount the TR30 and R30 series I/O Modules on the Base (Model: R30BS).
For details, please see the User Manual (EM-8631-A) supplied with the device and the User Manual for the I/O modules.

2.3 Preparation of configurator software

The configurator software is installed on the PC in order to configure the setting for the TR30 and each I/O module.

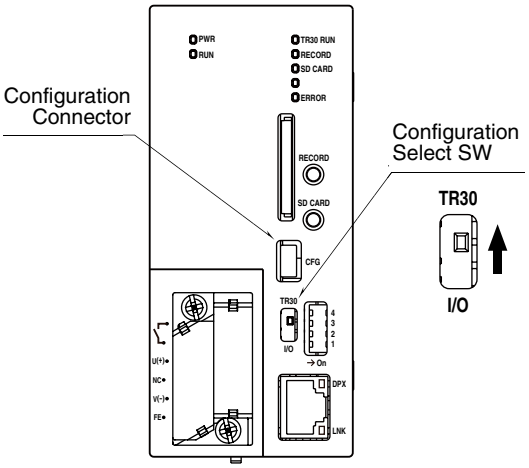
2.3.1 Configurator software for the TR30: TRGCFG

Installation

Download TRGCFG from our website, and complete the installation simply by extracting it into any folder. Use the shortcut to TRGCFG.exe which has been extracted to the desktop as required.

TRGCFG startup

(1) Set the [Configuration Select Switch] of the device as [TR30].

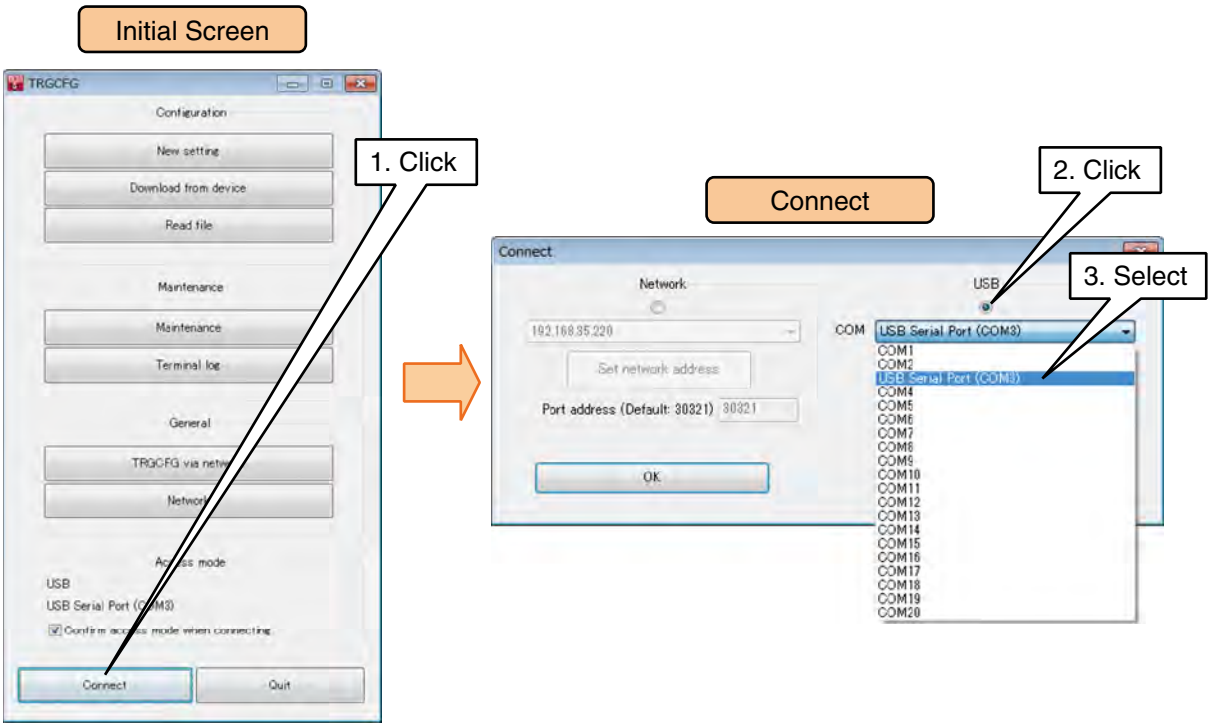


(2) Turn on the power supply to the device.

(3) Connect the PC and the device using a USB cable.
When it is connected for the first time, the driver software is automatically installed.

(4) Start up TRGCFG, and click on the [Connect] button. The [Connect] screen is displayed.

(5) Set the radio button as [USB]. Connect to the device, select the added COM port and click on the [OK] button.



NOTES

- If the driver software is not automatically installed, and the added COM port is not listed in the options, please download the driver from our website and install it.
- The added COM port No. varies from PC to PC.

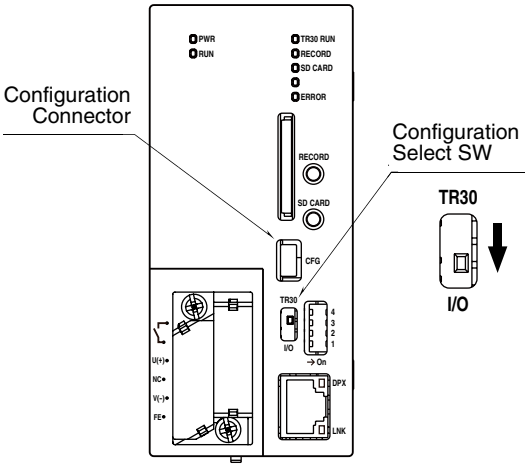
2.3.2 Configurator software for the I/O module: R30CFG

Installation

Please install by referring to the R30CFG User Manual.

R30CFG startup

(1) Set the [Configuration Select Switch] of the device as [I/O].



(2) Turn on the power supply to the device.

(3) Connect the PC and the device using a USB cable.

(4) Start up R30CFG, and configure the setting to use the COM port selected in TRGCFG. For details, refer to the R30CFG User Manual.

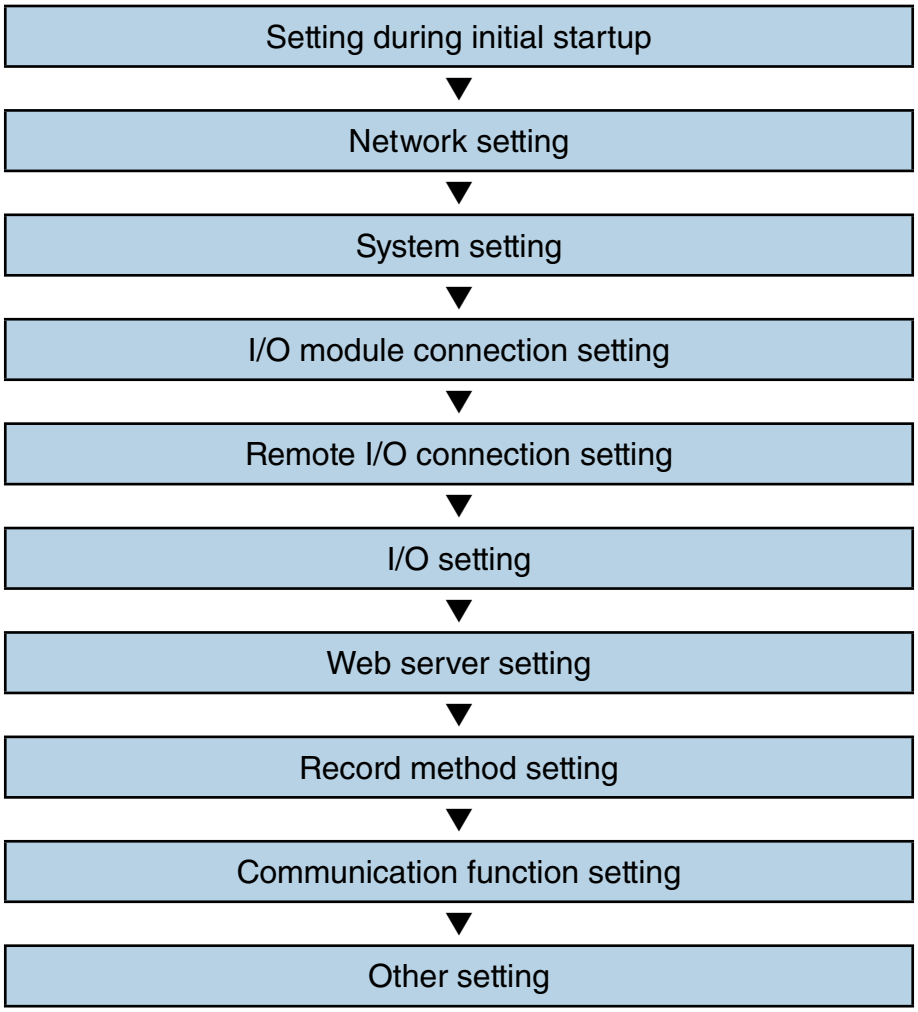
2.4 Explanation about the basic working and terms

Term	Explanation
Channel CH	4 types of input channels and 1 type of output channel are defined in a device. The I/O signals are in the form of fully encoded digital data. AI : Analog input (16 bit signed integer, unsigned integer) DI : Digital input (1 bit) PI : Pulse input (32 bit unsigned integer, signed integer, floating point) OI : Function input (32 bit floating point) DO : Discrete output (1 bit) The available number of channels is decided for each storing rate.
Pen	To record a waveform, the channel needs to be assigned to a pen. The available number of pens is decided for each storing rate.
Alarm zone transition	The total zone in which input values can be obtained as AI, PI or OI can be divided into a maximum of 5 zones. The change in the zone caused by a change in the input value is known as alarm zone transition. In case of DI, this can only be ON/OFF, and hence a change in the input signal is equivalent to an alarm zone transition.
Trend data	Indicates the waveform data assigned to the pen and recorded.
Event data	Indicates the information that [There has been an alarm zone transition], and this information can also be recorded along with the trend data. When recording only event data, the channel need not be assigned to a pen.
Comment data	This is a memo (text string) that the user can record at any desired position of the trend data.
Internal memory	When the TR30 records data, it records trend data, event data and comment data in the internal nonvolatile memory of the unit. This memory is known as internal memory.
Memory block	The TR30 divides internal memory into 50 segments and manages it. Each such divided segment of memory is known as a memory block. 1 memory block is equivalent to about 1 book of recorded chart paper. In a single memory block, trend data (120 pens × 50000 points), event data (3000 events) and comment data (1000 comments) can be recorded. Data files are transferred to the SD card per memory block.
Start new memory block	Indicates that the memory block is changing during recording.
Event summary	Extracted from the event data recorded in the memory block.
Comment summary	Extracted from the comment data recorded in the memory block.

3. Setting

3.1 Setting flow

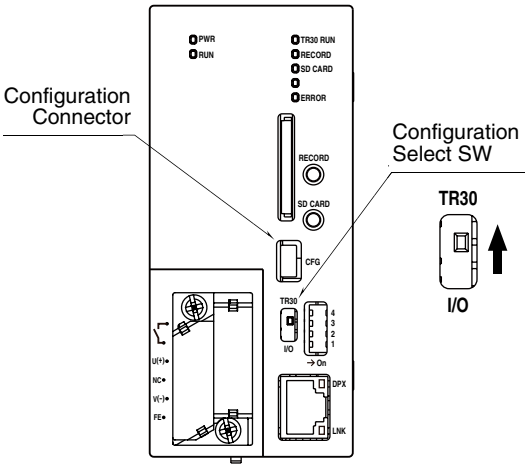
Before starting to record using a device, follow the procedure given below to configure the setting.



3.2 Setting during initial startup

In order to prevent exhaustion of the battery being used for calendar IC backup in this device, the calendar clock backup is disabled in the factory shipment setting. Hence, in its initial state, it will not work using the correct time.
If Switch 4 in the dip switch used for setting is OFF, it means that the calendar clock backup has been disabled. Please correct the unit time using the procedure shown below.

(1) Set the [Configuration Select Switch] of the device as [TR30].

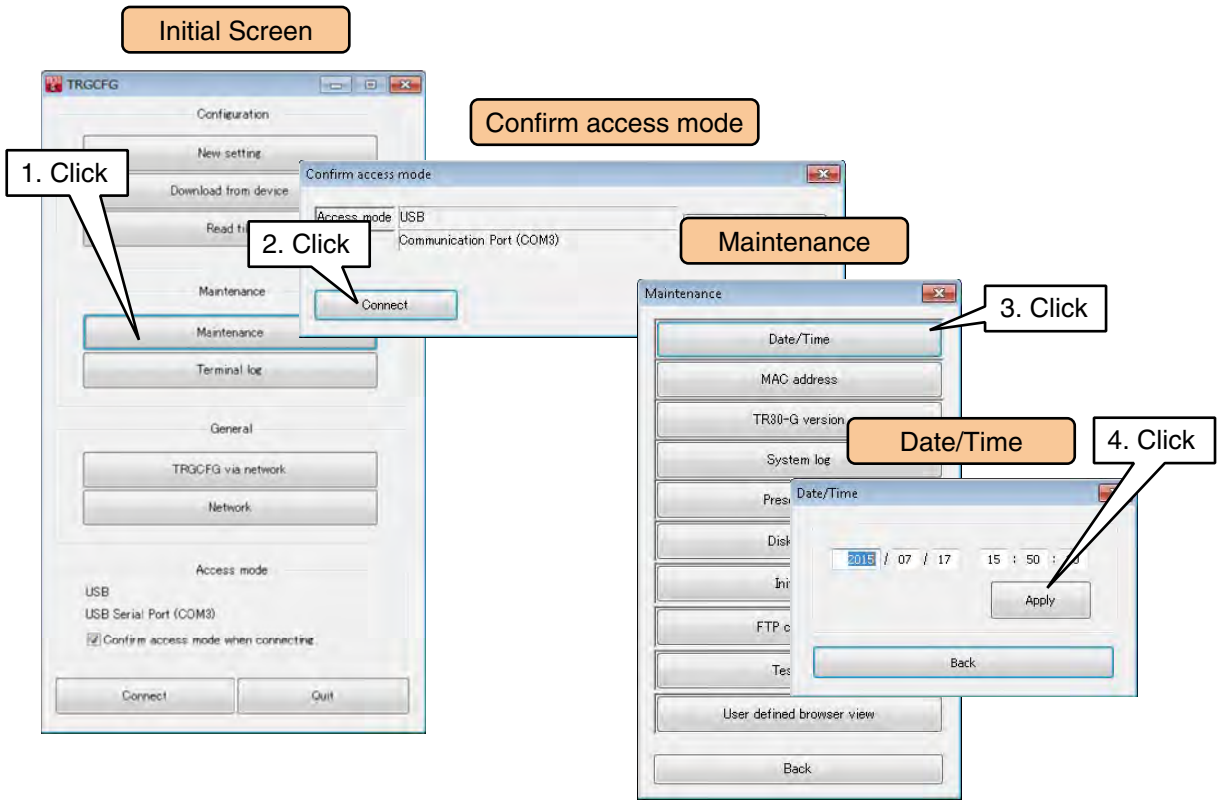


(2) Connect the PC in which TRGCFG is installed with the device using a USB cable, and start up TRGCFG.

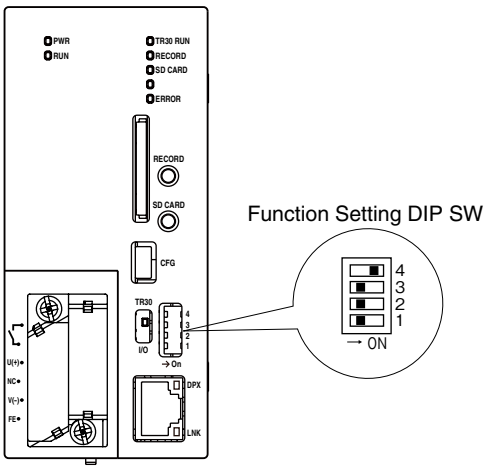
(3) Click on the [Maintenance] button.

(4) If the [Confirm access mode] is displayed, check that the device is correct, and click on the [Connect] button. The [Maintenance] screen is displayed.

(5) Click on the [Date/Time] button. The current time of the PC which is in use is initially displayed. Enter the time to be set and click on the [Apply] button.
The time which you have set is applied in the calendar IC of the device.



(6) Next, set Switch 4 of the dip switch used for setting as ON, and enable the calendar clock battery backup.



CAUTION

If the calendar clock battery backup has been enabled, but does not start up with the correct time, the battery may be exhausted. Please consult factory in such case.

3.3 Network setting

The TR30 is equipped with Web server functions. With the help of these functions, a PC, tablet terminal or smartphone can be used for remote monitoring.
And, setting changes can either be made via a network, or the FTP server function can be used to transfer or delete data which is stored in the device from a PC.

There are 2 methods of connecting the TR30 via a network.
Please set appropriately to suit the usage environment.

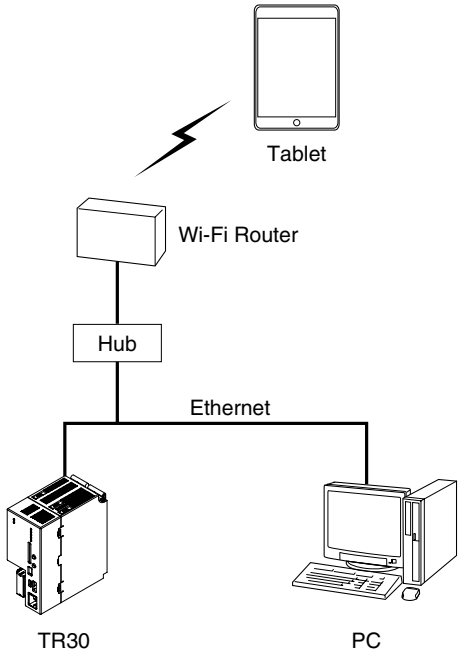
■Connect using a local network (LAN)

This is a method in which 1 device is connected to the inhouse LAN, and monitored using a terminal connected to the same network.

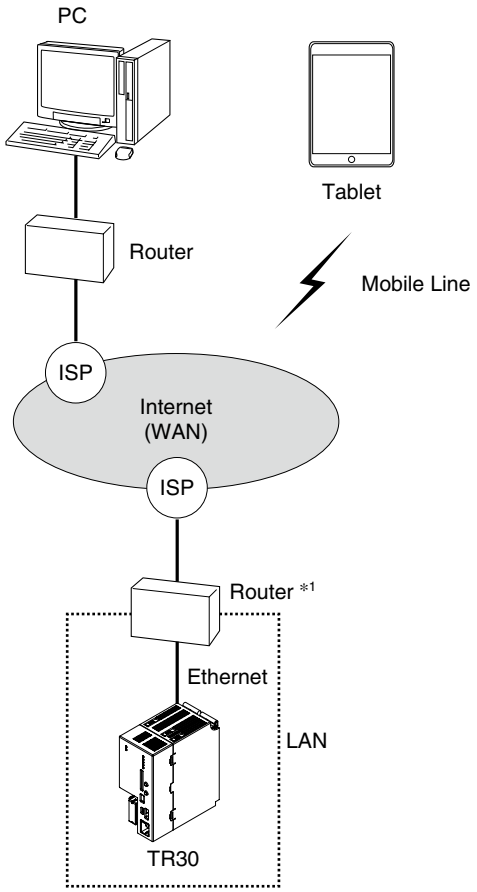
■Connect via the Internet (WAN)

This is a method in which 1 device is connected to a broadband router, and remotely monitored via the Internet.

■ **VIA LOCAL NETWORK (LAN)**



■ **VIA INTERNET (WAN)**



*1. D.DNS service or static IP address is reguired.

3.3.1 Connect using a local area network (LAN)

Depending on the server functions of the TR30 which are used, please set according to the table below. Please consult the network administrator for details about the setting.

Server function which is used	Network setting for the TR30
Web server	Set the IP address manually.
FTP server Used to transfer and delete the device data	
Maintenance Setting by TRGCFG are configured via a network	

3.3.2 Connect via the Internet (WAN)

Depending on the server functions of the TR30 which are used, please set according to the table below. Please see the router User Manual for information on how to set the router.

Server function which is used	Network setting for the TR30	Router setting
Web server	Set the IP address manually.	A fixed IP address or a dynamic DNS contract is necessary. Set so that an external HTTP packet (TCP port 80: Can be changed from TRGCFG) is allowed into the IP address set in the TR30.
FTP server Used to transfer and delete the device data	Set the IP address manually.	A fixed IP address or a dynamic DNS contract is necessary. Set so that an external FTP packet (FTP control port 21 and FTP data port 45967) is allowed into the IP address set in the TR30.
Maintenance Setting by TRGCFG are configured via a network	Set the IP address manually.	A fixed IP address or a dynamic DNS contract is necessary. Set so that an external TRGCFG packet (TCP port 30321: Can be changed from TRGCFG) is allowed into the IP address set in the TR30.

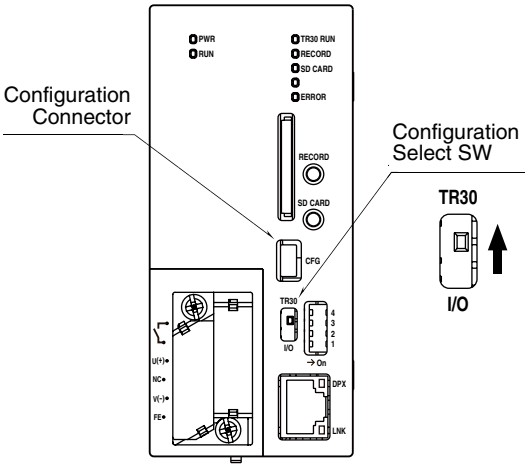
NOTES

- DHCP is also supported.
- It is strongly recommended to use VPN in terms of security.

3.3.3 Set the IP address

Use TRGCFG to configure the network setting.

(1) Set the [Configuration Select Switch] of the device as [TR30].



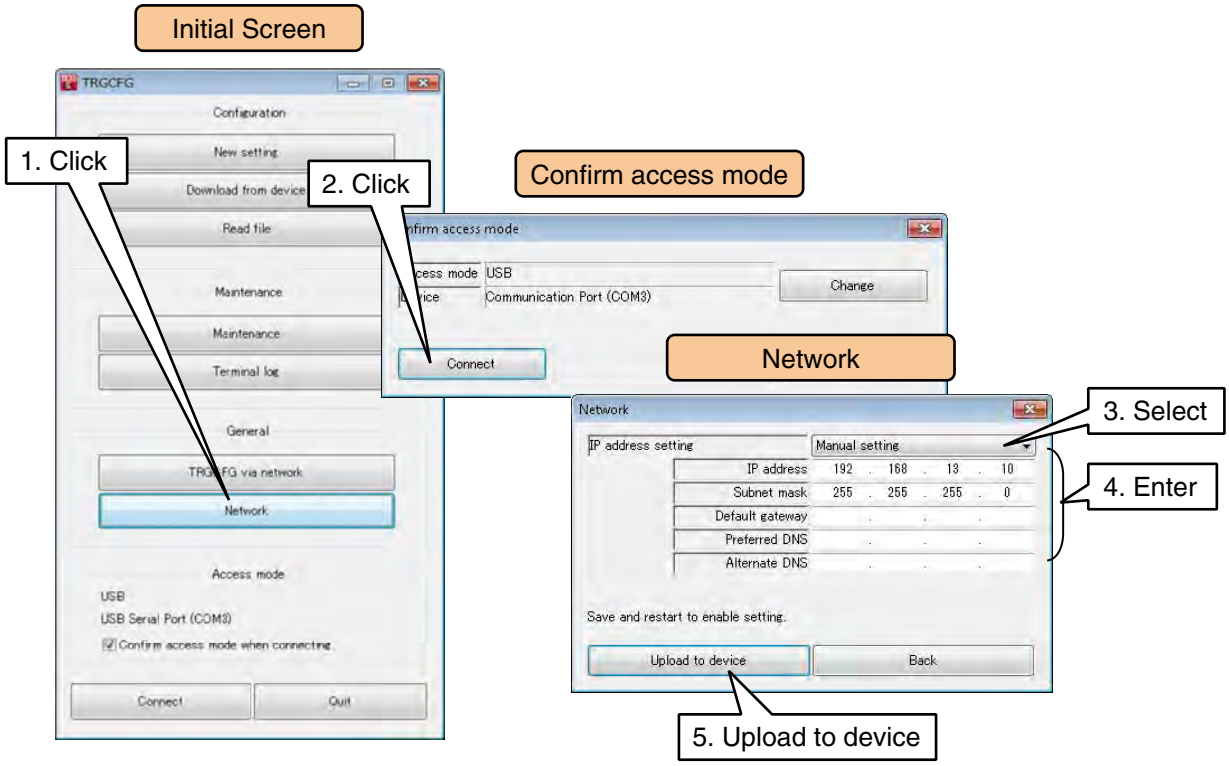
(2) Connect the PC and the device using a USB cable.

(3) Start up TRGCFG and click on the [Network] button.

(4) If the [Confirm access mode] is displayed, check that the device is correct, and click on the [Connect] button.

(5) The [Network] screen is displayed. To set a fixed IP address, select [Manual setting], and set the IP address.

(6) Press the [Upload to device] button to transfer the IP address to the TR30 (At this point, the IP address is not yet changed).

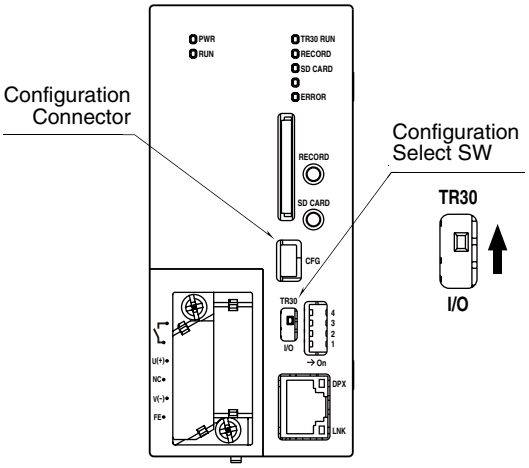


(7) Turn OFF the power supply to the device and turn it ON again to activate the transferred IP address.

3.3.4 Enable setup via a network

Setup can be done using TRGCFG via a network. Please set up TRGCFG by following the procedure given below.

(1) Set the [Configuration Select Switch] of the device as [TR30].



(2) Connect the PC and the device using a USB cable.

(3) Start up TRGCFG, and click on the [TRGCFG] button.

(4) If the [Confirm access mode] is displayed, check that the device is correct, and click on the [Connect] button.

(5) The setting information is loaded from the TR30, and the [TRGCFG] screen is displayed.

Set the parameters on this screen as shown in the table below.

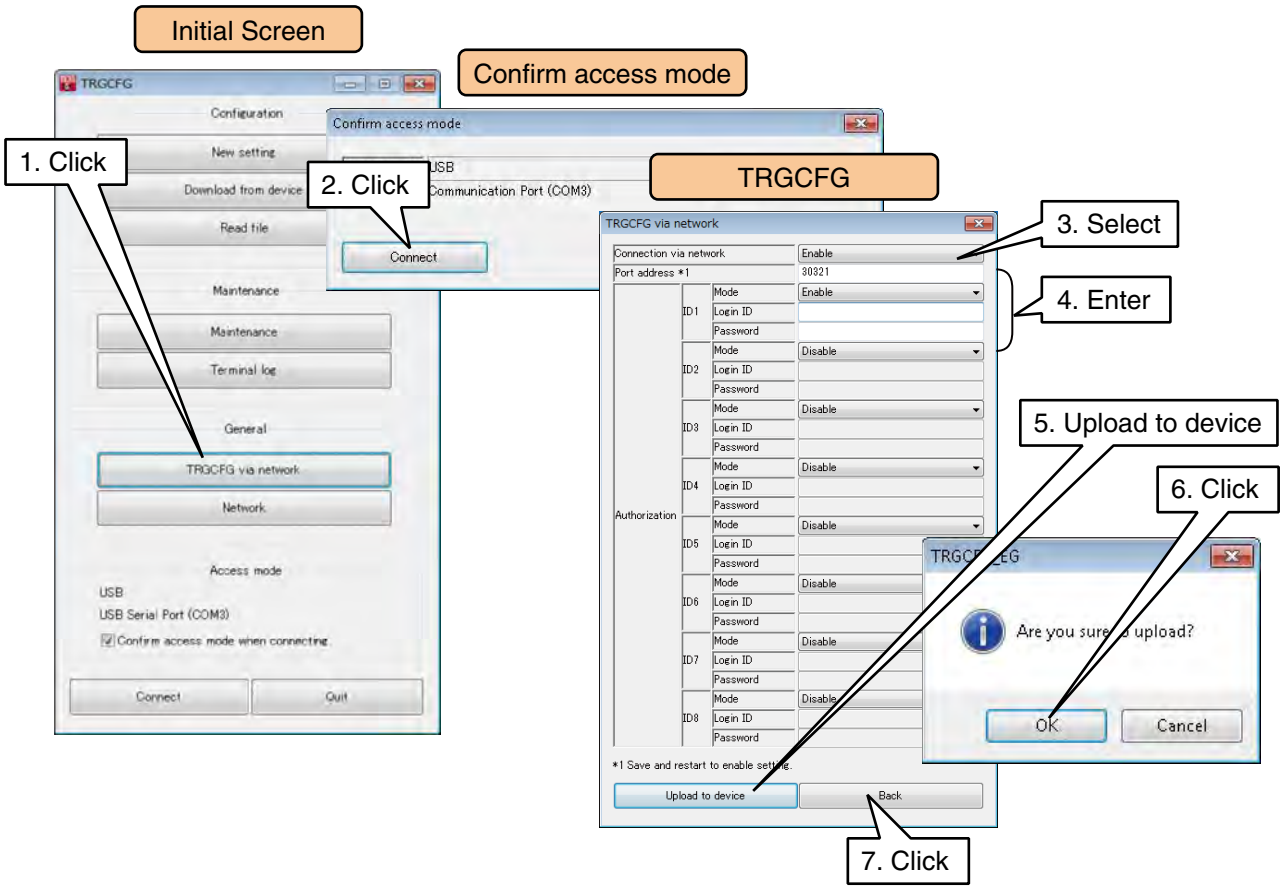
Parameter	Description	Default value
Connection via a network	Set as [Enable].	Disable
Port address	Set between 0 – 65535.	30321
Mode	When connecting via a network, please set at least 1 ID as [Enable].	ID1 is set as [Enable] The others are set as [Disable].
Login ID	Use less than 16 single byte alphanumeric characters (If there is no entry, leave blank).	admin
Password	Use less than 16 single byte alphanumeric characters (If there is no entry, leave blank).	admin

Note: Up to 8 sets of Login ID/password can be set.

NOTES

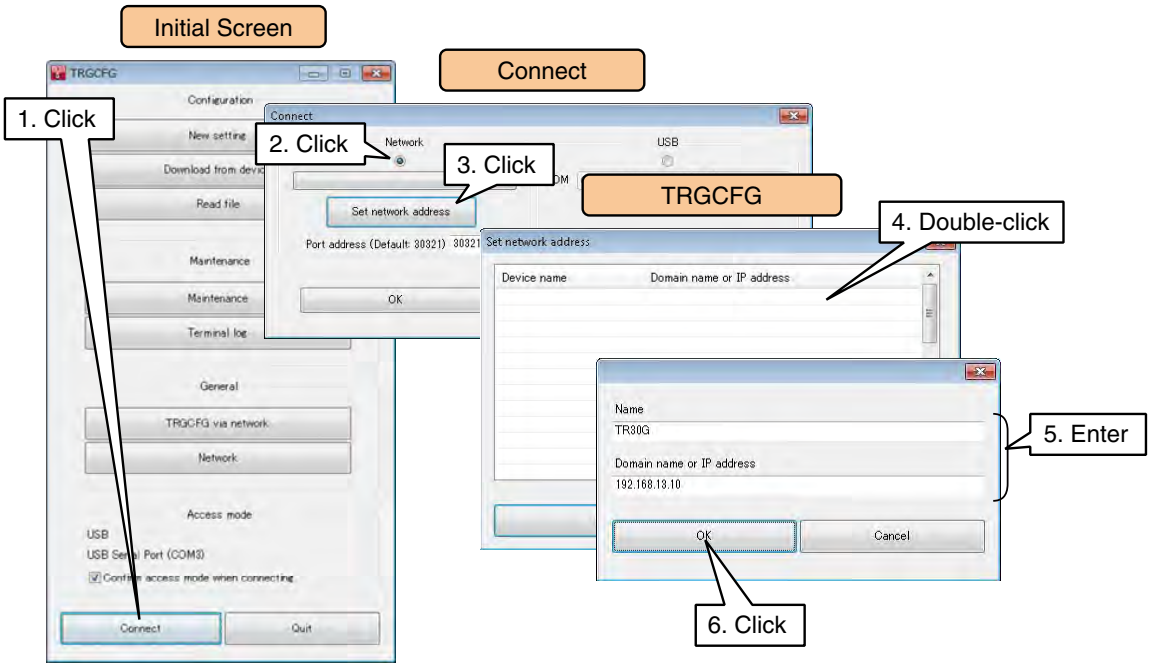
- Be sure to change the default ID and password.
- It is highly recommended to change the password regularly.

(6) Click on the [Upload to device] button to transfer the setting to the device, and then restart to the TR30 to activate the setting.
In TRGCFG, press the [Back] button and return to the [Initial Screen].



(7) Click on the [Connect] button in the [Initial Screen] to display the [Connect] screen. Set the radio button as [Network], and click on the [Set network address] button to display the [Set network address] screen.

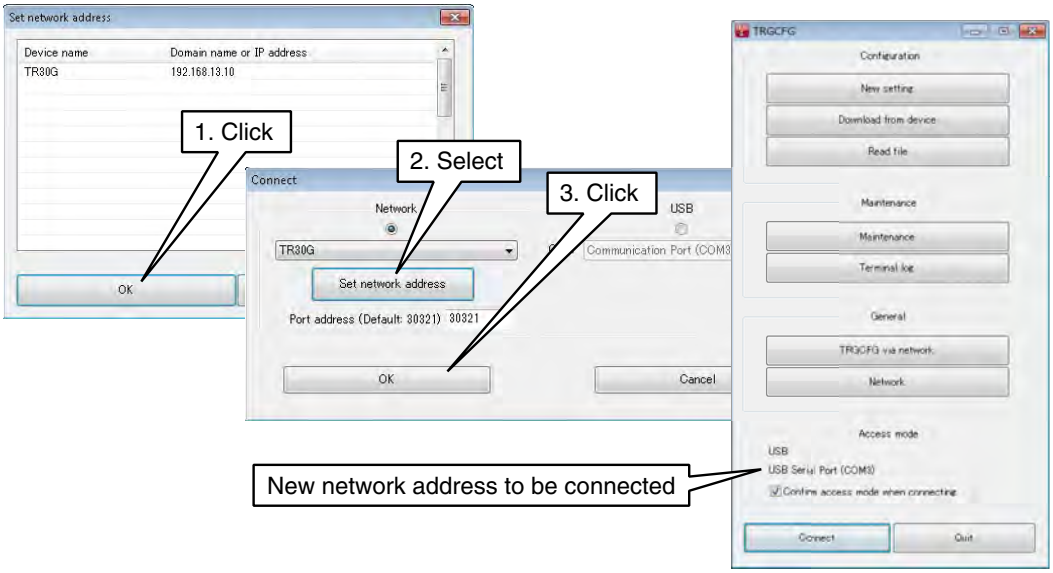
(8) Double-click on the line containing the connection destination to be registered and display the registration dialog. Set the name and connection destination (Domain name or IP address), and click on the [OK] button.
Up to 32 connection destinations can be registered.



(9) After checking that the contents entered in the [Set network address] screen have been registered, click on the [OK] button.

(10) The registered connection destinations are added to the options in the [Connect] screen. Select one.

(11) Click on the [OK] button to return to the initial screen, and check that the connection destinations are displayed.



(12) From now on, use in the same manner as when you are connected using a USB cable. At the time of connection, a dialog is displayed. Enter the Login ID and password set in (5).

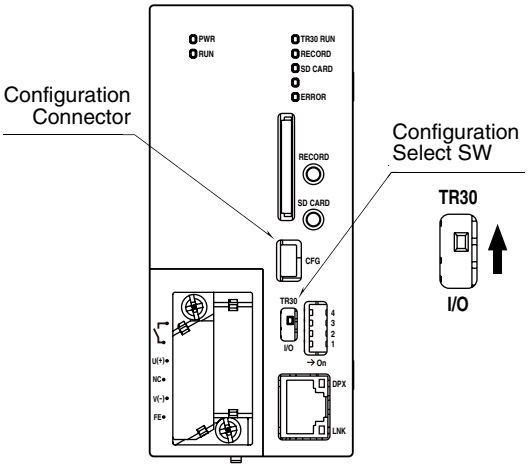
CAUTION

When you are connected via a network, the basic setting (TRGCFG, network) can only be viewed.

3.4 System setting

You can set a system name and description of your choice and display it on the Web screen.

(1) Set the [Configuration Select Switch] of the device as [TR30].



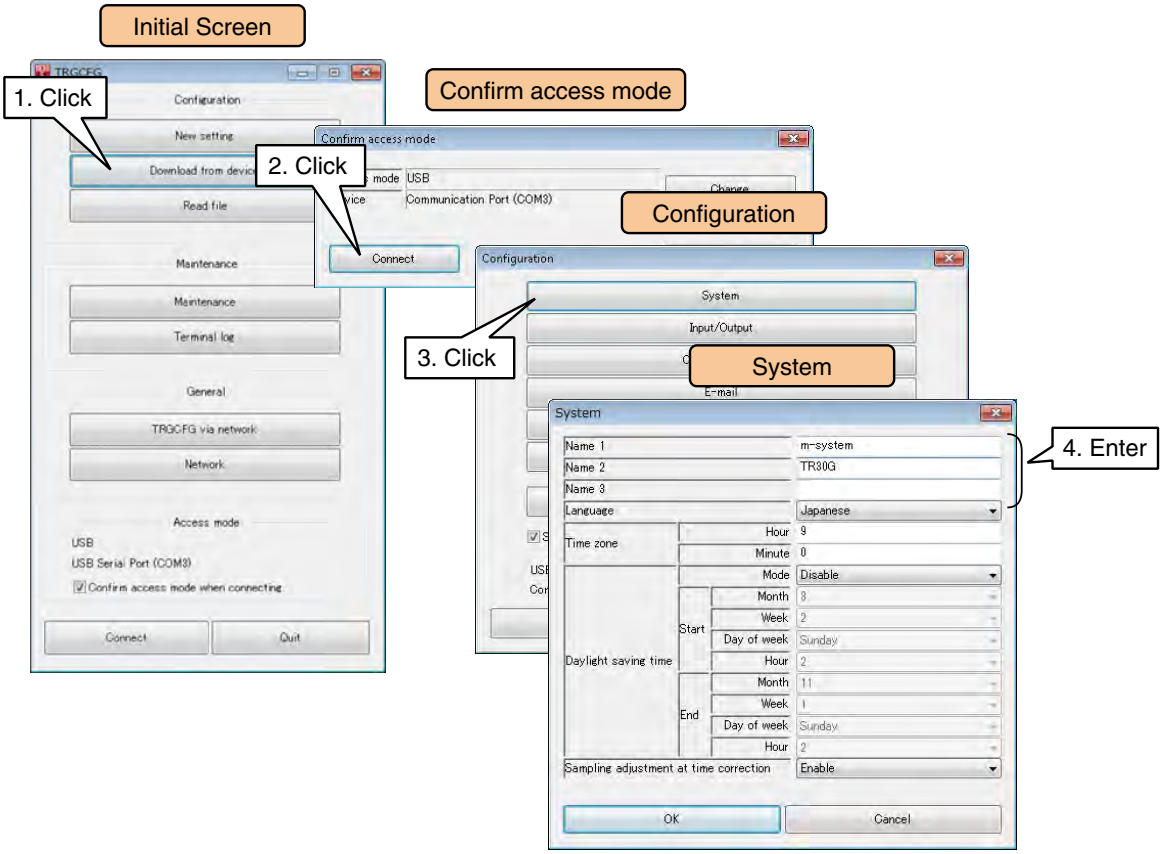
(2) Connect the PC in which TRGCFG is installed with the device, and start up TRGCFG.

(3) Click on the [Download from device] button.

(4) If the [Confirm access mode] is displayed, check that the device is correct, and click on the [Connect] button.

(5) Once the setting information has been loaded from the device, the [Configuration] is displayed.

(6) Click on the [System] button to display the [System] screen.



Refer to the following and configure the required setting such as the name.

Name

Set the Name (1, 2, 3) using less than 32 characters.

Language

Select the language to be used on the Web screen as Japanese or English.

Time zone

Set the time zone in Hours: (-12 to 13) and Minutes: (0 to 59)
JST is [+09: 00].

Daylight saving time

When using daylight saving time, set the mode as [Enable].
Set the starting and ending month, week, day of the week and time.

Sampling adjustment at time correction

When the time has been corrected during storing, time correction can be equalized to constant time so that continuous time is obtained. To validate equalization, set Sampling adjustment at time correction as [Enable]. Time correction when Sampling adjustment at time correction is set as [Enable] is as follows.

• Correction within 0 to -10 seconds
Sampling period is made longer until corrected current time catches up storing time. After catching up, sampling period returns to normal.

• Correction within 0 to 10 seconds
Insufficient sampling number of data is complemented. Also, sampling period is made shorter until storing time catches up corrected current time. After catching up, sampling period returns to normal.

• Other than above
Updated immediately.

NOTES

When time correction is carried out again during equalization, operation is as follows:

Sampling adjustment is maintained when the difference between current time after correction and current time before correction is within 10 seconds and the difference between current time after correction and storing time is within 10 seconds.

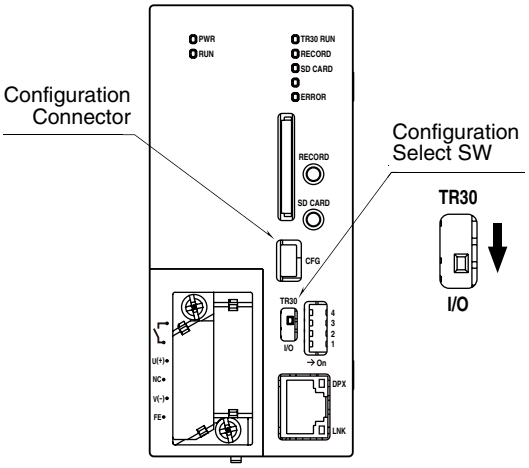
Updated immediately other than above.

(7) To activate the setting, please return to the [Configuration] and click on the [Upload to device] button.

3.5 Built-in I/O module setting

Next, please set each of built-in modules. Please use R30CFG for setting.

(1) Set the [Configuration Select Switch] of the device as [I/O].



(2) Connect the PC in which R30CFG is installed with the device using a USB cable.

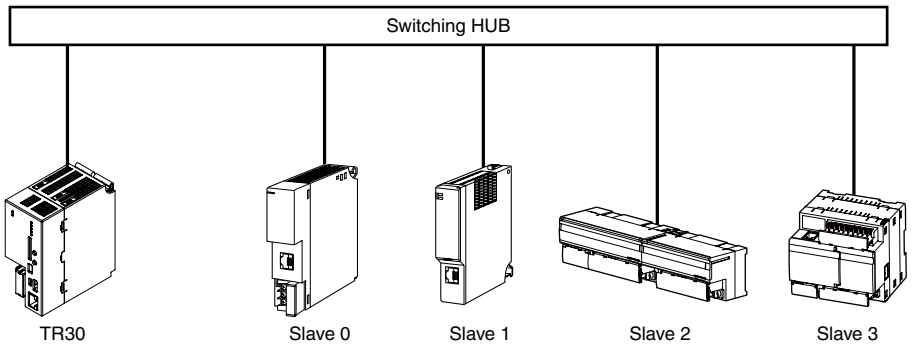
(3) Please refer to the [R30CFG User Manual] and configure setting such as the I/O range, etc.

CAUTION

The I/O modules cannot be set via a network.

3.6 Remote I/O connection setting

Using the Modbus/TCP master function of the TR30, I/O can be expanded using remote I/O nodes with a Modbus/TCP slave function.



A maximum of 12 remote I/O nodes can be connected to 1 device. Please set different IP addresses which do not overlap with the address of the TR30 for the remote I/O (Slave 0 to Slave 11).

■ Remote I/O nodes which can be connected

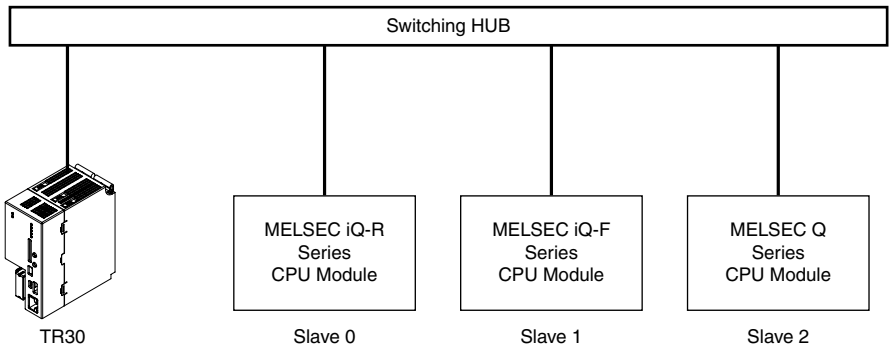
- R3-NE1
- R5-NE1
- R6-NE1
- R6-NE2
- TR3EX
- R7E
- R9EWTU
- 72EM2-M4
- GR8-EM
- DL8
- IT Series
- 73VR Series

NOTES

- Please refer to the Users Manual of each product for the remote I/O setting.
- When connecting to the TR30 via WAN, it is strongly recommended to use VPN in terms of security.

3.7 SLMP device connection setting

Using the SLMP client function of the TR30, I/O can be expanded using SLMP devices.



At the maximum of 12 SLMP devices can be connected to single TR30 device. Please set different IP addresses which do not overlap with the address of the TR30 for the SLMP device (Slave 0 to Slave 11).

■SLMP-compatible devices that can be connected to the TR30

- MELSEC iQ-R Series (Mitsubishi Electric)
- MELSEC iQ-F Series (Mitsubishi Electric)
- MELSEC Q Series (Mitsubishi Electric)

■Tested and verified SLMP-compatible CPU modules

- R04CPU
- FX5U-32M
- Q03UDECPU

■Connecting CPU modules for SLMP

The TR30 is connected to SLMP devices by TCP/IP over the Ethernet.
In order that the TR30 communicates with an SLMP device, register the device on Ethernet Configuration setting window and set as follows:

Communication data code: Binary
Communication method: SLMP
Protocol: TCP
IP address: IP address specified in the I/O slave setting of the TRGCFG
Port No.: Port No. specified in the I/O slave setting of the TRGCFG

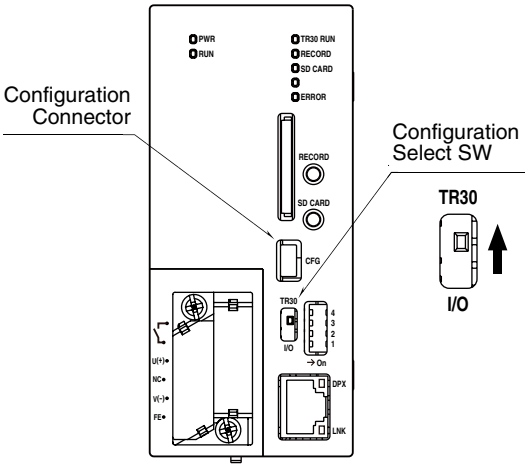
NOTES

- Please refer to the Users Manual of each product for the SLMP setting.
- When connecting to the TR30 via WAN, it is strongly recommended to use VPN in terms of security.

3.8 I/O setting

Next, please configure the I/O setting. Use TRGCFG to configure the setting.

(1) Set the [Configuration Select Switch] of the device as [TR30].



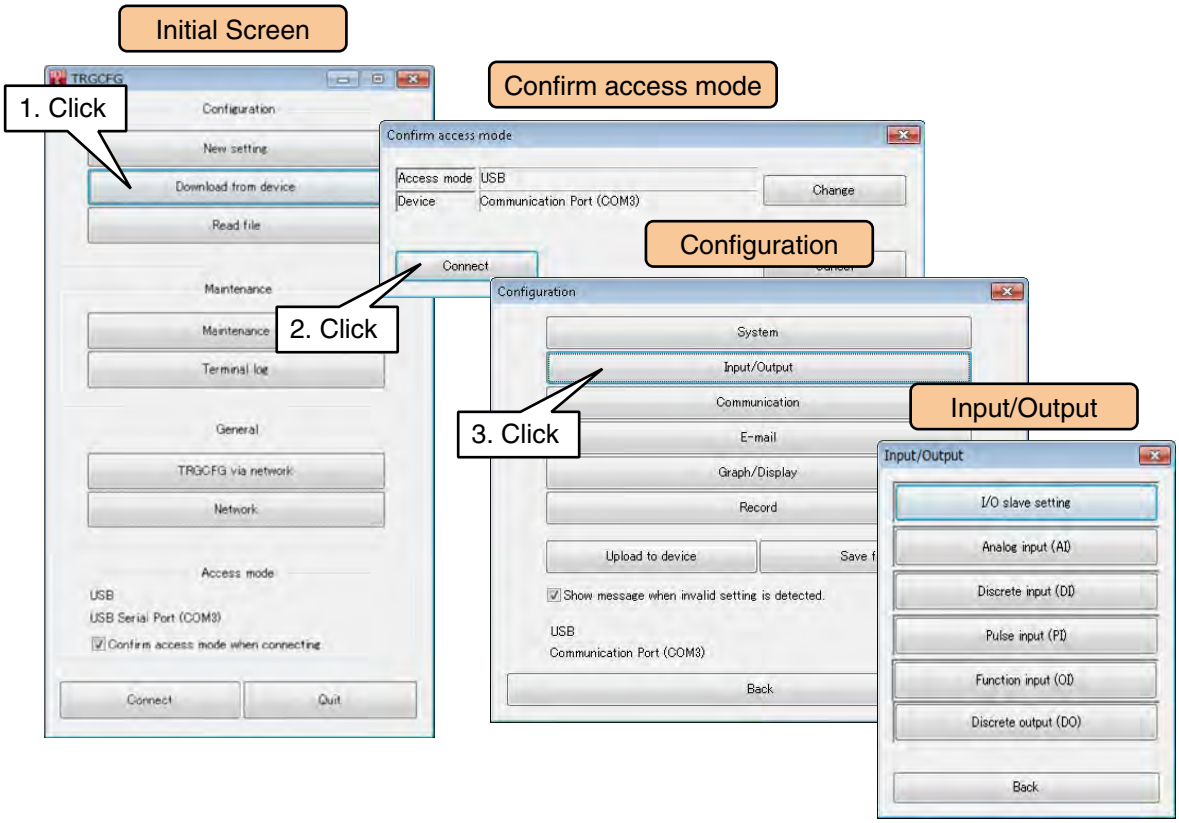
(2) Connect the PC in which TRGCFG is installed with the device, and start up TRGCFG.

(3) Click on the [Download from device] button.

(4) If the [Confirm access mode] is displayed, check that the device is correct, and click on the [Connect] button.

(5) After the setting information is downloaded from the device, the [Configuration] is displayed.

(6) Click on the [Input/Output] button. The [Input/Output] screen is displayed.



NOTES

The parameters for which the engineering unit value is set in TRGCFG can be set between ±10,000,000,000.

The maximum number of digits that can be entered after the decimal point equals the number of digits which is displayed on the screen.

For example, since the scale 0% for the analog input has an initial value of 0.000, when [123.4567890] is entered, it is rounded off to 3 digits after the decimal point to match the initial value 0.000, and therefore becomes [123.457]. (The 4th digit after the decimal point is rounded off)
When the exponent notation is specified, the mantissa is rounded off to 3 digits after the decimal point, and therefore the value is described as [1.235 e +2].

CAUTION

The number of usable channels and pens depends upon the storing rate. Refer to [3.10 Recording method setting] for the limitations.

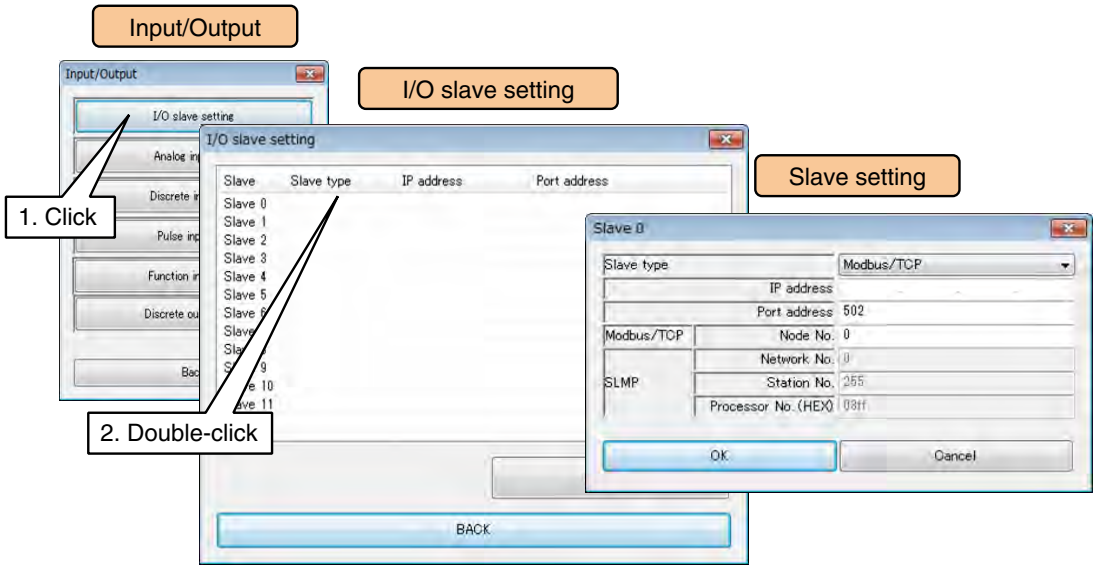
3.8.1 I/O slave setting

Modbus/TCP remote I/O and SLMP devices that are used to communicate with the TR30 must be identified with each IP address and relevant settings. The Pause period and Timeout setting are common to all slave devices.

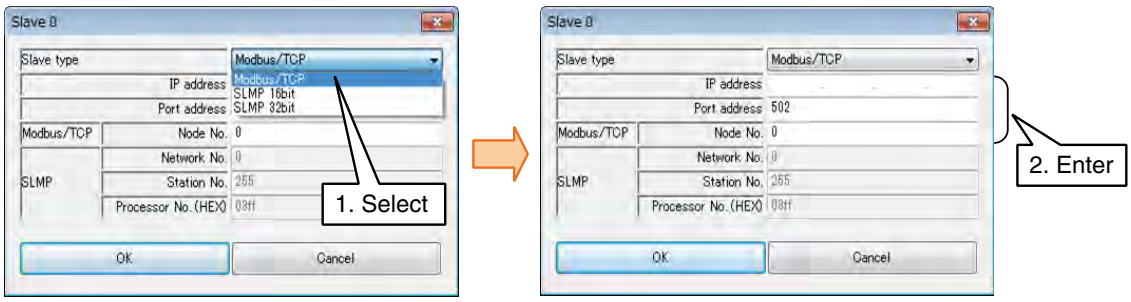
Assignment of remote I/O

(1) In the [Input/Output] screen, click on the [I/O slave setting] button.

(2) Double-click on the row containing the slave to be set to open the slave setting.



(3) Choose [Modbus/TCP]. Enter IP address and other required parameters for the remote I/O device selected in [3.6 Remote I/O connection setting]. Click on the [OK] button and temporarily store the setting.



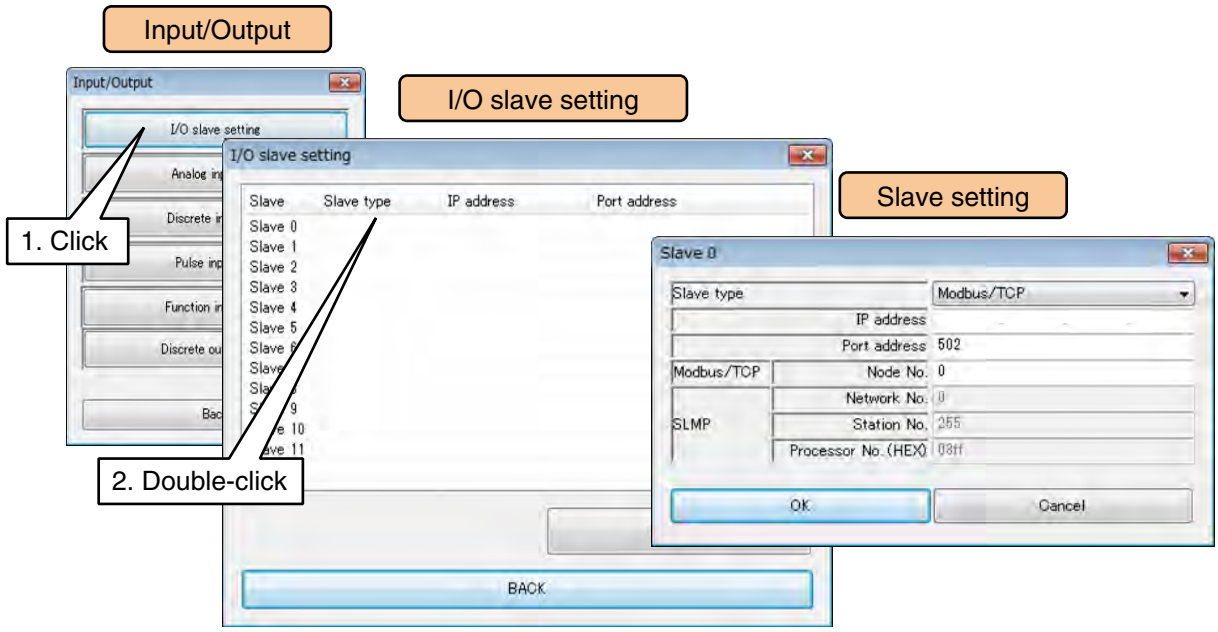
Parameter	Description
IP address	Set an IP address.
Port address	Set a Port address.
Node No.	Set Node No. of the remote I/O device.

NOTES

To register a remote I/O which is connected to the 72EM2-M4 through Modbus-RTU (RS-485), set the IP address of 72EM2-M4 in the [IP address], and the Modbus-RTU node number in the [Node No.]. The maximum number of connections is limited by the number of slaves specified in Modbus/TCP master (I/O slave setting) screen.
The same principle is applied to other gateways such as model GR8-EM.

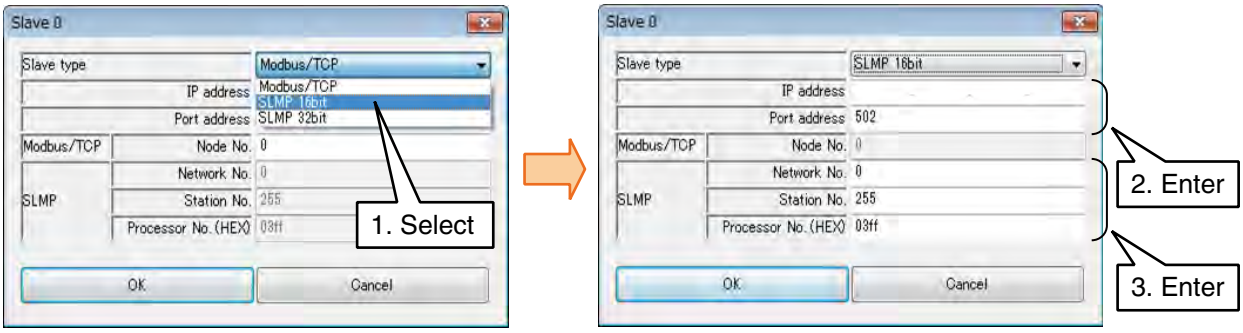
Assignment of SLMP device

(1) In the [Input/Output] screen, click on the [I/O slave setting] button.



(2) Double-click on the row containing the slave to be set to open the slave setting.

(3) Choose [SLMP ...]. Enter IP address and other required parameters for the SLMP device selected in [3.7 SLMP device connection setting]. Click on the [OK] button and temporarily store the setting.

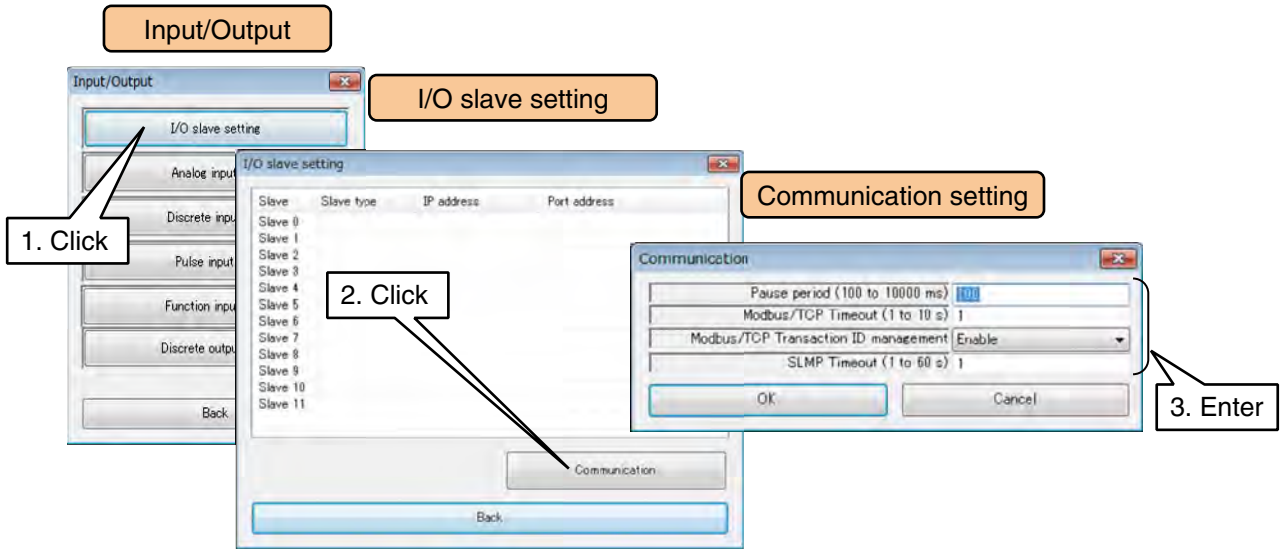


Parameter	Description
IP address	Set an IP address.
Port address	Set a Port address.
Network No.	Set Network No. of the SLMP device.
Station No.	Set Station No. of the SLMP device
Processor No. (HEX)	Set processor No. of the SLMP device.

3.8.2 Communication Setting

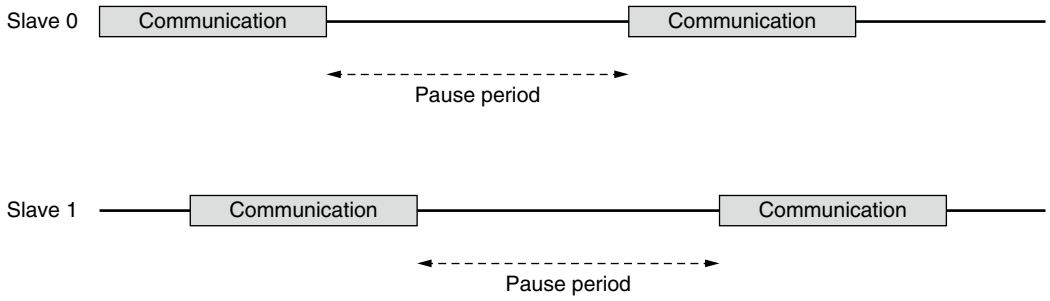
(1) In the [Input/Output] screen, click on the [I/O slave setting] button.

(2) Click on the [Communication] to display the Communication setting.



• Pause period

Considering the communication pertaining to all the registered slaves and all the channels as one batch, set the time from one communication batch to the next.
This is roughly the same value as the sampling interval.



• Modbus/TCP Timeout

Please set the wait time for a response after a query has been sent.

• Modbus/TCP Transaction ID management

Unintended messages are skipped by the management of Modbus message IDs.

• SLMP Timeout

Please set the wait time for a response after a query has been sent.

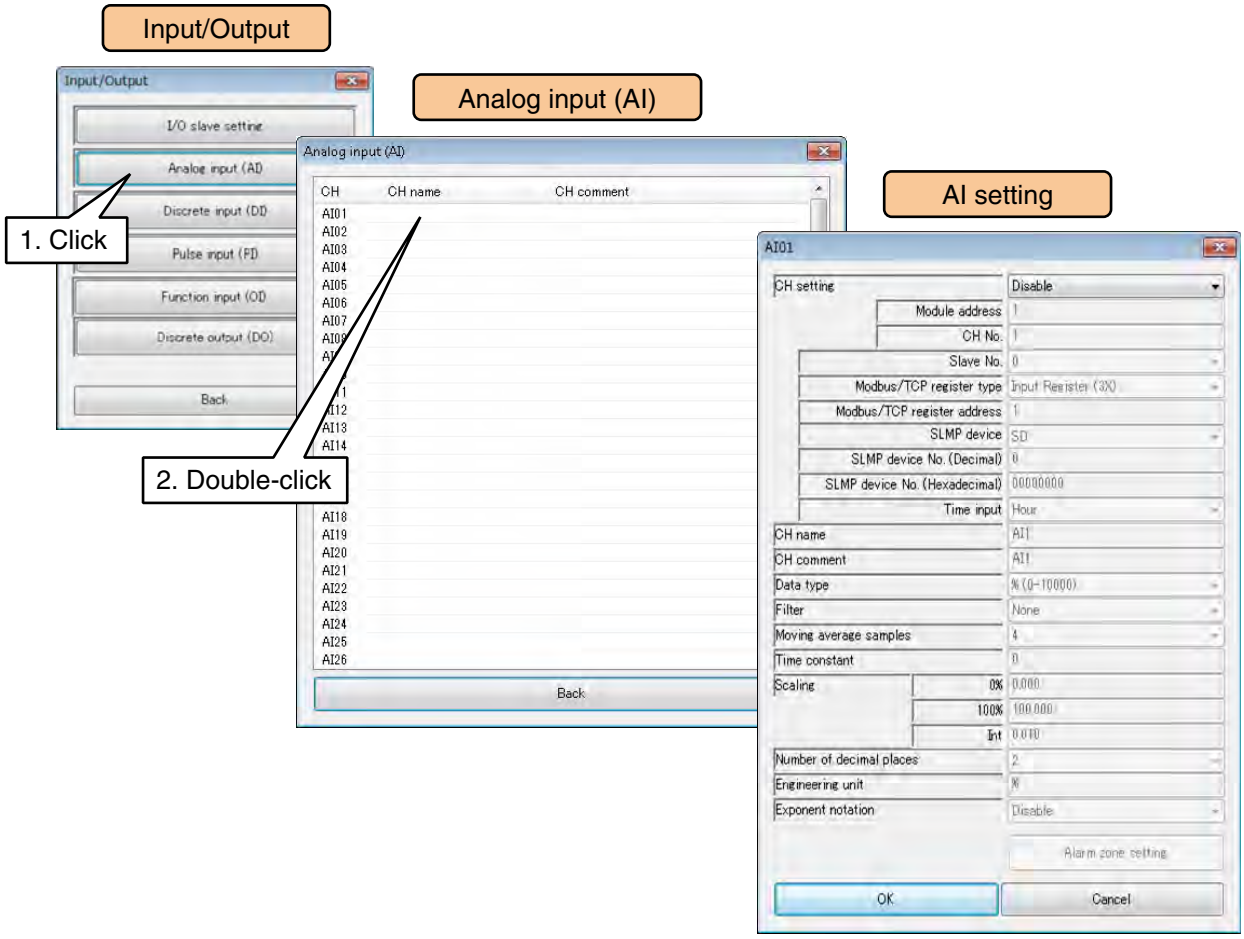
3.8.3 Analog input (AI)

Analog input signals can be monitored for a maximum of 64 points (AI1 to AI64).
Please assign the analog input from the connected I/O module or remote I/O to the TR30 by following the procedure given below.

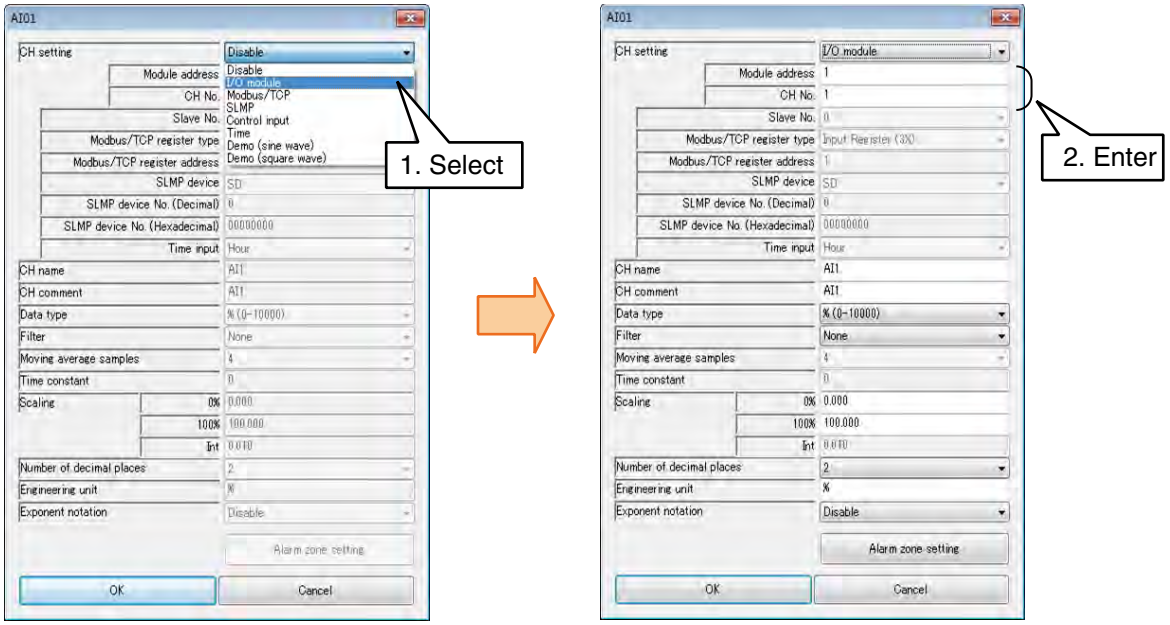
Assignment of the I/O module to AI

(1) Click on the [Analog input (AI)] button on the [Input/Output] screen to display the [Analog input (AI)] screen.

(2) Double-click on the row containing the AI to be set to display the [AI setting].



(3) Set the [CH setting] as [I/O module] to enable the [Module address] and [CH No.]. Please enter the CH value to be assigned.



In case of analog input, up to 4 ch can be assigned per module.

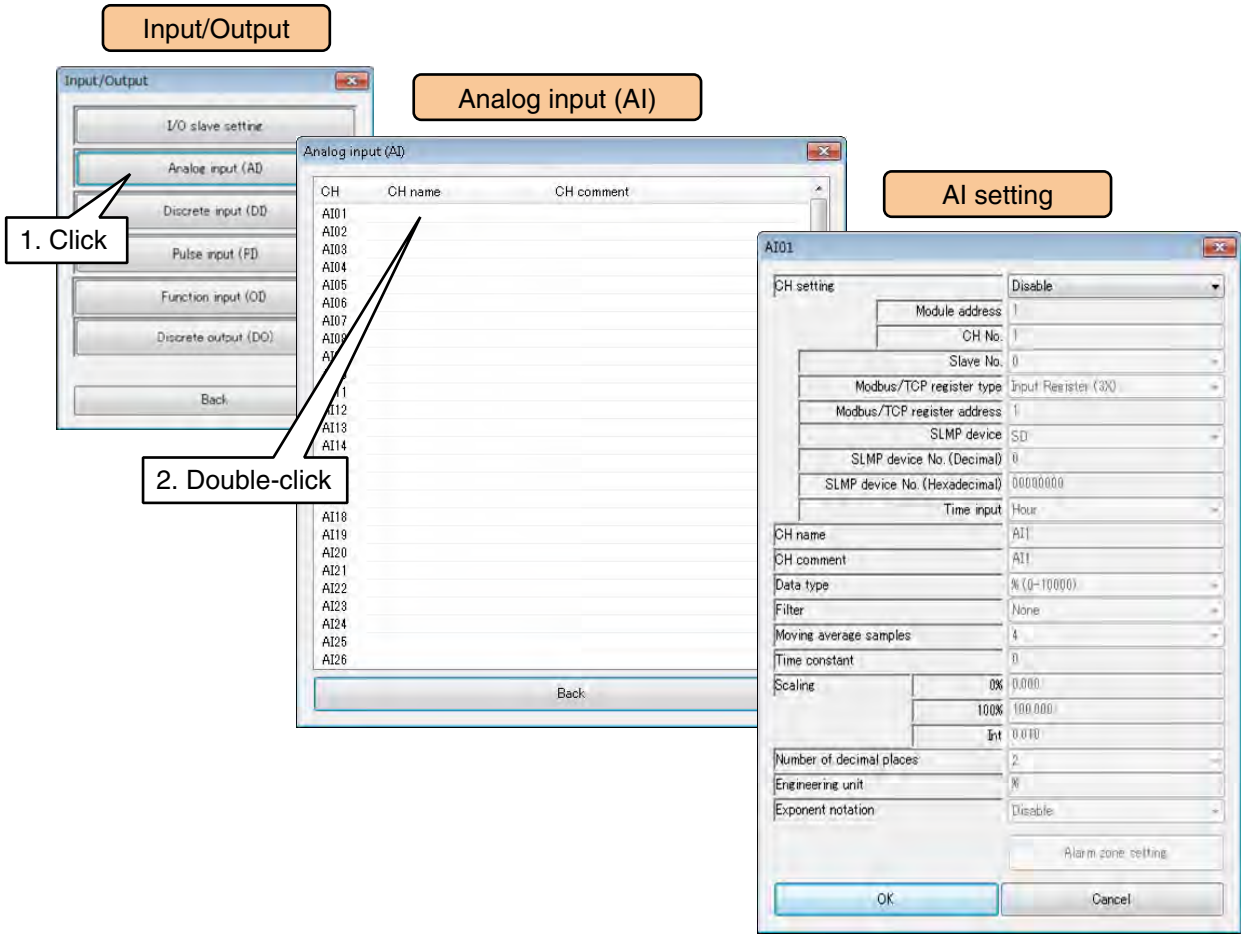
Module category	Compatible module	CH No.	Module address	CH No. in the module
2 ch module	R30US2 R30SV2	CH1	N	1
		CH2	N	2
4 ch module	R30SV4 R30SVF4 R30TS4 R30RS4 R30MS4 R30US4	CH1	N	1
		CH2	N	2
		CH3	N	3
		CH4	N	4

N: Module address

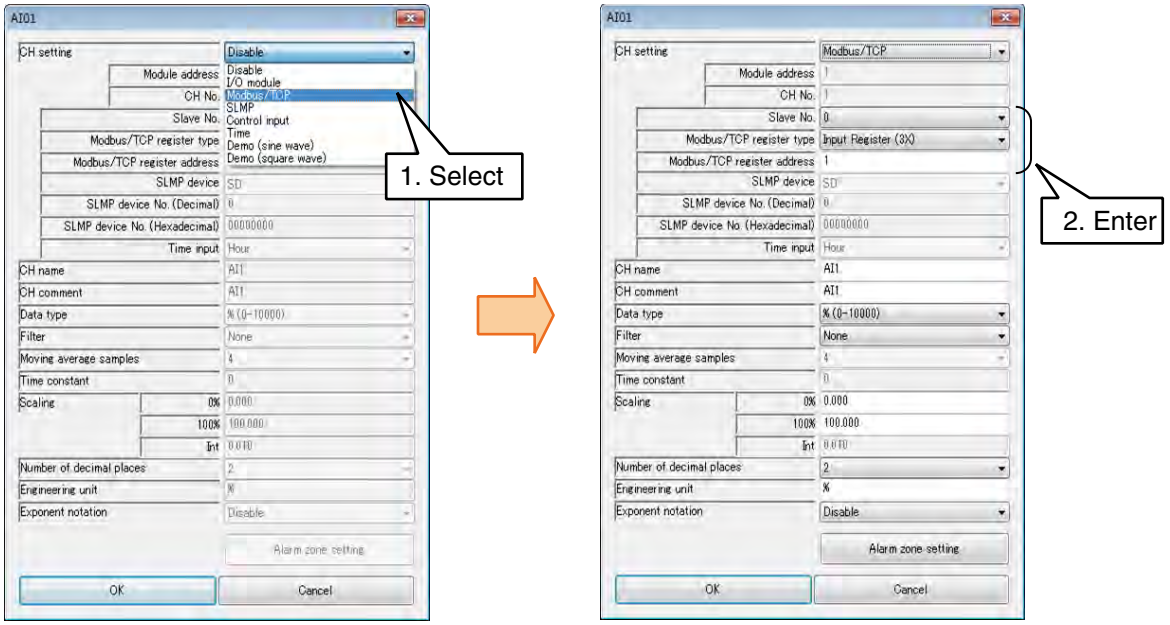
Assignment of remote I/O to AI

(1) Go first through the I/O slave setting for the remote I/O device.
➔ 3.8.1 I/O slave setting

(2) Display the [AI setting] just as in case of the I/O module.



(3) Set the [CH setting] as [Modbus/TCP], and enter the [Modbus/TCP slave No.], [Modbus/TCP register type] and [Modbus/TCP register address].

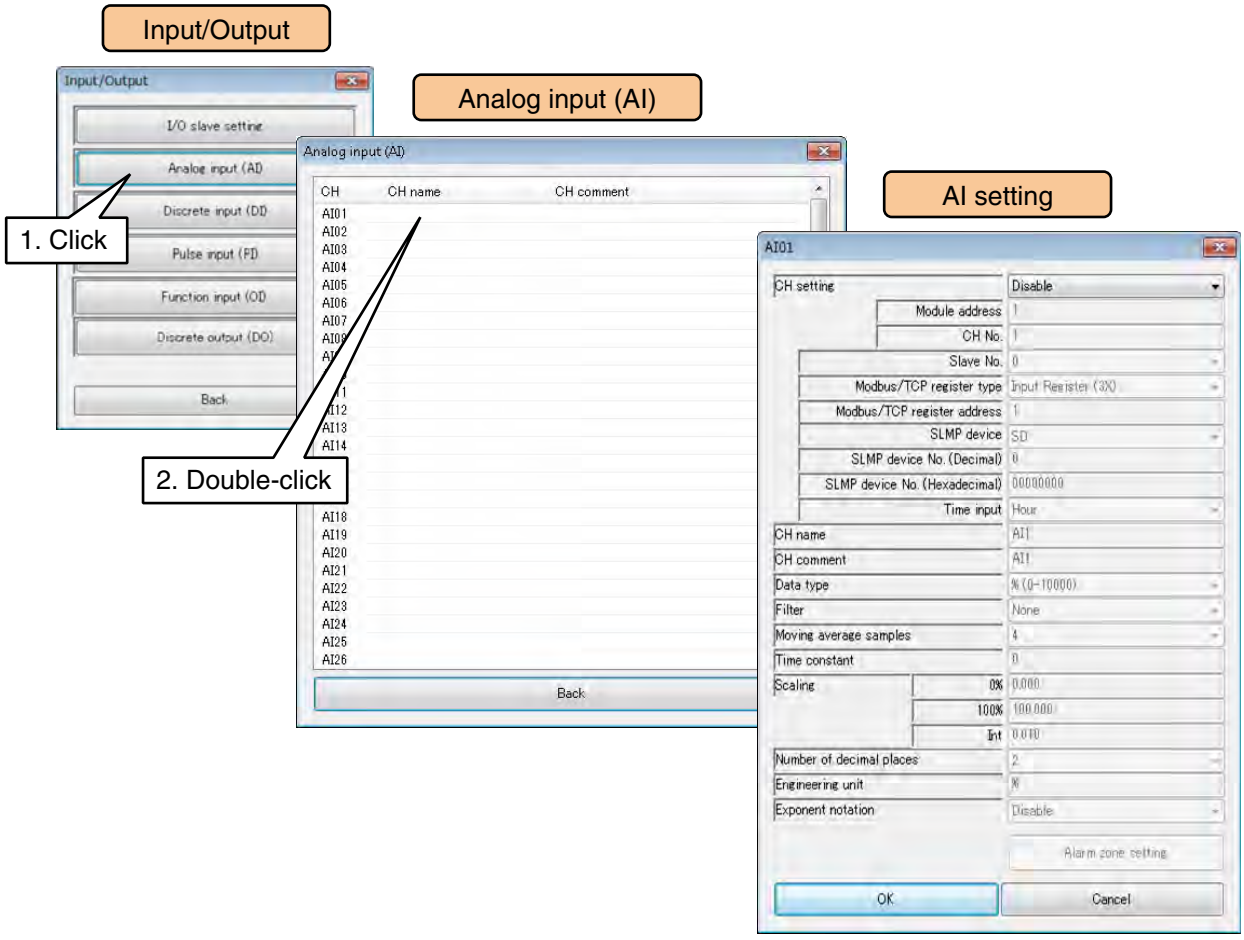


Parameter	Description
Modbus/TCP slave No.	Enter the slave No. (0 to 11) set in (1).
Modbus/TCP register type	Select from [Input Register (3X)] or [Holding Register (4X)].
Modbus/TCP register address	Set the register address (1 to 65536) in the above register type.

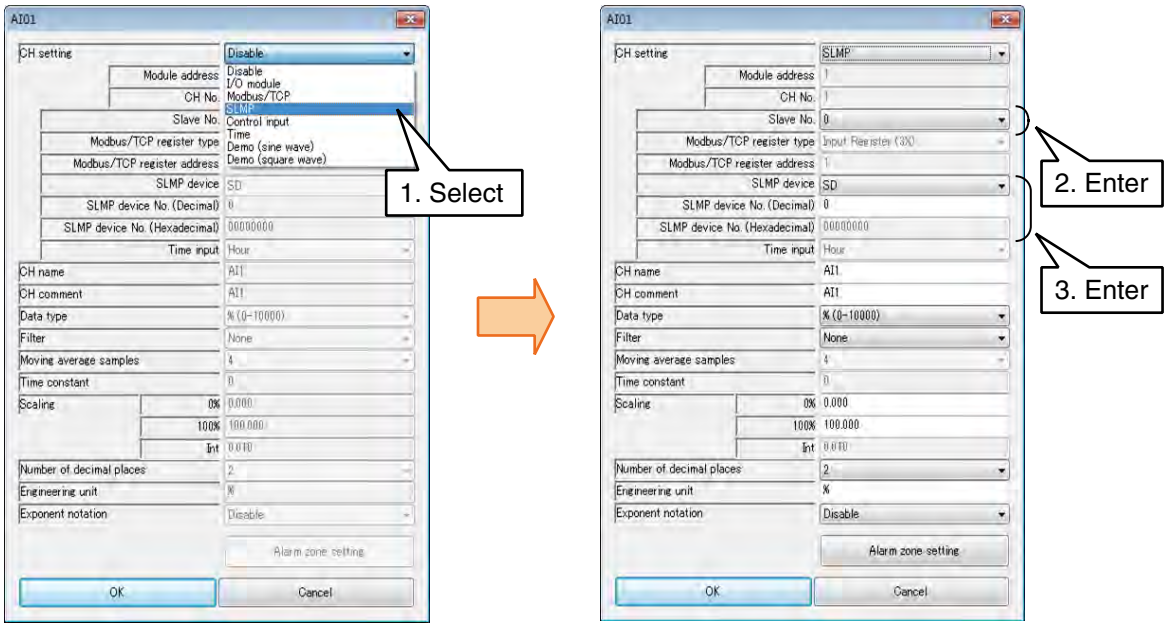
Assignment of SLMP device to AI

(1) Go first through the I/O slave setting for the SLMP device.
➔ 3.8.1 I/O slave setting

(2) Display the [AI setting] just as in case of the I/O module.



(3) Set the [CH setting] as [SLMP], and enter the parameters in the table below.



Parameter	Description
Slave No.	Enter the slave No. (0 to 11) set in (1).
SLMP device	Choose the device code of the SLMP device to be connected.
SLMP device No.	Set the device No. of the SLMP device to be connected.

Assignment of control input to AI

Input values can be specified from remote locations by writing values in the internal registers using the Modbus/TCP slave function.

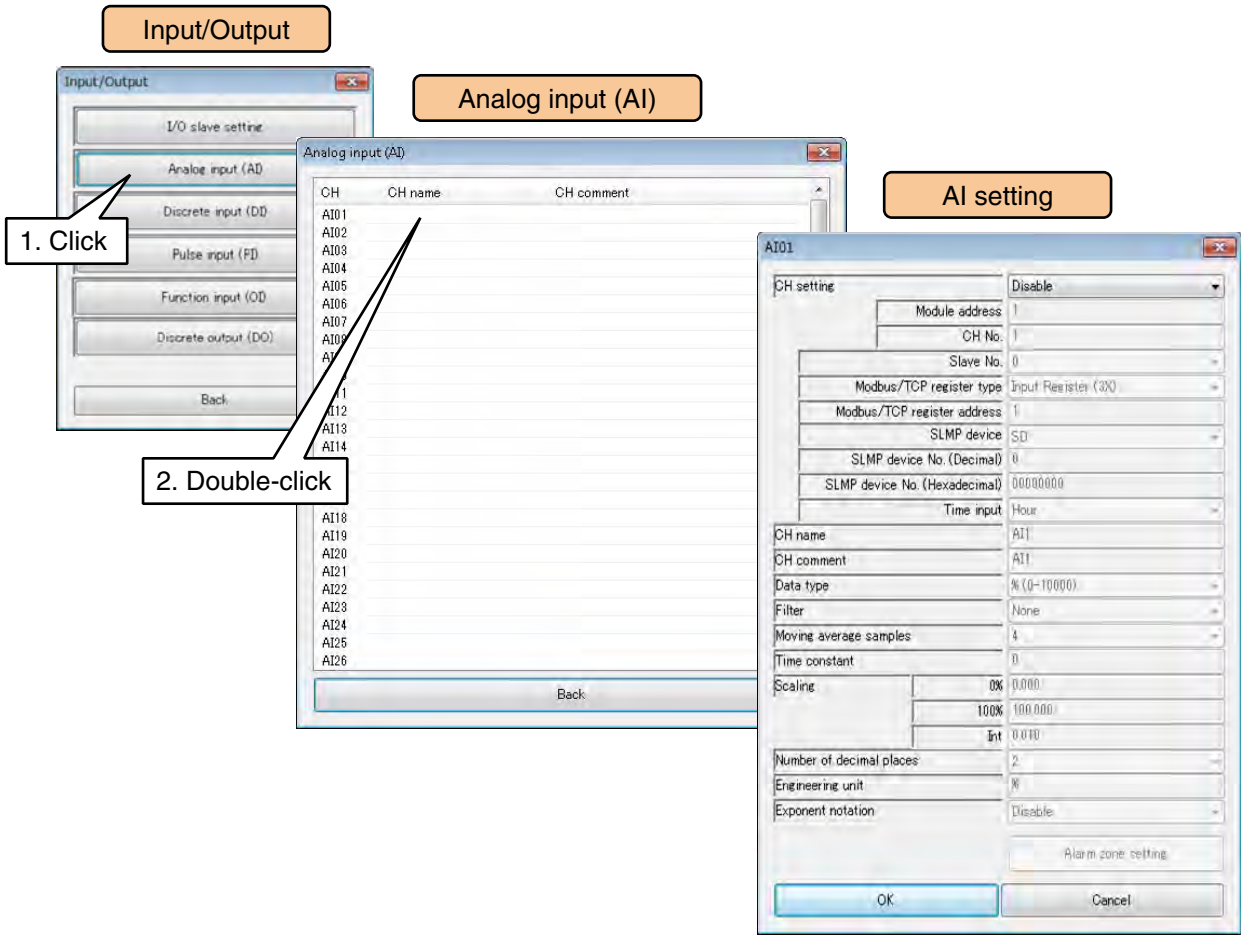
NOTES

Please see [3.11.4 Modbus/TCP slave] and [7.3.7 Modbus/TCP slave] for information on the Modbus/TCP slave function and internal registers.

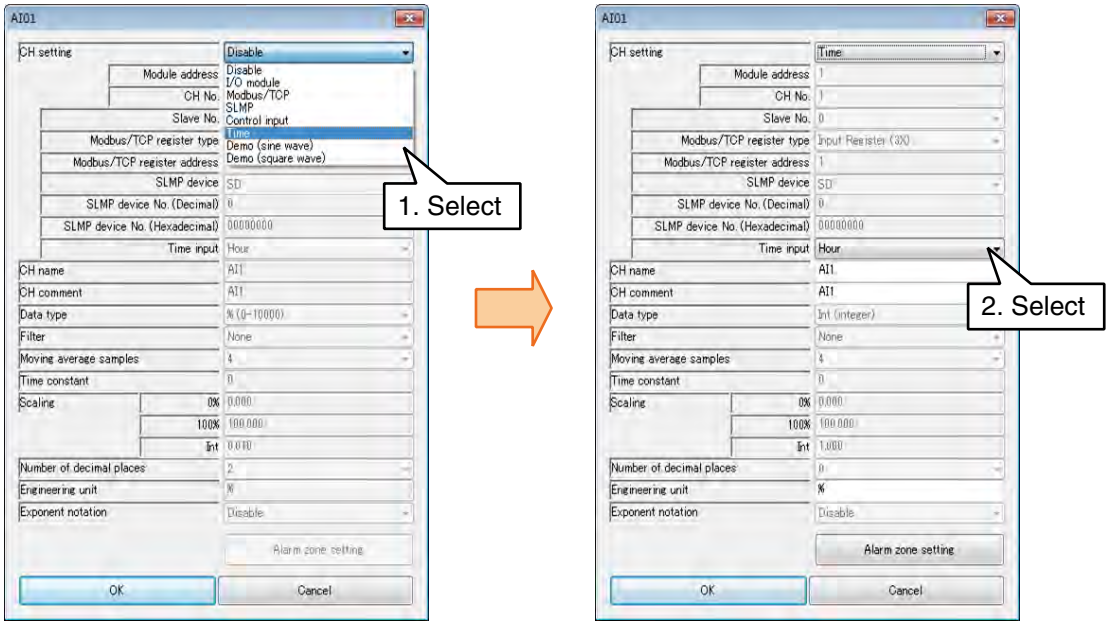
Assignment of time input to AI

The current time consisting of the hour (0 – 23) / minutes (0 – 59) / seconds (0 – 59) can be used as the input value to AI. By setting the zone, the counter (PI) or operation (OI) can be reset in a fixed cycle.

(1) Just as in case of an I/O module, display the [AI setting].

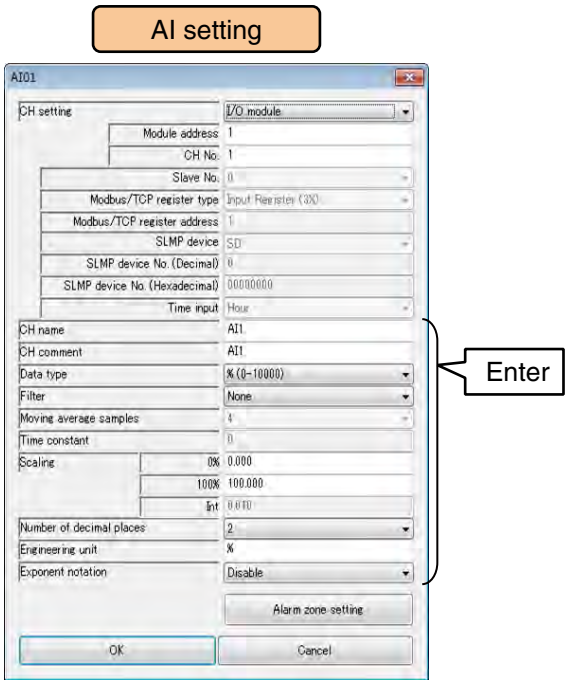


(2) Set the [CH setting] as [Time], and select the item to be used as the input value from [hour / minutes / seconds].



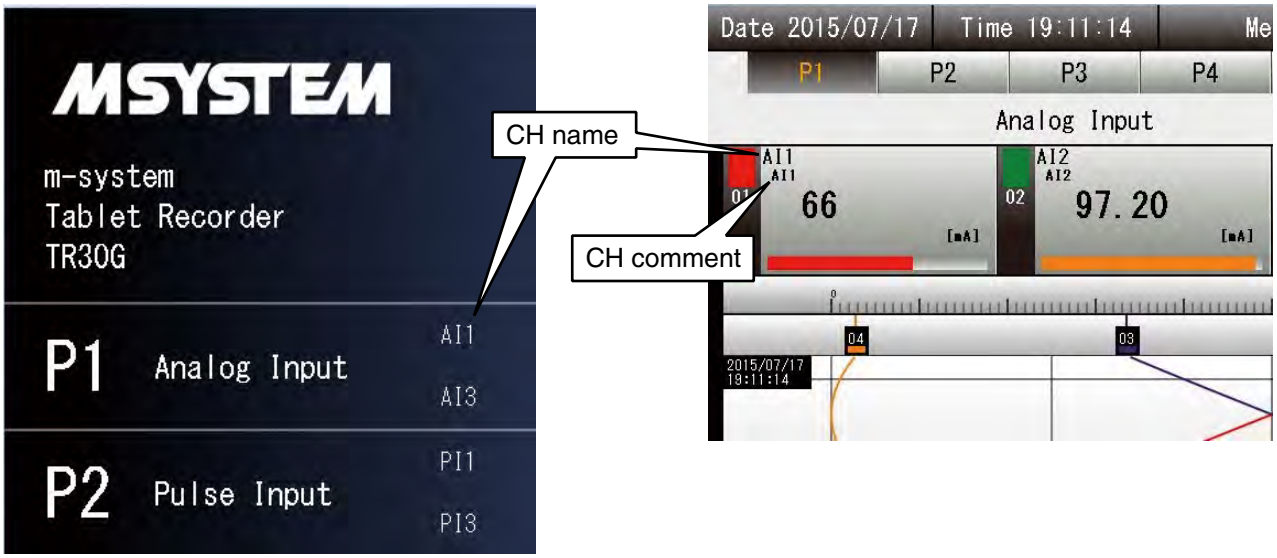
Basic setting (AI)

Once the assignment is complete, configure the following basic setting. Click on the [OK] button to temporarily store the setting.



Parameter	Description
CH name	Set a name for the channel which is less than 16 characters.
CH comment	Set a description for the channel which is less than 16 characters using the tag name, etc.
Data type	Select the data type from the following 2 types. • % %×100 format data (-2000 to 12000) (equivalent to the voltage/current data for remote I/O) • Int Signed 16 bit integer format data (-32768 to 32767) (equivalent to the temperature data for remote I/O) • Uint Unsigned 16 bit integer format data (0 to 65535)
Filter	Set the filter function. Select from None / Moving average / Delay buffer.
Moving average samples	If the filter is set as [Moving average], set the number of such moving averages. You can select from 4/8/16/32/64. For information on the sampling cycle, please see [7.3.3 Storing rate and sampling cycle].
Time constant	If the filter is set as [Delay buffer], set its time constant. Set a numeric value between 0 and 100 for the [Sampling cycle] of the device.
Scaling	• If the data type is [%] Set the actual corresponding values at 0% and 100% respectively as numeric values. • If the data type is [Int] Set the numeric value to be multiplied with the data in order to convert it to its actual value. For example, if the temperature data is the actual value × 10, enter as [0.1].
Number of decimal places	Set the number of digits after the decimal point for the values displayed as numeric values on the Web screen. A value among 0, 1, 2 and 3 can be set.
Engineering unit	Set the engineering unit corresponding to the actual value set in the [Scale]. Can be set as less than 8 characters.
Exponent notation	Choose to use the normalized exponent notation for numeric values on the web browser views. The number of decimal places set in the above is also used in the mantissa.

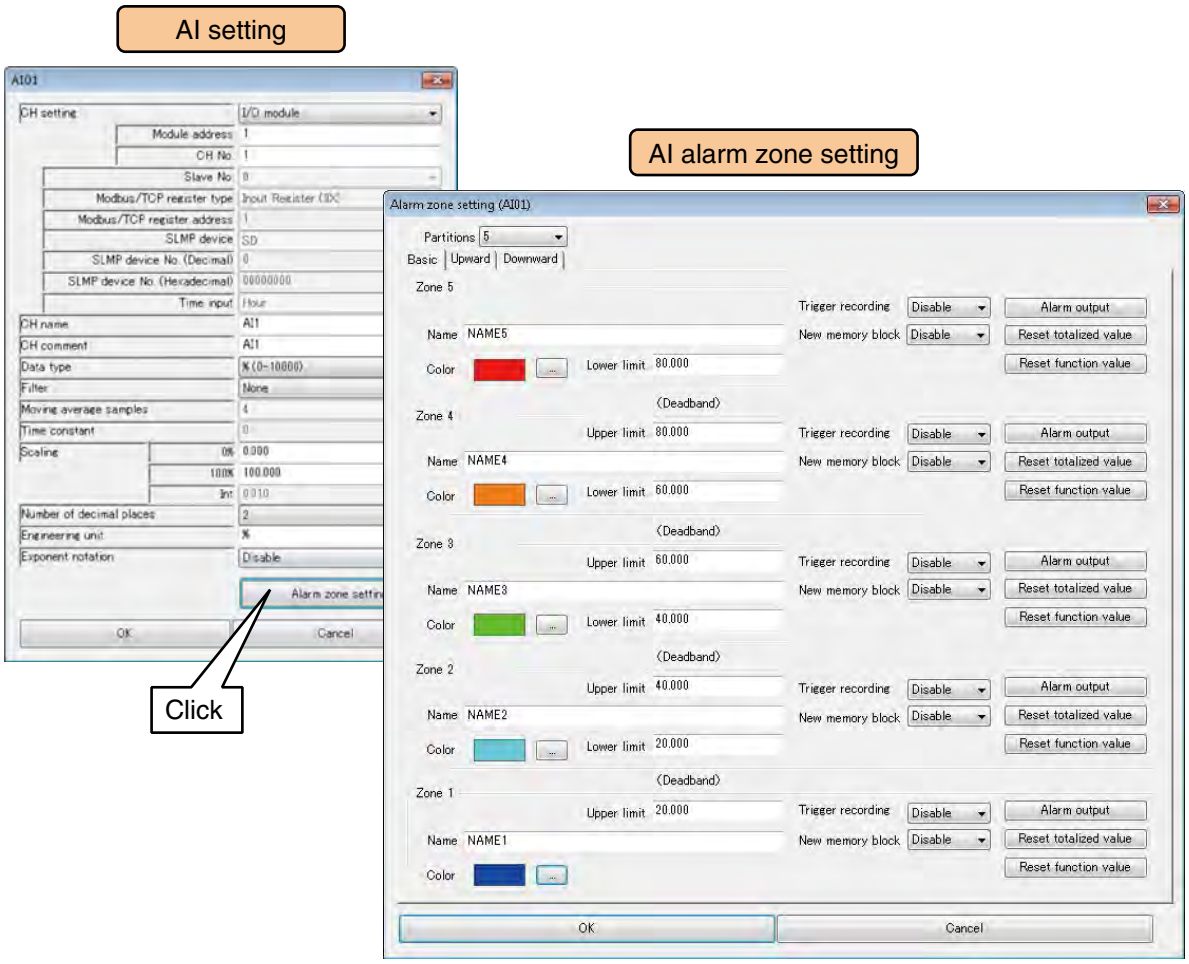
The CH name and CH comment which have been set are displayed in the initial screen or the trend of the Web screen.



Alarm zone setting (AI)

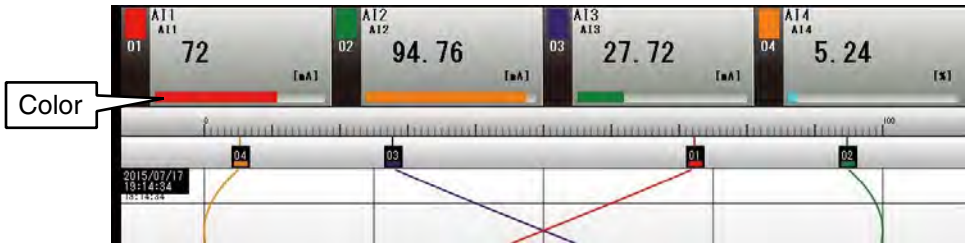
Configure alarm zone setting corresponding to the input values. A maximum of 5 zones can be set, and dead-band can also be set between zones.

(1) Click on the [Alarm zone setting] button in the [AI setting] to display the [Alarm zone setting].



(2) Set various parameters by referring to the table below.

Parameter	Description
Partitions	Set the number of partitions to be used. You can select from: Not to be used / 2 / 3 / 4 / 5.
Name	Set a name which is less than 32 characters for each zone.
Color	Set a color to represent each zone which will be displayed on the Web screen.
Upper limit : : : Lower limit	Set the upper and lower limit value for these zones as actual values. Set the upper limit value > lower limit value. • When the deadband is set When a deadband is set between zone 1 and zone 2, please set the values so that the deadband is between the upper limit value for zone 1 and the lower limit value for zone 2. Set similarly for the other zones as well. • When the deadband is not set When the deadband is not set between zone 1 and zone 2, please set the same value for the upper limit value of zone 1 and the lower limit value of zone 2. Set similarly for the other zones as well.
Trigger recording	Set whether or not to record when there is a change in the input value and it enters a certain zone. You can select from: Disable / Start / Stop.
New memory block	Set whether or not to run a start new memory block when there is a change in the input value and it enters a certain zone. You can select from: Disable / Enable.



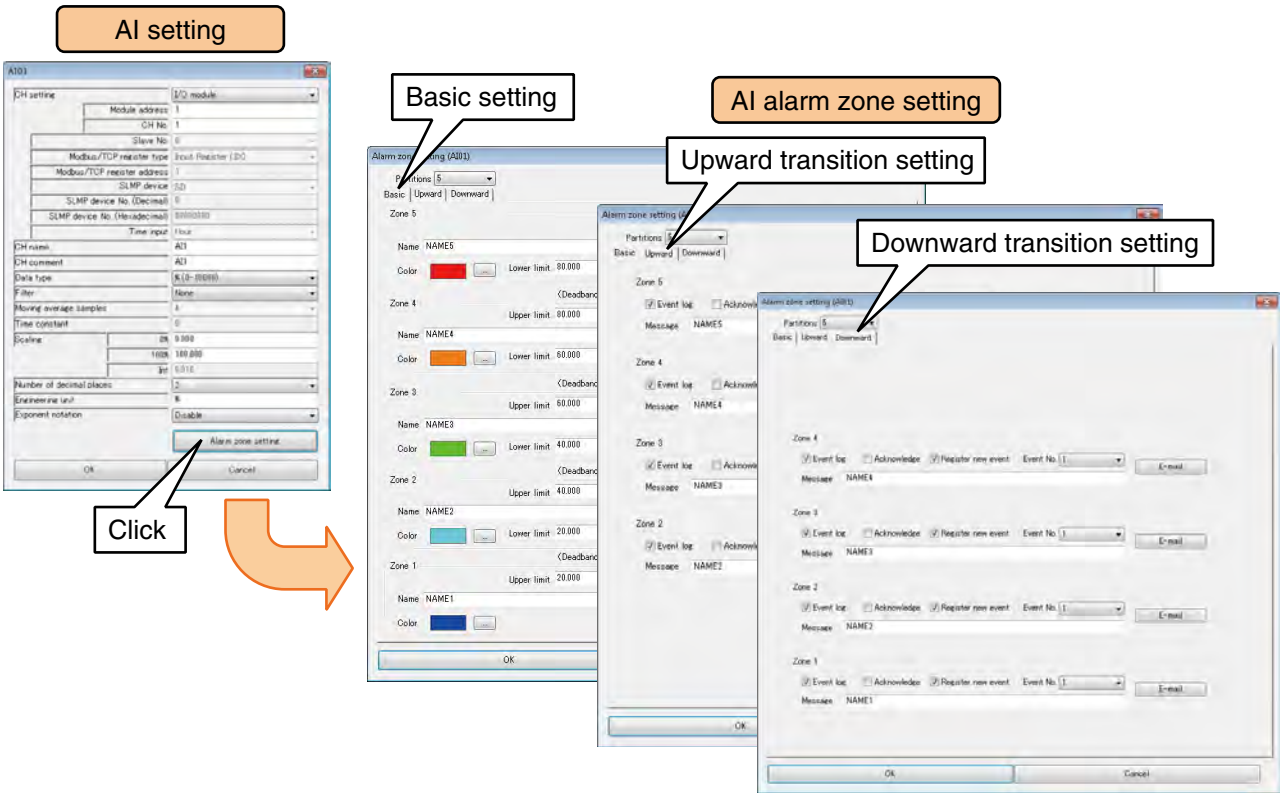
CAUTION

If the new memory block lasts for a short time, data on a memory block which has not been transferred to the SD card may get overwritten. Set the start new memory block interval as a multiple of 10 seconds.

Upward setting / Downward setting (AI)

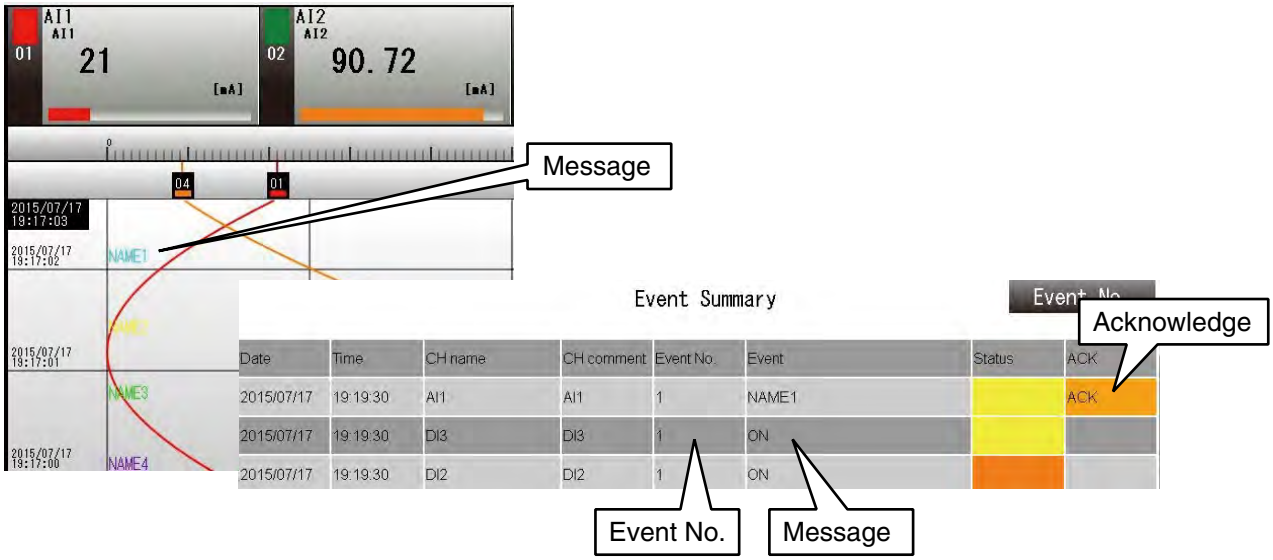
This event occurs when the zone which has been set in the zone setting is changed.

(1) Click on the [Alarm zone setting] button in the [AI setting] to display the [Alarm zone setting]. Click on the tab [Upward] or [Downward].



(2) Set various parameters by referring to the table below. Once the setup is complete, press the [OK] button and temporarily store the setting.

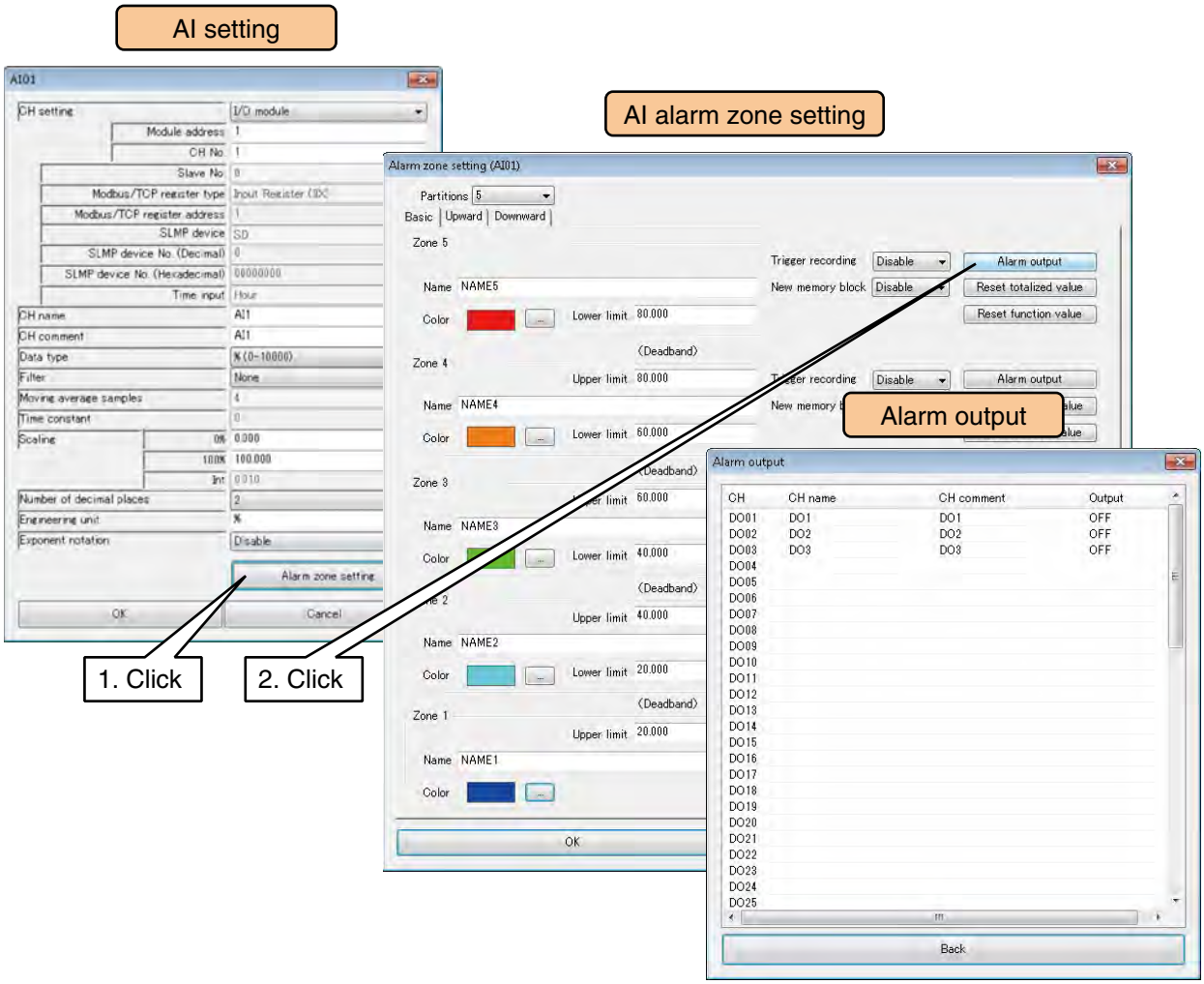
Parameter	Description
Event log	Set whether or not to record an event when there is a change in the input value and it enters a certain zone. To record, put a check in the check box.
Acknowledge	Set whether the event summary/new event needs to be acknowledged or not.
Register new event	Set whether or not to display the input value in the new event screen when there is a change in the input value and it enters a certain zone. To display, put a check in the check box.
Event No.	Set the event number. This number can be used to set a filter in the event summary in the Web screen. (Setting range: 1 to 32)
Message	Set a message which is less than 32 characters to be displayed when an event occurs.
E-mail	Set the mail to be sent when an event occurs.


AI1
AI1
01
21
[mA]
AI2
AI2
02
90.72
[mA]
Message
04
01
2015/07/17
19:17:03
2015/07/17
19:17:02
NAME1
2015/07/17
19:17:01
NAME3
2015/07/17
19:17:00
NAME4
Event Summary
Event No.
Acknowledge
Date
Time
CH name
CH comment
Event No.
Event
Status
ACK
2015/07/17
19:19:30
AI1
AI1
1
NAME1
ACK
2015/07/17
19:19:30
DI3
DI3
1
ON
2015/07/17
19:19:30
DI2
DI2
1
ON
Event No.
Message

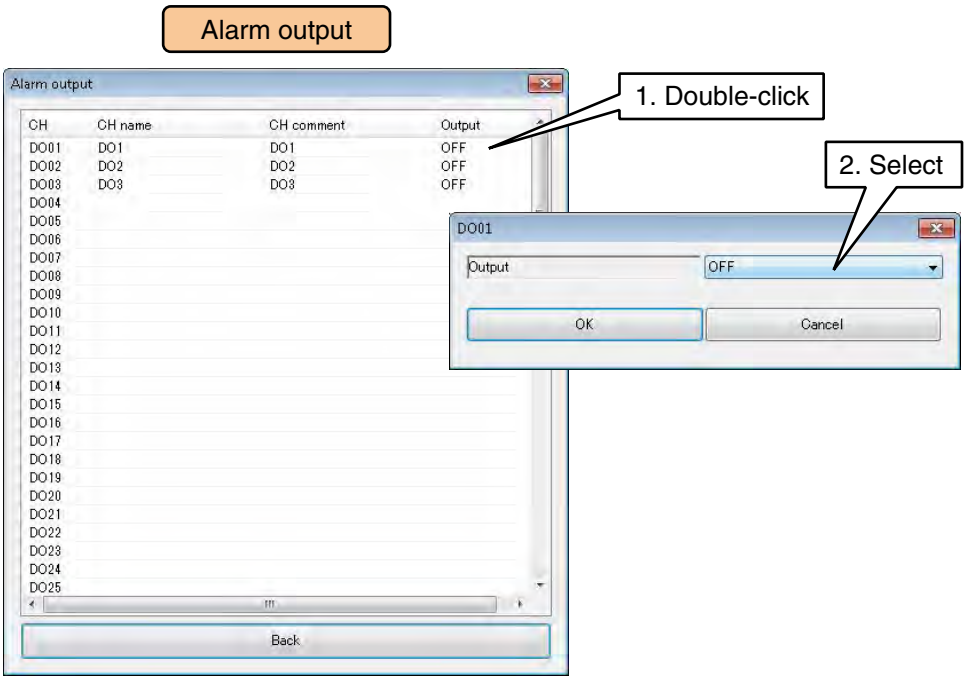
Alarm output (AI)

A specific DO can be turned ON for each zone. The DO channel to be operated needs to be first assigned in [Discrete output (DO)].

(1) Click on the [Alarm zone setting] button in the [AI setting] to display the [Alarm zone setting]. Click on the [Alarm output] button of a specific zone to display the [Alarm output].



(2) Double-click on the DO channel to be operated and set as ON/OFF.



(3) Once the setup is complete, press the [OK] button and temporarily store the setting.

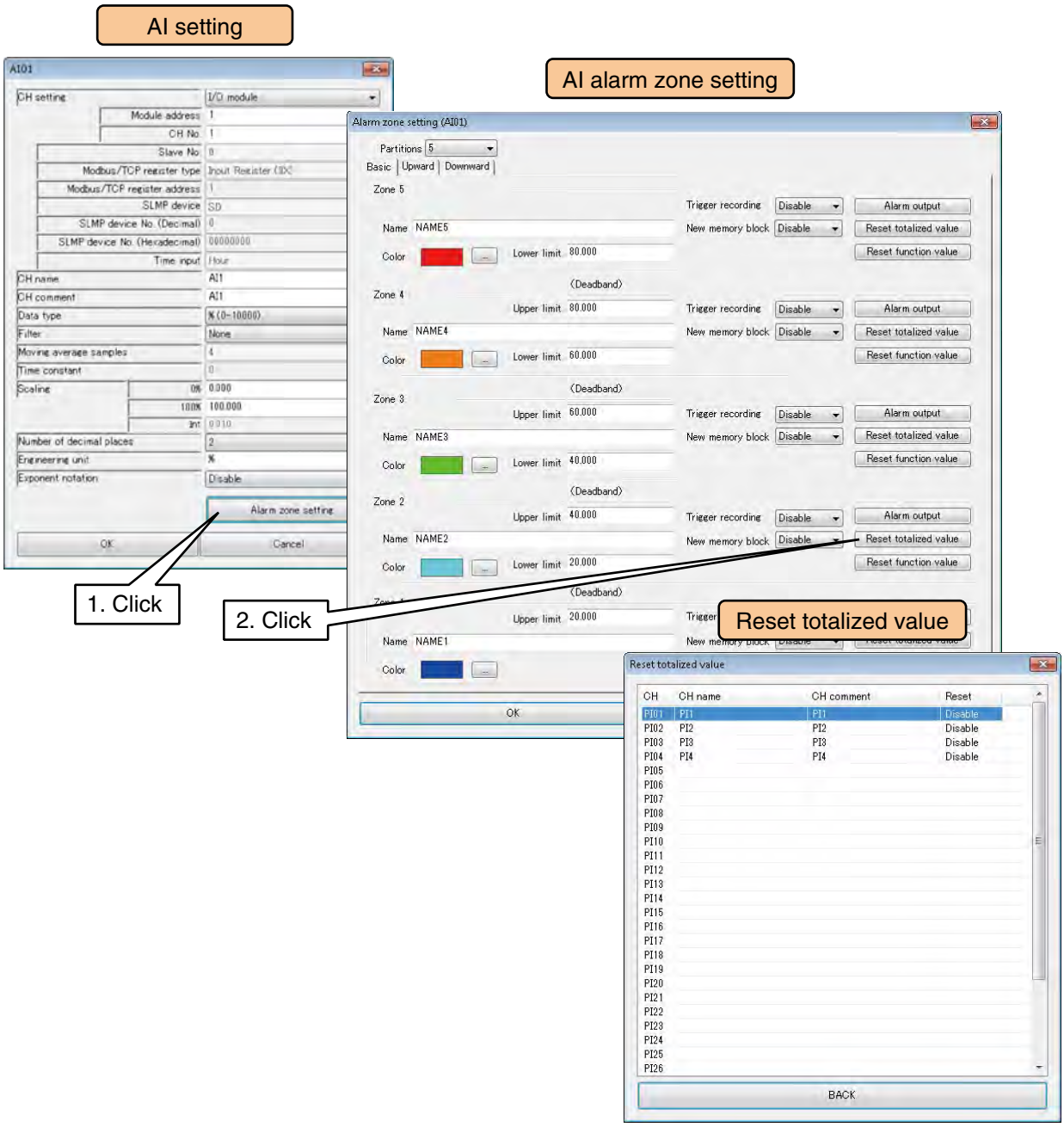
CAUTION

- Before configuring these setting, configure the DO setting.
  ➔ 3.8.7 Discrete output (DO)
- When DO is turned ON in the alarm output, the ON output continues as long as the input value is within that zone.
- If the alarm output is not used, please set it as OFF.

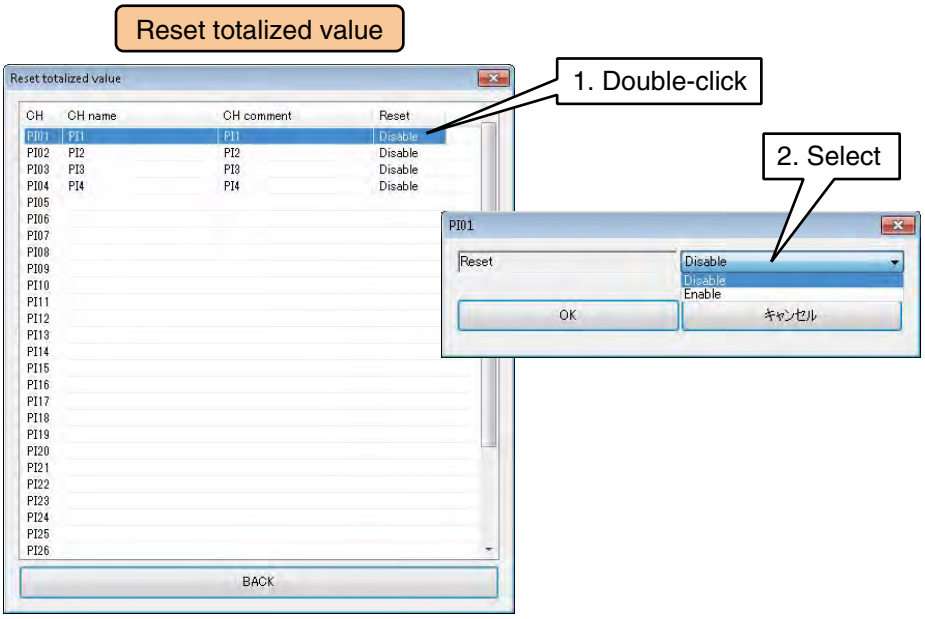
Reset totalized value (AI)

The cumulative total value of a specific PI can be reset during zone transition.

(1) Click on the [Alarm zone setting] button in the [AI setting] to display the [Alarm zone setting]. Click on the [Reset totalized value] button in a specific zone to display the [Reset totalized value].



(2) Double-click on the PI channel to be operated and set as Disable / Enable.

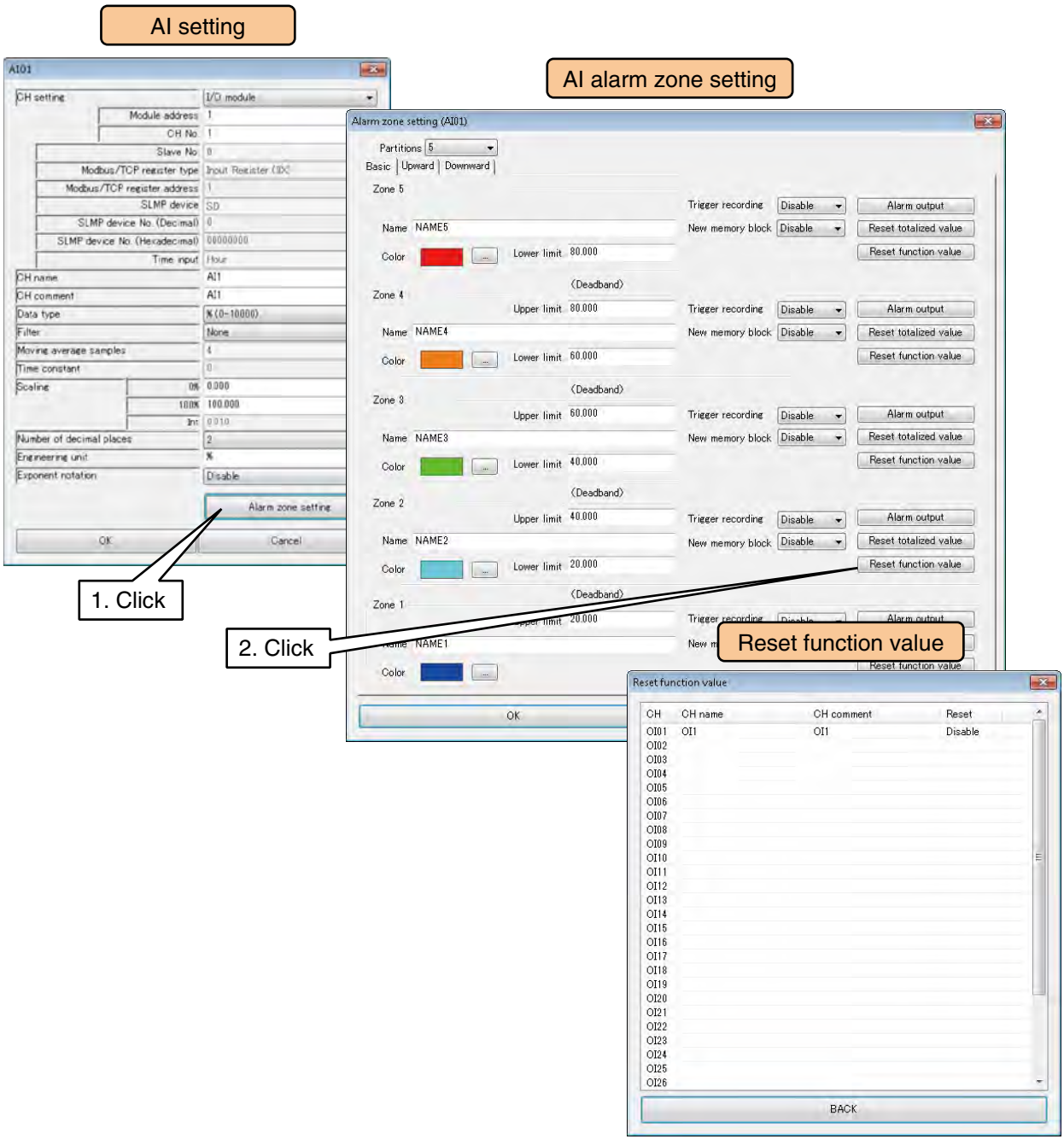


(3) Once the setup is complete, press the [OK] button and temporarily store the setting.

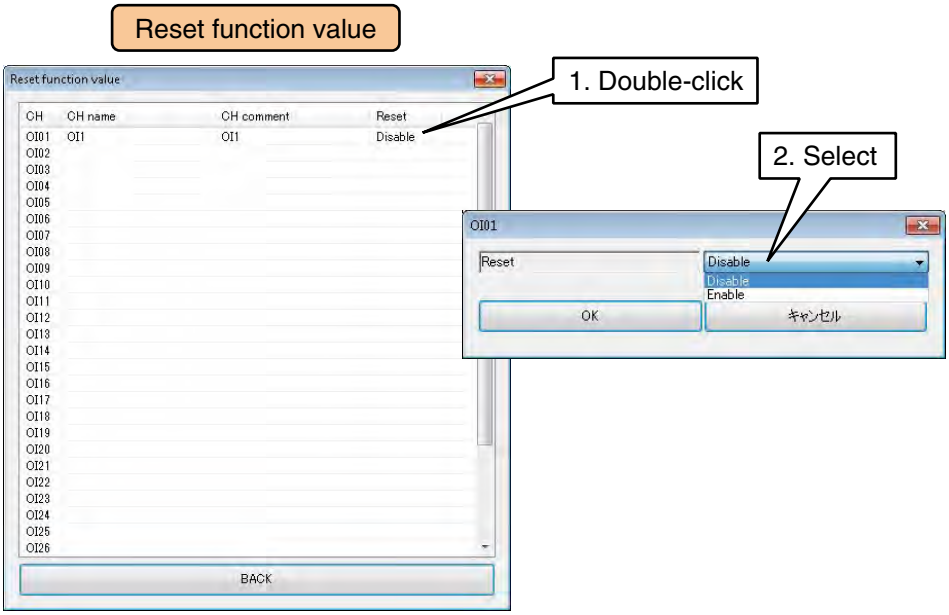
Reset function value (AI)

The operation of a specific OI can be reset during zone transition.

(1) Click on the [Alarm zone setting] button in the [AI setting] to display the [Alarm zone setting]. Click on the [Reset function value] button in a specific zone to display the [Reset function value].



(2) Double-click on the OI channel to be operated and set as Disable / Enable.



(3) Once the setup is complete, press the [OK] button and temporarily store the setting.

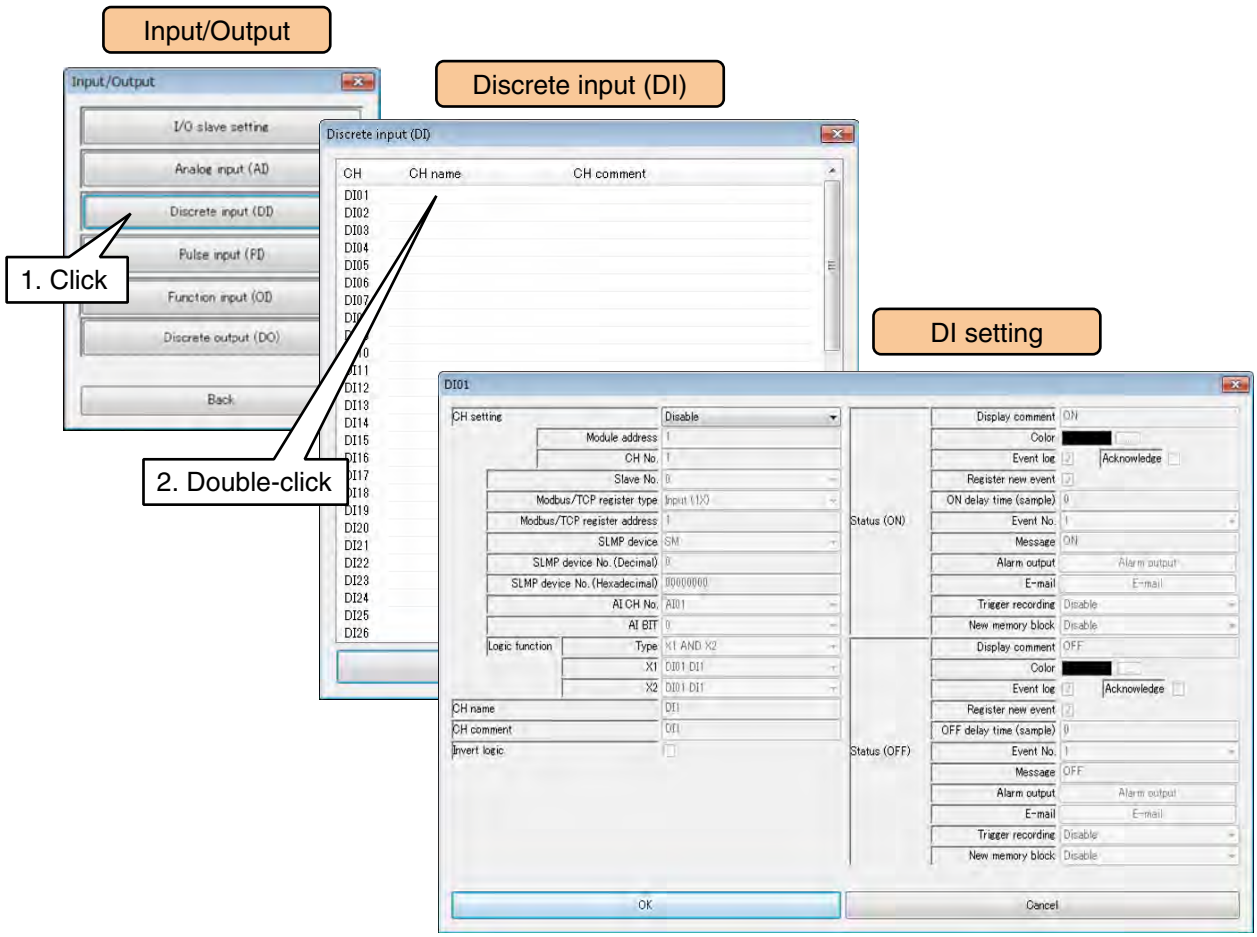
Use the above procedure to set all the CHs.
The CH setting for which the setting is complete in the [Analog input (AI)] screen can also be copied to other CHs and only the required portions can be edited.
➔ 3.8.8 Copying the CH setting

3.8.4 Discrete input (DI)

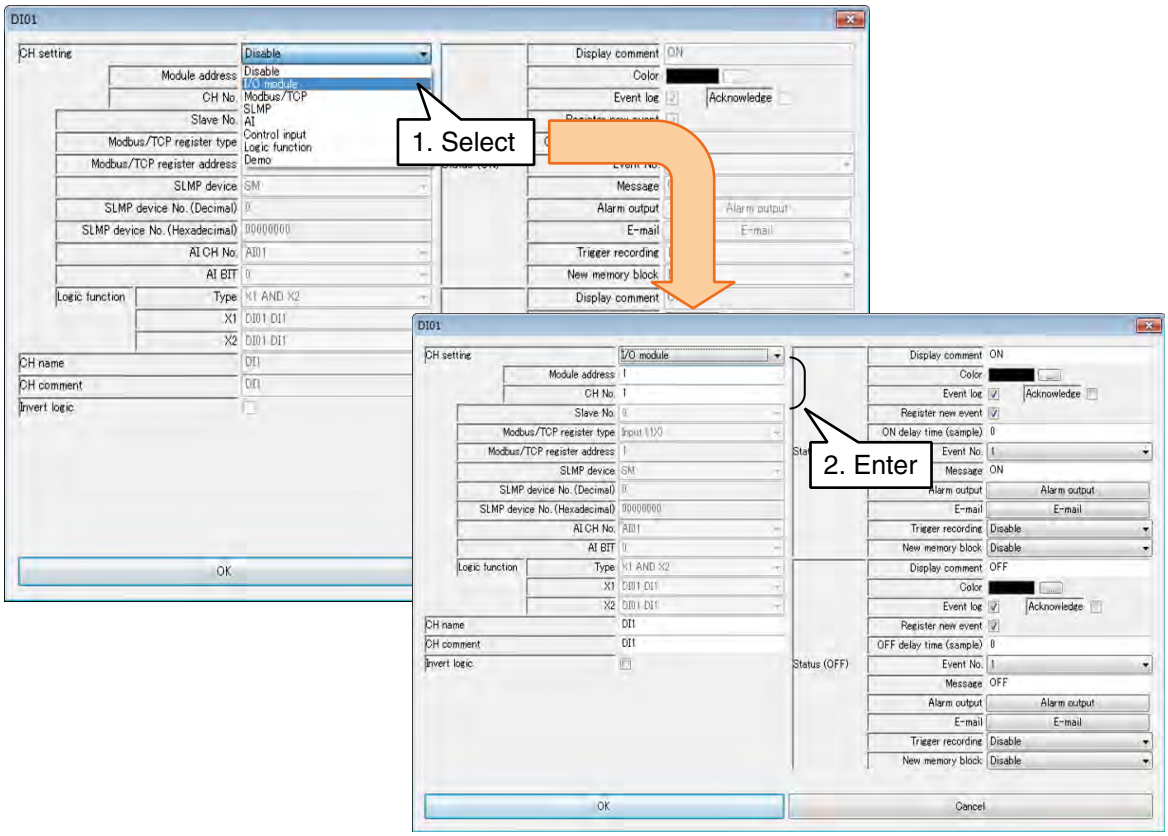
Digital input signals can be monitored for a maximum of 64 points (DI1 to DI64).
Please assign the digital input from the connected I/O module or remote I/O to the device by following the procedure given below.

Assignment of the I/O module to DI

(1) Click on the [Discrete input (DI)] button in the [Input/Output] screen to display the [Discrete input (DI)] screen. Double-click on the row containing the DI to be set in this screen to display the [DI setting].



(2) Set the [CH setting] as [I/O module] to enable the [Module address] and [CH No.]. Please enter the CH value to be assigned.



In case of discrete input, up to 16 ch can be assigned per module.

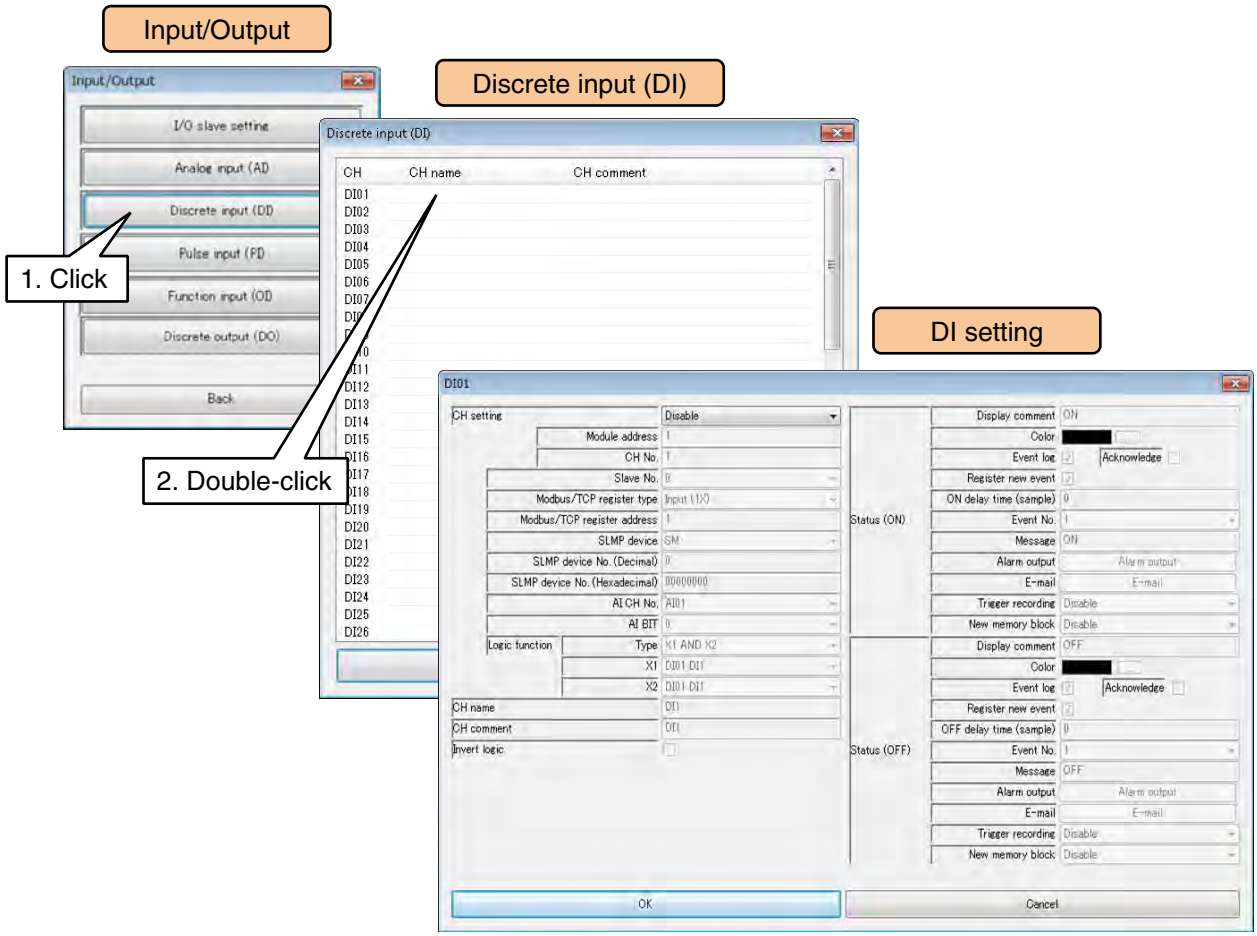
Card type	Compatible card	CH No.	Slot address	CH No. in the card
16 ch module	R30XN16A	CH1	N	1
		CH2	N	2
		CH3	N	3
		CH4	N	4
		CH5	N	5
		CH6	N	6
		CH7	N	7
		CH8	N	8
		CH9	N	9
		CH10	N	10
		CH11	N	11
		CH12	N	12
		CH13	N	13
		CH14	N	14
		CH15	N	15
		CH16	N	16

N: Slot address

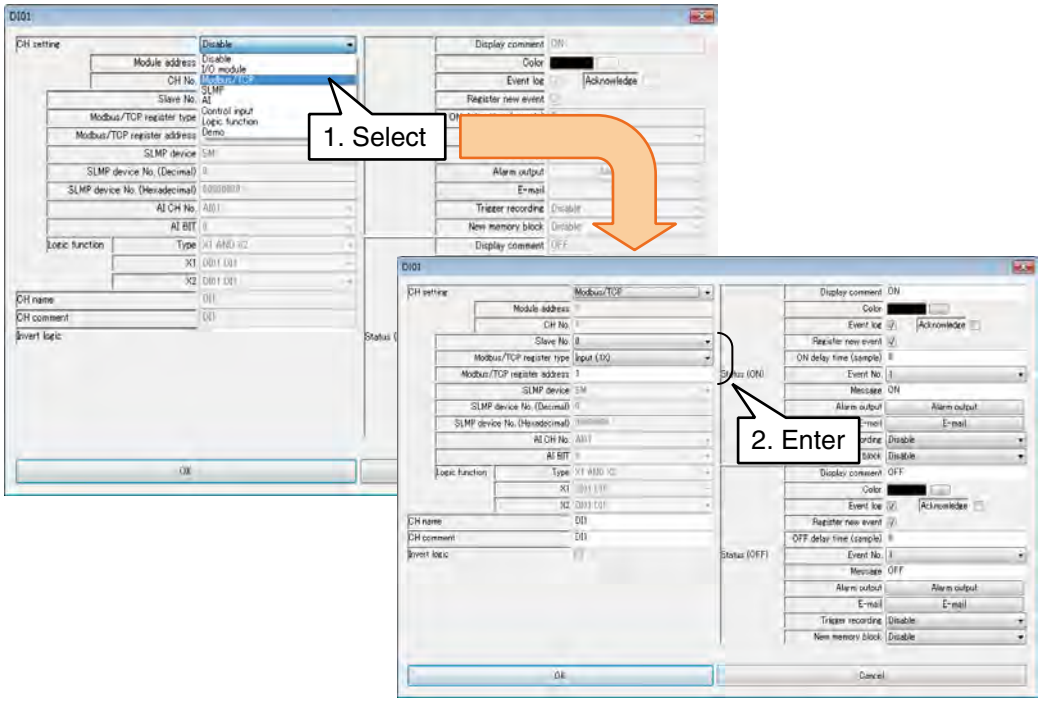
Assignment of remote I/O to DI

(1) Go first through the I/O slave setting for the remote I/O device.
➔ 3.8.1 I/O slave setting

(2) Display the [AI setting] just as in case of the I/O module.



(3) Set the [CH setting] as [Modbus/TCP], and enter the [Modbus/TCP slave No.], [Modbus/TCP register type] and [Modbus/TCP register address].

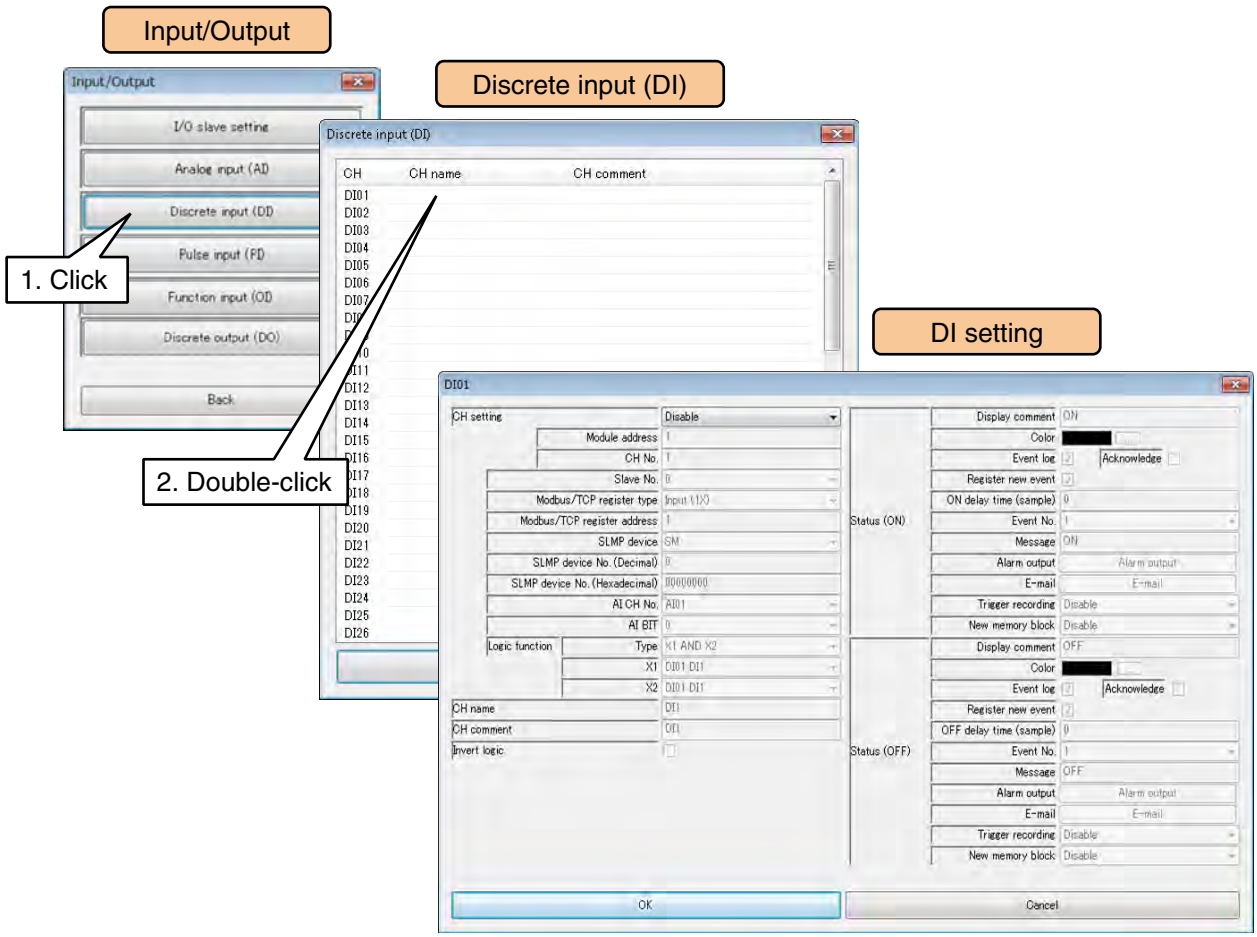


Parameter	Description
Modbus/TCP slave No.	Enter the slave No. (0 to 11) set in (1).
Modbus/TCP register type	Select from [Input (1X)] or [Coil (0X)].
Modbus/TCP register address	Set the register address in the above register type (1 to 65536).

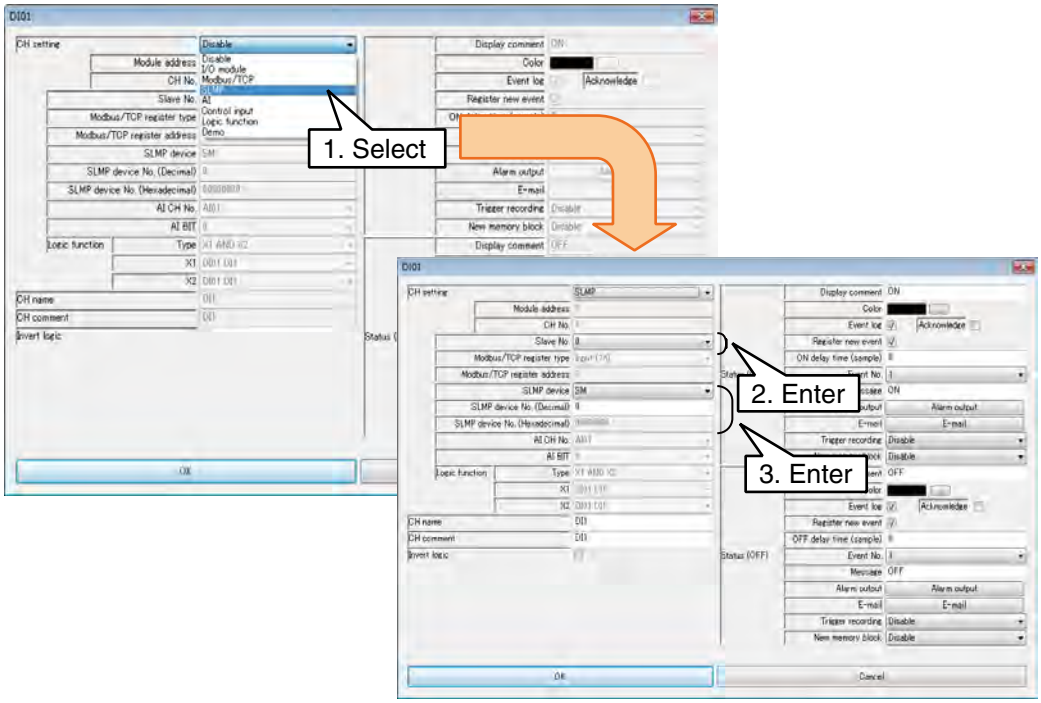
Assignment of SLMP device to DI

(1) Go first through the I/O slave setting for the SLMP device.
➔ 3.8.1 I/O slave setting

(2) Display the [DI setting] just as in case of the I/O module.



(3) Set the [CH setting] as [SLMP], and enter the parameters in the table below.

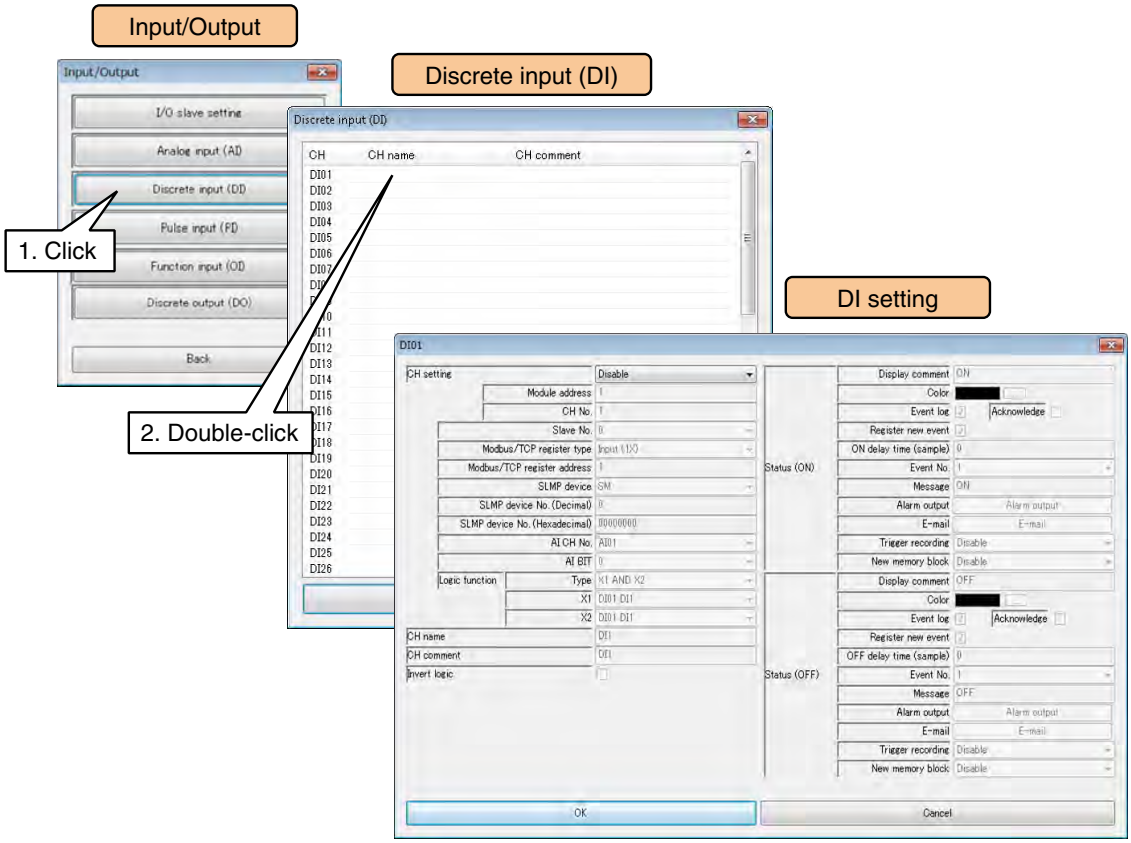


Parameter	Description
Slave No.	Enter the slave No. (0 to 11) set in (1).
SLMP device	Choose the device code of the SLMP device to be connected.
SLMP device No.	Set the device No. of the SLMP device to be connected.

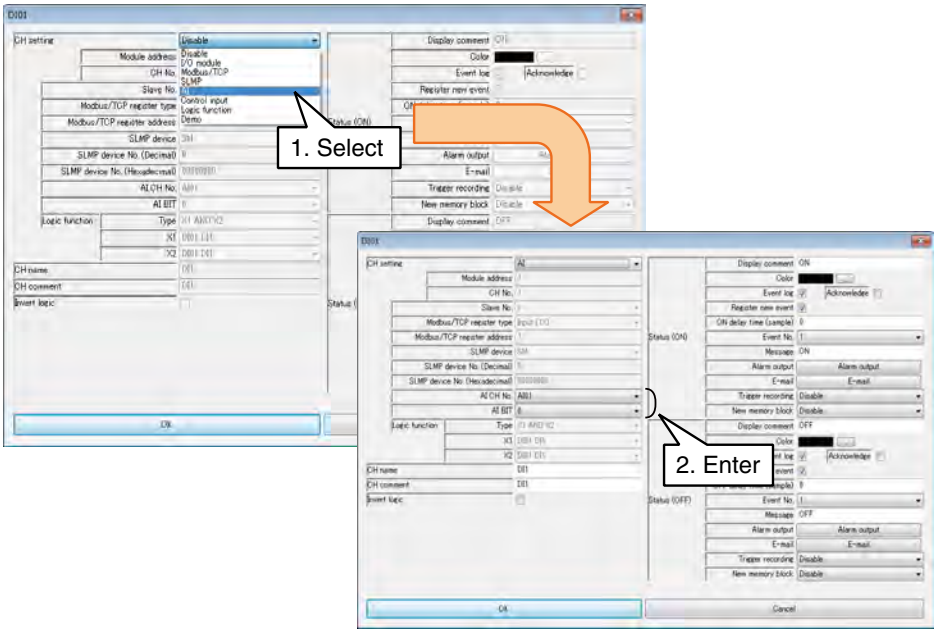
Assignment of analog input (AI) for DI

A specific bit among 16 bits of AI word data can be assigned to a DI.

(1) Display the [DI setting] just as in case of the I/O module.



(2) Set the [CH setting] as [AI], and enter the parameters in the table below.



Parameter	Description
AI CH No.	Choose an AI channel to be used for DI
AI BIT	Choose a bit position of the AI word.

Assignment of control input to DI

Input values can be specified from remote locations by writing values in the internal registers using the Modbus/TCP slave function.

NOTES

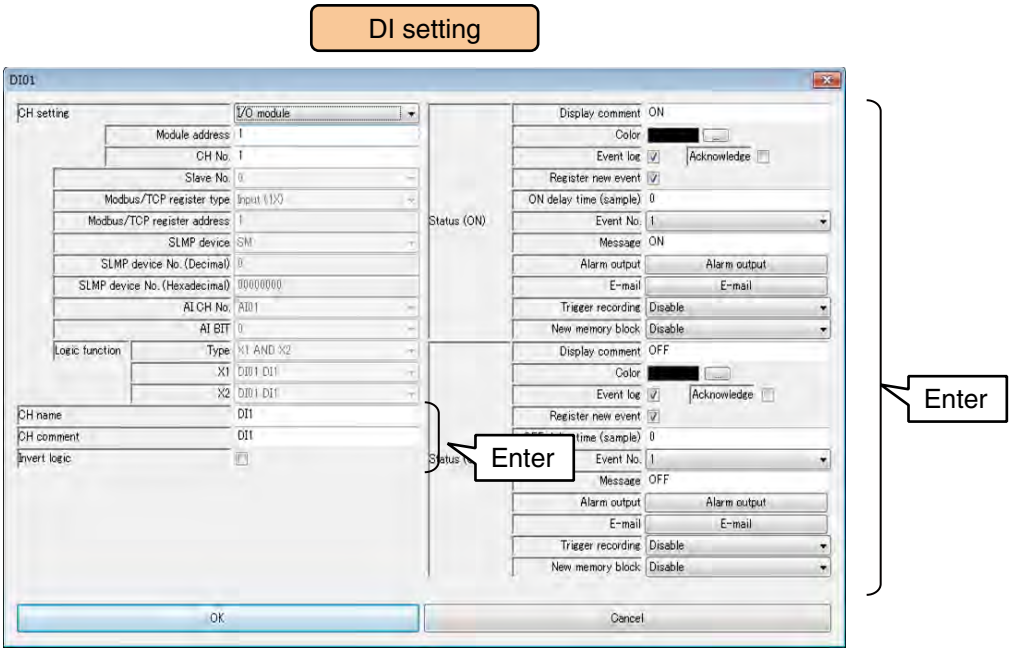
Please see [3.11.4 Modbus/TCP slave] and [7.3.7 Modbus/TCP slave] for information on the Modbus/TCP slave function and internal registers.

Assignment of logic functions to DI

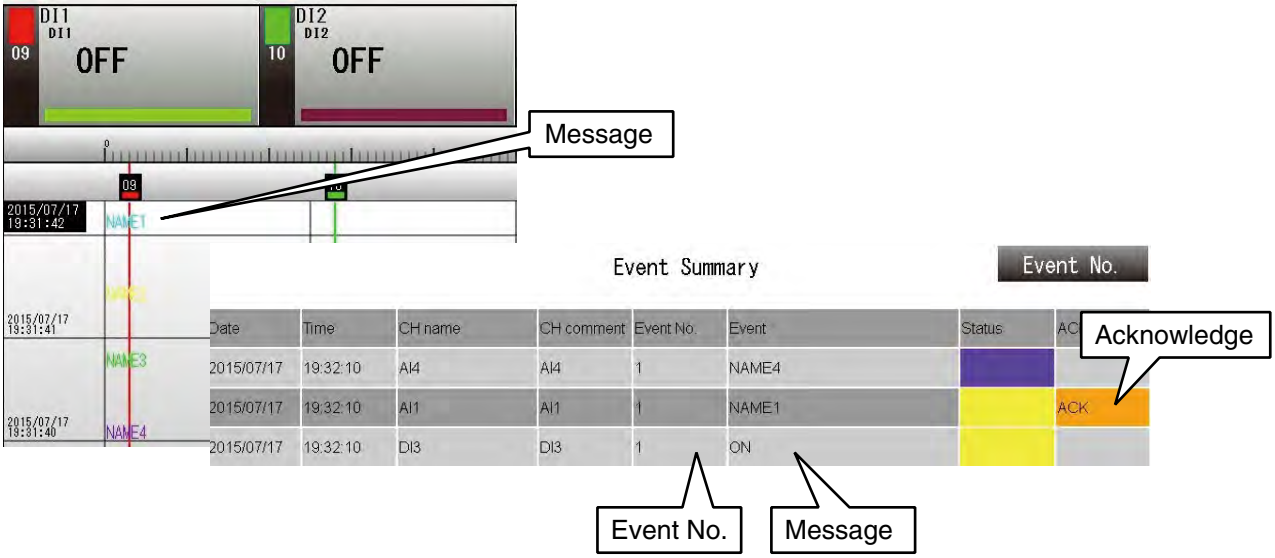
Logic functions (AND, OR, XOR, NOT) can be performed on DI input values and the results can be used as DI input values.
Logic functions are performed sequentially by channel number starting from DI1. Therefore, when a channel whose number is greater than a certain channel is set as input, the operation is performed on the values in the previous sample.
For example, set DI10 = DI5 AND DI12, uses previous sampling data for DI12.

Basic setting (DI)

Once the assignment is complete, configure the following basic setting. Click on the [OK] button to temporarily store the setting.



Parameter	Description
CH name	Set a channel name which is less than 16 characters.
CH comment	Set a description for the channel which is less than 16 characters using the tag name, etc.
Invert logic	If the ON/OFF in the input signal and the ON/OFF in the application signal are the reverse of each other, put a check in the check box.
Status (ON) (OFF)	• Display comment Set strings corresponding to ON/OFF respectively. Can be set as less than 8 characters. • Color Set the colors which represent the status displayed on the Web screen for ON/OFF respectively. • Event log Set whether or not to record the event summary from the Web screen when there is a change in the input values. To record, put a check in the check box. • Acknowledge You can set whether Acknowledge is required for ON/OFF respectively. • Register new event Set whether or not to display as a new event when there is a change in the input values and it enters a certain zone. To display, put a check in the check box. • On delay time/Off delay time Set the number of samples for the delay time for ON/OFF respectively. (Setting range: 0 to 999) For example, with a sampling cycle of 100 msec., if the [On delay time] is set as 10, the unit is recognized as being ON when the input signal has been continuously ON for 1 second (1000 msec.). And, if the sampling cycle is changed to 1 second in this state, the delay time becomes 1 second × 10 which is 10 seconds, and the unit is then recognized as being ON when the input signal has been continuously ON for 10 seconds. ➔ 7.3.3 Storing rate and sampling cycle • Event number The event number can be set for ON/OFF respectively. This number can be used to set a filter in the event summary in the Web screen. (Setting range: 1 to 32) • Message Set a message which is less than 32 characters to be displayed for each event. • E-mail Set the mail number to be sent when an event occurs. ➔ 3.11.5 Mail reporting • Trigger recording Set whether or not to record when there is a change in the input value and the status changes. You can select from: Disable / Start / Stop. • New memory block Set when or not to run a new memory block when there is a change in the input value and the status changes. You can select from: Disable / Enable.



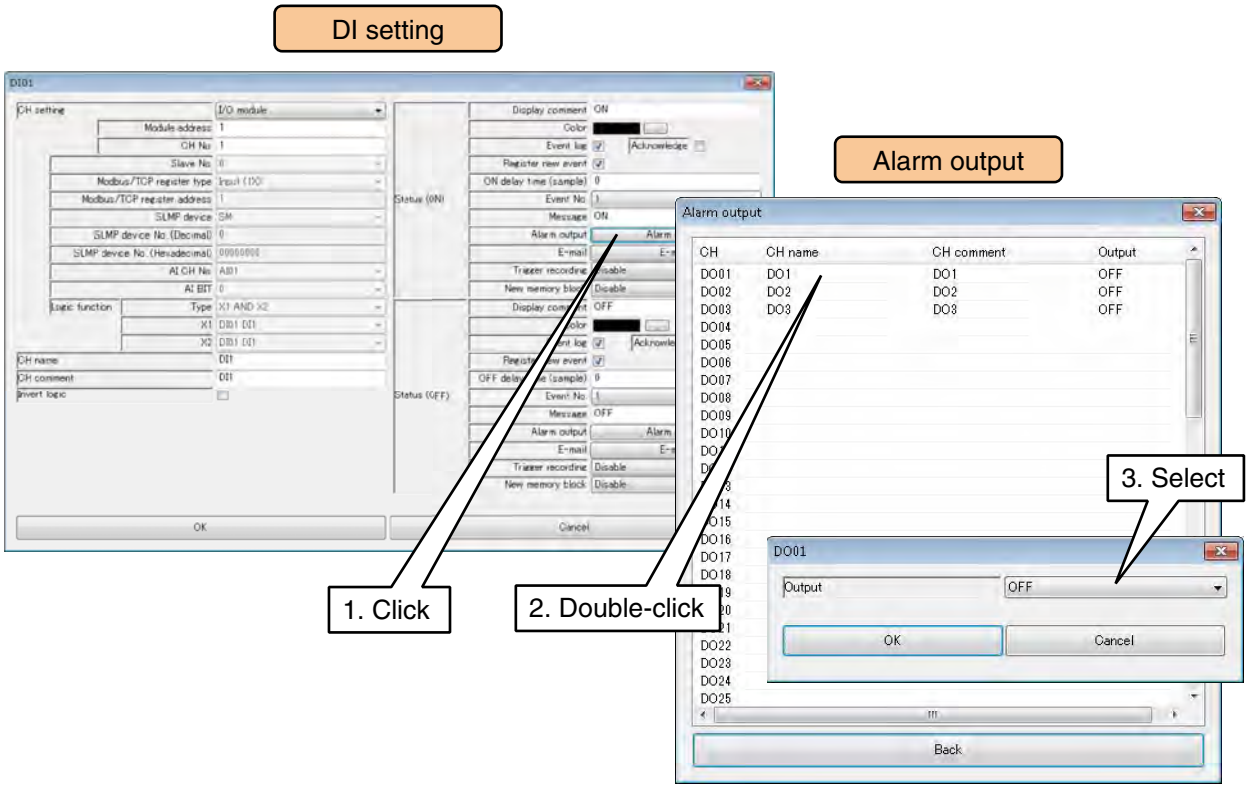
CAUTION

If the new memory block lasts for a short time, data on a memory block which has not been transferred to the SD card may get overwritten. Set the new memory block interval as a multiple of 10 seconds.

Alarm output (DI)

A specific DO can be turned ON for each status.

(1) Click on the [Alarm output] button in the [DI setting] to display the [Alarm output]. Double-click on the DO channel to be operated and set as ON/OFF.



(2) Once the setup is complete, press the [OK] button and temporarily store the setting.

CAUTION

- Before configuring these setting, please configure the DO setting.
  ➔ 3.8.7 Discrete output (DO)
- When DO is turned ON for the alarm output, the ON output continues as long as the alarm output status is ON.
- If the alarm output is not used, please set it as OFF.

Reset totalized value (DI)

The totalized value of a specific PI can be reset in the rising edge of the DI.
Specify this in the [Reset totalized value entry] in the PI basic setting. ➔ 3.8.5 Pulse input (PI)

Reset function value (DI)

The operation of a specific OI can be reset by switching the DI from OFF to ON.
Specify this in the [Reset function value entry] in the OI basic setting. ➔ 3.8.6 Function input (OI)
Set each CH by following the above procedure.
The CH setting for which the setting is complete in the [Discrete input (DI)] screen can also be copied to other CHs and only the required portions can be edited.
➔ 3.8.8 Copying the CH setting

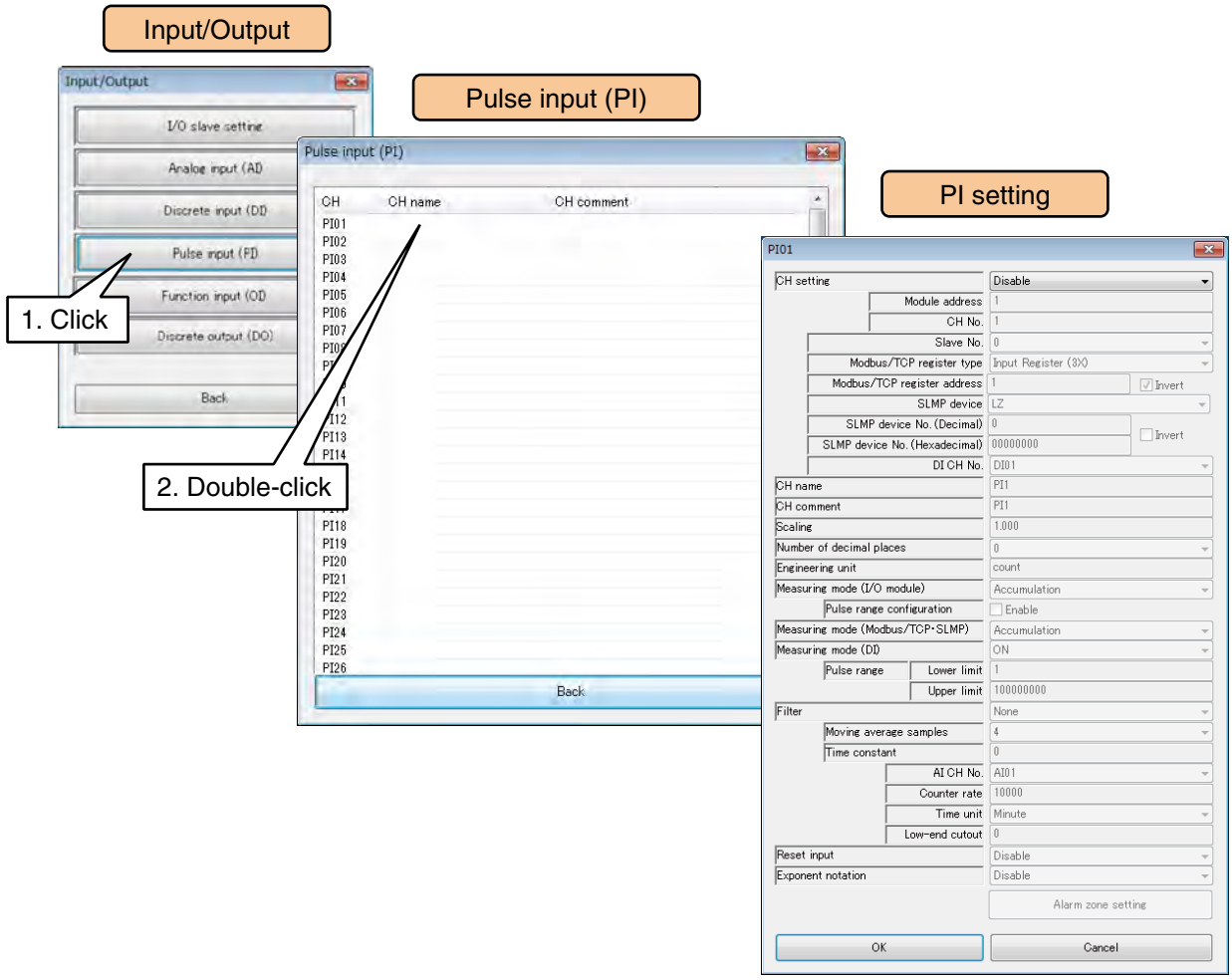
3.8.5 Pulse input (PI)

Pulse input signal can be monitored for a maximum of 32 points (PI1 to PI32). 32 bit integer data such as energy data can also be assigned to PI.
Please assign the pulse input from a remote I/O which has been connected to the device by following the procedure given below.

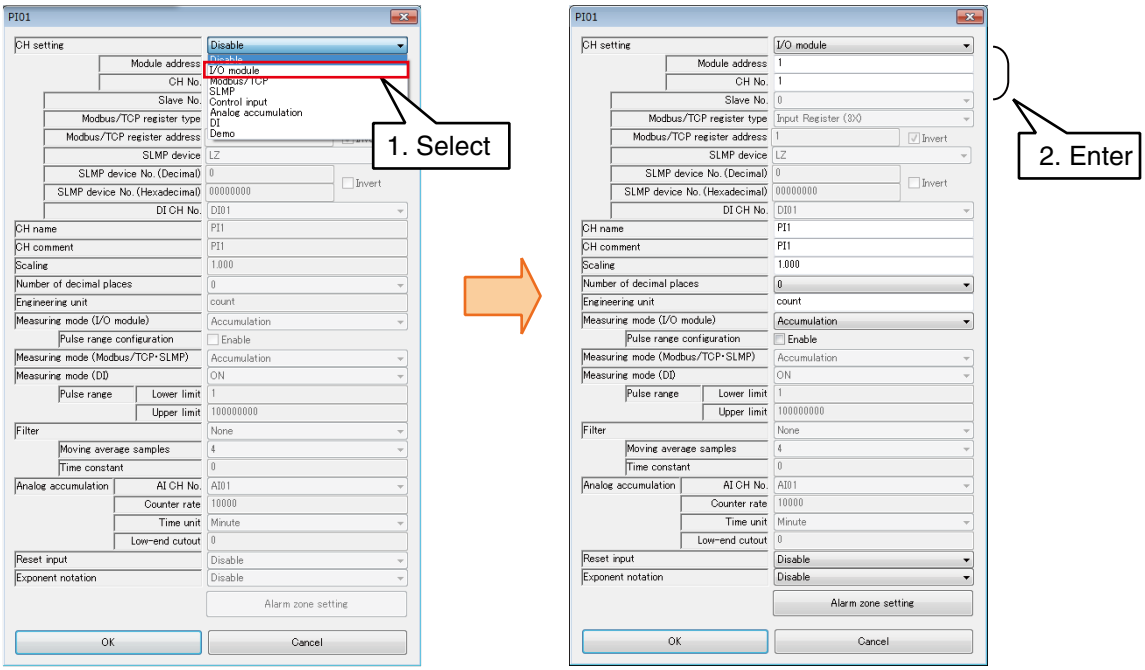
Assignment of the I/O module to PI

(1) Click on the [Pulse input (PI)] button on the [Input/Output] screen to display the [Pulse input (PI)] screen.

(2) Double-click on the row containing the PI to be set to display the [PI setting].



(3) Set the [CH setting] as [I/O module] to enable the [Module address] and [CH No.]. Please enter the CH value to be assigned.



In case of pulse input, up to 2 ch can be assigned per module.

Module category	Compatible module	CH No.	Module address	CH No. in the module
2 ch module	R30PA2	CH1	N	1
		CH2	N	2

N: Module address

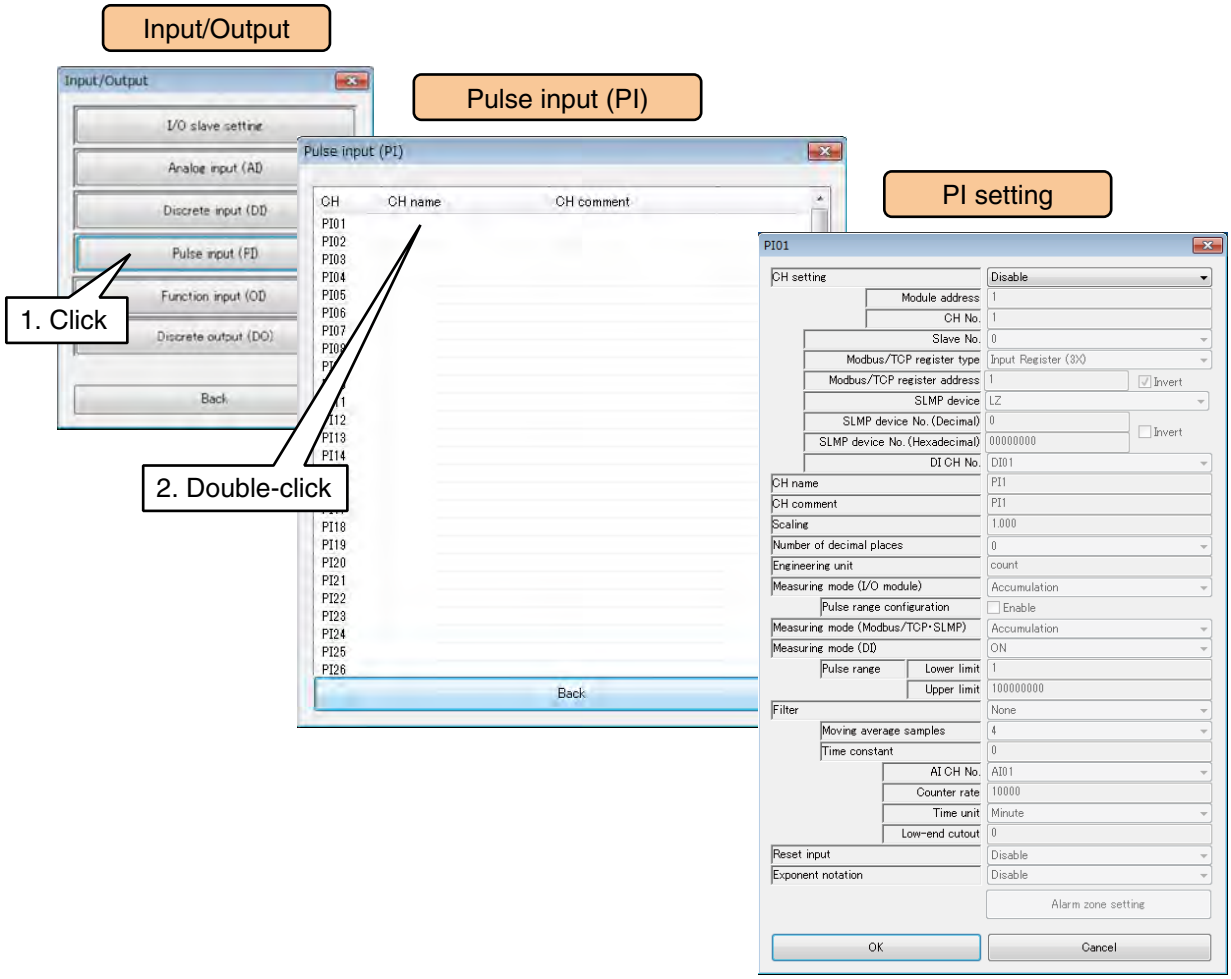
(4) Set the parameter in the following table.

Parameter	Description
Measuring mode (I/O module)	Set the type of the 32 bit data read from the I/O module. Select from the following. • Accumulation The cumulative total is calculated by accumulating the difference between the value at the start of cumulative totalizing and the value when it is reset, for each sampling duration. • Actual value The retrieved data is recognized as a signed 32 bit integer, and its value is taken as sampling data.
Pulse range configuration	If the pulse range configuration of the I/O module is changed, check [Enable], and put the same value set to the I/O module to the pulse range.
Pulse range	If the pulse range configuration of the I/O module is changed, enable the "pulse range configuration" and set the same value set to the I/O module. Configurable when "measurement mode" is set to accumulation and "pulse range configuration" is enabled.

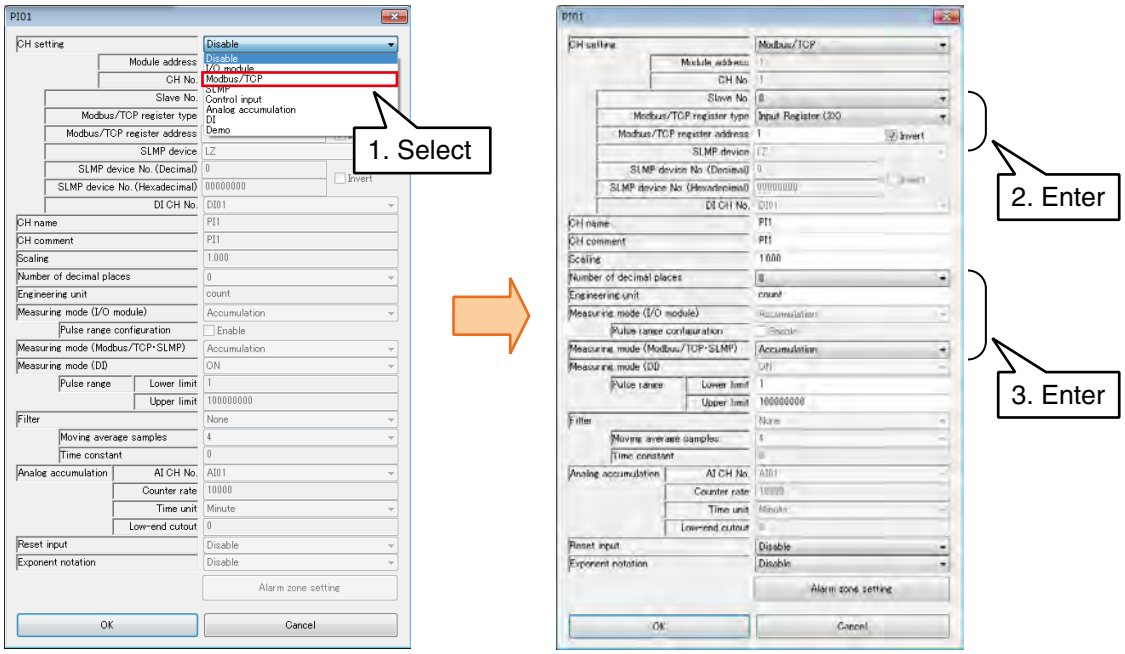
Assignment of remote I/O to PI

(1) Go first through the I/O slave setting for the remote I/O device.
➔ 3.8.1 I/O slave setting

(2) Display the [PI setting] just as in case of the I/O module.



(3) Set the [CH setting] as [Modbus/TCP], and enter the [Modbus/TCP slave No.], [Modbus/TCP register type] and [Modbus/TCP register address].



Parameter	Description
Modbus/TCP slave No.	Enter the slave No. (0 to 11) set in (1).
Modbus/TCP register type	Select either [Input Register (3X)] or [Holding Register (4X)].
Modbus/TCP register address	Set the register address (1 to 65535) in the above register type. Since the PI data is 32 bits, it is set as data in 2 consecutive addresses. Set the register address of the smaller number. If you do not want to reverse the higher and lower registers, remove the check from the [Invert] check box. (The set register address and the next register address are handled as upper data and lower data, respectively.) Refer to the specifications of each remote I/O module for the register allocation.

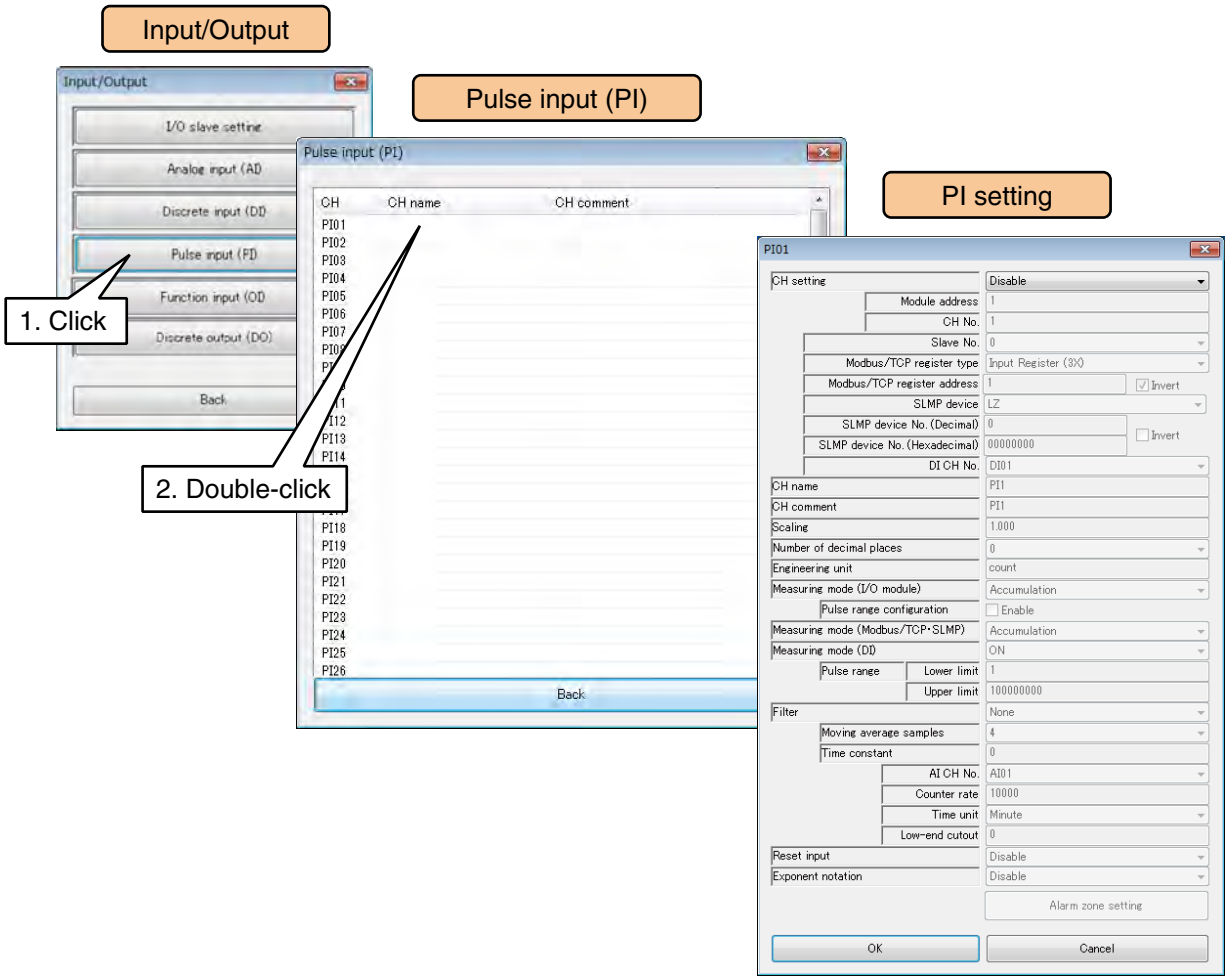
(4) Set the parameters in the following table.

Parameter	Description
Measuring mode (Modbus/TCP·SLMP)	Set the type of the 32 bit data read from the remote I/O. Select from the following. • Accumulation The cumulative total is calculated by accumulating the difference between the value at the start of cumulative totalizing and the value when it is reset, for each sampling duration. This corresponds to the cumulative total data of the remote I/O. • Actual value The retrieved data is recognized as a signed 32 bit integer, and its value is taken as sampling data. This corresponds to the power data of the remote I/O. • Float The retrieved data is recognized as single precision floating point, and its value is taken as sampling data. This corresponds to the power data of the remote I/O.
Pulse range	Set the same value as the pulse range set in the remote I/O. For details, please see the User Manual for the remote I/O which you are using.

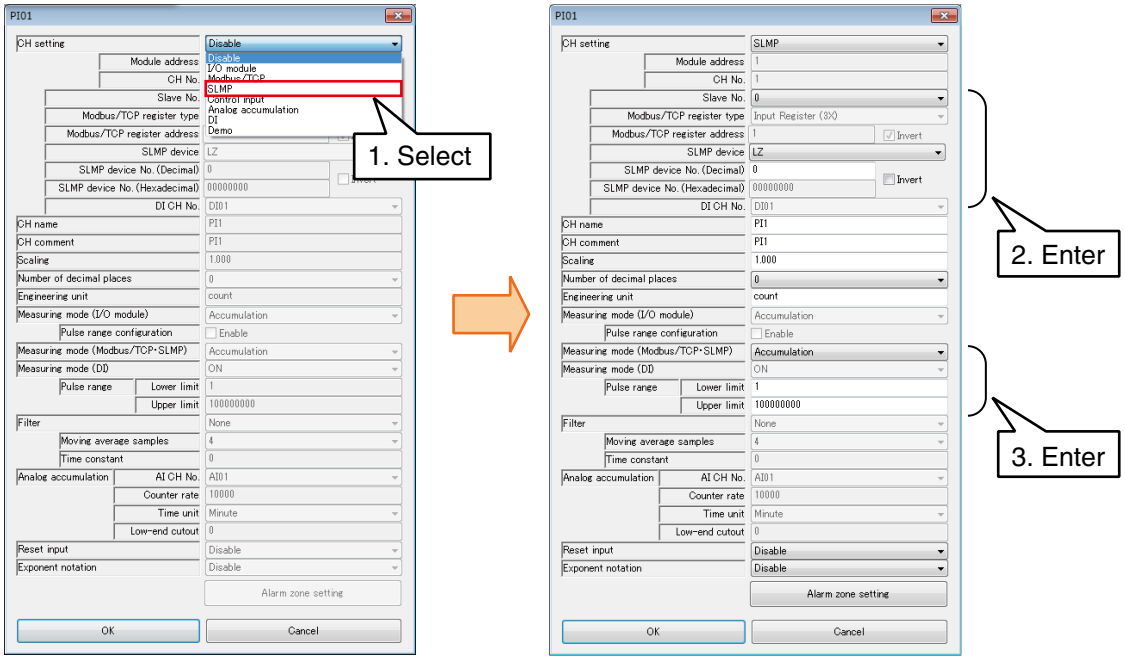
Assignment of SLMP device to PI

(1) Go first through the I/O slave setting for the SLMP device.
➔ 3.8.1 I/O slave setting

(2) Display the [PI setting] just as in case of the I/O module.



(3) Set the [CH setting] as [SLMP], and enter the parameters in the table below.



Parameter	Description
Slave No.	Enter the slave No. (0 to 11) set in (1).
SLMP device	Choose the device code of the SLMP device to be connected.
SLMP device No.	Set the device No. of the SLMP device to be connected. When the slave type of the selected Slave No. is [SLMP 16bit], set the device No. of the smaller number because the PI data is 32 bit data set in two addresses. Check or uncheck the [Invert] check box depending on the order of high/low devices.
Measuring mode (Modbus/TCP·SLMP)	Set the type of the 32 bit data read from the remote I/O. Select from the following. • Accumulation The cumulative total is calculated by accumulating the difference between the value at the start of cumulative totalizing and the value when it is reset, for each sampling duration. This corresponds to the cumulative total data of the SLMP device. • Actual value The retrieved data is recognized as a signed 32 bit integer, and its value is taken as sampling data. This corresponds to the power data of the SLMP device. • Float The retrieved data is recognized as single precision floating point, and its value is taken as sampling data. This corresponds to the power data of the SLMP device.
Pulse range	Set the same value as the pulse range set in the SLMP device. For details, please see the User Manual for the SLMP device which you are using.

Assignment of control input to PI

Input values can be specified from remote locations by writing values in the internal registers using the Modbus/TCP slave function.

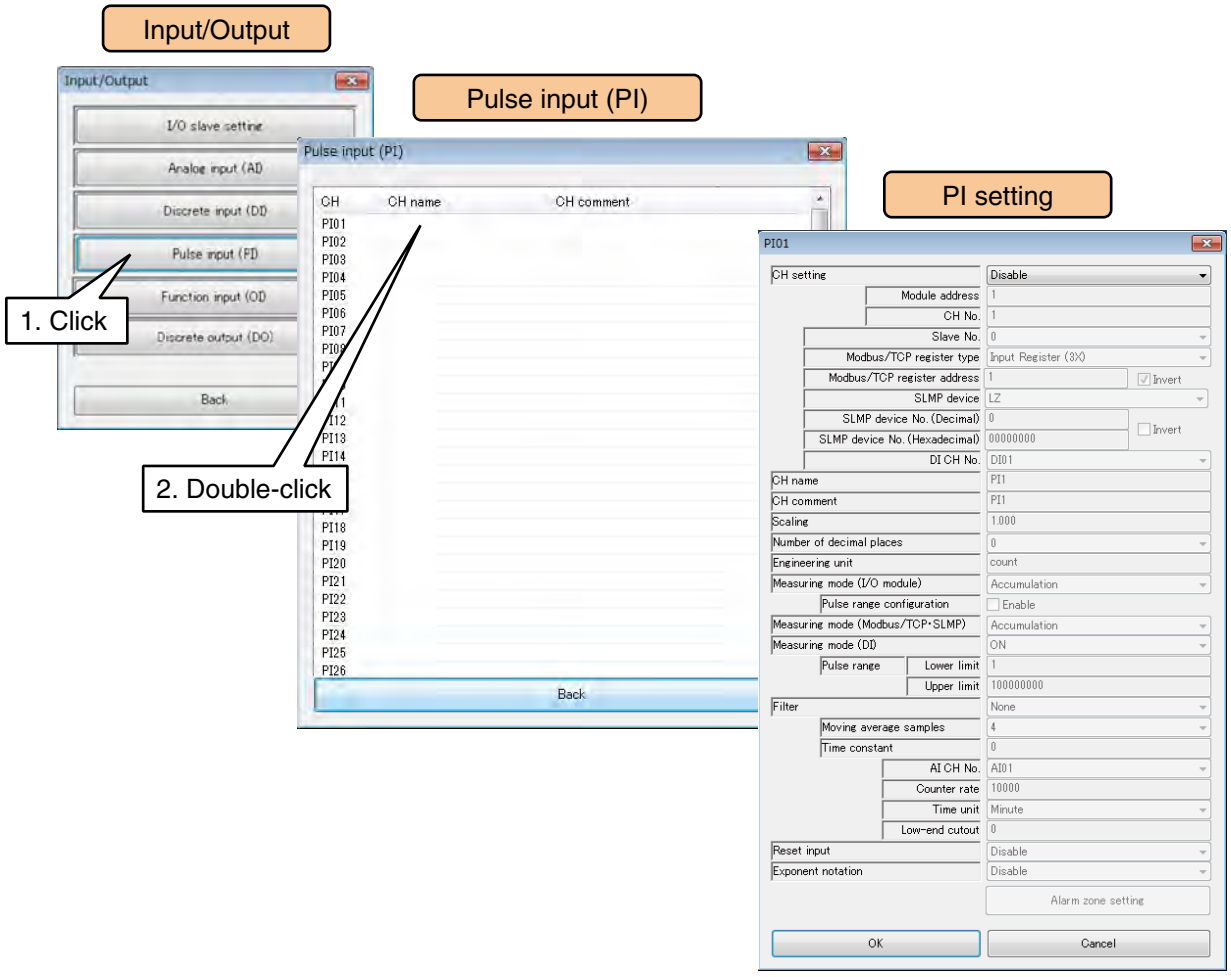
NOTES

Please see [3.11.4 Modbus/TCP slave and 7.3.7 Modbus/TCP slave for information on the Modbus/TCP slave function and internal registers.

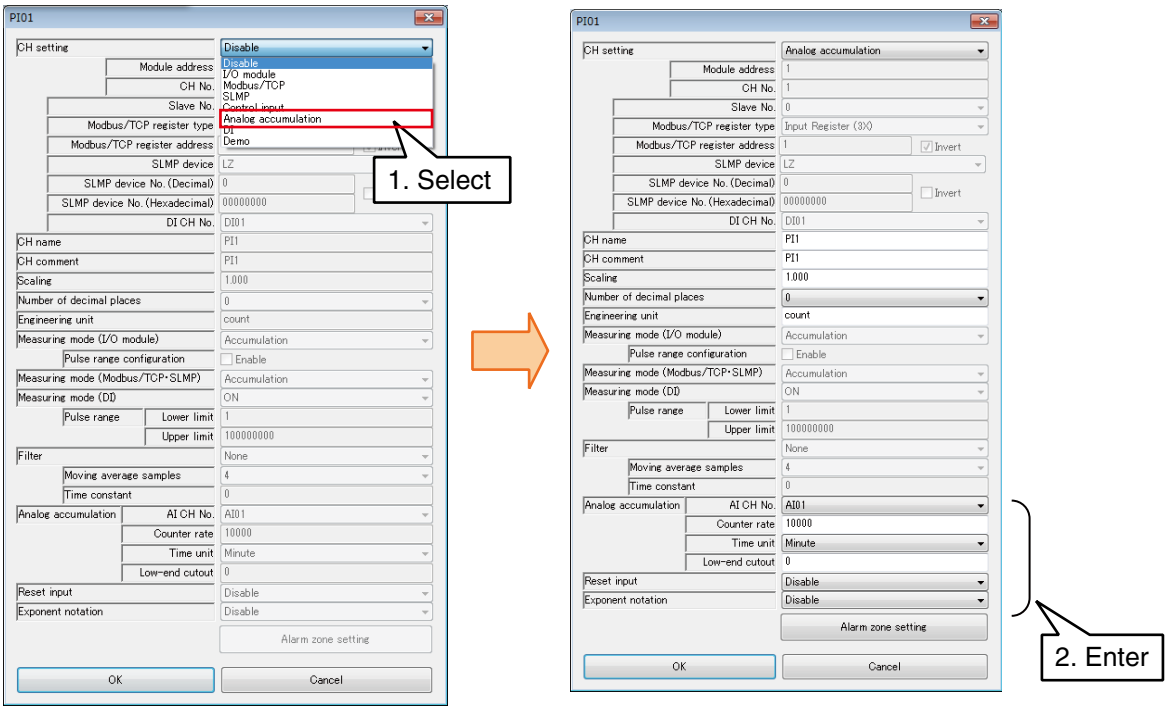
Assignment of the Analog accumulation to PI

The cumulative total can be obtained by considering the AI input values as the number of pulses.

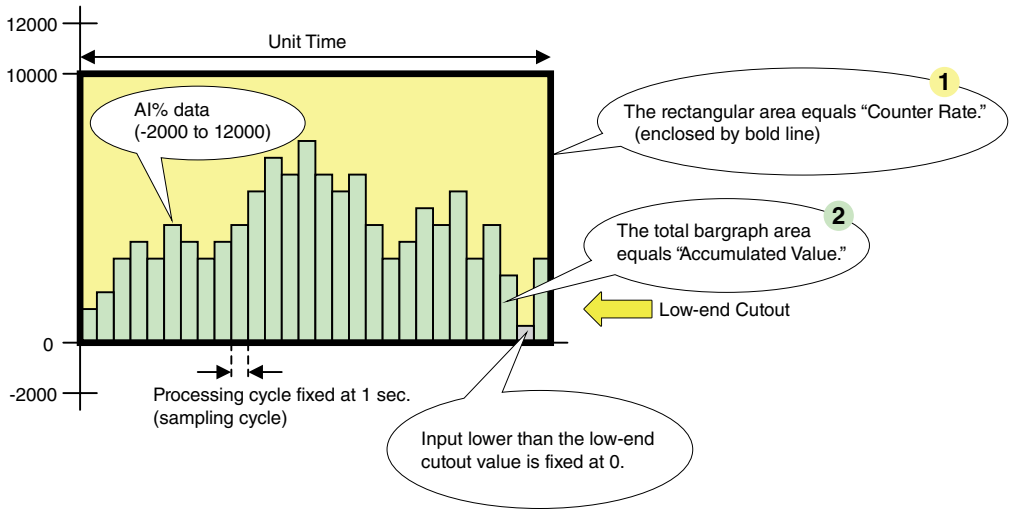
(1) Display the [PI setting].



(2) Set the [CH setting] as [Analog accumulation], and enter the [AI CH No.], [Counter rate], [Time unit] and [Low-end cutout].



Analog Accumulation Analog input is treated as pulse input.



When the AI% data remains at 100% (10000) for the unit time period, it is converted to a preset number of pulses called "Counter Rate." The rectangular area in the above graphs corresponds to the Counter Rate. 1

Actual AI% value (0 to 10000) is accumulated and converted as "Accumulated Value" into the number of pulses using the Counter Rate. The total graph area in the above graphs corresponds to the Accumulated Value. 2

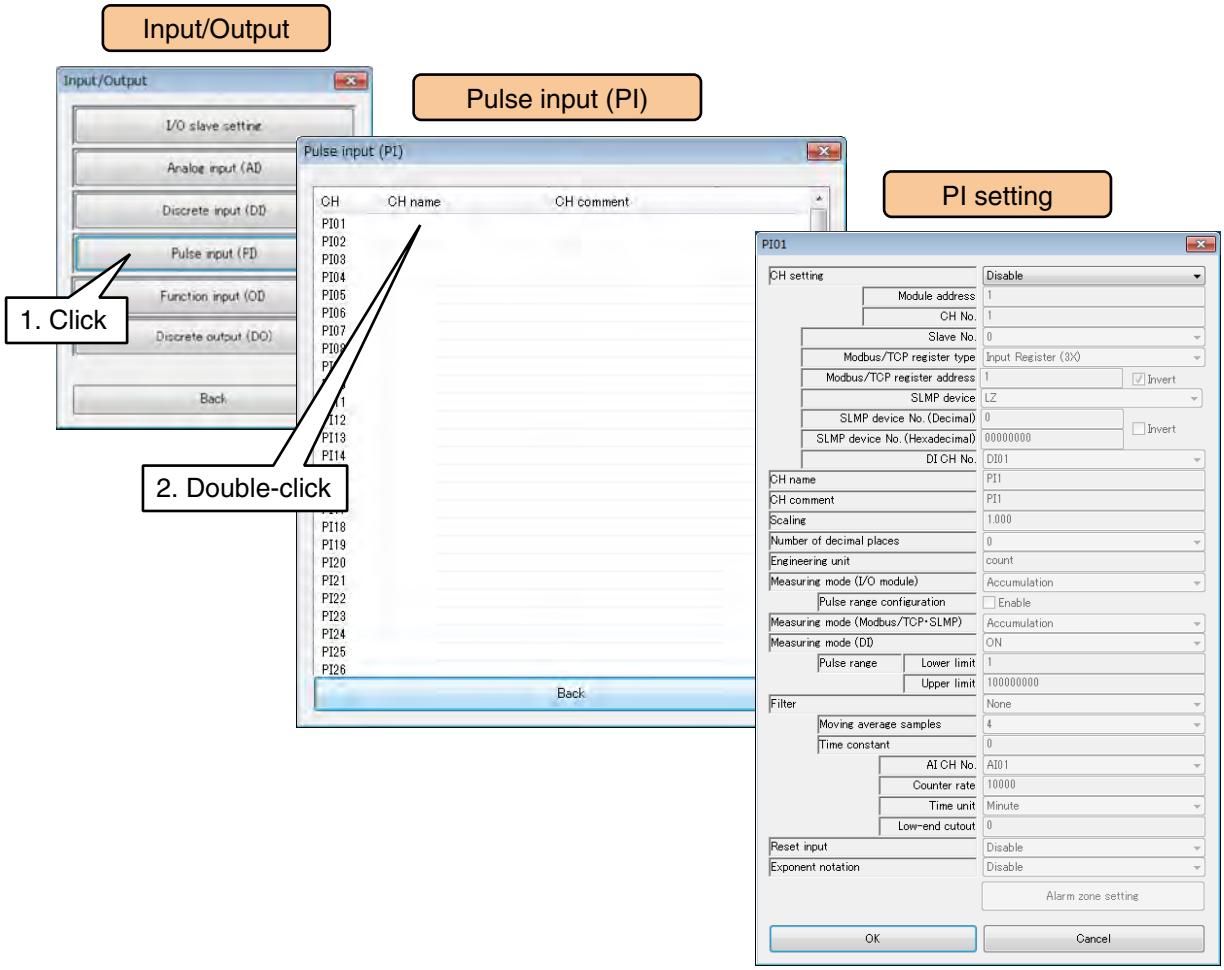
The Accumulated Value is treated just like other pulse inputs, multiplied by "Scaling" into an engineering unit value.

[Example]
Flow value is sent as a voltage signal. 1 V corresponds to 0 t/h, while 5 V corresponds to 30 t/h.
In order to use analog accumulation, choose "%" as "Data Type". 1 V at 0%, 5 V at 100%.
Choose "Hour" as "Time Unit" for the engineering unit t/h.
If "Counter Rate" is set to "30" an accumulated value of 30 is given when AI remains at 100% (5 V) for 1 hour.

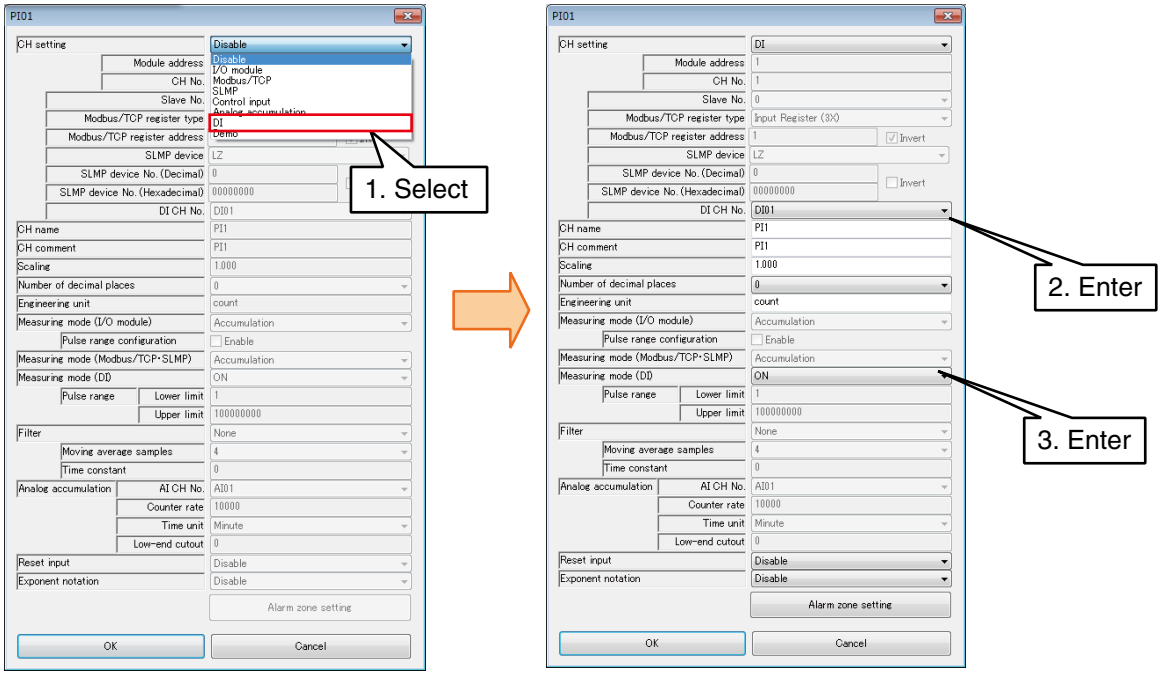
Assignment of the Discrete Input (DI) to PI

The cumulative total can be obtained by considering the DI input values as the number of pulses.

(1) Display [PI setting Dialogue] as same case of Remote I/O device.



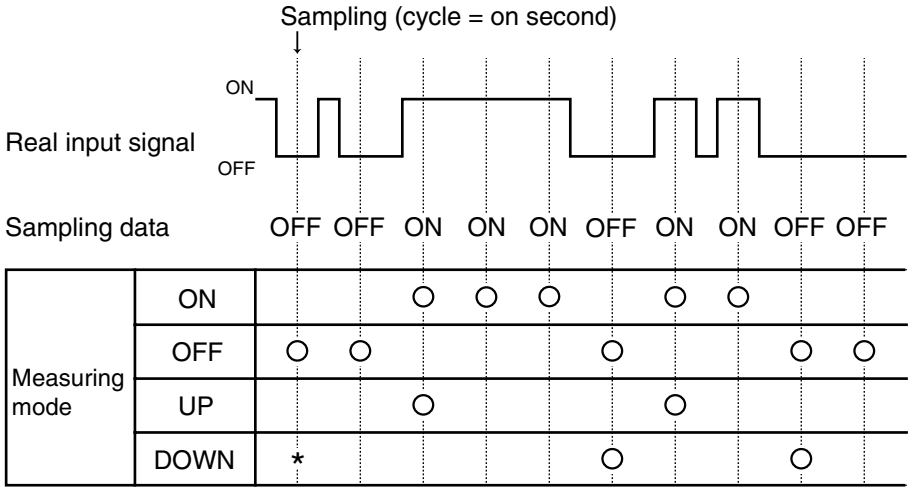
(2) Set the [CH setting] [DI], and set each parameter as shown below.



Item	Description
DI CH Number	Select the CH Number of DI assigned.
Measuring mode (DI)	Select the measuring mode from ON/OFF/UP/DOWN, determining of input values based on sample signal of every on second. ON: Considering the time (second) of ON as input values of PI. OFF: Considering the time (second)of OFF as input values of PI. UP: Counting as 1 pulse per one time of the rising of the DI. DOWN: Counting as 1 pulse per one time of the falling of the DI.

■The difference of the action by measuring mode

Considering [ON] as [ON one second] if the sampling date is ON. [OFF] is also same.
[UP] is counted as [one pulse] in the condition that previous sampling data is OFF, and this sampling data is ON.
[DOWN] is same also.

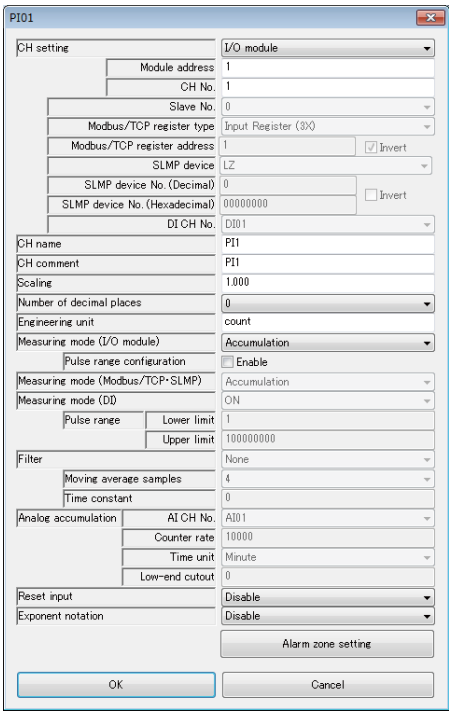


* By previous time sampling data, determining to count it or not.

Basic setting (PI)

Once the assignment is complete, please configure the following basic setting. Click on the [OK] button to temporarily store the setting.

PI setting

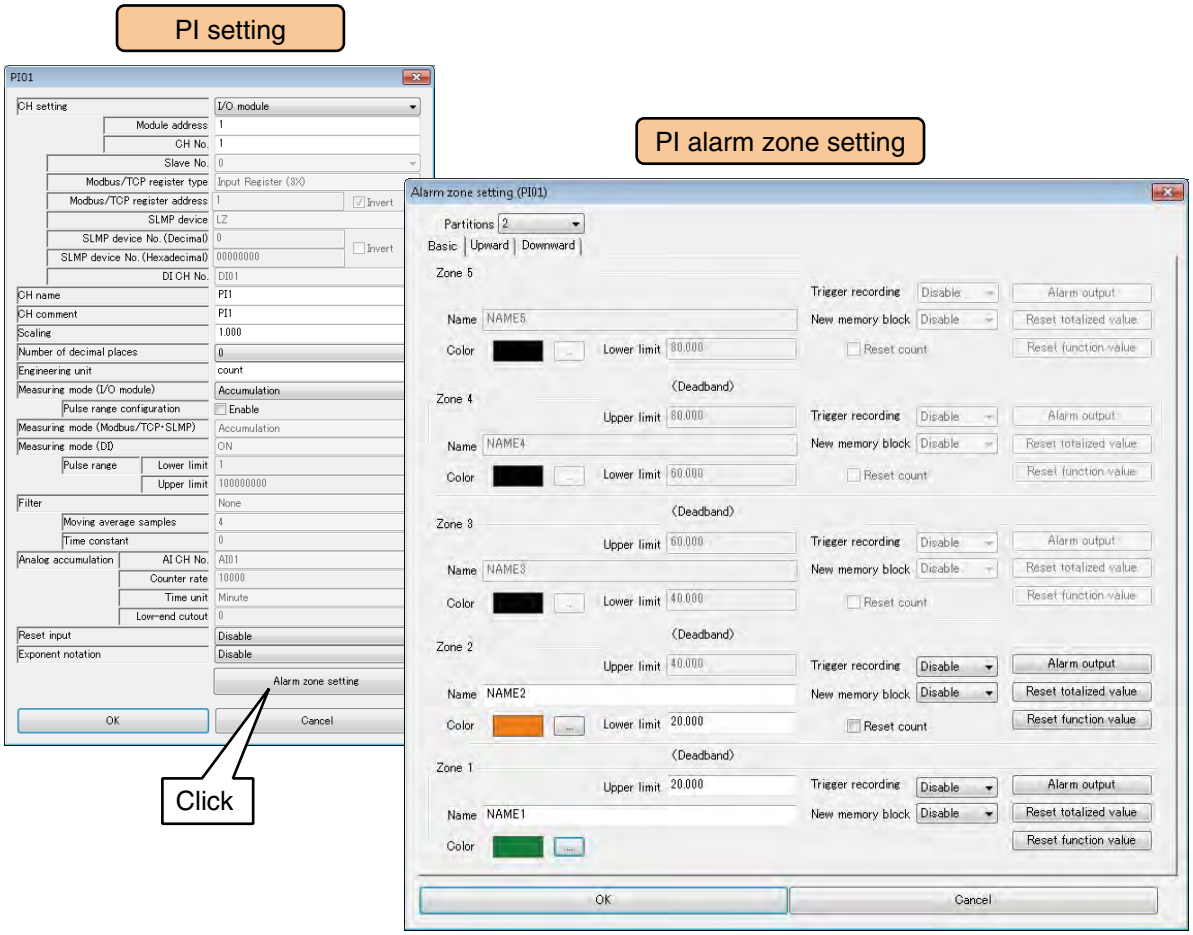


Parameter	Description
CH name	Set a channel name which is less than 16 characters.
CH comment	Set a description for the channel which is less than 16 characters using the tag name, etc.
Scaling	Set the weight per pulse as a numeric value.
Number of decimal places	Set the number of digits after the decimal point in the values displayed as numeric values in the Web screen. You can set a value between 0 and 3.
Engineering unit	Set the engineering unit corresponding to the actual value set in the [Scale]. Can be set as less than 8 characters.
Filter	Set by selecting from: None/Moving average/Delay buffer. Can only be set for actual values
Analog accumulation	• Accumulation rate Set the equivalent number of pulses (0 to 10000), in the case of target AI is entered as 100% and this continues for unit time. •Time Unit Set minute/hour/day. • Low-end cut out Set the lower limit values(0 to 12000) per one sampling.
Reset input	The cumulative total pulse can be reset on the rising edge of the Discrete input (DI). If this function is not being used, set it as [Disable], and if it is being used, set the target DI.
Exponent notation	Choose to use the normalized exponent notation for numeric values on the web browser views. The number of decimal places set in the above is also used in the mantissa.

Alarm zone setting (PI)

Configure alarm zone setting corresponding to the input values. A maximum of 5 zones can be set, and dead-bands can also be set between zones.

(1) Click on the [Alarm zone setting] button in the [PI setting] to display the [PI Alarm zone setting].



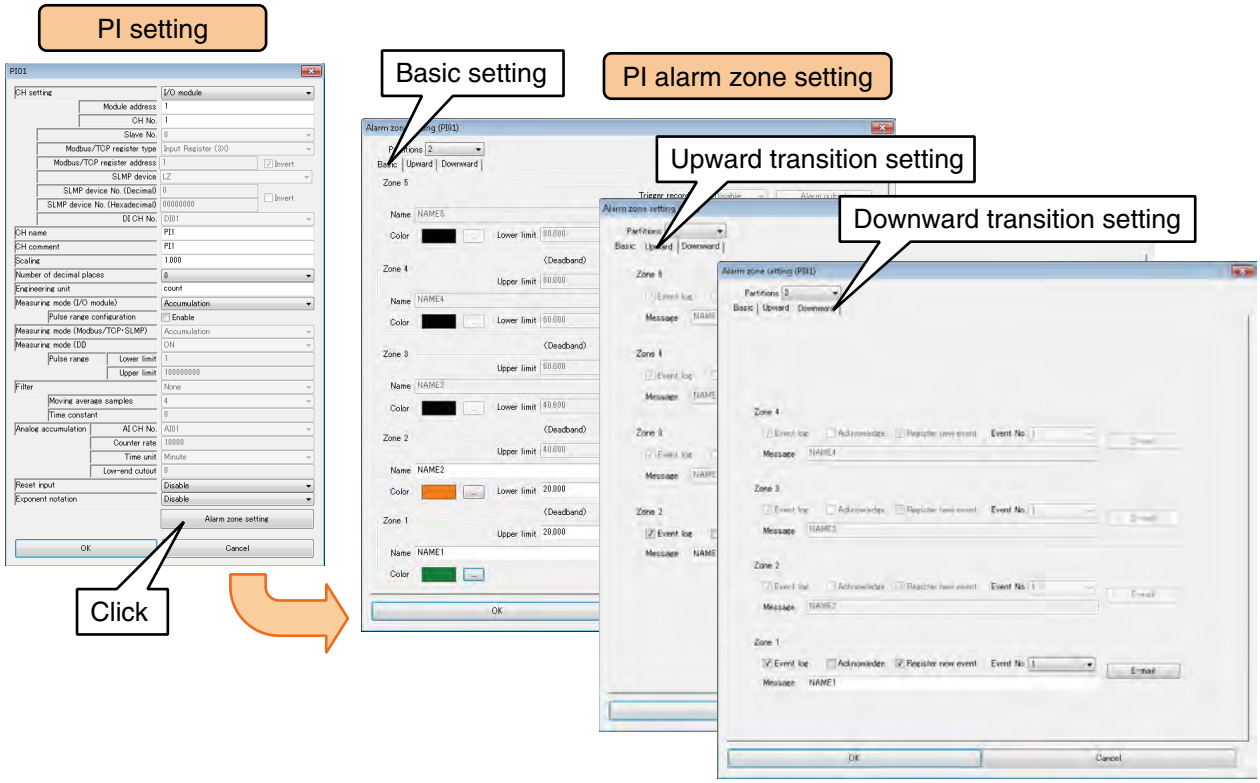
(2) Set various parameters by referring to the table below.

Parameter	Description
Partitions	Set the number of partitions to be used. You can select from: Disable / 2 / 3 / 4 / 5.
Name	Set a name which is less than 32 characters for each zone.
Color	Set a color to represent each zone which will be displayed on the Web screen.
Upper limit : : : Lower limit	Set the upper and lower limit value for these zones as actual values. Set the upper limit value > lower limit value. • When the deadband is set When a deadband is set between zone 1 and zone 2, set the values so that the deadband is between the upper limit value for zone 1 and the lower limit value for zone 2. Set similarly for the other zones as well. • When the deadband is not set When the deadband is not set between zone 1 and zone 2, set the same value for the upper limit value of zone 1 and the lower limit value of zone 2. Set similarly for the other zones as well.
Trigger recording	Set whether or not to record when there is a change in the input value and it enters a certain zone. You can select from: Disable / Start / Stop.
New memory block	Set whether or not to run a new memory block when there is a change in the input value and it enters a certain zone. You can select from: Disable / Enable.

Upward setting / Downward setting (PI)

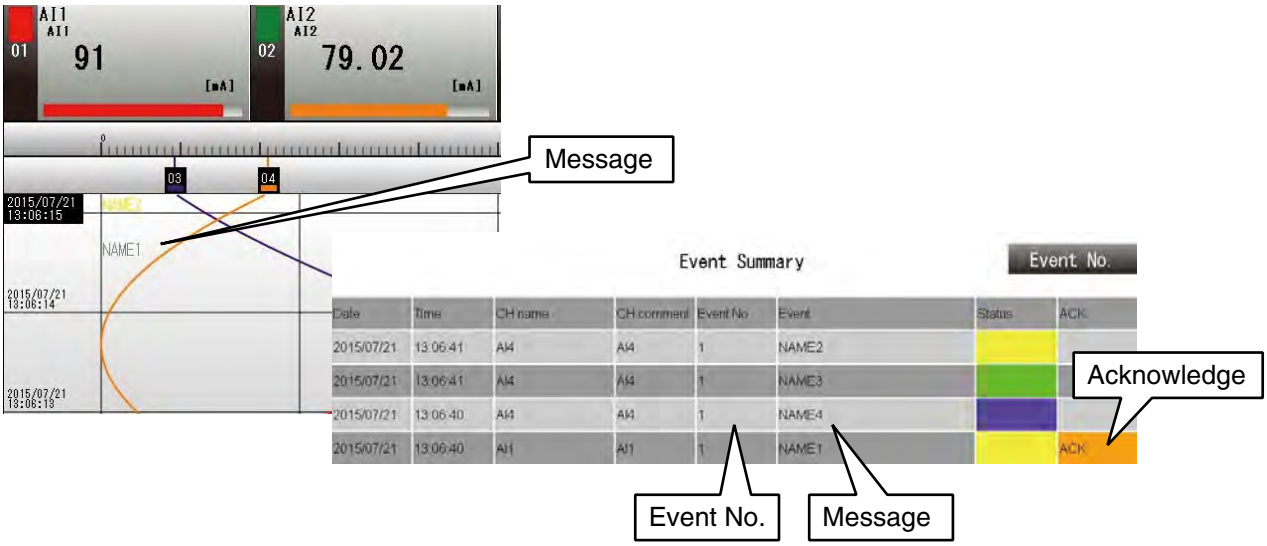
This event occurs when the zone which has been set in the alarm zone setting is changed.

(1) Click on the [Alarm zone setting] button in the [PI setting] to display the [PI Alarm zone setting]. Click on the tab [Upward] or [Downward].



(2) Please set various parameters by referring to the table below. Once the setup is complete, press the [OK] button and temporarily store the setting.

Parameter	Description
Event log	Set whether or not to record an event when there is a change in the input value and it enters a certain zone. To record, put a check in the check box.
Acknowledge	Set whether the event summary/new event needs to be acknowledged or not.
Register new event	Set whether or not to display the input value in the new event screen when there is a change in the input value and it enters a certain zone. To display, put a check in the check box.
Event No.	Set the event number. This number can be used to set a filter in the event summary in the Web screen. (Setting range: 1 to 32)
Message	Set a message which is less than 32 characters to be displayed when an event occurs.
E-mail	Set the mail number to be sent when an event occurs.



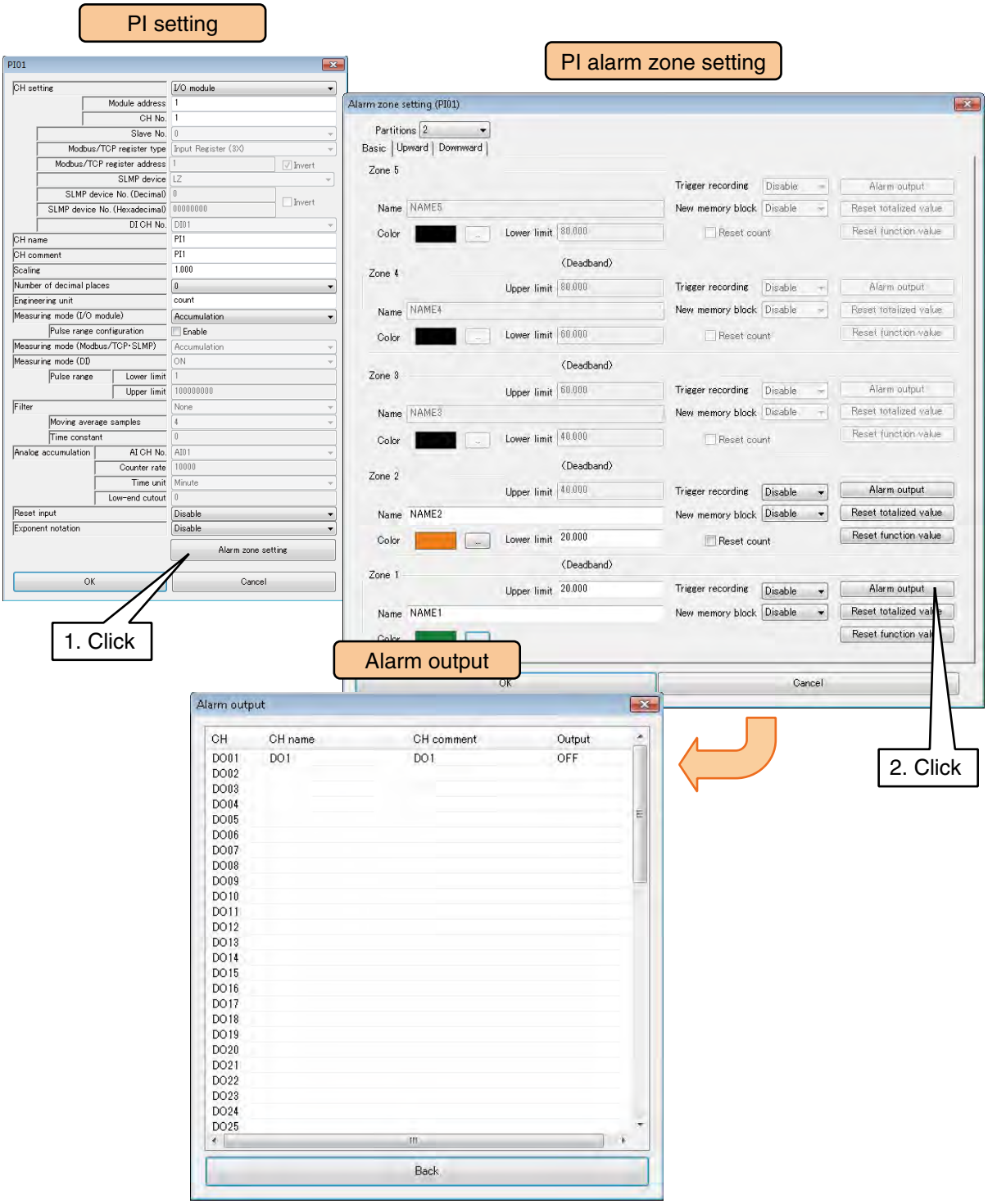
CAUTION

If the new memory block lasts for a short time, data on a memory block which has not been transferred to the SD card may get overwritten. Set the new memory block interval as a multiple of 10 seconds.

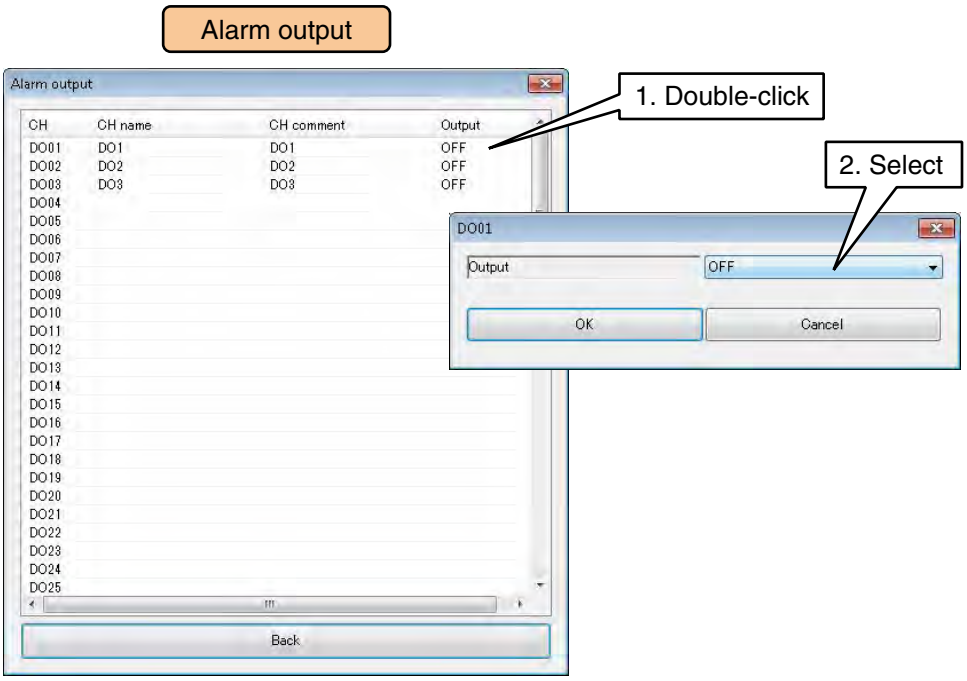
Alarm output (PI)

A specific DO can be turned ON for each zone.

(1) Click on the [Alarm zone setting] button in the [PI setting] to display the [PI Alarm zone setting]. Click on the [Alarm output] button in a specific zone to display the [Alarm output].



(2) Double-click on the DO channel to be operated and set as ON/OFF.



(3) Once the setup is complete, press the [OK] button and temporarily store the setting.

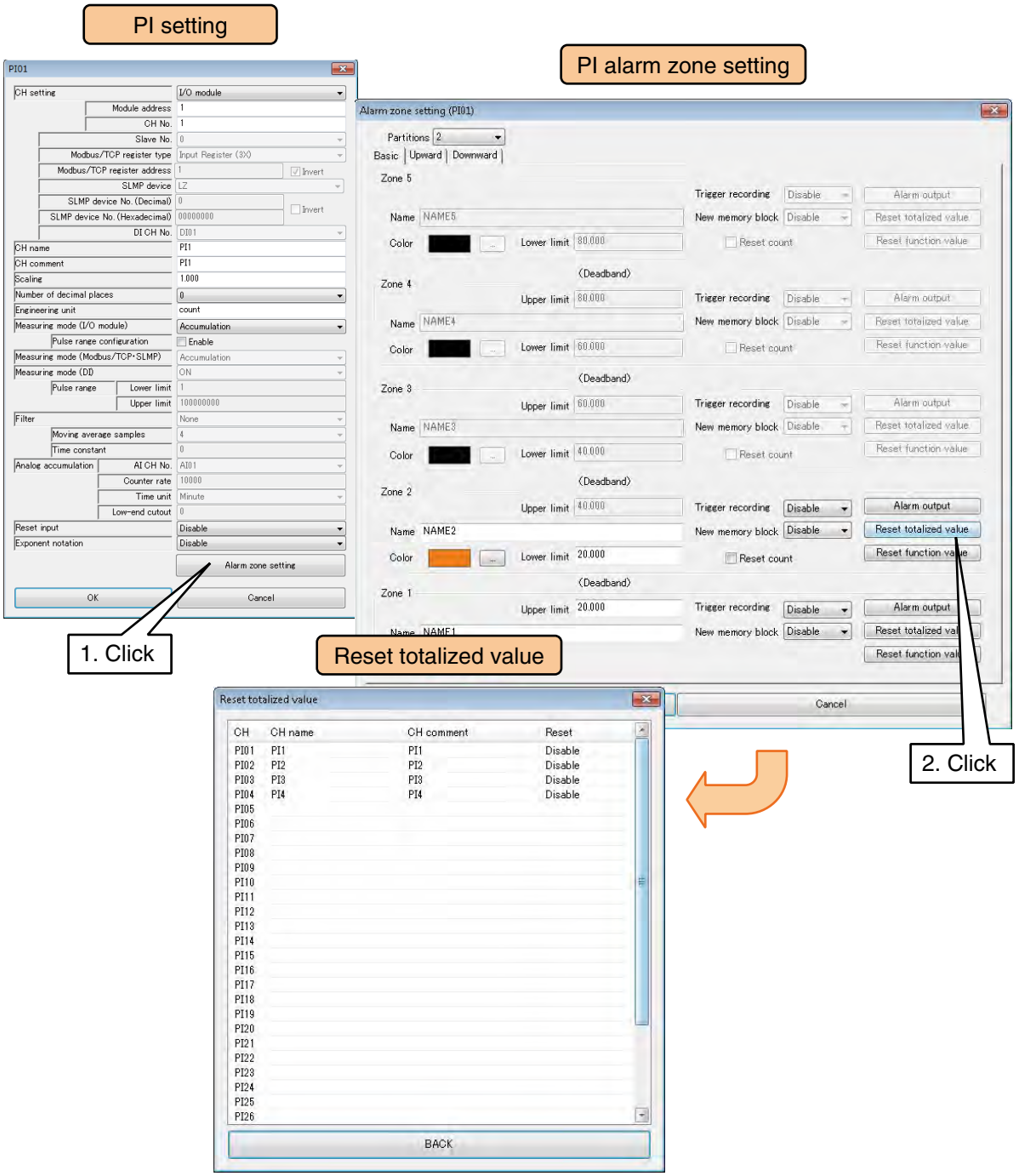
CAUTION

- Configure the DO setting before configuring these setting.
  ➔ 3.8.7 Discrete output (DO)
- When DO is turned ON in the alarm output, the ON output continues as long as the input value is within that zone.
- If the alarm output is not used, set it as OFF.

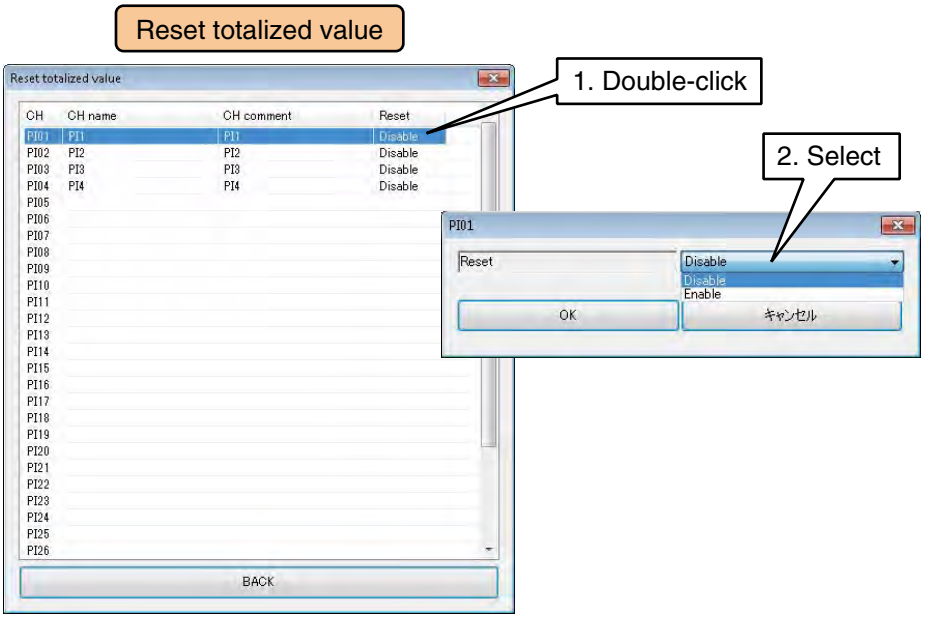
Reset totalized value (PI)

During zone transition, the cumulative total value of a specific PI can be reset.

(1) Click on the [Alarm zone setting] button in the [PI setting] to display the [PI Alarm zone setting]. Click on the [Reset totalized value] button in a specific zone to display the [Reset totalized value].



(2) Double-click on the PI channel to be operated and set as Disable/Enable.

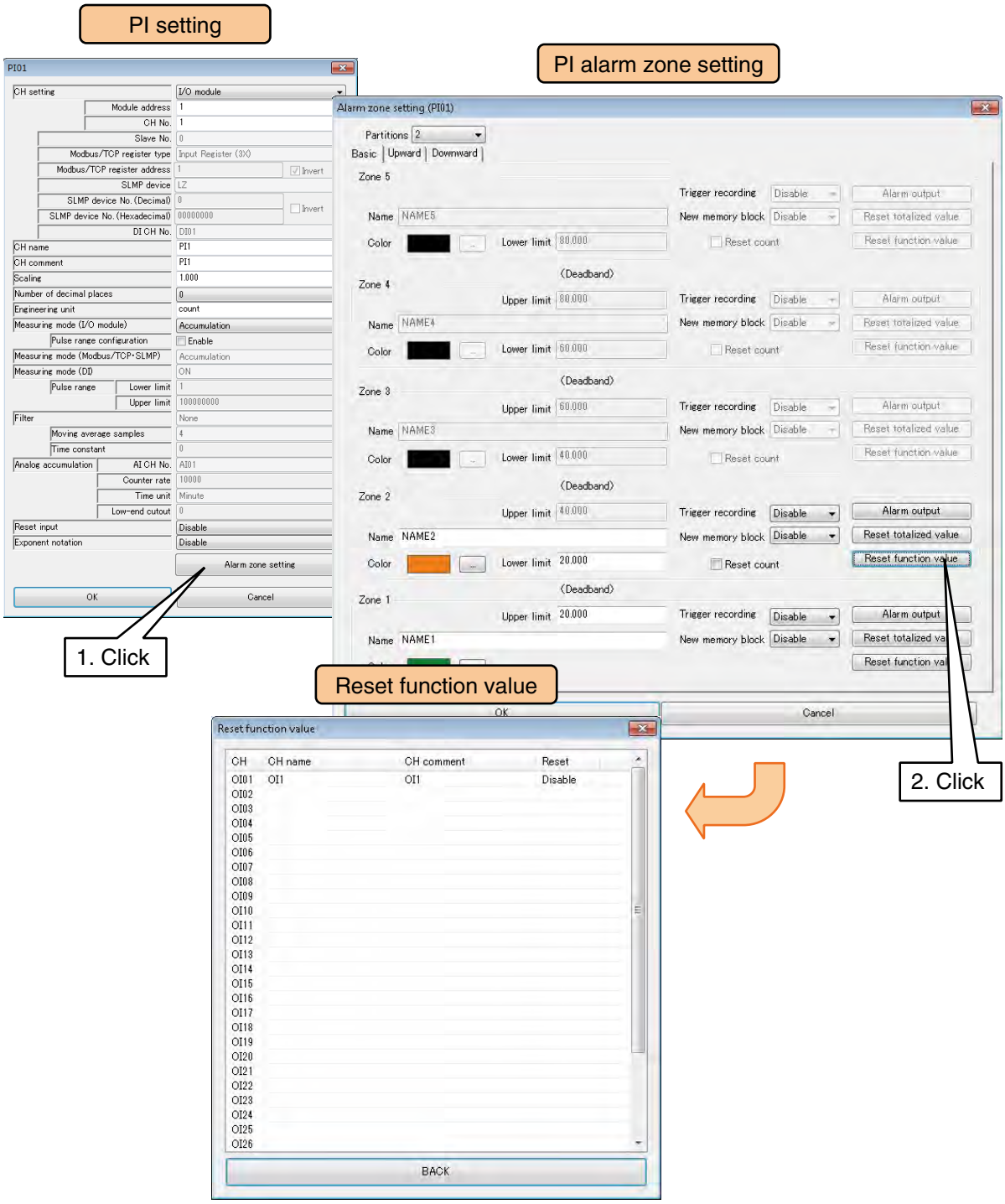


(3) Once the setup is complete, press the [OK] button and temporarily store the setting.

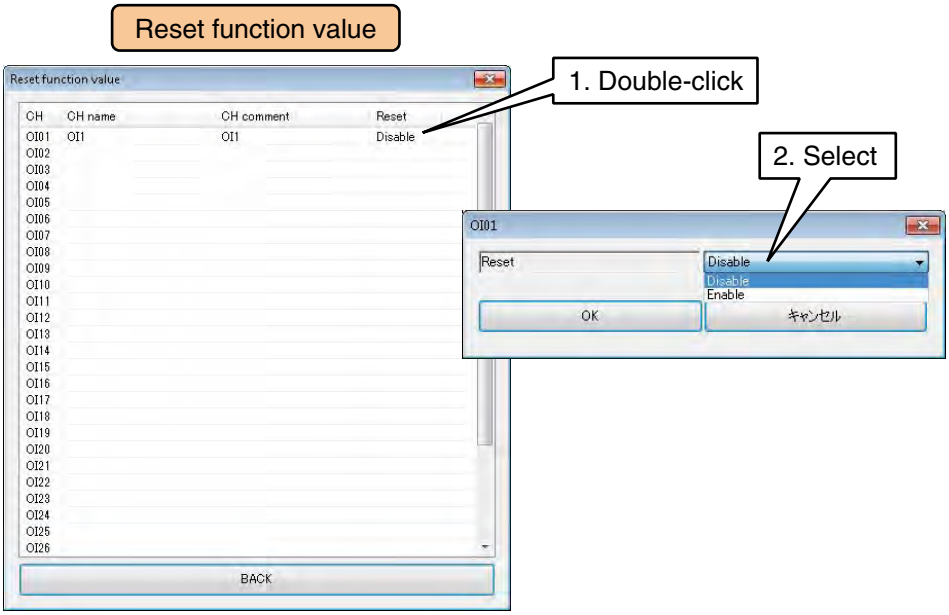
Reset function value (PI)

During zone transition, the operation of a specific OI can be reset.

(1) Click on the [Alarm zone setting] button in the [PI setting] to display the [PI Alarm zone setting]. Click on the [Reset function value] button in a specific zone to display the [Reset function value].



(2) Double-click on the OI channel to be operated and set as Disable / Enable.



(3) Once the setup is complete, press the [OK] button and temporarily store the setting.

Set each CH by following the above procedure.
The CH setting for which the setting is complete in the [Pulse input (PI)] screen can also be copied to other CHs and only the required portions can be edited.
➔ 3.8.8 Copying the CH setting

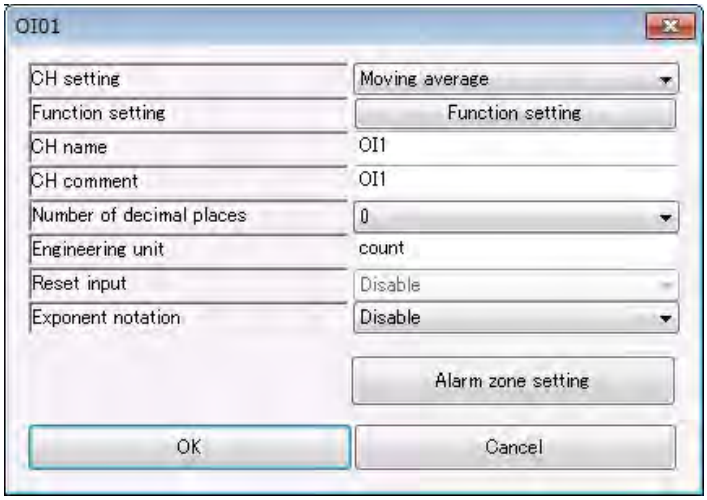
3.8.6 Function input (OI)

Function input can be done for a maximum of 32 points (OI1 to OI32).
Please use the following procedure to configure the setting for the device.

Basic setting (OI)

Configure the following basic setting. Click on the [OK] button to temporarily store the setting.

OI setting



Parameter	Description
CH setting	Select and set from: Disable / Addition and subtraction / Multiplication / Division / Square root / Moving average / Delay buffer / Peak hold (max) / Valley hold (min) / exp / Common logarithm / Natural logarithm / Analog accumulation / Power / F value calculation / Antilog / Scaling.
CH name	Set a channel name which is less than 16 characters.
CH comment	Set a description for the channel which is less than 16 characters using the tag name, etc.
Number of decimal places	Set the number of digits after the decimal point in the values displayed as numeric values in the Web screen. You can set a value between 0 and 3.
Engineering unit	Set the engineering unit. Can be set as less than 8 characters.
Reset input	Perform reset function value by switching the specific DI from OFF to ON. If you do not want to use this function, set it as [Disable], and to use it, please set the target DI.
Exponent notation	Choose to use the normalized exponent notation for numeric values on the web browser views. The number of decimal places set in the above is also used in the mantissa.

■Operation specifications

Operation name	Formula	Parameters
Addition and subtraction	$K1X1 + K2X2 + K3X3 + A0$	K1, K2, K3, A0: Constant X1, X2, X3: AI1 - 64, DI1 - 64, PI1 - 32, OI1 - 32 Use engineering unit values. DI: ON=1.0, OFF=0.0
Multiplication	$(K1X1 + A1)(K2X2 + A2) + A0$	K1, K2, A0, A1, A2: Constant X1, X2: AI1 - 64, DI1 - 64, PI1 - 32, OI1 - 32 Use engineering unit values. DI: ON=1.0, OFF=0.0
Division	$(K1X1 + A1) / (K2X2 + A2) + A0$	K1, K2, A0, A1, A2: Constant X1, X2: AI1 - 64, DI1 - 64, PI1 - 32, OI1 - 32 Use engineering unit values. DI: ON=1.0, OFF=0.0
Square root	$10\ K1\sqrt{X1}$	K1: Constant X1: AI1 - 64, PI1 - 32, OI1 - 32, engineering unit value
Moving average		X1: AI1 - 64, PI1 - 32, OI1 - 32, engineering unit value K1: Number of moving averages (4 / 8 / 16 / 32 / 64)
Delay buffer		X1: AI1 - 64, PI1 - 32, OI1 – 32, engineering unit value K1: Time constant (0 to 100 seconds)
Exp	e^{x1}	X1: AI1 - 64, PI1 - 32, OI1 - 32, engineering unit value
Common logarithm	$\log X1$	X1: AI1 - 64, PI1 - 32, OI1 - 32, engineering unit value
Natural logarithm	$\ln X1$	X1: AI1 - 64, PI1 - 32, OI1 - 32, engineering unit value
Peak hold(max)	$MAX\ (X1)$	X1: AI1 - 64, PI1 - 32, OI1 - 32, engineering unit value RST: Initialize (MAX=X1)
Valley hold (min)	$MIN\ (X1)$	X1: AI1 - 64, PI1 - 32, OI1 - 32, engineering unit value RST: Initialize (MIN=X1)
Analog accumulation		X1: AI1 - 64, PI1 - 32, OI1 - 32, engineering unit value (0 to 100%) K1: Counter rate K2: Time Unit (Minutes / Hours / Days) K3: Low-end cutout (0.000 to 120.000%) RST: Initialize
Power	$X1^{K1}$	X1: AI1 - 64, PI1 - 32, OI1 - 32, engineering unit value K1: Exponent
F value calculation	$\sum 10^{\frac{X1 - K1}{K2}}$	X1: AI1 - 64, PI1 - 32, OI1 - 32, engineering unit value (°C) K1: Reference temperature (°C) K2: Z value (Positive actual number) RST: Initialize
Inverse logarighm	10^{x1}	X1: AI1 - 64, PI1 - 32, OI1 - 32, engineering unit value
Scaling	$K3 + (K4 - K3)(X1 - K1) / (K2 - K1)$	X1: AI1 - 64, PI1 - 32, OI1 - 32 K1: Zero (input) K2: Span (input) K3: Zero (output) K4: Span (output) Zero and span must not be the same value.

■ **Action when there is an error**

Operation name	Process
Division	When K2X2 + A2 = 0, consider the previous value as the operation value. Record the contents in the system log.
Square root	When X1 is negative, consider the previous value as the operation value. Record the contents in the system log.
Common logarithm	When X1 is <= 0, consider the previous value as the operation value. Record the contents in the system log.
Natural logarithm	When X1 is <= 0, consider the previous value as the operation value. Record the contents in the system log.
Power	When X1 = 0 and K1 <= 0, or X1 is negative and K1 is not an integer value, consider the previous value as the operation value. Record the contents in the system log.

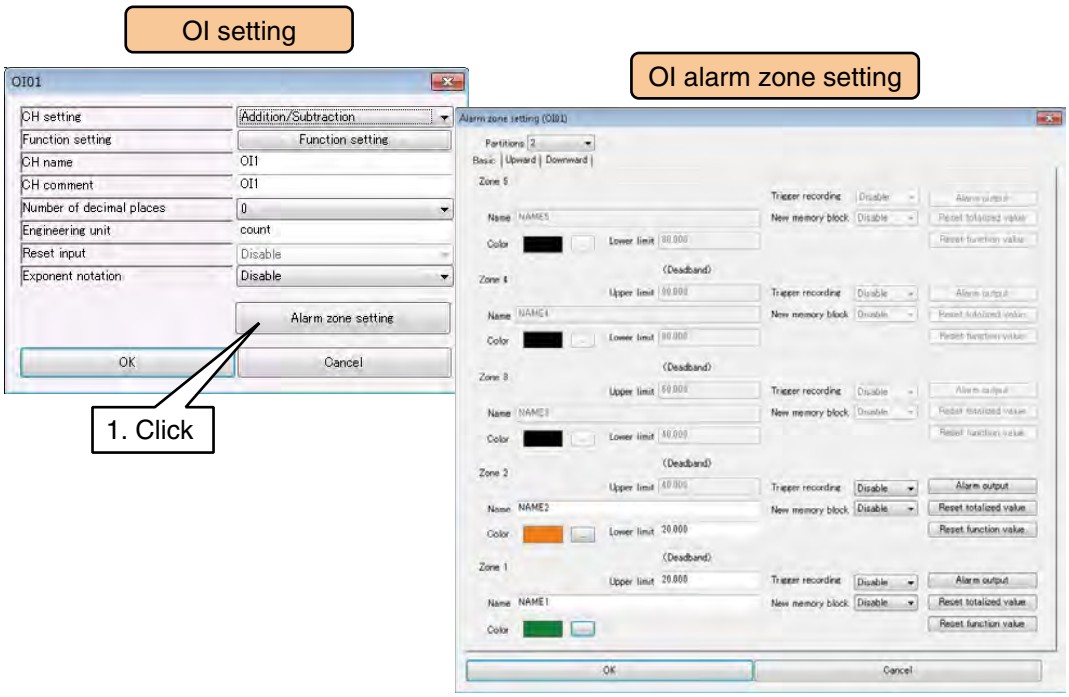
NOTES

Refer the accumulate method of analog accumulate to the assignment of PI of [3.8.5 Pulse input (PI)].

Alarm zone setting (OI)

Configure alarm zone setting corresponding to the input values. A maximum of 5 zones can be set, and dead-bands can also be set between zones.

(1) Click on the [Alarm zone setting] button in the [OI setting] to display the [OI Alarm zone setting].



(2) Set various parameters by referring to the table below.

Parameter	Description
Partitions	Set the number of partitions to be used. You can select from: Disable / 2 / 3 / 4 / 5.
Name	Set a name which is less than 32 characters for each zone.
Color	Set a color to represent each zone which will be displayed on the Web screen.
Upper limit : : : Lower limit	Set the upper and lower limit value for these zones as actual values. Set the upper limit value > lower limit value. • When the deadband is set When a deadband is set between zone 1 and zone 2, please set the values so that the deadband is between the upper limit value for zone 1 and the lower limit value for zone 2. Set similarly for the other zones as well. • When the deadband is not set When the deadband is not set between zone 1 and zone 2, set the same value for the upper limit value of zone 1 and the lower limit value of zone 2. Set similarly for the other zone as well.
Trigger recording	Set whether or not to record when there is a change in the input value and it enters a certain zone. You can select from: Disable / Start / Stop.
New memory block	Set whether or not to run a new memory block when there is a change in the input value and it enters a certain zone. You can select from: Disable / Enable.

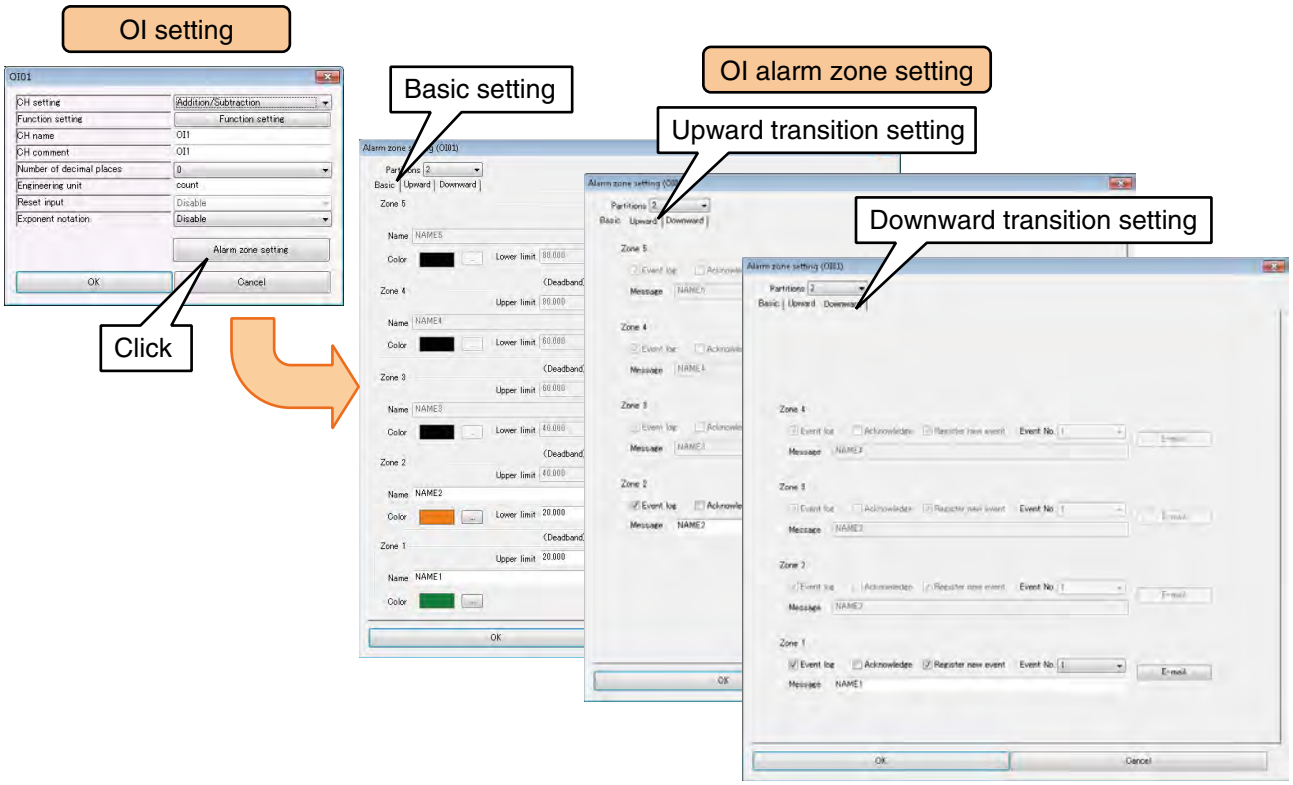
CAUTION

If the new memory block lasts for a short time, data on a memory block which has not been transferred to the SD card may get overwritten. Set the new memory block interval as a multiple of 10 seconds.

Upward setting / Downward setting (OI)

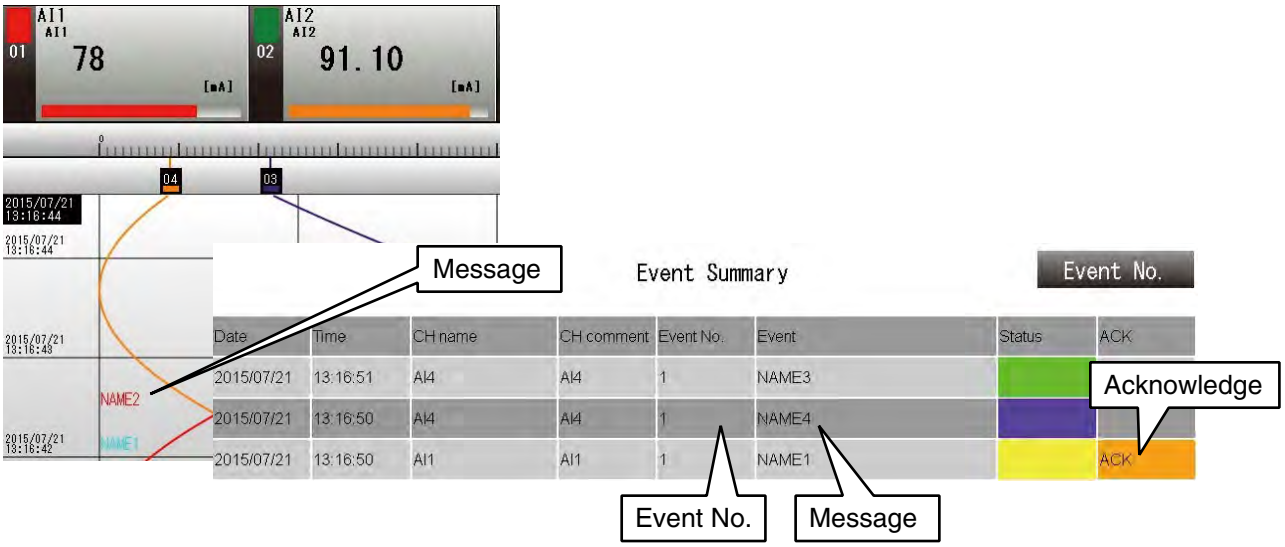
This event occurs when the zone which has been set in the alarm zone setting is changed.

(1) Click on the [Alarm zone setting] button in the [OI setting] to display the [OI Alarm zone setting]. Click on the tab [Upward] or [Downward].



(2) Set various parameters by referring to the table below. Once the setup is complete, press the [OK] button and temporarily store the setting.

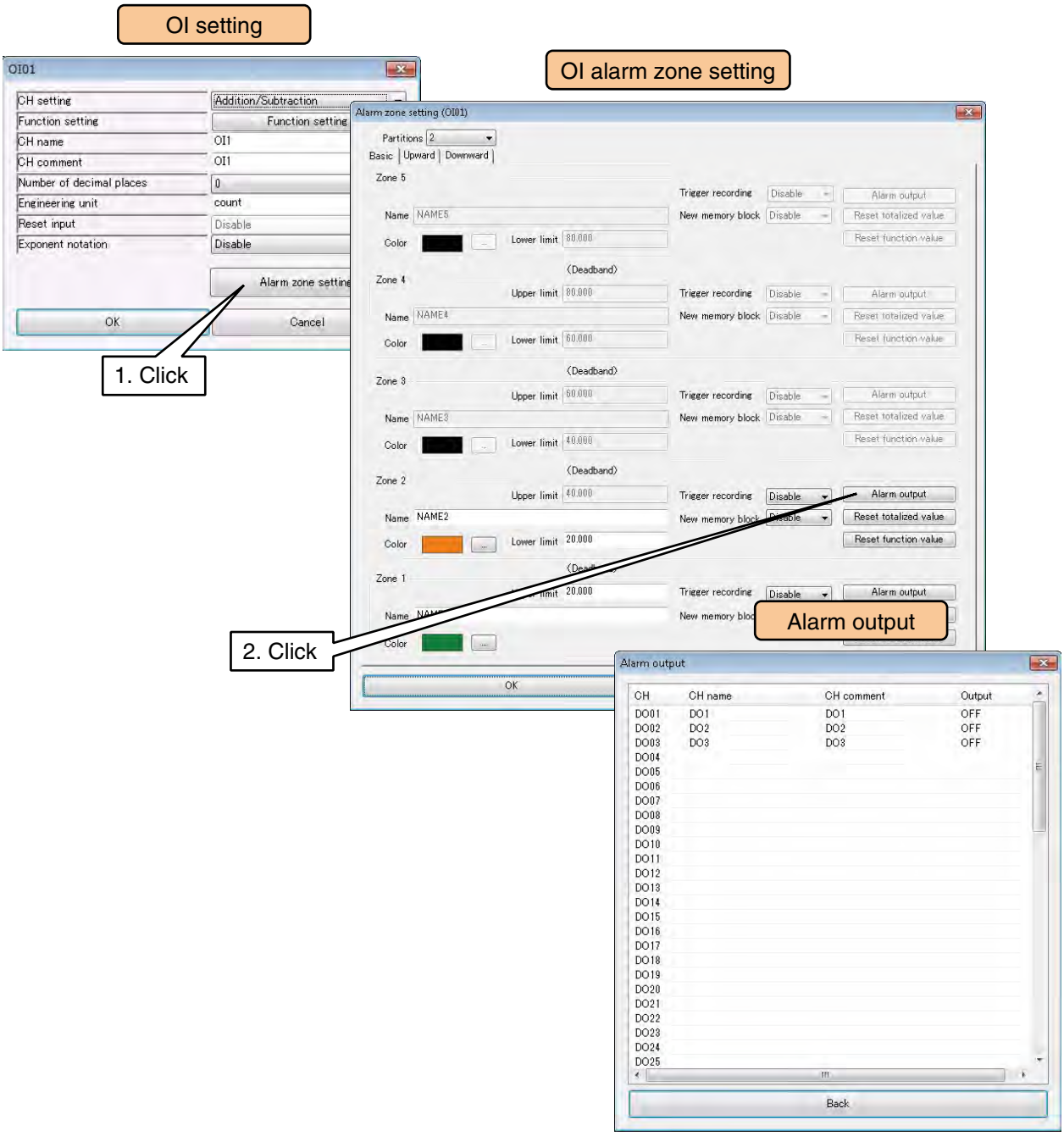
Parameter	Description
Event log	Set whether or not to record an event when there is a change in the input value and it enters a certain zone. To record, put a check in the check box.
Acknowledge	Set whether the event summary/new event needs to be acknowledged or not.
Register new event	Set whether or not to display the input value in the new event screen when there is a change in the input value and it enters a certain zone. To display, put a check in the check box.
Event No.	Set the event number. This number can be used to set a filter in the event summary in the Web screen. (Setting range: 1 to 32)
Message	Set a message which is less than 32 characters to be displayed when an event occurs.
E-mail	Set the mail to be sent when an event occurs.


AI1
AI1
78
[mA]
AI2
AI2
91.10
[mA]
01
02
04
03
2015/07/21
13:16:44
2015/07/21
13:16:44
2015/07/21
13:16:43
2015/07/21
13:16:42
NAME2
NAME1
Message
Event Summary
Event No.
Date
Time
CH name
CH comment
Event No.
Event
Status
ACK
2015/07/21
13:16:51
AI4
AI4
1
NAME3
2015/07/21
13:16:50
AI4
AI4
1
NAME4
2015/07/21
13:16:50
AI1
AI1
1
NAME1
ACK
Acknowledge
Event No.
Message

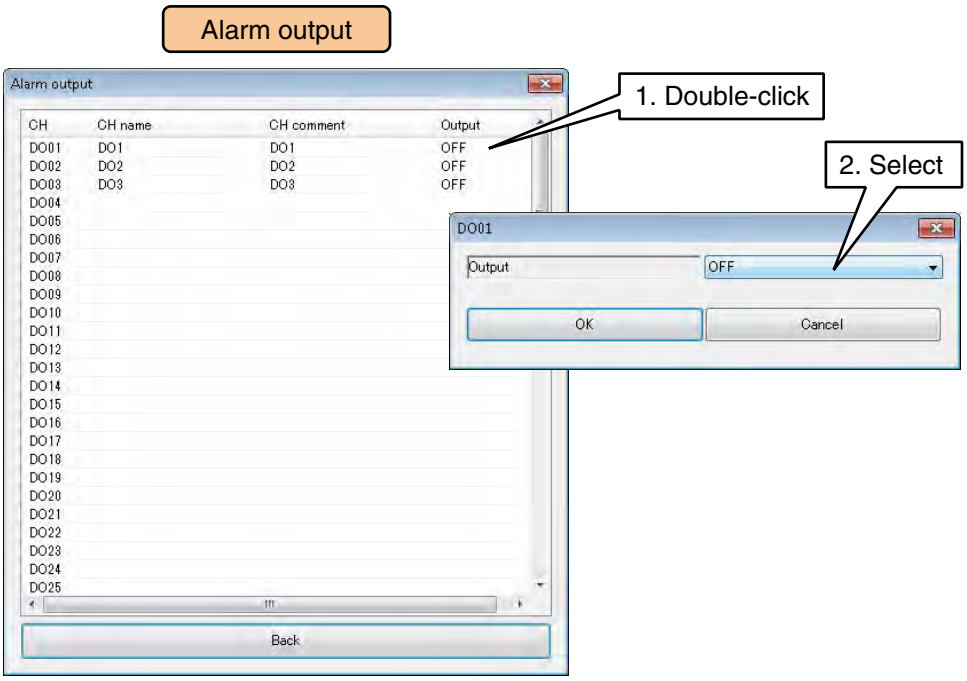
Alarm output (OI)

A specific DO can be turned ON for each zone.

(1) Click on the [Alarm zone setting] button in the [OI setting] to display the [OI Alarm zone setting]. Click on the [Alarm output] button in a specific zone to display the [Alarm output].



(2) Double-click on the DO channel to be operated and set as ON/OFF.



(3) Once the setup is complete, press the [OK] button and temporarily store the setting.

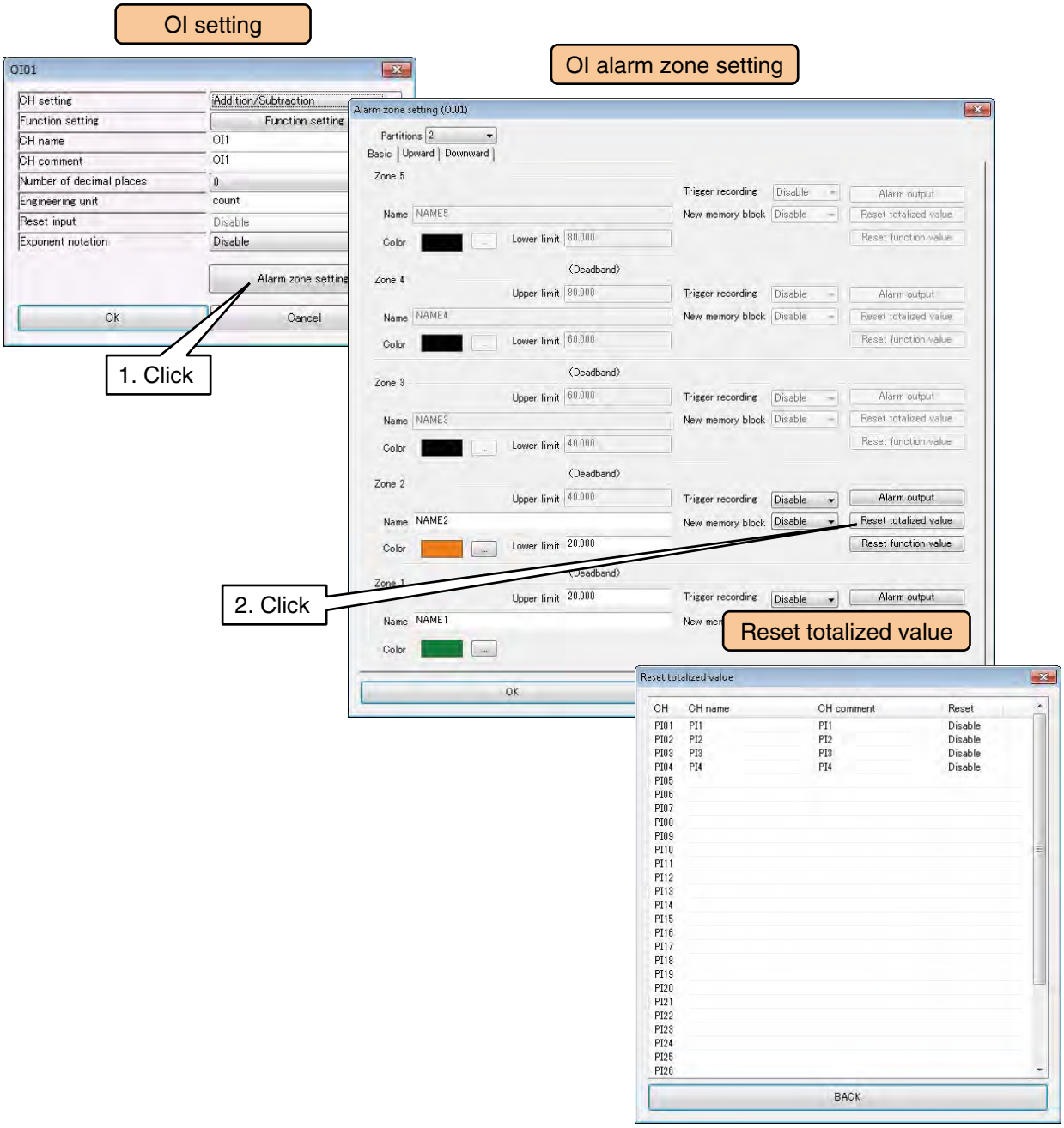
CAUTION

- Configure the DO setting before configuring these setting.
  ➔ 3.8.7 Discrete output (DO)
- When DO is turned ON in the alarm output, the ON output continues as long as the input value is within that zone.
- If the alarm output is not used, please set it as OFF.

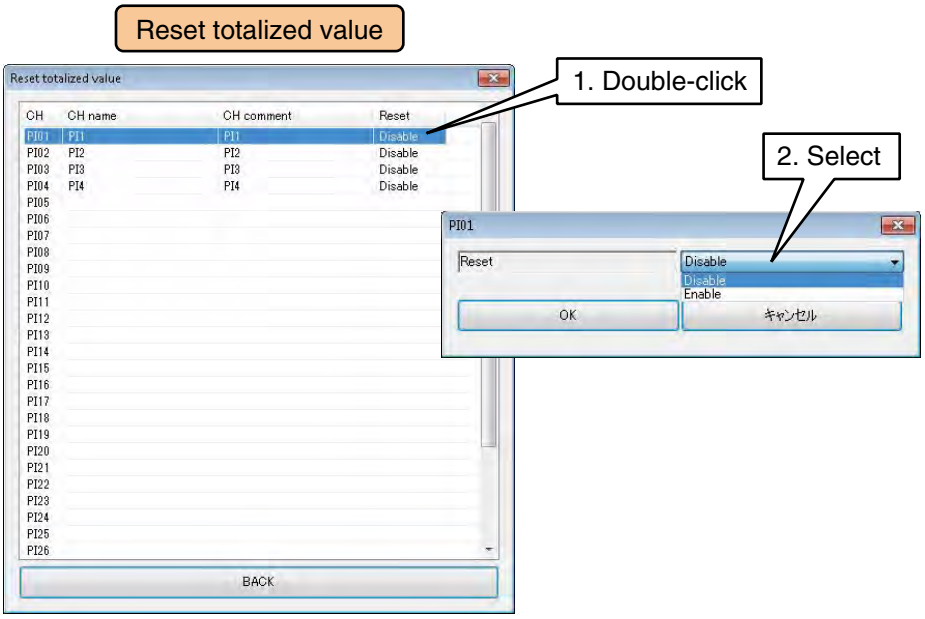
Reset totalized value (OI)

During zone transition, the cumulative total value of a specific PI can be reset.

(1) Click on the [Alarm zone setting] button in the [OI setting] to display the [OI Alarm zone setting]. Click on the [Reset totalized value] button in a specific zone to display the [Reset totalized value].



(2) Double-click on the PI channel to be operated and set as Disable/Enable.

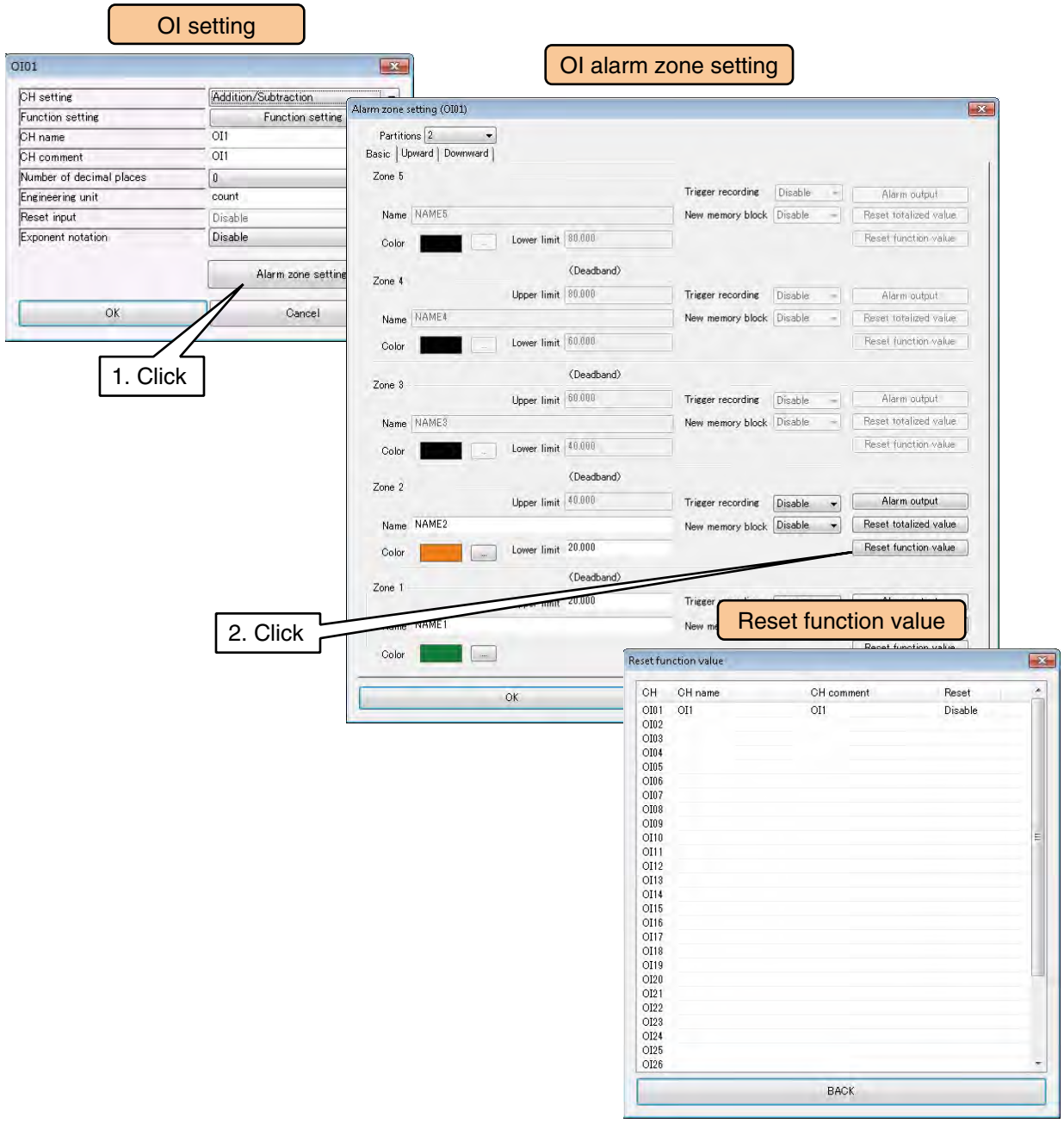


(3) Once the setup is complete, press the [OK] button and temporarily store the setting.

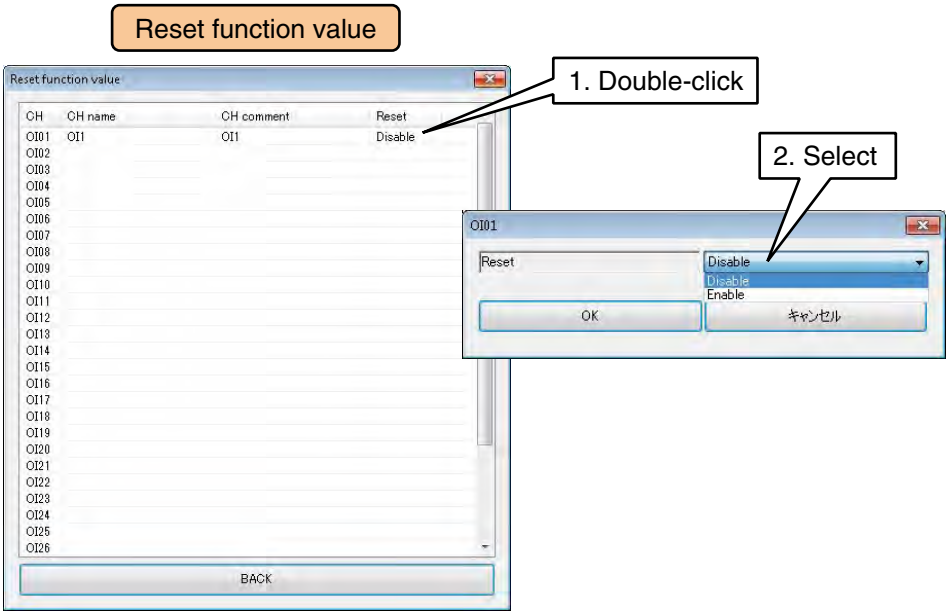
Reset function value (OI)

During zone transition, the operation of a specific OI can be reset.

(1) Click on the [Alarm zone setting] button in the [OI setting] to display the [OI Alarm zone setting]. Click on the [Reset function value] button in a specific zone to display the [Reset totalized value].



(2) Double-click on the OI channel to be operated and set as Disable / Enable.



(3) Once the setup is complete, press the [OK] button and temporarily store the setting.

Please set each CH by following the above procedure.
The CH setting for which the setting is complete in the [Pulse input (PI)] screen can also be copied to other CHs and only the required portions can be edited.
➔ 3.8.8 Copying the CH setting

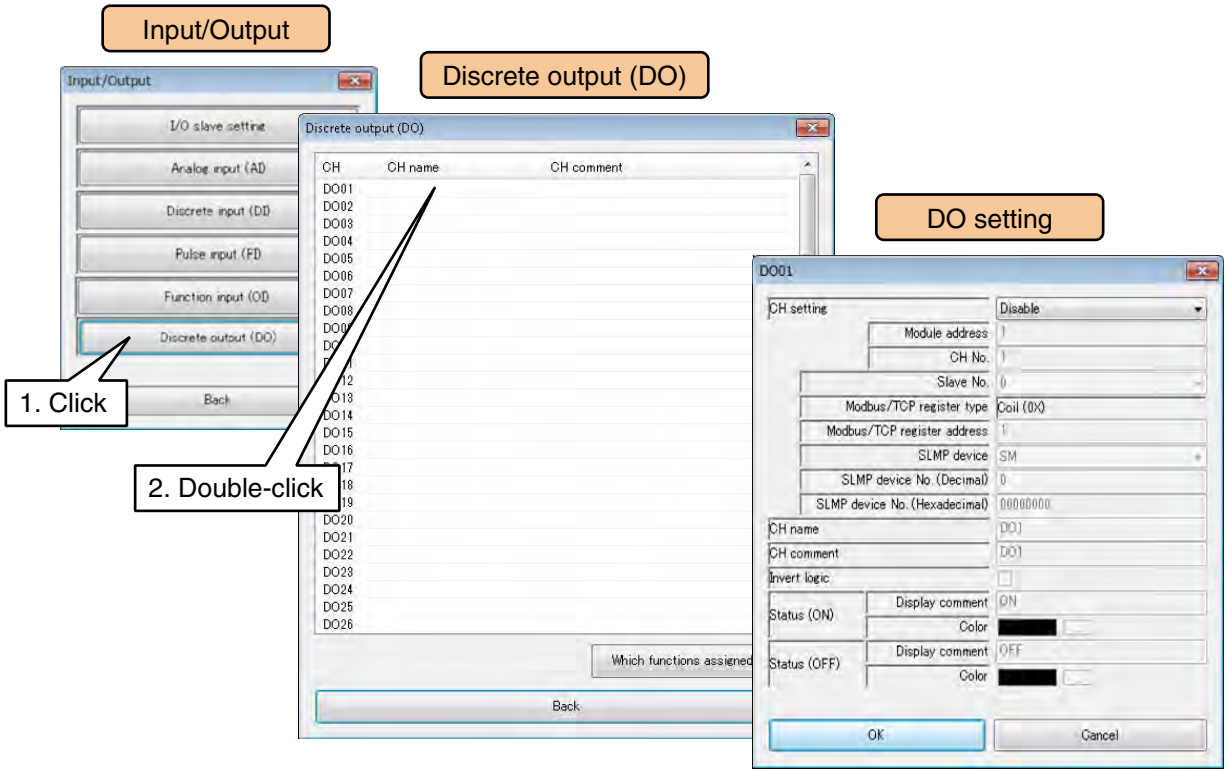
3.8.7 Discrete output (DO)

Discrete output (DO1 to DO64) can be output from a maximum of 64 points.
Please assign the discrete output from the connected I/O module or remote I/O to the device by following the procedure given below.

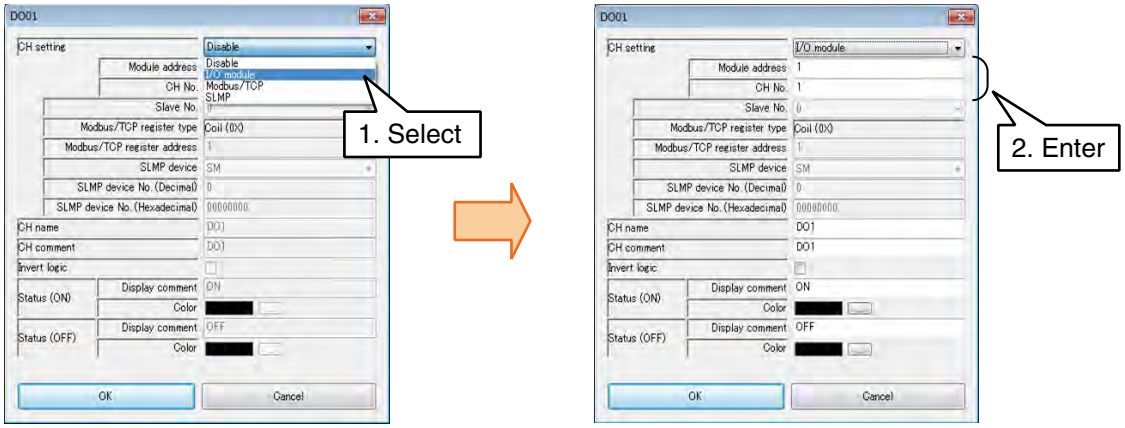
Assignment of the I/O module to DO

(1) Click on the [Discrete output (DO)] button in the [Input/Output] screen to display the [Discrete output (DO)] screen.

(2) Double-click on the DO row to be set to display the [DO setting].



(3) Set the [CH setting] as [I/O module] to enable the [Module address] and [CH No.]. Please enter the CH value to be assigned.



In case of discrete output, up to 16 ch can be assigned per module.

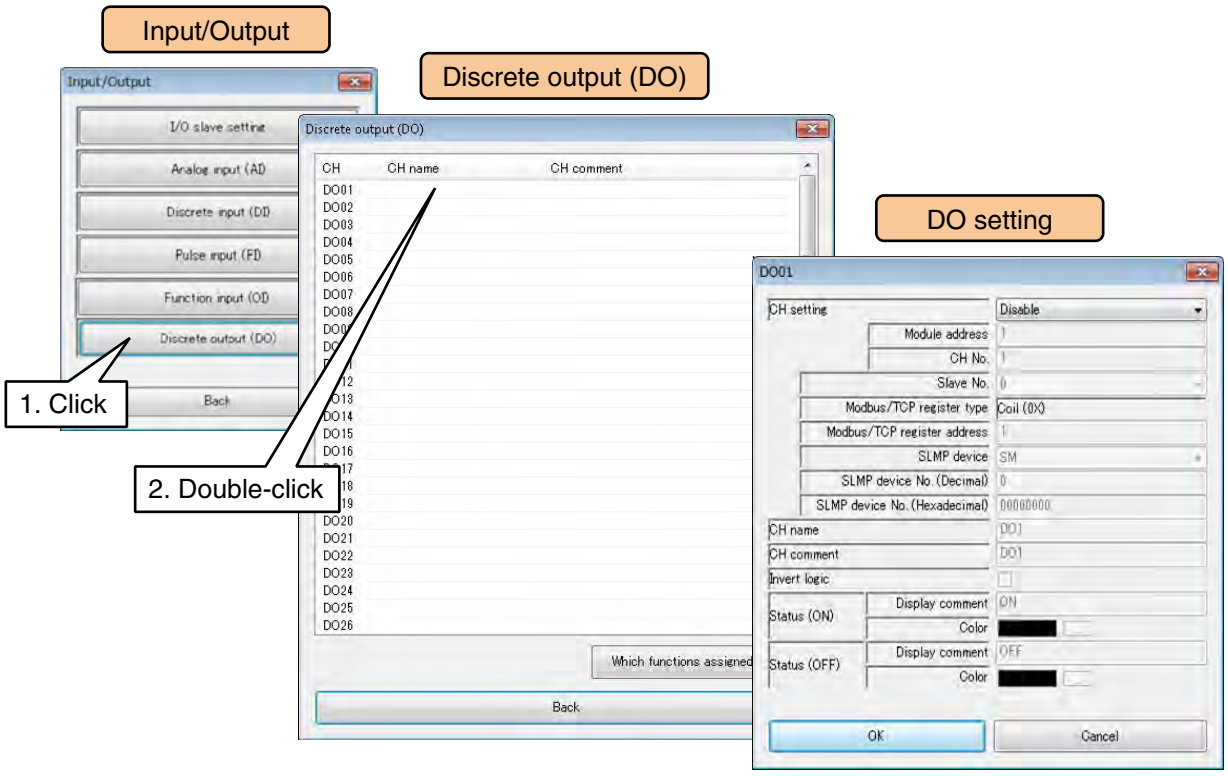
Module type	Compatible module	CH No.	Slot address	CH No. in the module
16 ch module	R30YN16A R30YN16C	CH1	N	1
		CH2	N	2
		CH3	N	3
		CH4	N	4
		CH5	N	5
		CH6	N	6
		CH7	N	7
		CH8	N	8
		CH9	N	9
		CH10	N	10
		CH11	N	11
		CH12	N	12
		CH13	N	13
		CH14	N	14
		CH15	N	15
		CH16	N	16

N: Slot address

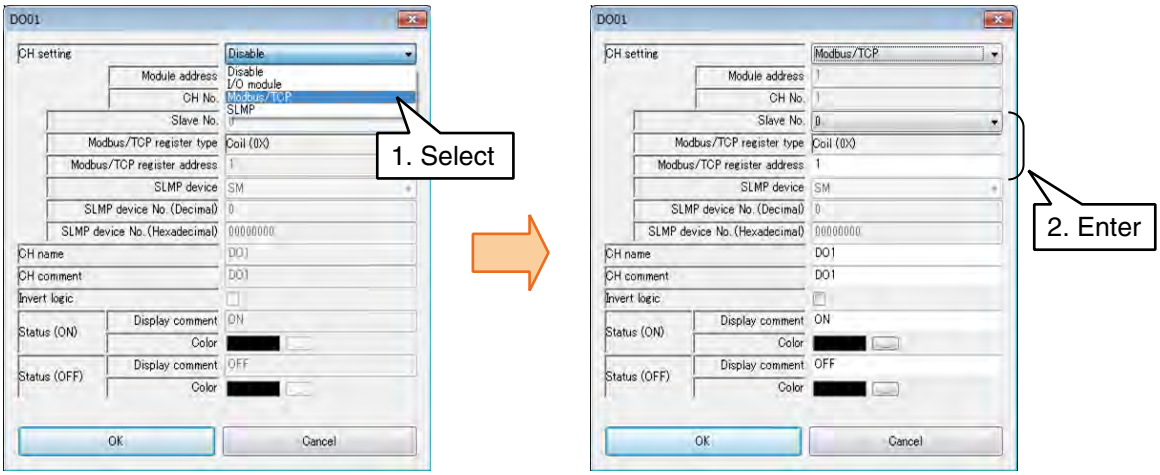
Assignment of remote I/O to DO

(1) Go first through the I/O slave setting for the remote I/O device.
➔ 3.8.1 I/O slave setting

(2) Display the [DO setting] just as in case of the I/O module.



(3) Set the [CH setting] as [Modbus/TCP], and enter the [Modbus/TCP slave No.], [Modbus/TCP register type] and [Modbus/TCP register address].

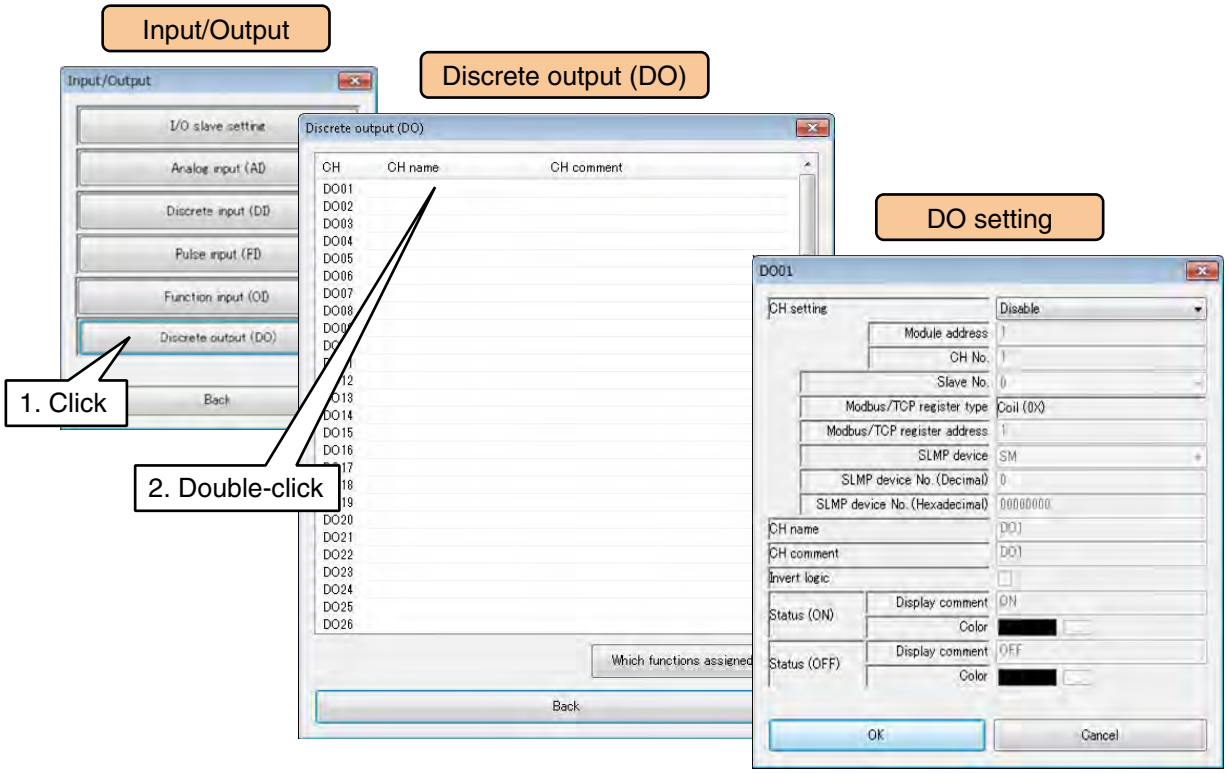


Parameter	Description
Modbus/TCP slave No.	Enter the slave No. (0 to 11) set in (1).
Modbus/TCP register type	Fixed as [Coil (0X)].
Modbus/TCP register address	Set the register address in the above register type (1 to 65536).

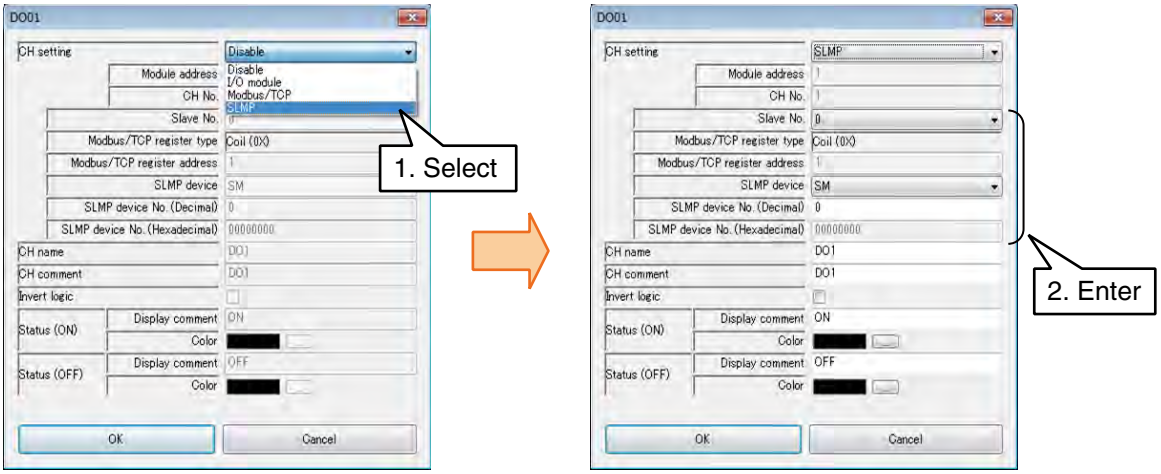
Assignment of SLMP device to DO

(1) Go first through the I/O slave setting for the SLMP device.
➔ 3.8.1 I/O slave setting

(2) Display the [DO setting] just as in case of the I/O module.



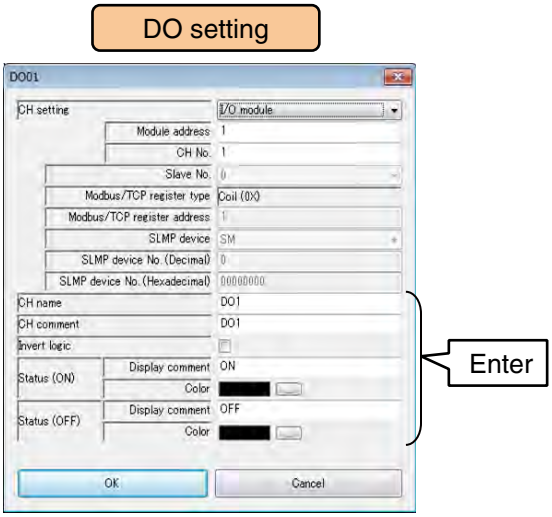
(3) Set the [CH setting] as [SLMP], and enter the parameters in the table below.



Parameter	Description
Slave No.	Enter the slave No. (0 to 11) set in (1).
SLMP device	Choose the device code of the SLMP device to be connected.
SLMP device No.	Set the device No. of the SLMP device to be connected.

Basic setting (DO)

Once the assignment is complete, please configure the following basic setting. Click on the [OK] button to temporarily store the setting.

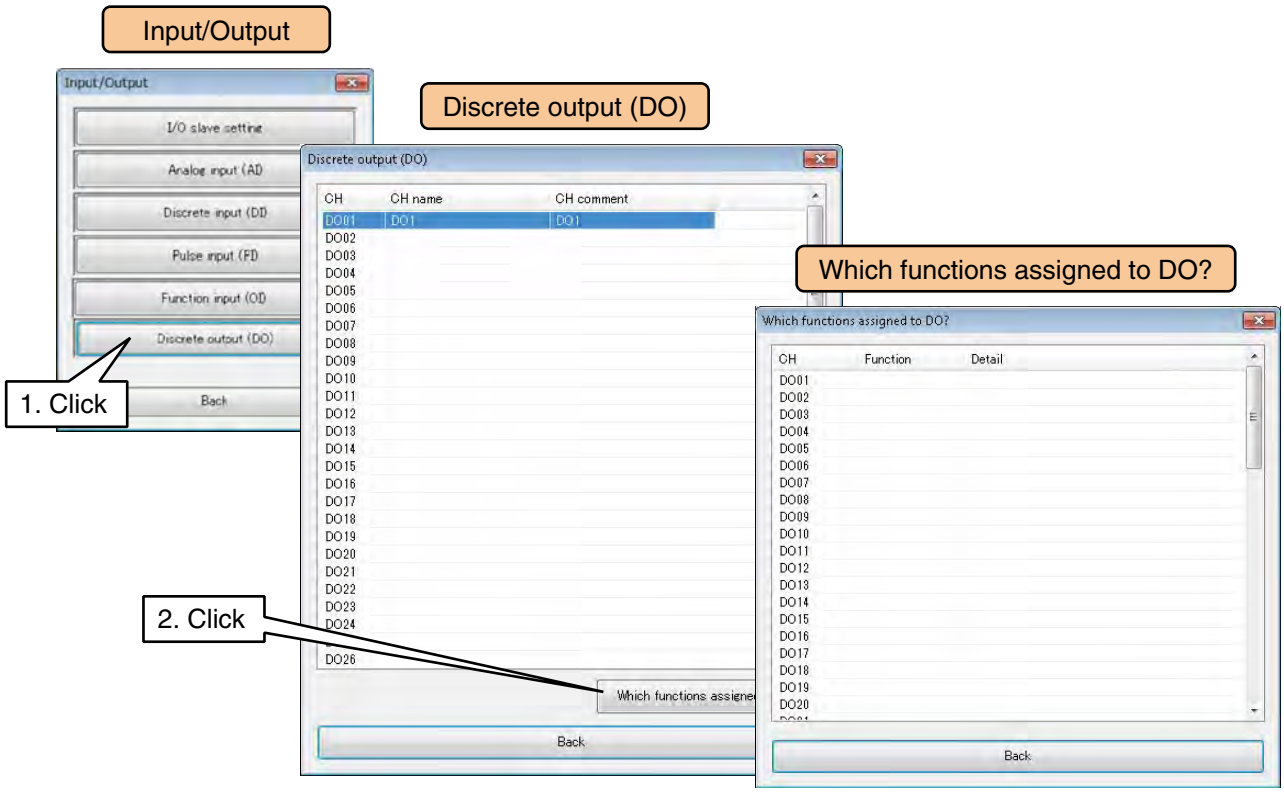


Parameter	Description
CH name	Set a channel name which is less than 16 characters.
CH comment	Set a description for the channel which is less than 16 characters using the tag name, etc.
Invert logic	If the ON/OFF of the output signal and the ON/OFF of the application signal are the reverse of each other, put a check in the check box.
Display comment (ON) (OFF)	Set strings corresponding to ON/OFF respectively. Can be set less than 8 characters.
Color (ON) (OFF)	Set the color corresponding to ON/OFF respectively.

Please set each CH by following the above procedure.
The CH setting for which the setting is complete in the [Discrete output (DO)] screen can also be copied to other CHs and only the required portions can be edited.
➔ 3.8.8 Copying the CH setting

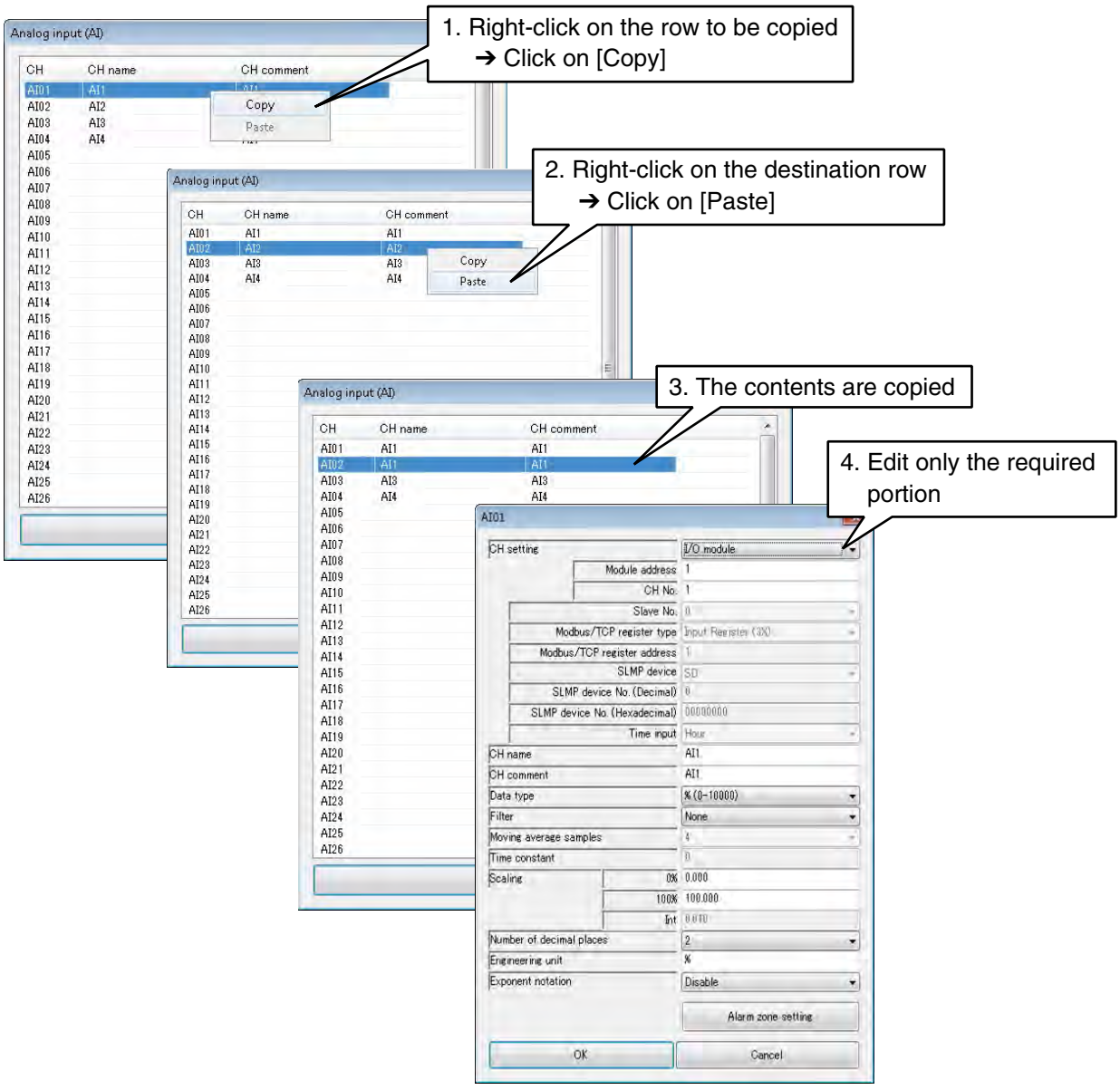
Which functions assigned to DO?

The list of functions in which alarm output has been set is displayed.



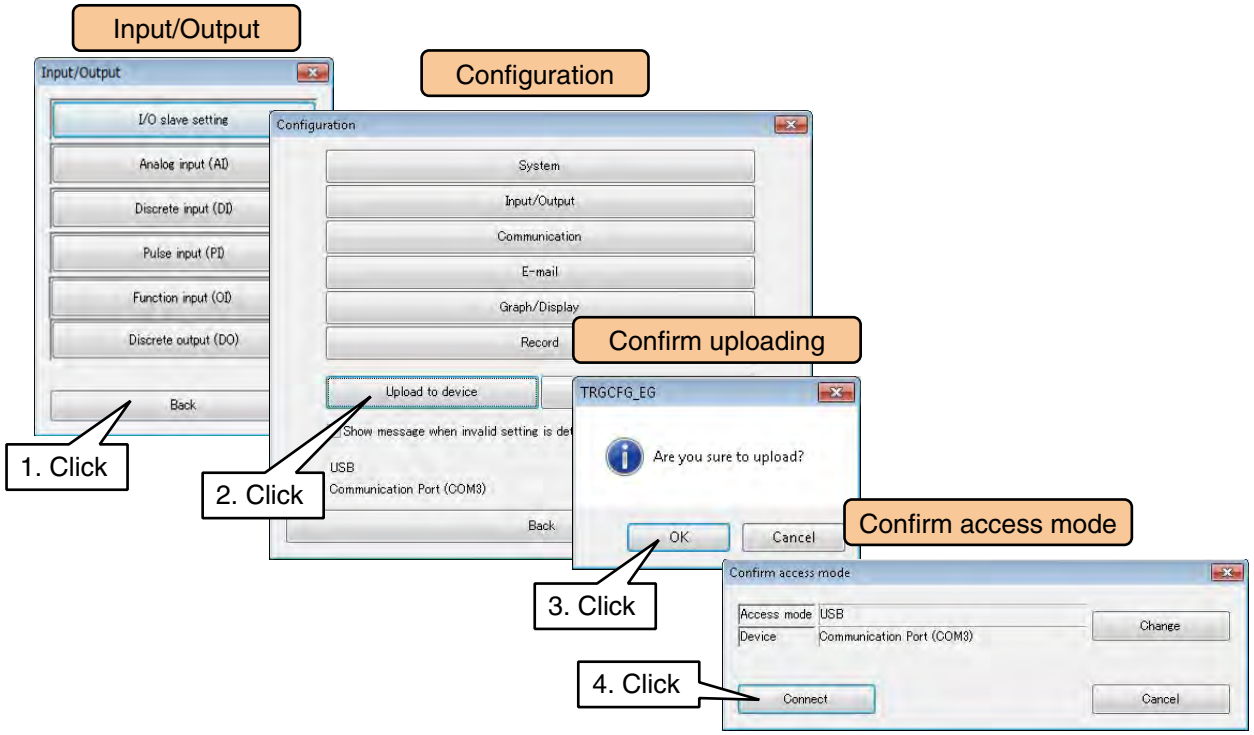
3.8.8 Copying the CH setting

The CH setting for which the setting is complete in the CH list screen (Example: Analog input (AI) screen) can also be copied to other CHs and only the required portions can be edited.



3.8.9 Applying the setting

To transfer the temporarily stored setting values to the device, please click on the [Back] button from the [Input/Output] screen to return to the [Configuration], and then click on the [Upload to device] button.



NOTES

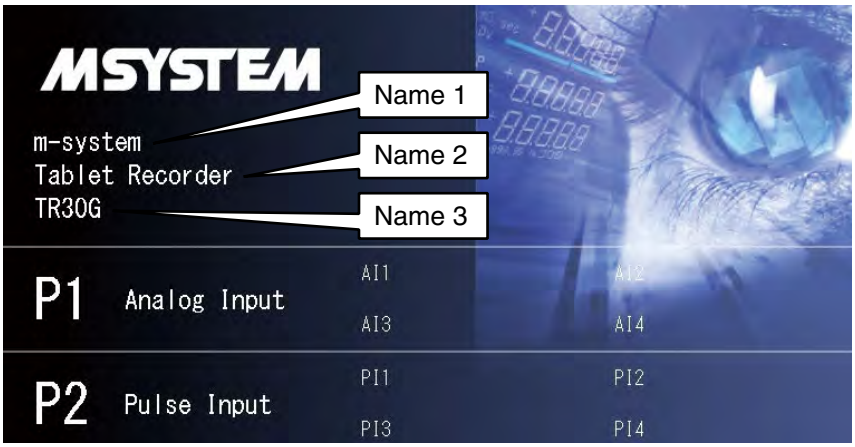
If you want to store the setting values in a PC, click on the [Save file] button in the [Configuration].
➔ 6.1.1 Storage and retrieval of setting values

3.9 Web server setting

You can set the page names, pen colors, etc. displayed on the Web server screens.

3.9.1 Name setting

Set Name 1, 2 and 3 by referring to [3.4 System setting].



3.9.2 Trend screen display setting

Pen setting

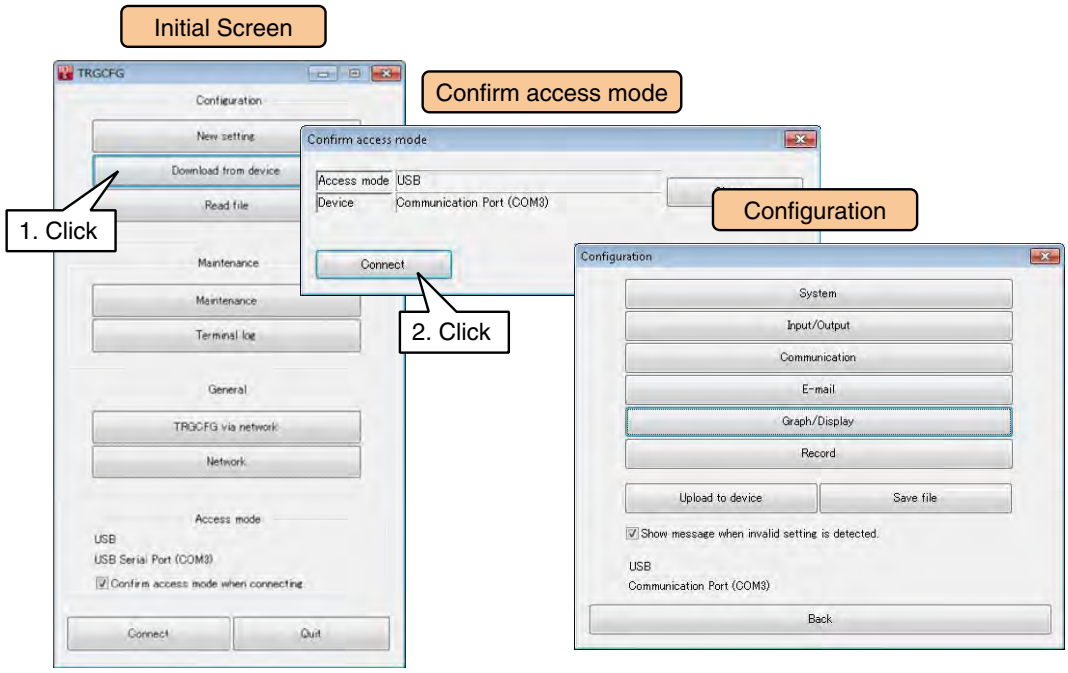
Configure the pen assignment, color and other setting for the trend displayed on the Web screen.
Pens 1 to 4, Pens 5 to 8, ... are assigned to Page 1, Page 2,..., respectively.
A maximum of 32 pens can be displayed on a total of 8 pages when the storing rate is set to 1 minute or shorter, while a maximum of 120 pens can be displayed on 30 pages when the storing rate is 2 minutes or longer.

(1) Start up TRGCFG.

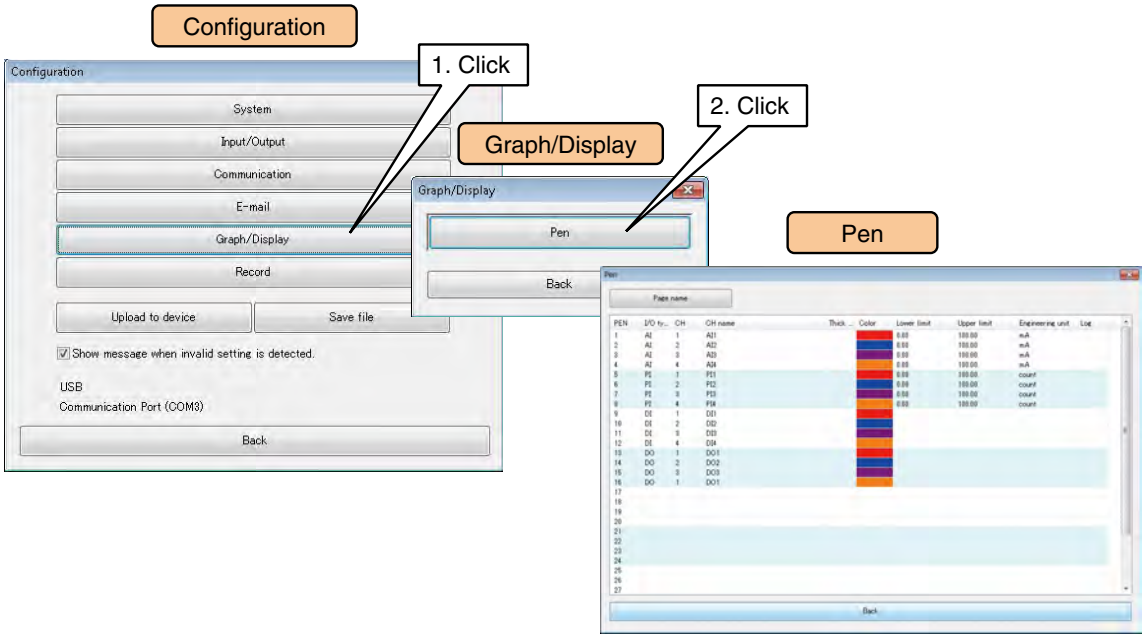
(2) Click on the [Download from device] button.

(3) If the [Confirm access mode] is displayed, check that the device is correct, and click on the [Connect] button.

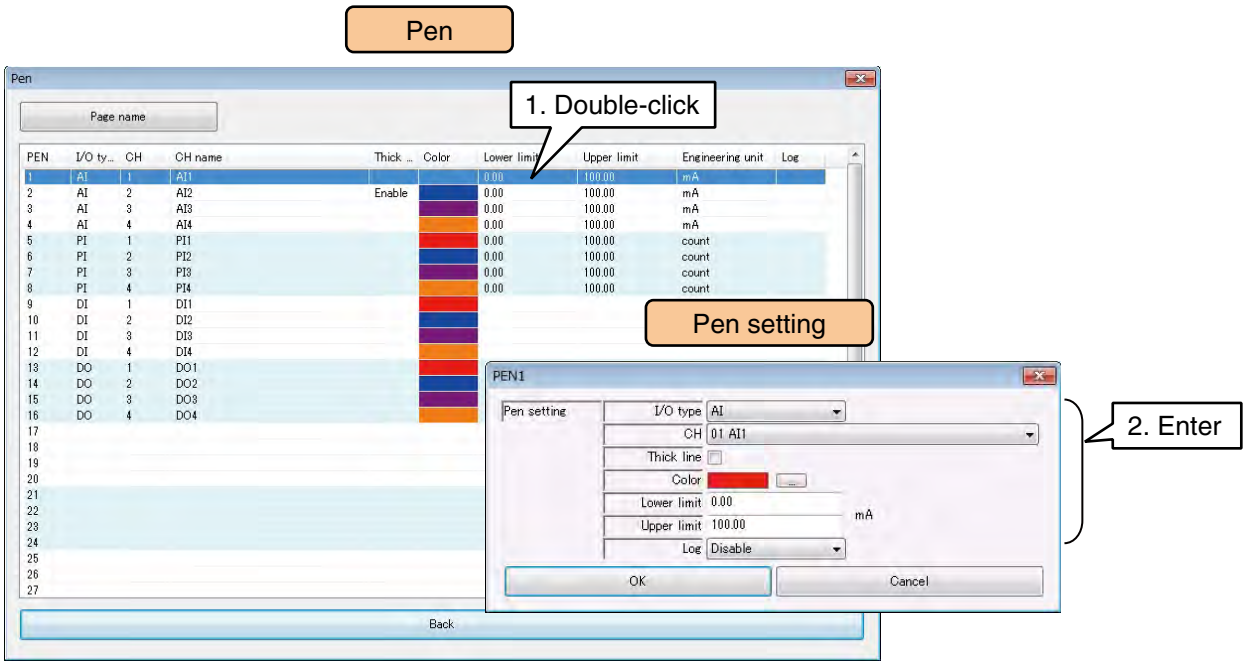
(4) Once the setting information has been loaded from the device, the [Configuration] is displayed.



(5) Click on the [Graph/Display] button in the [Configuration] to display the [Graph/Display] screen. Click on the [Pen] button to display the [Pen] screen.

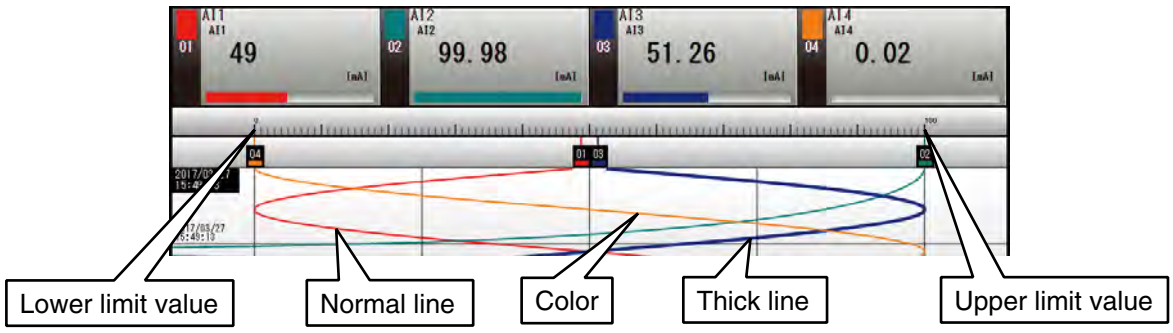


(6) Double-click on the row containing the pen number which you want to set. The [Pen setting] is displayed.



Please configure the pen setting by referring to the table below. Click on the [OK] button to temporarily store the setting.

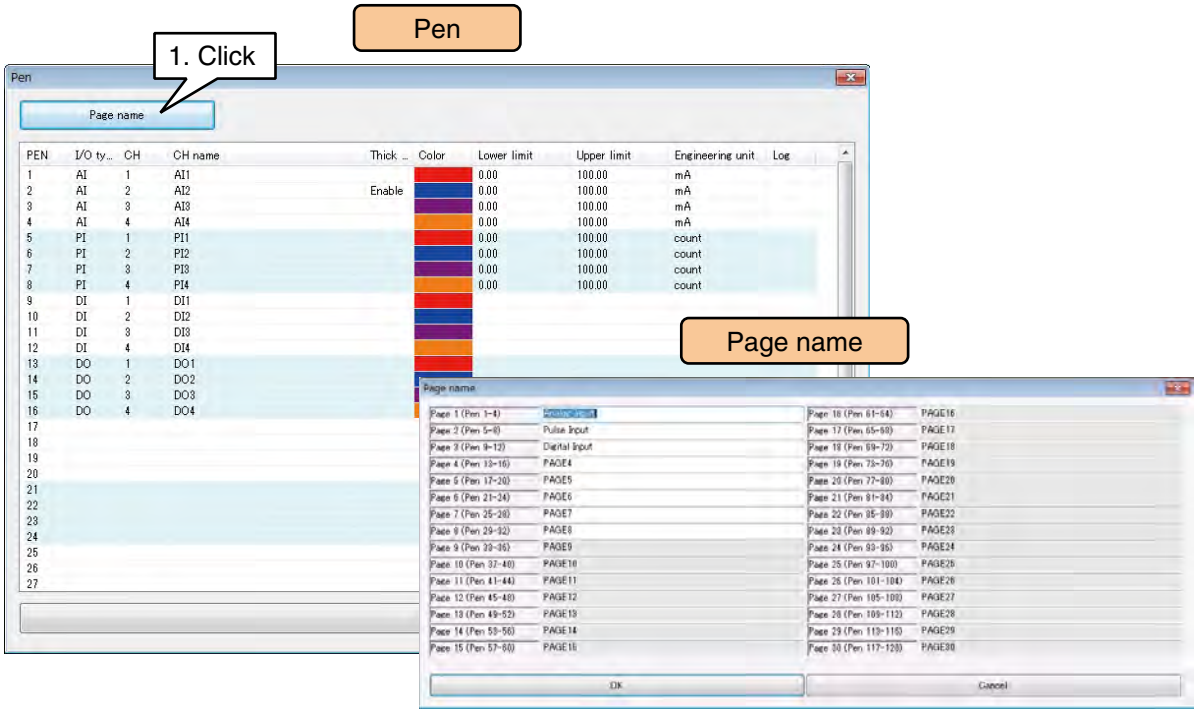
Parameter	Description
I/O type	Select the I/O type of the channel to be assigned. You can select from: None / AI / DI / PI / OI / DO.
CH	Set the channel to be assigned. You can select from the channel list for the I/O type which you have selected.
Thick line	Put a check to use a pen which draws a thick line.
Color	Set the pen color.
Lower limit value	Set the 0% scaling value for the trend graph. Specify a power value (±10) when the log setting is enabled.
Upper limit value	Set the 100% scaling value for the trend graph. Specify a power value (±10) when the log setting is enabled.
Log	Choose Enable to plot the trend graph in logarithm.



Page name setting

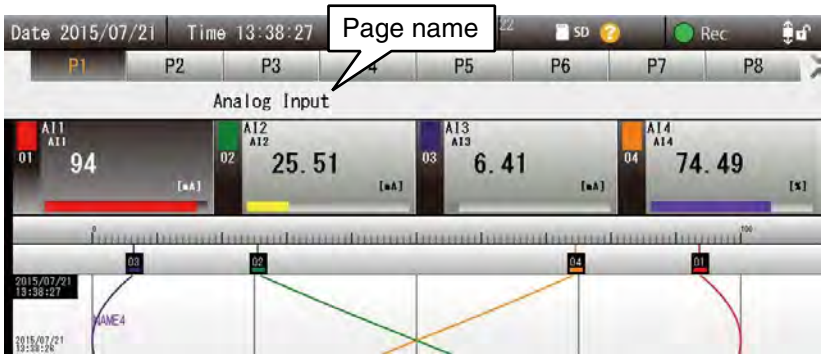
You can set the name of each page displayed in the trend screen.

(1) Click on the [Page name] button in the [Pen] screen to display the [Page name] screen. Set a name which is less than 64 characters for each page.



(2) Once the setup is complete, press the [OK] button and temporarily store the setting.

(3) To activate the setting, return to the [Configuration] and click on the [Upload to device] button.



3.9.3 Login ID / password / port address setting

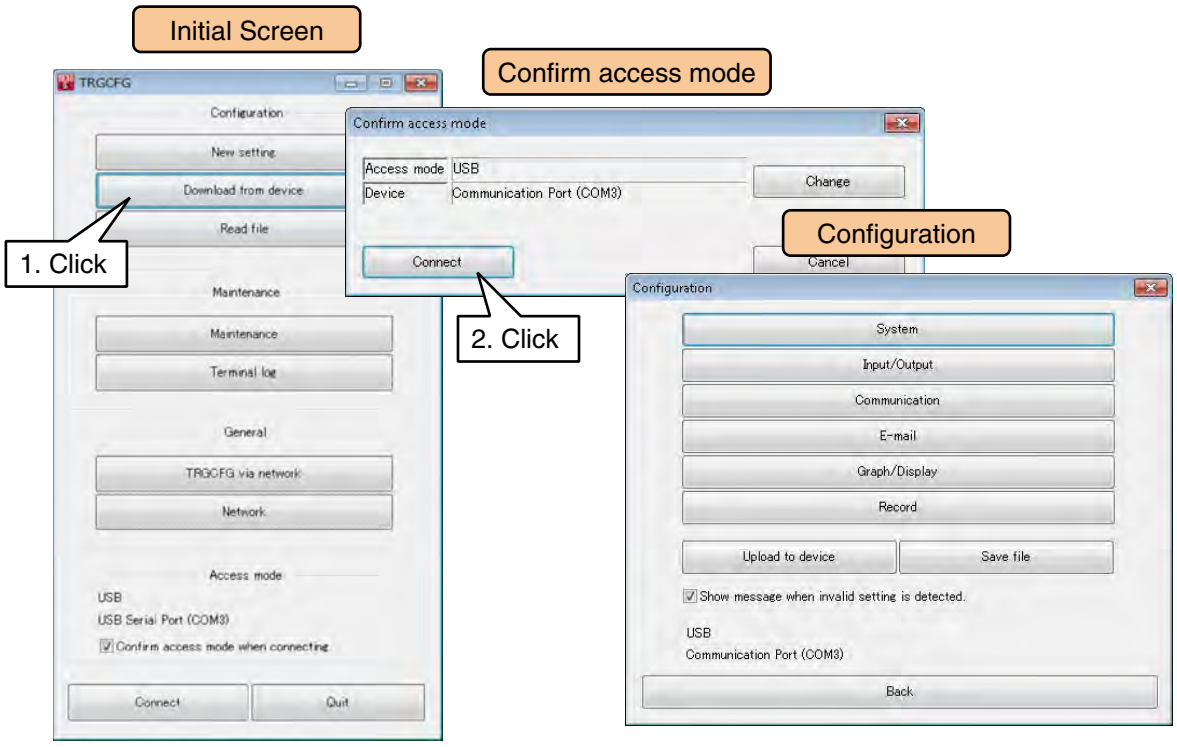
Web browsing can be password locked. Please set as follows.
You can also change the HTTP port address.

(1) Start up TRGCFG.

(2) Click on the [Download from device] button.

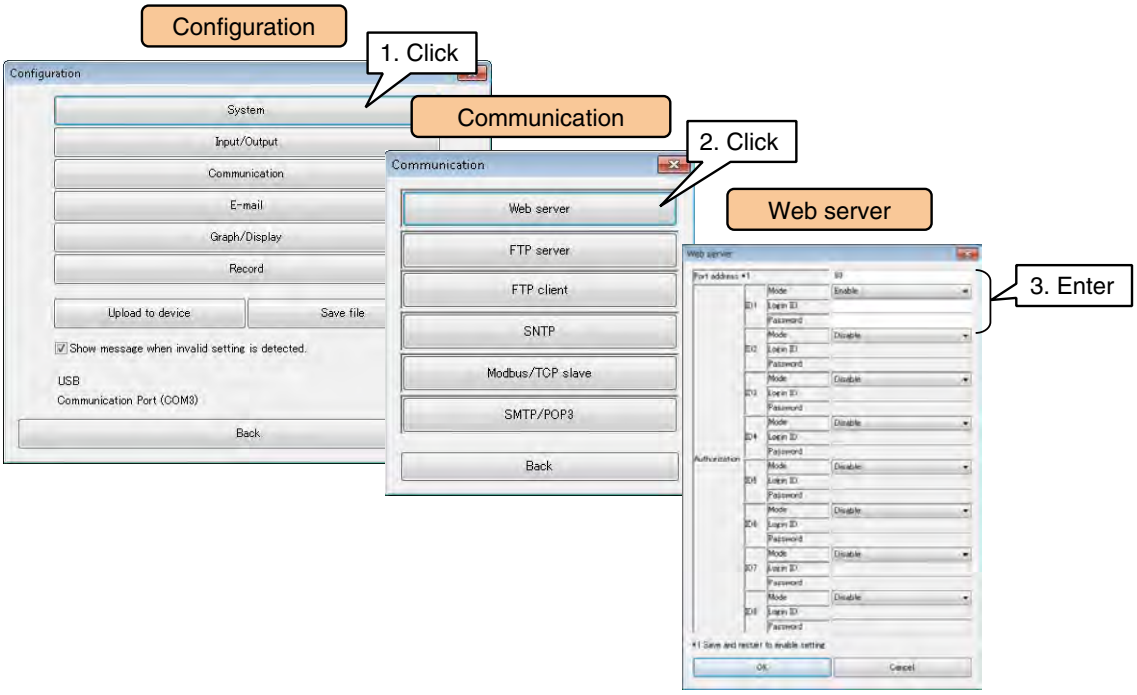
(3) If the [Confirm access mode] is displayed, check that the device is correct, and click on the [Connect] button.

(4) Once the setting information has been loaded from the device, the [Configuration] is displayed.



(5) Click on the [Communication] button.

(6) The [Communication] screen is displayed. Click on the [Web server] button. The [Web server] screen is displayed.



Please set various parameters by referring to the table below.

Parameter	Description	Default value
Port address	Set the port address. After transferring the setting to the unit, turn the power supply OFF and ON to activate it.	80
Mode	To enable Web browsing, set at least 1 ID as [Enable].	ID1 is Set as [Enable]. The others are set as [Disable]
Login ID	Set the Login ID for the Web server using less than 16 single byte alphanumeric characters.	No entry (Blank)
Password	Set the password to login to the Web server using less than 16 single byte alphanumeric characters.	No entry (Blank)

(7) Once the setup is complete, press the [OK] button and temporarily store the setting.
To activate the setting, return to the [Configuration] and click on the [Upload to device] button.
If you have changed the port address, turn the power supply to the device OFF and ON.

NOTES

The priority level of the Login ID and password used to connect to the network in TRGCFG is higher than these setting.
➔ 3.3.4 Enable setup via a network

CAUTION

- The Login ID and password for the Web server of the device are simple functions. They do not guarantee complete security.
- After changing the Login ID and password, use the Update button of the browser to update the cache.
- Be sure to change the default ID and password.
- It is highly recommended to change the password regularly.

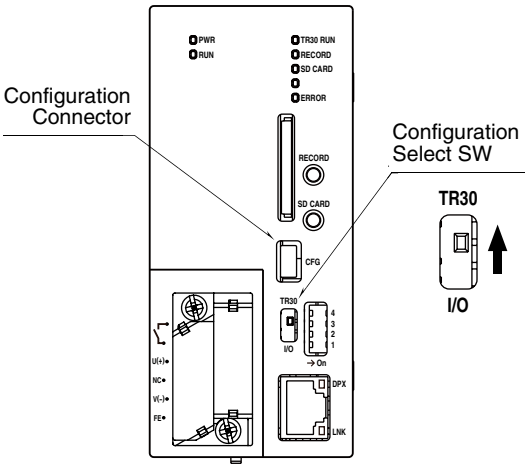
3.9.4 Trend graph orientation setting (vertical/horizontal)

Please see [4.1 Initial screen (Group selection screen)].

3.10 Recording method setting

Recording data is first written into memory blocks in the internal memory of the unit. Once a specified time or number of samples is reached, the recording moves to the next memory block. During this transition, the recording data in the previous memory block is transferred to the SD card (if the SD card has been inserted). 1 memory block corresponds to 1 file, and this file can be displayed as a book of chart paper.

(1) Set the [Configuration Select Switch] of the device as [TR30].

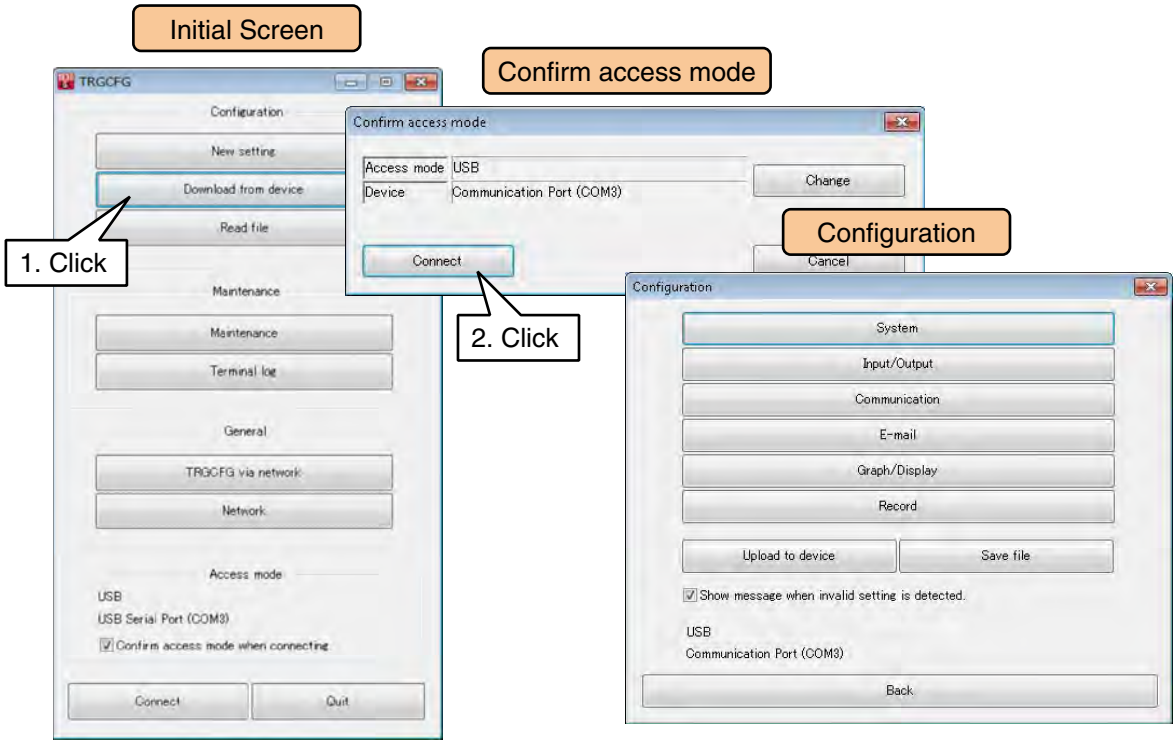


(2) Connect the PC in which TRGCFG is installed with the device, and start up TRGCFG.

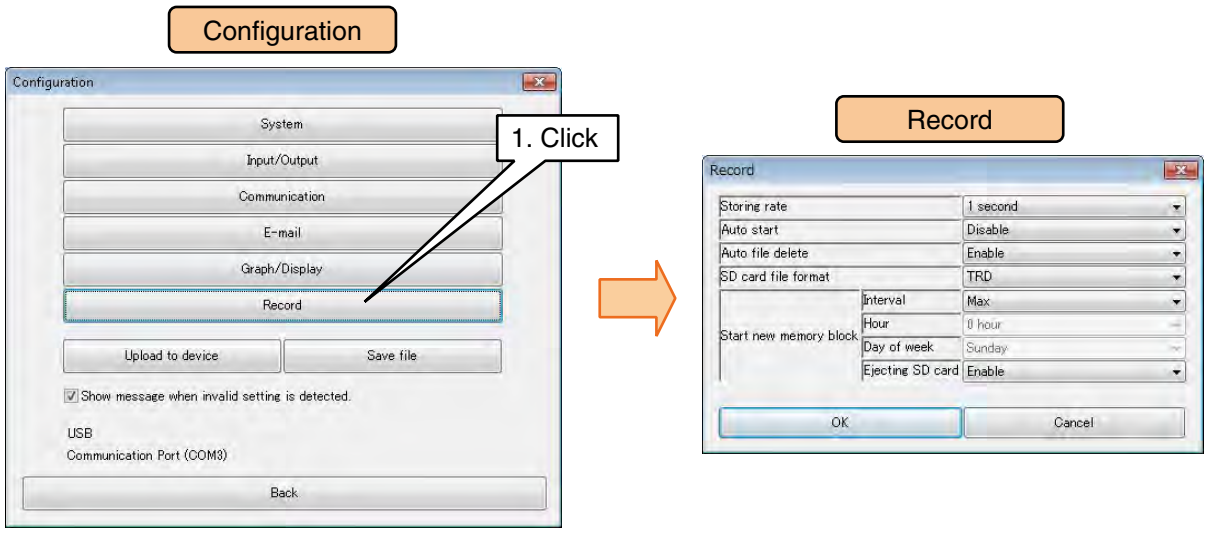
(3) Click on the [Download from device] button.

(4) If the [Confirm access mode] is displayed, check that the device is correct, and click on the [Connect] button.

(5) Once the setting information has been loaded from the device, the [Configuration] is displayed.



(6) Click on the [Record] button. The [Record] screen is displayed.



Please set the following parameters.

Storing rate

Set the storing rate.
You can select from: 5 ms / 10 ms / 50 ms / 100 ms / 500 ms / 1 seconds / 2 seconds / 5 seconds / 10 seconds / 1 minute / 2 minutes / 5 minutes / 10 minutes / 15 minutes / 30 minutes /1 hour.

Auto start

Set as [Enable] to start recording automatically once the power supply to the device is turned ON.

Auto file delete

Specify whether to automatically delete files/folders when the remaining space in the SD card reaches 100 MB.
Set as [Enable] to automatically delete.
But, if you change the folder name in the internal registers in [3.11.4 Modbus/TCP slave], it will not be considered for auto file delete.

SD card file format

Select the format in which to store files in the SD card of the unit from the 3 types shown in the table below.

SD card file format	Description
TRD	Stored in the binary format. Can be displayed in the historical trend screen and in TRViewer. In TRViewer, it can also be converted to the CSV format.
CSV (S-JIS)	Stored in the CSV format using S-JIS character codes. Cannot be displayed in the historical trend screen or in TRViewer.
CSV (UTF-8)	Stored in the CSV format using UTF-8 character codes. Cannot be displayed in the historical trend screen or in TRViewer.

Start new memory block

Set the timing at which a new memory block is created.

Please set various parameters by referring to the table below.

Parameter	Description	Default value
Interval	Usable transition intervals depend upon the selected storing rate. With [Max] setting, a new memory block is created when the number of trend data points reaches 50000.	Max
Hour	Specify at which hour of the day a new memory block shall be created for the transfer interval setting to [1 day].	0 hour
Day of week	Specify at which day of the week a new memory block shall be created for the transfer interval setting to [1 week].	Sunday
(Transfer at) Ejecting SD card	Choose [Enable] if you want to transfer to a new memory block when the SD card is removed.	Enable

NOTES

- Please see [7.3.3 Storing rate and sampling cycle] for the relation between the timing of transfer to the SD card, the storing rate and new memory block.
- If auto file delete has been set as [Disable], data cannot be transferred to the SD card from the memory blocks once there is no more space on the SD card. Data will continue to be recorded in the memory blocks, but after the last memory block, the first memory block is overwritten.
- Be sure to configure the pen setting (See [Pen setting]) along with the recording method setting, otherwise data will not be recorded.
- Regardless of the interval, ON/OFF status of DI, and alarm zone setting of AI, PI, and OI can also create new memory blocks.
- Please see 7.3.14 Storing rate and new memory block for the relation between setting of interval and new memory block.

Limit on the number of CHs and number of pens per storing rate

The number of channels and number of pens that can be used per storing rate are fixed as per the table below.

Storing rate	Number of pens and channels that can be used					
	AI	DI	PI	OI	DO	PEN
5 ms	1 – 16	1 – 32	1 – 16	1 – 16	1 – 32	1 – 16
10 ms	1 – 16	1 – 32	1 – 16	1 – 16	1 – 32	1 – 16
50 ms	1 – 16	1 – 32	1 – 16	1 – 16	1 – 32	1 – 16
100 ms	1 – 32	1 – 64	1 – 32	1 – 32	1 – 64	1 – 32
500 ms	1 – 32	1 – 64	1 – 32	1 – 32	1 – 64	1 – 32
1 second	1 – 32	1 – 64	1 – 32	1 – 32	1 – 64	1 – 32
2 seconds	1 – 32	1 – 64	1 – 32	1 – 32	1 – 64	1 – 32
5 seconds	1 – 32	1 – 64	1 – 32	1 – 32	1 – 64	1 – 32
10 seconds	1 – 32	1 – 64	1 – 32	1 – 32	1 – 64	1 – 32
1 minute	1 – 64	1 – 64	1 – 32	1 – 32	1 – 64	1 – 120
2 minutes	1 – 64	1 – 64	1 – 32	1 – 32	1 – 64	1 – 120
5 minutes	1 – 64	1 – 64	1 – 32	1 – 32	1 – 64	1 – 120
10 minutes	1 – 64	1 – 64	1 – 32	1 – 32	1 – 64	1 – 120
15 minutes	1 – 64	1 – 64	1 – 32	1 – 32	1 – 64	1 – 120
30 minutes	1 – 64	1 – 64	1 – 32	1 – 32	1 – 64	1 – 120
1 hour	1 – 64	1 – 64	1 – 32	1 – 32	1 – 64	1 – 120

Starting / stopping recording by channel

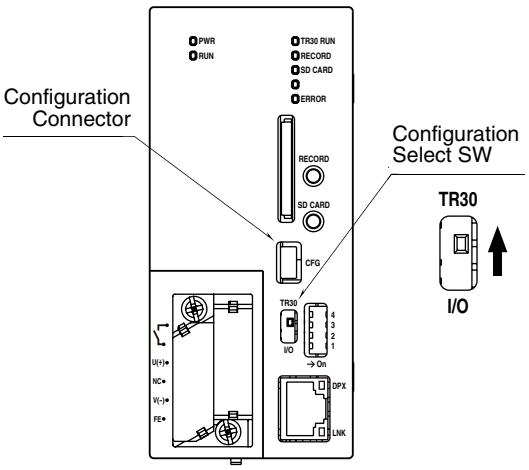
Setting the channel status and area enables to start or stop recording.

3.11 Communication function setting

3.11.1 FTP server

Using the FTP server function built into the TR30, you can perform remote transfer/deletion of files in the SD card inserted into the device.

(1) Set the [Configuration Select Switch] of the device as [TR30].

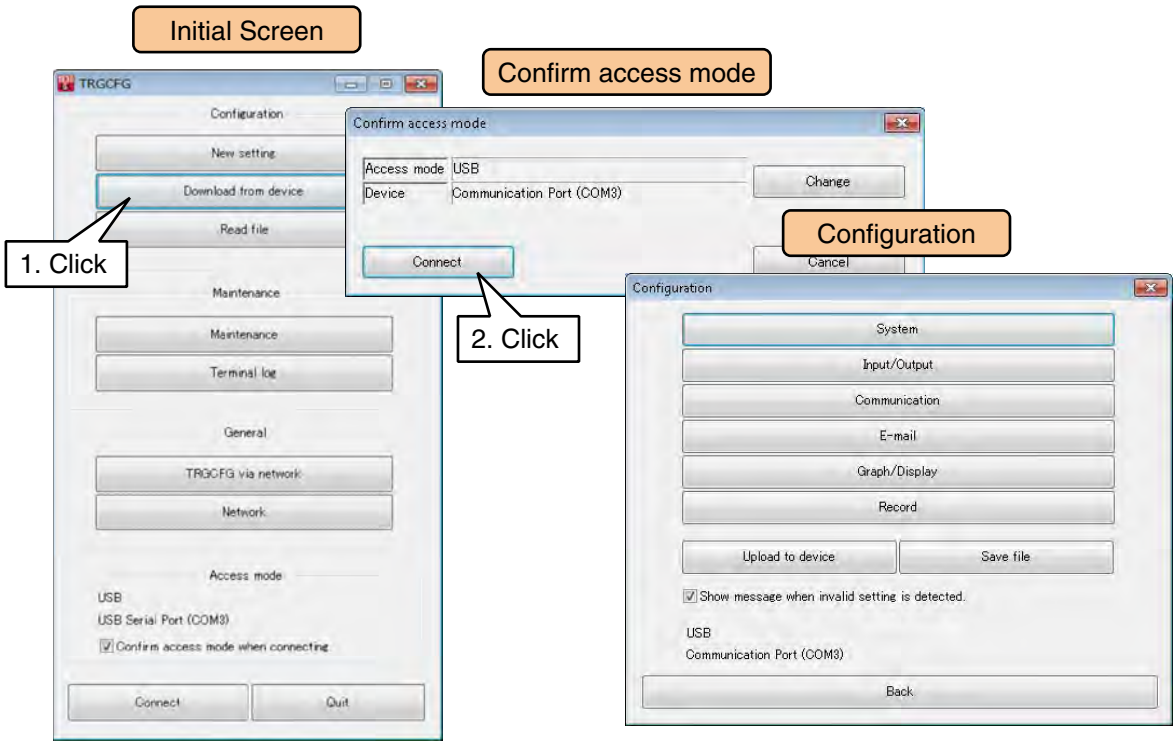


(2) Connect the PC in which TRGCFG is installed with the device, and start up TRGCFG.

(3) Click on the [Download from device] button.

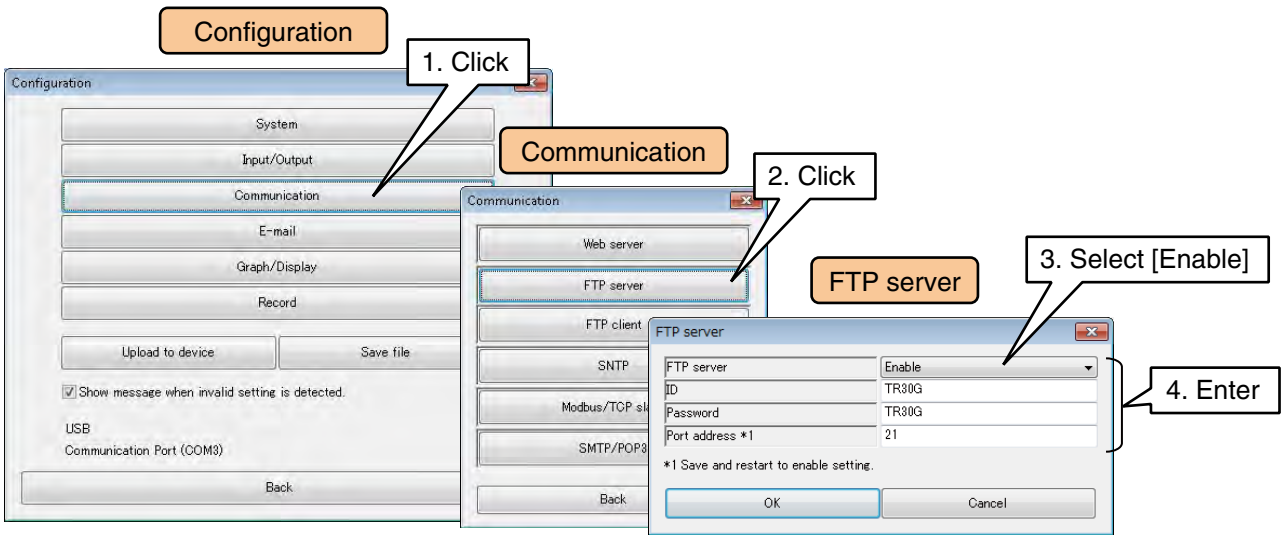
(4) If the [Confirm access mode] is displayed, check that the device is correct, and click on the [Connect] button.

(5) Once the setting information has been loaded from the device, the [Configuration] is displayed.



(6) Click on the [Communication] button.

(7) The [Communication] screen is displayed. Click on the [FTP server] button. The [FTP server] screen is displayed.



Please set the items by referring to the table below.

Parameter	Description	Default value
FTP server	To use the FTP server function, set as [Enable].	Disable
ID	Set the FTP server Login name using less than 16 single byte alpha-numeric characters.	TR30G
Password	Set the FTP server password using less than 16 single byte alphanu-meric characters.	TR30G
Port address	Set the port address of the FTP server. (0 – 65535)	21

(8) Once the setup is complete, press the [OK] button and temporarily store the setting.
To activate the setting, return to the [Configuration] and click on the [Upload to device] button.
After changing the setting, turn the power supply to the device OFF and ON.

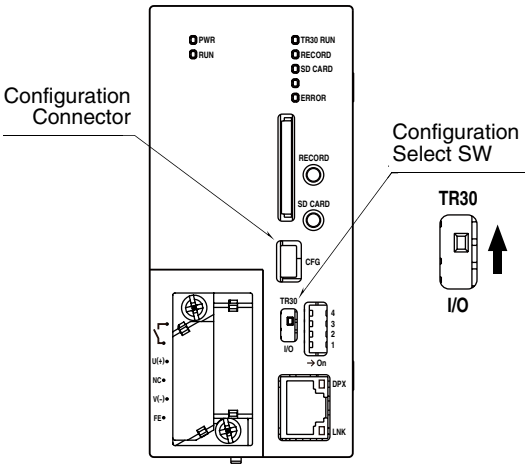
NOTES

Please see [7.3.6 FTP server] for information on the OSs and applications supported by the FTP server function of the TR30.
- Be sure to change the default ID and password.
- It is highly recommended to change the password regularly.

3.11.2 FTP client

You can use the FTP client function built into the TR30 to send the files stored in the SD card to the FTP server.

(1) Set the [Configuration Select Switch] of the device as [TR30].

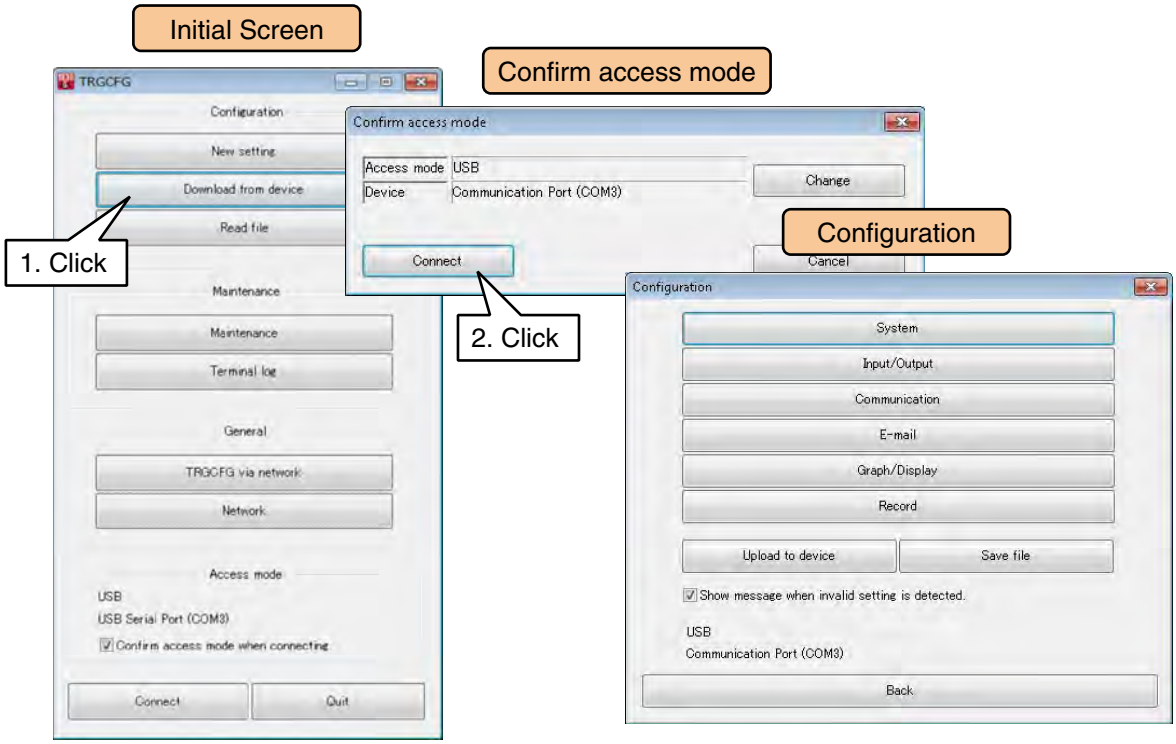


(2) Connect the PC in which TRGCFG is installed with the device, and start up TRGCFG.

(3) Click on the [Download from device] button.

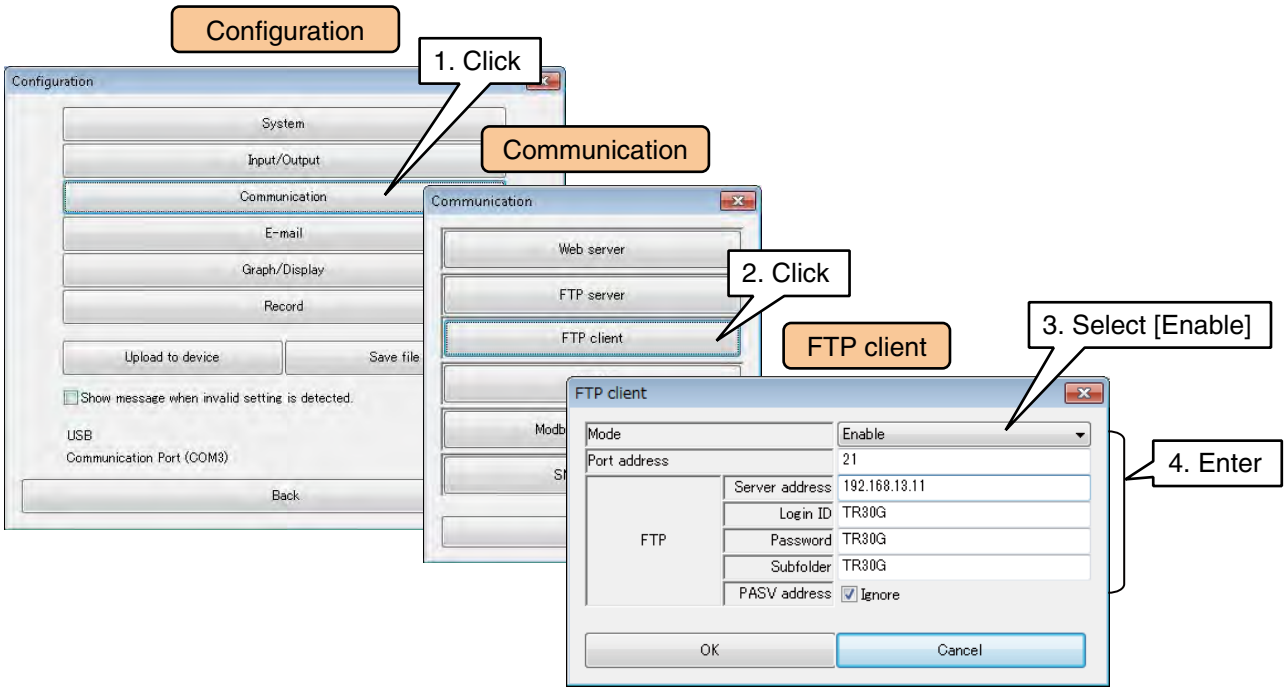
(4) If the [Confirm access mode] is displayed, check that the device is correct, and click on the [Connect] button.

(5) Once the setting information has been loaded from the device, the [Configuration] is displayed.



(6) Click on the [Communication] button.

(7) The [Communication] screen is displayed. Click on the [FTP client] button. The [FTP client] screen is displayed.



Please set the parameters by referring to the table below.

Parameter	Description	Default value
Mode	To use the FTP client function, set as [Enable].	Disable
Port address	Set the port address of the FTP server. (0 – 65535)	21
Server address	Set the FTP server address.	No (Blank)
Login ID	Set the FTP server Login name using less than 16 single byte alpha-numeric characters.	No (Blank)
Password	Set the FTP server password using less than 16 single byte alphanu-meric characters.	No (Blank)
Subfolder	Set subfolder(s) in the FTP server. If it is left blank, files are transferred to the root directory.	No (Blank)
PASV address	Ignore addresses returned with PASV mode. Uncheck when control connection and data connection are different.	Checked

(8) Once the setup is complete, press the [OK] button and temporarily store the setting.
To activate the setting, return to the [Configuration] and click on the [Upload to device] button.

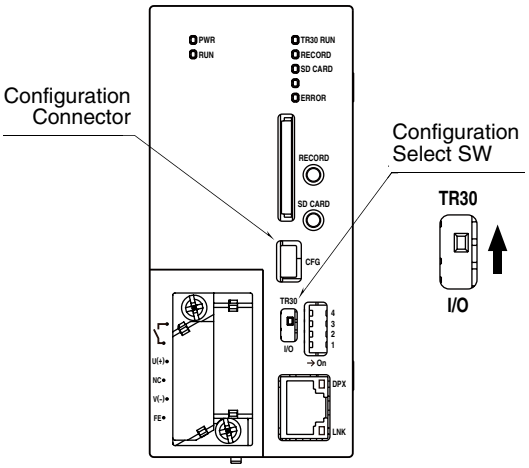
NOTES

File transfer is executed at the same timing of transition of memory blocks.
Please see [3.10 Recording method setting] for detailed information on the transition of memory blocks.

3.11.3 SNTP

You can automatically correct the time using the SNTP client function built into the TR30.
Automatic time correction is done at power on and 00:00, 06:00, 12:00 and 18:00 hours.

(1) Set the [Configuration Select Switch] of the device as [TR30].

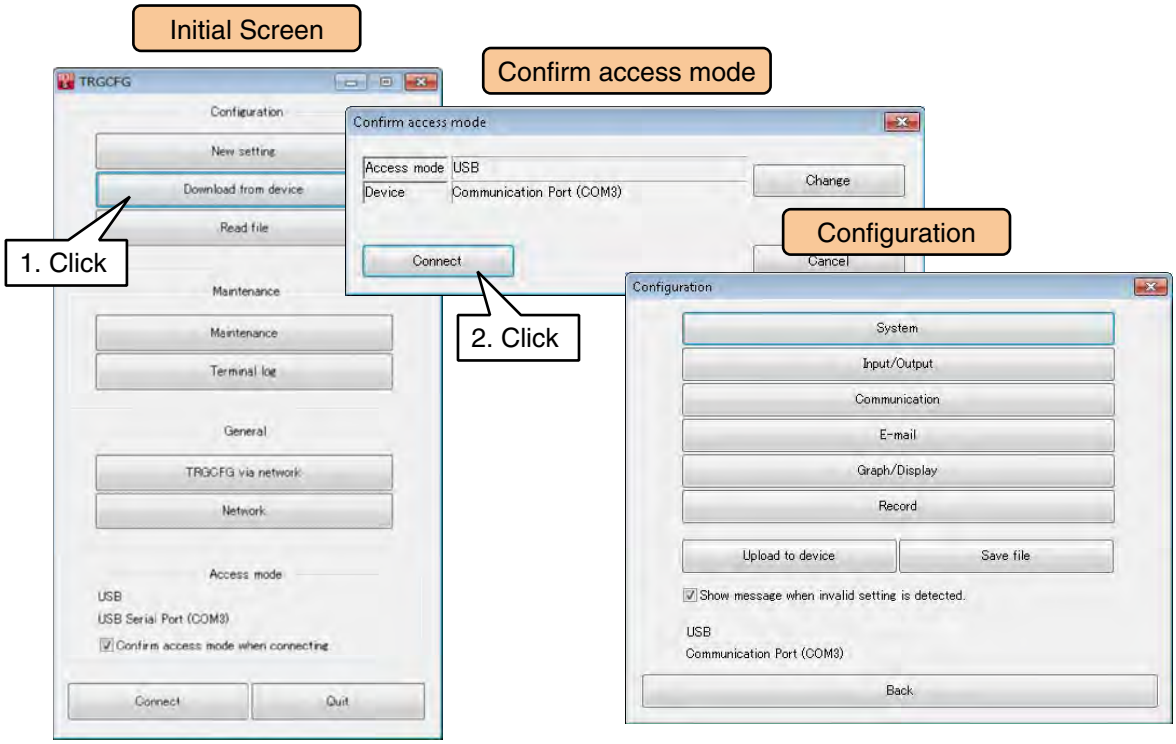


(2) Connect the PC in which TRGCFG is installed with the device, and start up TRGCFG.

(3) Click on the [Download from device] button.

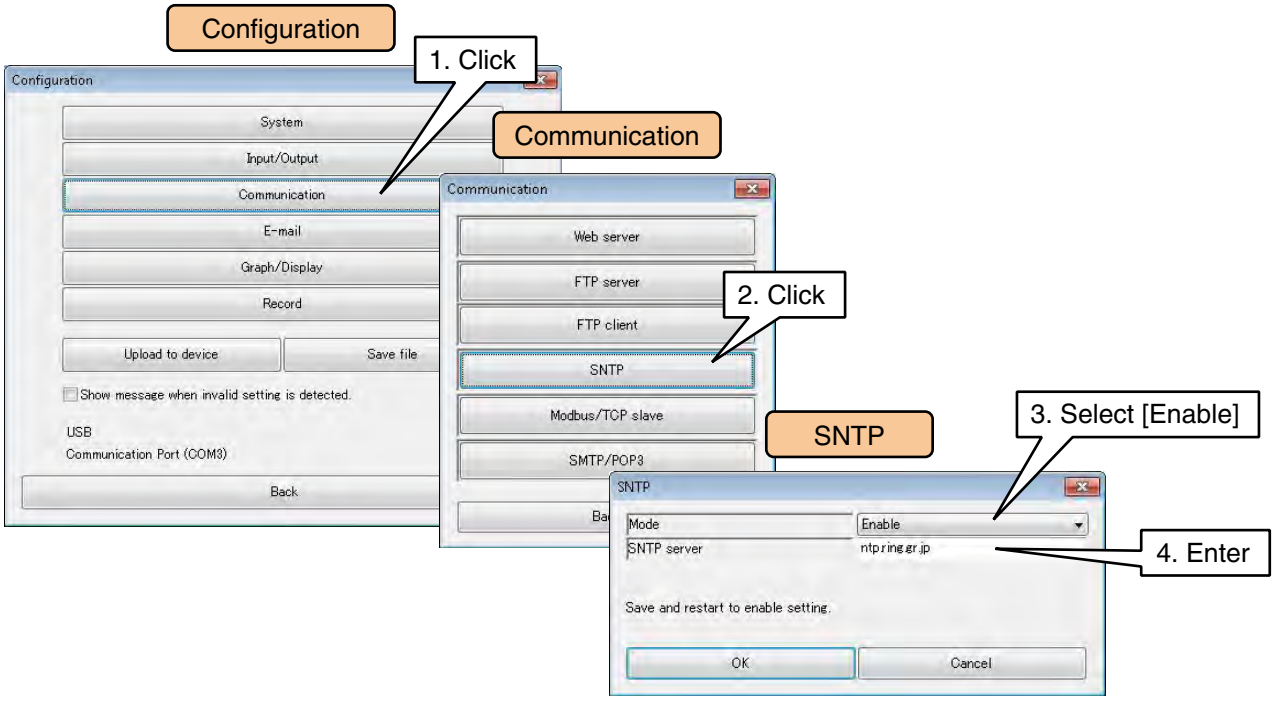
(4) If the [Confirm access mode] is displayed, check that the device is correct, and click on the [Connect] button.

(5) Once the setting information has been loaded from the device, the [Configuration] is displayed.



(6) Click on the [Communication] button.

(7) The [Communication] screen is displayed. Click on the [SNTP] button. The [SNTP] screen is displayed.



Please set the parameters by referring to the table below.

Parameter	Description	Default value
Mode	To use the SNTP client function, Set as [Enable].	Disable
SNTP server	Set the SNTP server.	ntp.nict.jp

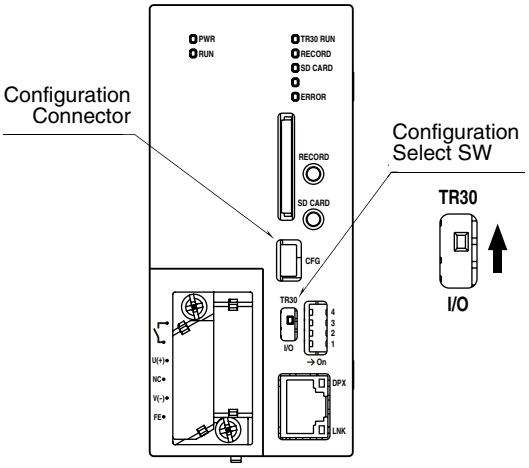
(8) Once the setup is complete, press the [OK] button and temporarily store the setting.
To activate the setting, please return to the [Configuration] and click on the [Upload to device] button.
After changing the setting, please turn the power supply to the device OFF and ON.

3.11.4 Modbus/TCP slave

By using the Modbus/TCP slave function built into the TR30, you can perform various operations including online monitoring from outside.

- By setting the internal registers as [Enable], operations such as [Start/stop recording], [Start new memory block] and [Comment insertion] can be performed from external devices such as PLCs.
- By setting the internal registers as [Enable], input values such as AI, DI and PI can be specified through control input from outside. Since an event can be triggered by this setting, commands for trend string insertion, alarm output, and mail reporting can be issued to from remote locations.

(1) Set the [Configuration Select Switch] of the device as [TR30].

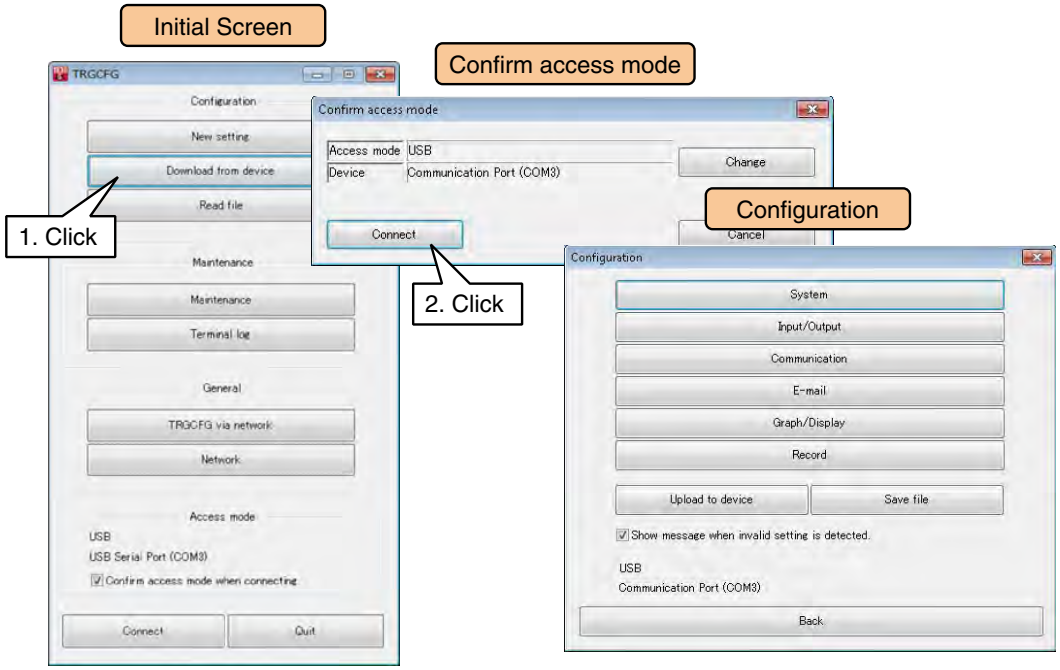


(2) Connect the PC in which TRGCFG is installed with the device, and start up TRGCFG.

(3) Click on the [Download from device] button.

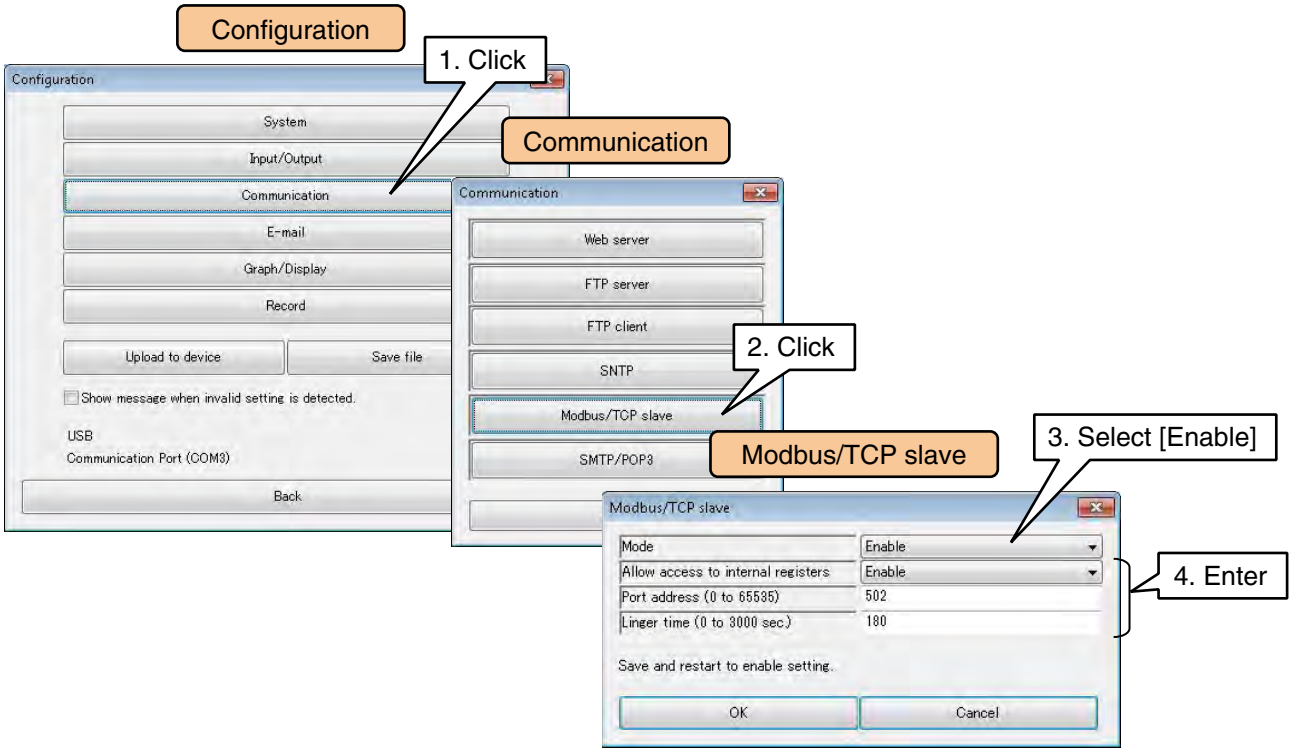
(4) If the [Confirm access mode] is displayed, check that the device is correct, and click on the [Connect] button.

(5) Once the setting information has been loaded from the device, the [Configuration] is displayed.



(6) Click on the [Communication] button.

(7) The [Communication] screen is displayed. Click on the [Modbus/TCP slave] button. [Modbus/TCP slave] screen is displayed.



Please set the parameters by referring to the table below.

Parameter	Description	Default value
Mode	To use the Modbus/TCP slave function, set as [Enable].	Disable
Allow access to internal registers	To use internal registers, set as [Enable].	Disable
Port address	Set the port address for Modbus/TCP. (0 to 65535)	502
Linger time	Set the communication timeout duration. (0 to 3000 seconds)	180

(8) Once the setup is complete, press the [OK] button and temporarily store the setting.
To activate the setting, return to the [Configuration] and click on the [Upload to device] button.
After changing the setting, turn the power supply to the device OFF and ON.

NOTES

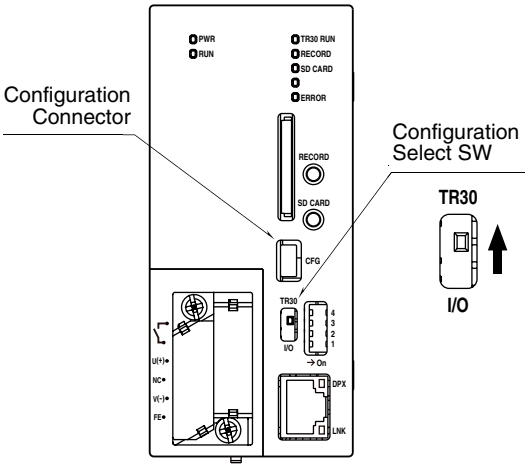
Please see [7.3.7 Modbus/TCP slave] for the register map, internal registers and available commands.

3.11.5 Mail reporting

Mail reporting can be done using the function built into the TR30.
There are 2 kinds of mail reports: [Event report] which is sent during zone transition, and [Regular report] which are sent at preset times.
The TR30 does not have a function to receive mail.

SMPT / POP3 setting

(1) Set the [Configuration Select Switch] of the device as [TR30].

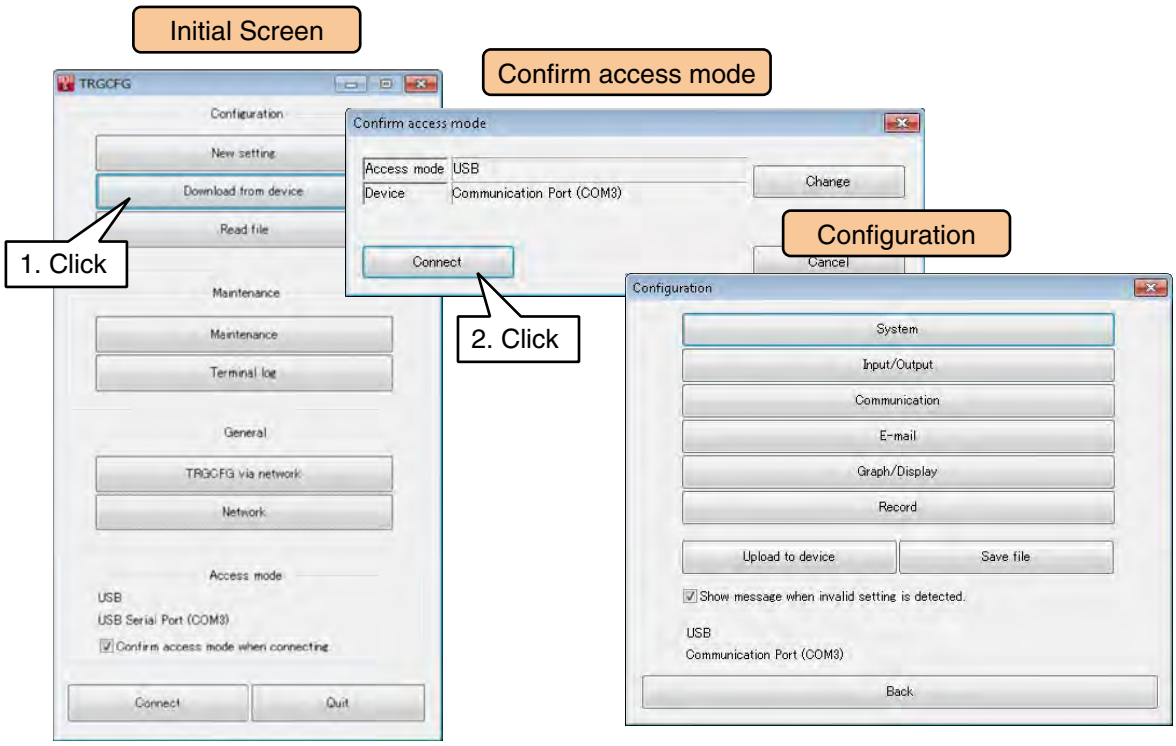


(2) Connect the PC in which TRGCFG is installed with the device, and start up TRGCFG.

(3) Click on the [Download from device] button.

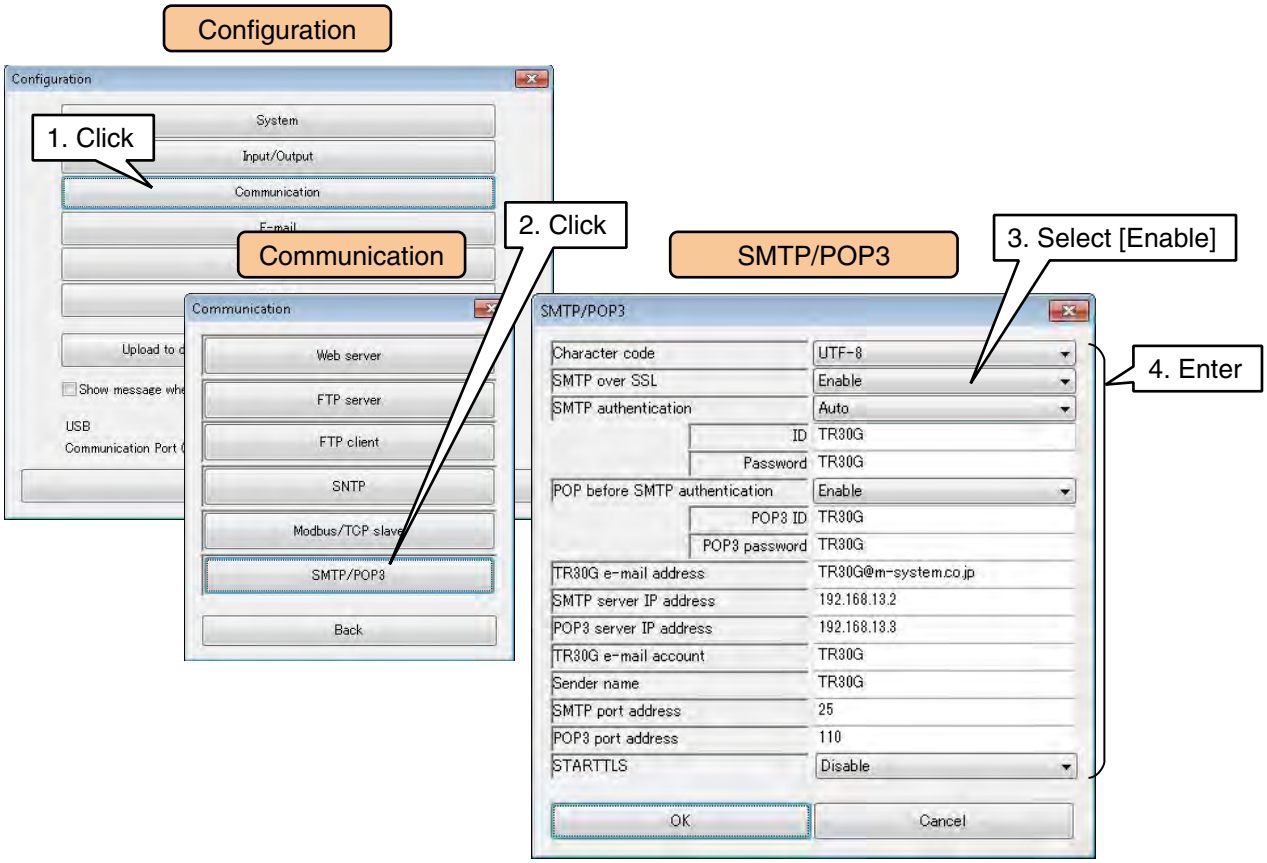
(4) If the [Confirm access mode] is displayed, check that the device is correct, and click on the [Connect] button.

(5) Once the setting information has been loaded from the device, the [Configuration] is displayed.



(6) Click on the [Communication] button.

(7) The [Communication] screen is displayed. Click on the [SMTP/POP3] button. The [SMTP/POP3] screen is displayed.



Please set the parameters by referring to the table below.

Parameter	Description	Default value
Character code	Set the character code for the mail. UTF-8 ISO-2022-JP	UTF-8
SMTP over SSL	Configure encrypted Connect setting. To use, set as [Enable].	Disable
SMTP authentication	Configure SMTP authentication setting. Disable: Do not carry out SMTP authentication. Automatic: Automatically decide on the authentication algorithm. CRAM-MD5: Carry out CRAM-MD5 authentication. LOGIN: Carry out LOGIN authentication. PLAIN: Carry out PLAIN authentication.	Disable
ID	Set the ID to be used for the SMTP server.	No entry (Blank)
Password	Set the password to be used for the SMTP server.	No entry (Blank)
POP before SMTP authentication	Set as [Enable] to use the POP before SMTP authentication function.	Disable
POP3 ID	Set the POP3 ID.	No entry (Blank)
POP3 password	Set the POP3 password.	No entry (Blank)
TR30G e-mail address	Set the TR30 mail address.	No entry (Blank)
SMTP server IP address	Set the domain name or IP address of the SMTP server.	No entry (Blank)
POP3 server IP address	Set the domain name or IP address of the POP3 server.	No entry (Blank)
TR30G e-mail account	Set the TR30 mail account name. Set it as the string before @ in the mail address.	No entry (Blank)
Sender name	Set the name to be displayed for the sender.	TR30G
SMTP port address	Set the SMTP port address.	25
POP3 port address	Set the POP3 port address.	110
STARTTLS	When SMTP over SSL is enabled, configure the STARTTLS setting.	Disable

(8) Once the setup is complete, press the [OK] button and temporarily store the setting.
To activate the setting, return to the [Configuration] and click on the [Upload to device] button.

Setting examples for popular free e-mail services are shown in the following table (As of Nov. 2015).

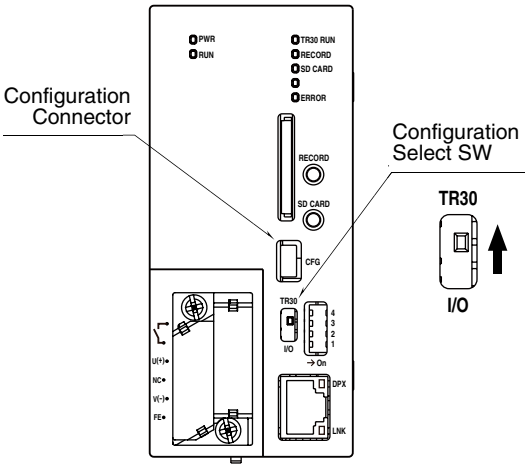
Parameter	Yahoo mail (Yahoo Japan)	Gmail (Google)
SMTP over SSL	Disable	Enable
SMTP authentication	Automatic	Automatic
ID	Before @ in the mail address Example: dl8	Mail address Example: dl8@gmail.com
Password	Registered password Example: abcde	Registered password Example: abcde
TR30G e-mail address	Mail address Example: dl8@yahoo.co.jp	Mail address Example: dl8@gmail.com
SMTP server	smtp.mail.yahoo.co.jp	smtp.gmail.com
TR30G e-mail account	Before @ in the mail address Example: dl8	Before @ in the mail address Example: dl8
SMTP port address	587	465
STARTTLS	Disable	Disable

CAUTION

- POP3 is incorporated for POP before SMTP authentication. Mail receiving is not available for device.
- SMTP over SSL authentication of device is intended only for encryption. Therefore the certification issued by mail server is not verified.
- Many mail servers are equipped with antispam tactic. Consult your company management for details.
- It is not guaranteed that this function can connect to all mail servers.
- For mail service, there are many kind of restrictions varying by each company. Also change of function or authentication may be carry out. Therefore according to these changes of restriction or function, check the mail communication on a regular basis and perform adequate operational administrative.

Mail setting

(1) Set the [Configuration Select Switch] of the device as [TR30].

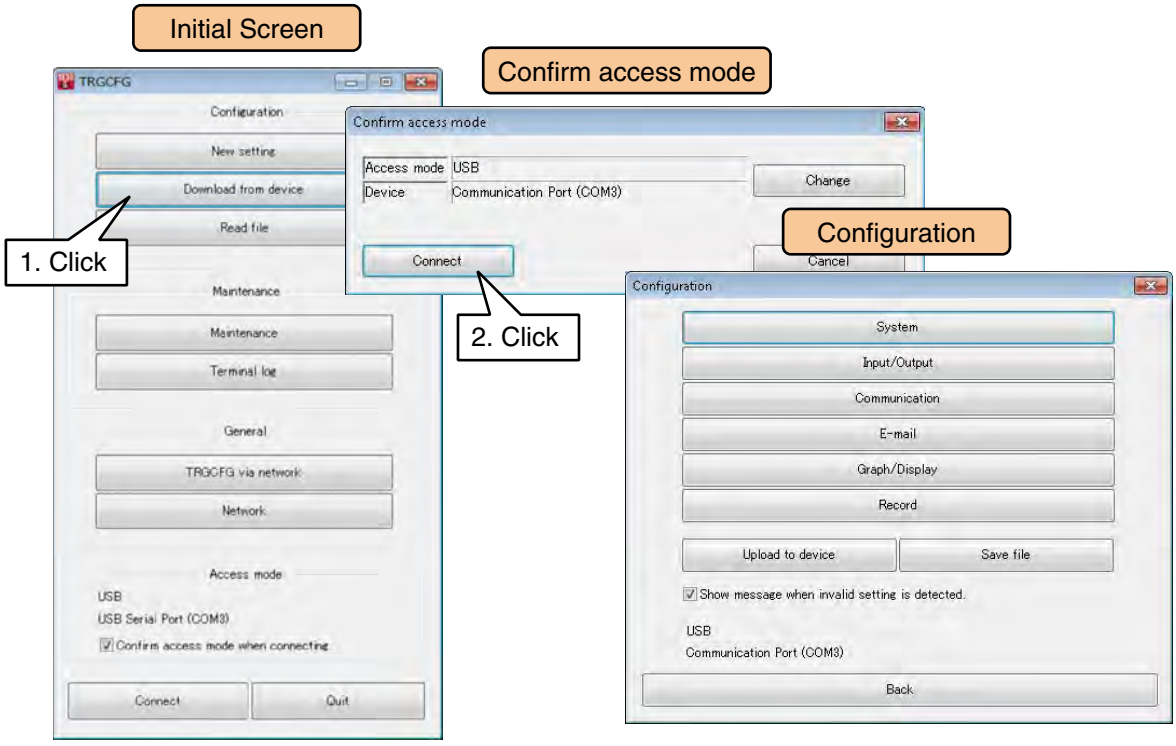


(2) Connect the PC in which TRGCFG is installed with the device, and start up TRGCFG.

(3) Click on the [Download from device] button.

(4) If the [Confirm access mode] is displayed, check that the device is correct, and click on the [Connect] button.

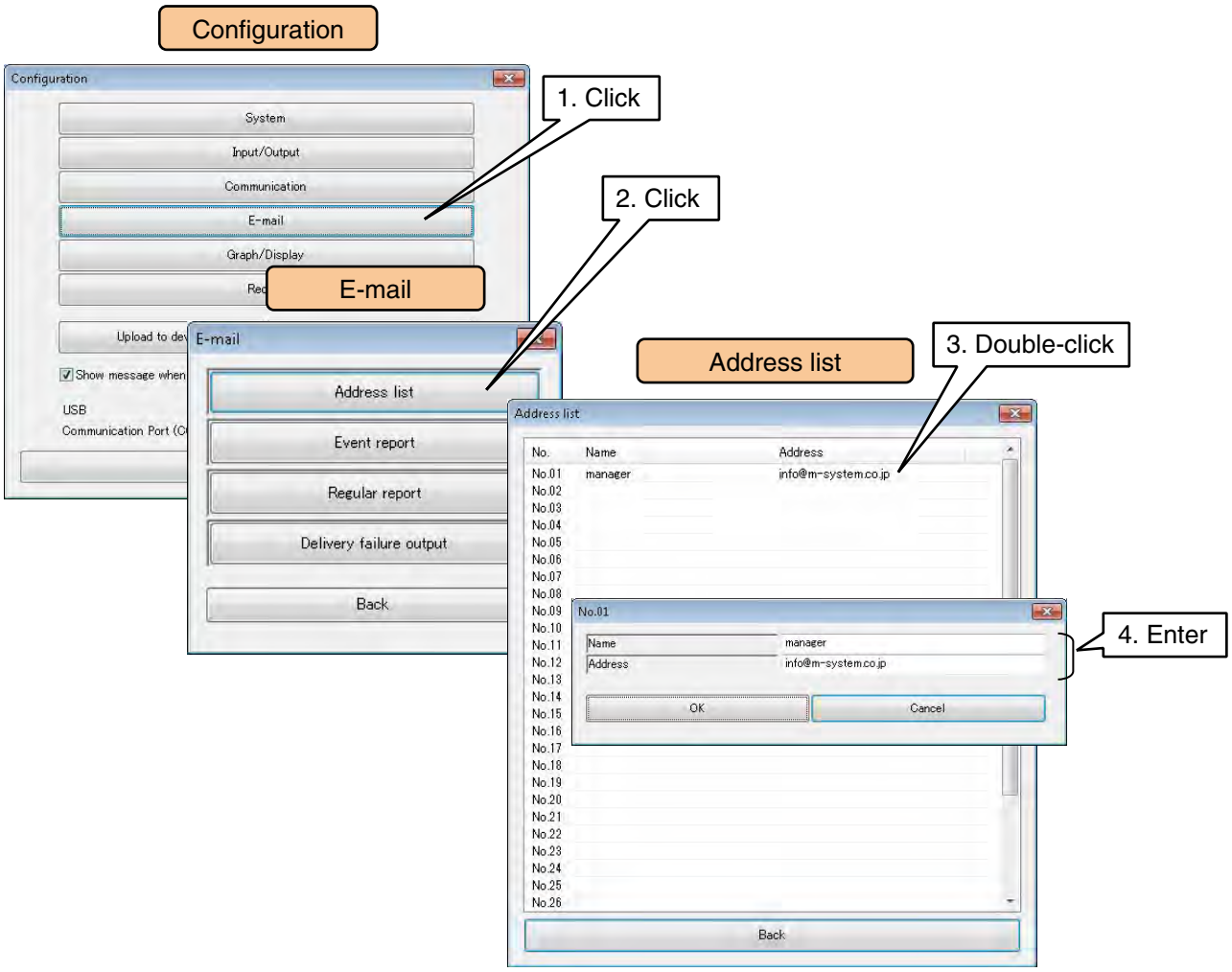
(5) Once the setting information has been loaded from the device, the [Configuration] is displayed.



(6) Click on the [E-mail] button.

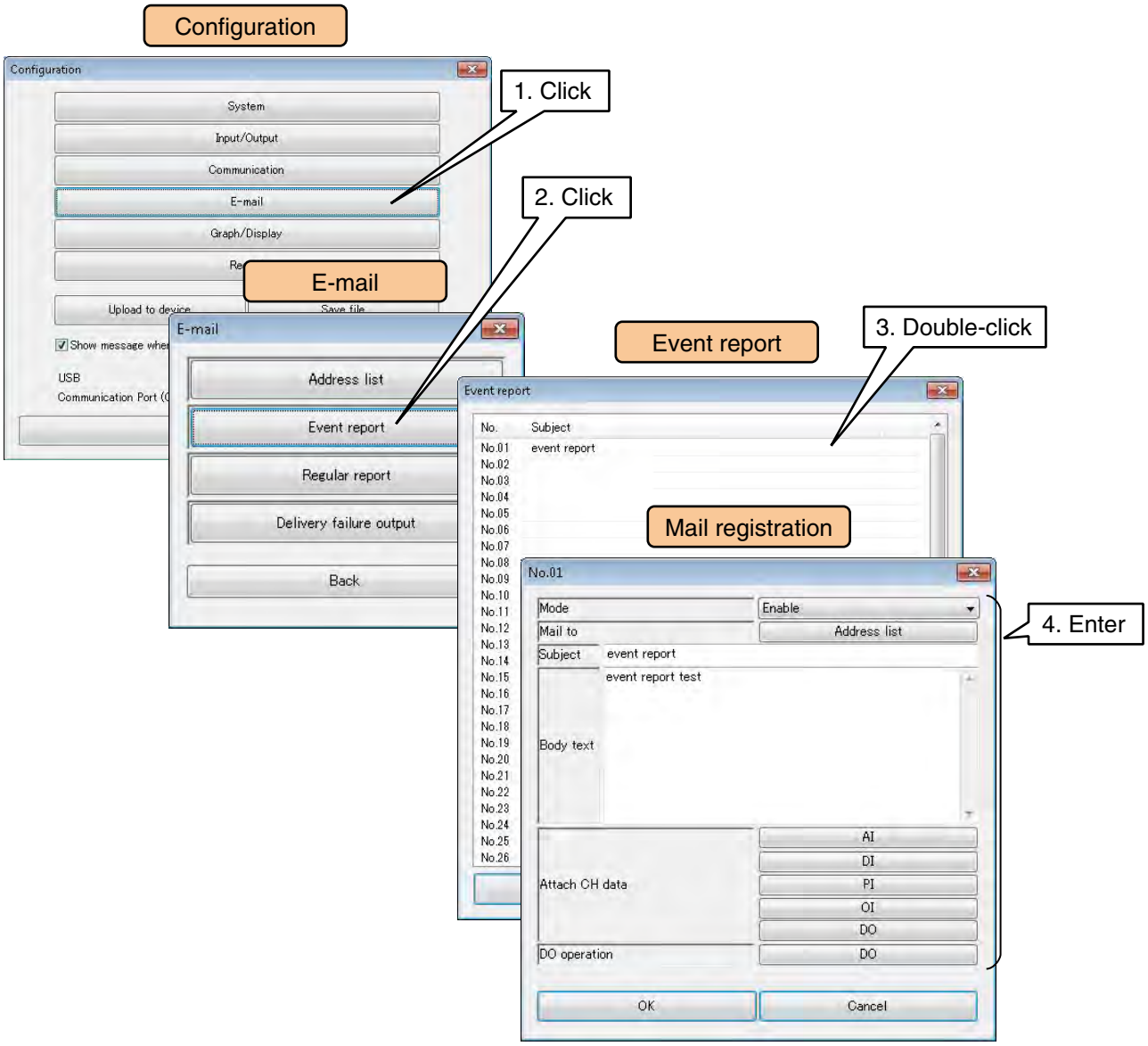
(7) The [E-mail] screen is displayed. Click on the [Address list] button. The [Address list] screen is displayed. Double-click on the Address list row to be registered, and register the Name and Address (mail address).

You can register up to 32 addresses as the Address list.



(8) Click on the [Event report] button to display the [Event report] screen. Register the mail document for the event report here.

Double-click on the row with the mail number to be registered as the event report. The registration screen is displayed. First, set the [Mode] as [Enable]. Then, enter the subject of the mail using less than 32 characters, and the text of the mail using less than 256 characters. If the [Mode] is set as [Disable], the mail is not sent.

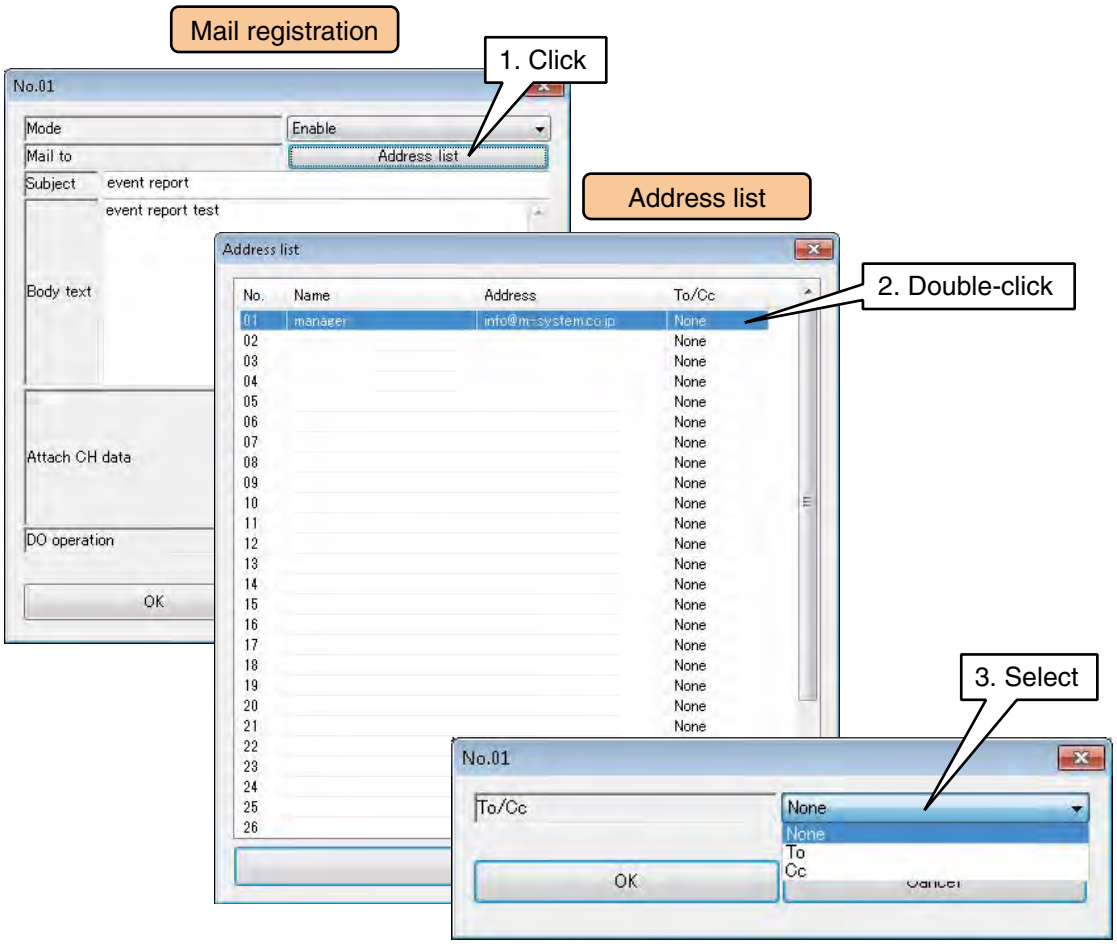


CAUTION

When the [Mode] is disabled, the relevant event report setting is also changed accordingly. For temporarily disabling a particular mail registration, choose [None] in [Address list].

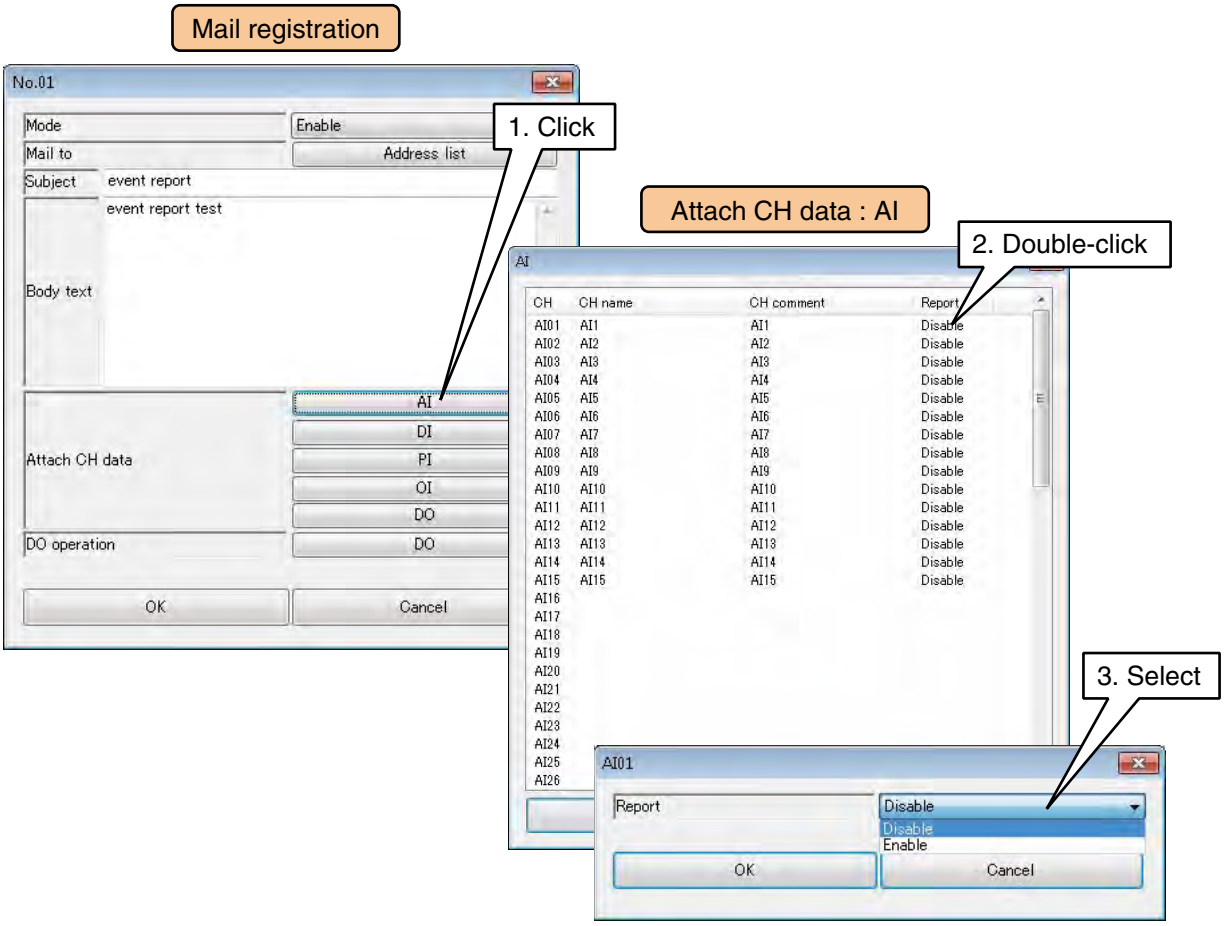
(9) Click on the [Address list] button. The [Address list] screen is displayed.

Double-click on the row containing the registered Address list, and select from: None / To / Cc.



(10) Configure the setting related to the most recent input value report to be appended at the end of the mail document.

Click on the [Attach CH data] (AI - DO) button. The [CH information (AI - DO)] screen is displayed. To display it as the input value report, double-click on the row containing the relevant CH, and set it as [Enable].

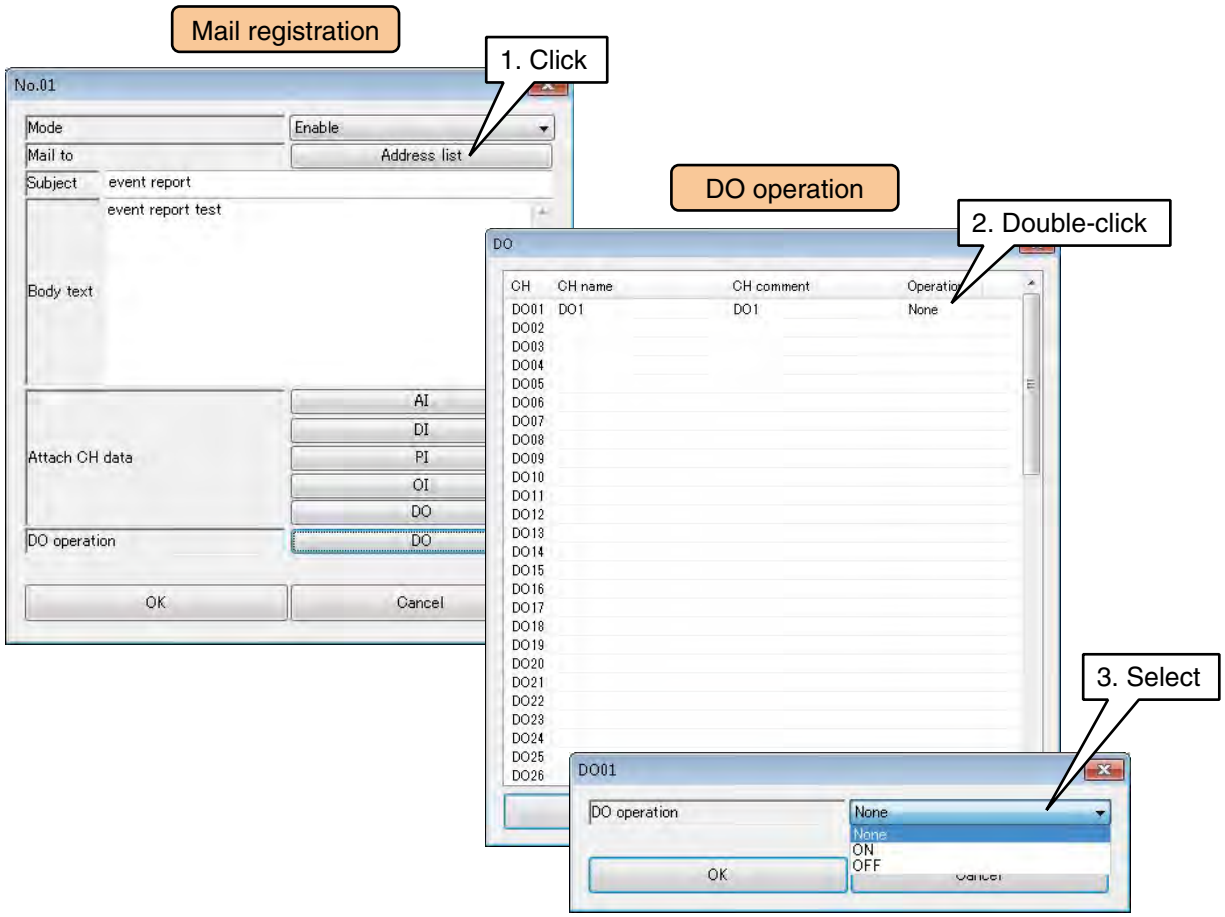


Attached CH data is shown in following table.

Parameter	Description
CH data	- For AI, PI and OI [CH No.] CH name <CH comment>: engineering unit value (engineering unit) - For DI and DO [CH No.] CH name <CH comment>: display comment set with ON or OFF

(11) When the mail reporting is successful, configure the setting for the DO to be operated.

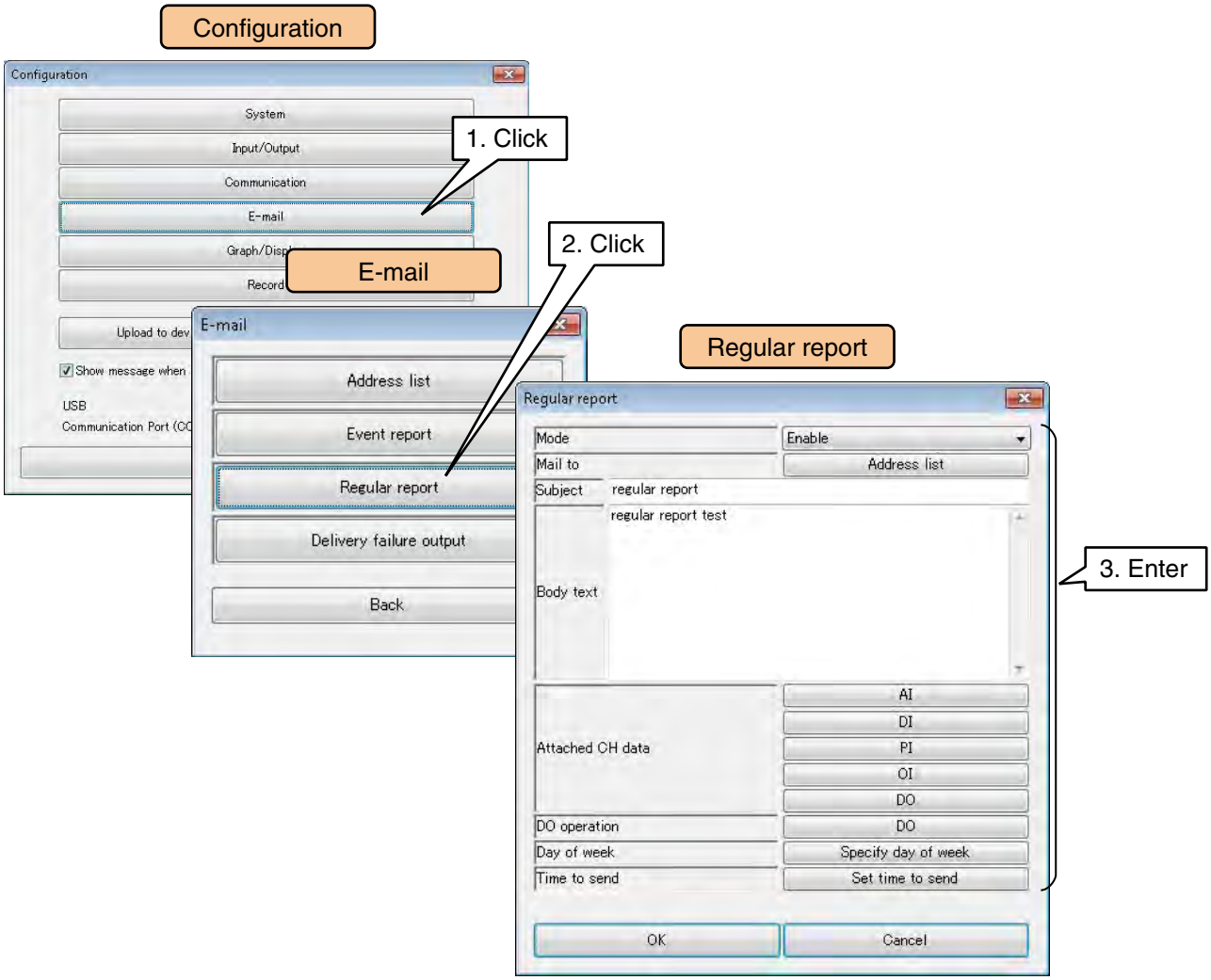
Click on the [DO] button. The [DO] screen is displayed. Double-click on the row containing the CH to be operated, and select from: [None], [ON] and [OFF].



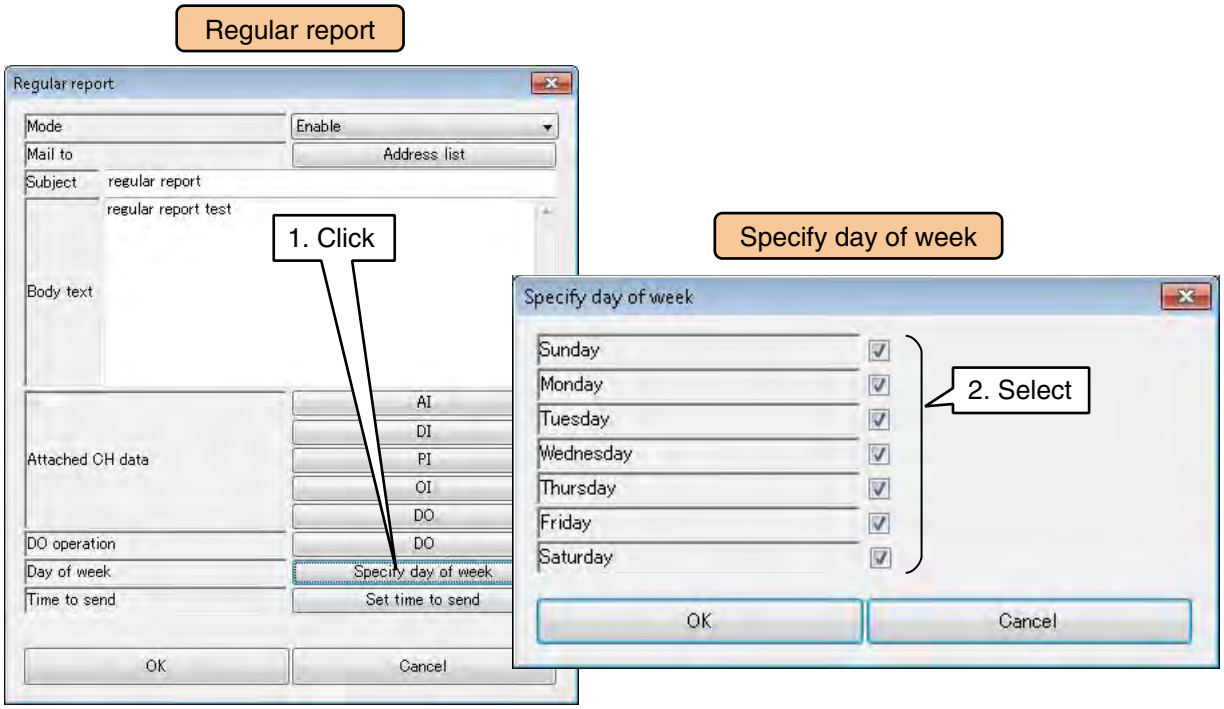
(12) Once the setup is complete, click on the [OK] and [Back] buttons and temporarily store the setting.

(13) For regular reporting, please click on the [Regular report] button. The [Regular report] screen is displayed.

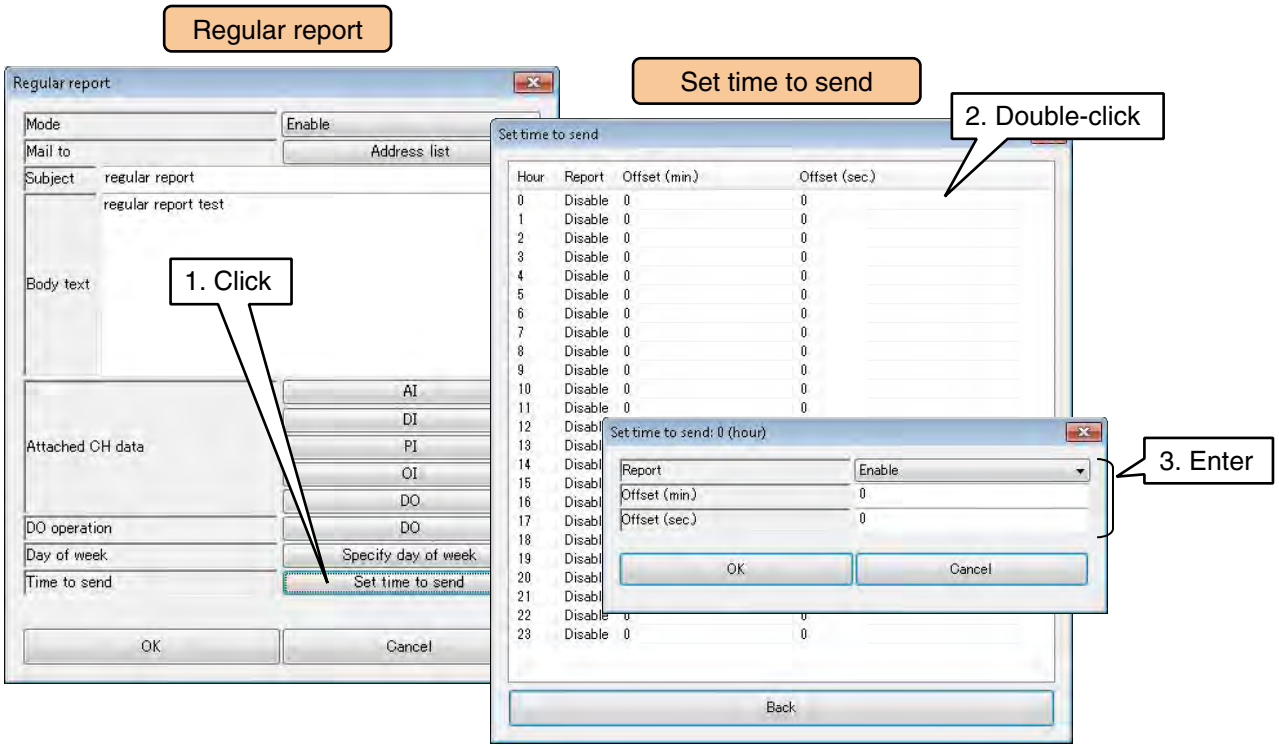
Please configure the setting for [Mode], [Address list], [Subject], [Body text], [Attached CH data] and [DO operation] just as for the [Event report].



(14) For a [Regular report], you can specify the day (of the week) when it should be sent.

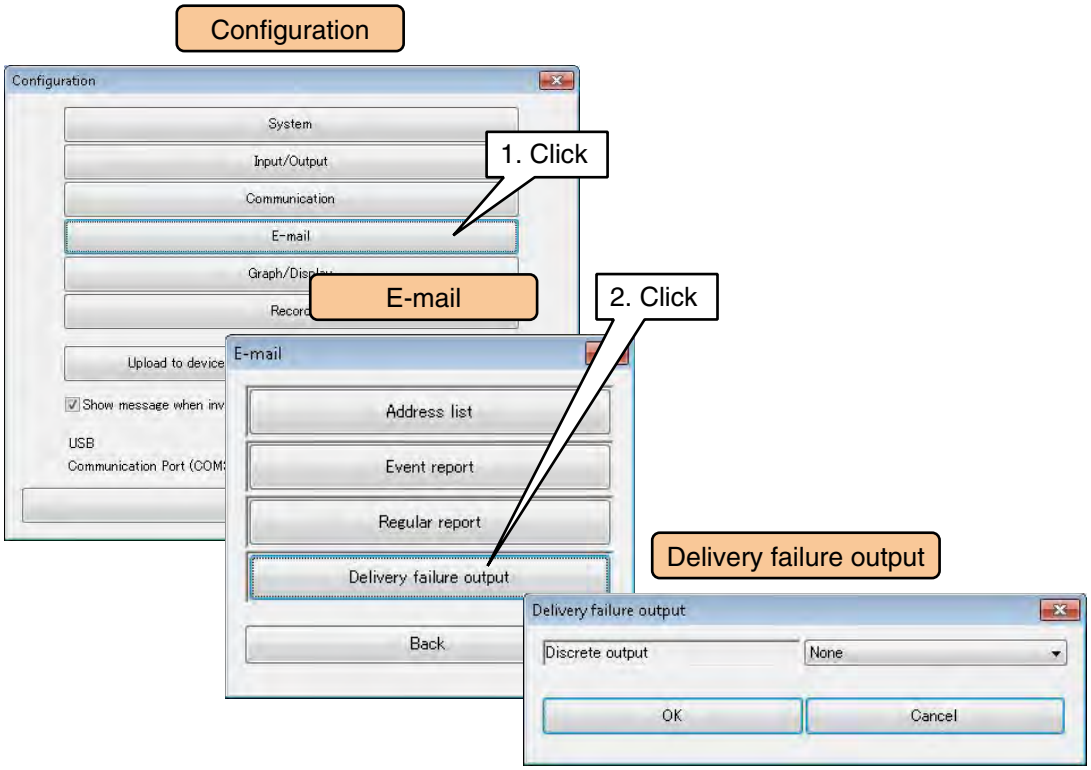


(15) Please set the time to send the [Regular report] between 0 and 23 hours. To report, set the [Report] as [Enable]. And, in [Offset (min)] and [Offset (sec)], please set the reporting time in minutes and seconds. In case the reporting is on the hour, both should be set as 0.



(16) You can configure the report failure output setting to detect a mail reporting failure.

Click on the [Delivery failure output] button. The [Delivery failure output] screen is displayed. Select from: [None] or [DO1 - 64].



(17) Once the setup is complete, please click on the [OK] and [Back] buttons and temporarily store the setting. To activate the setting, please return to the [Configuration] and click on the [Upload to device] button.

CAUTION

- Do not share delivery failure output with alarm output and control output. Allocating to dedicated Do channel is recommended.
- Maximum capacity per one mail when CH data is attached to body text is approx. 4 KB. If many CH data is attached, the last part of the mail may be lost by capacity limit.

3.12 Other settings

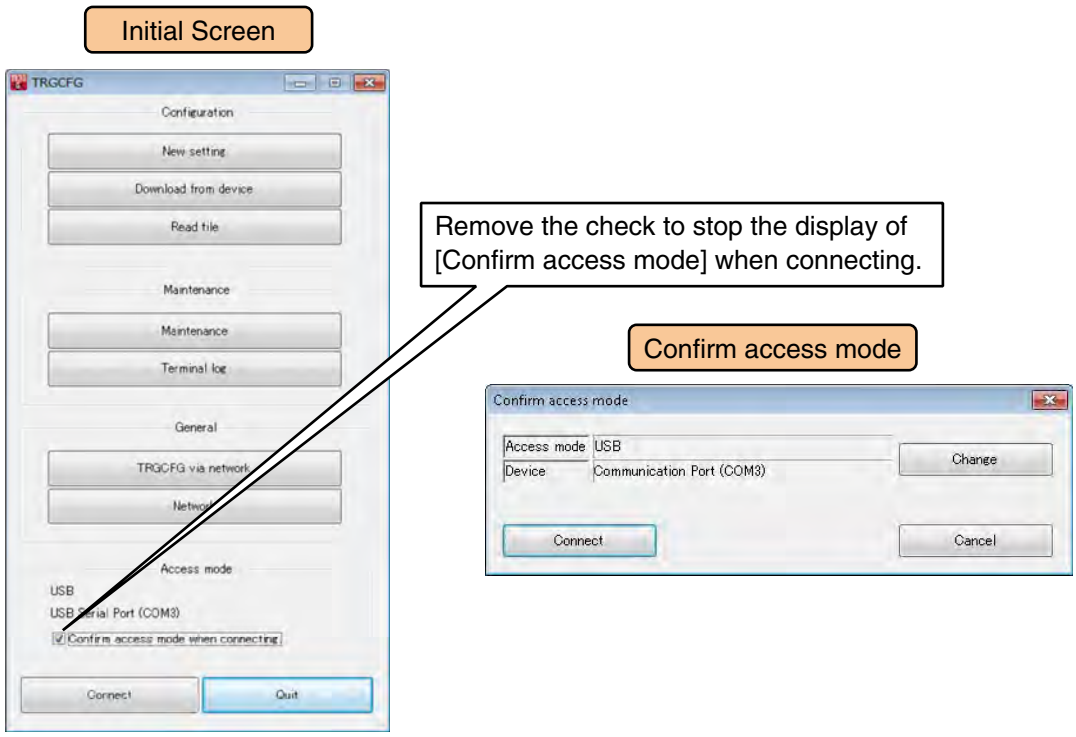
3.12.1 TRGCFG setting

You can configure the setting so that the [Confirm access mode] is not displayed when connecting to the TR30.

(1) Start up TRGCFG.

(2) Remove the check against [Confirm access mode when connecting.] in the initial screen.

(3) The [Confirm access mode] will no longer be displayed. If you want to change it so that it is displayed once again, put a check in the check box in the [Initial screen].



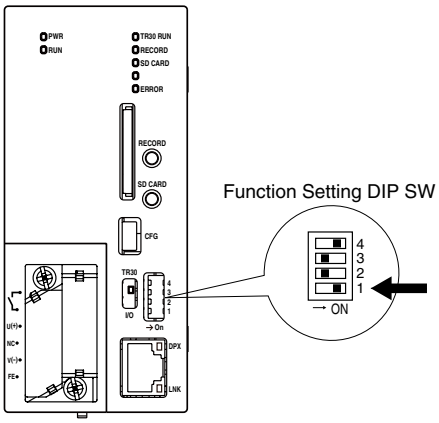
3.12.2 FTP status monitoring

The status of data uploading by FTP can be confirmed during the setup procedure using one of the following methods.
Shows the communication log that occurs while communication log window is opened.

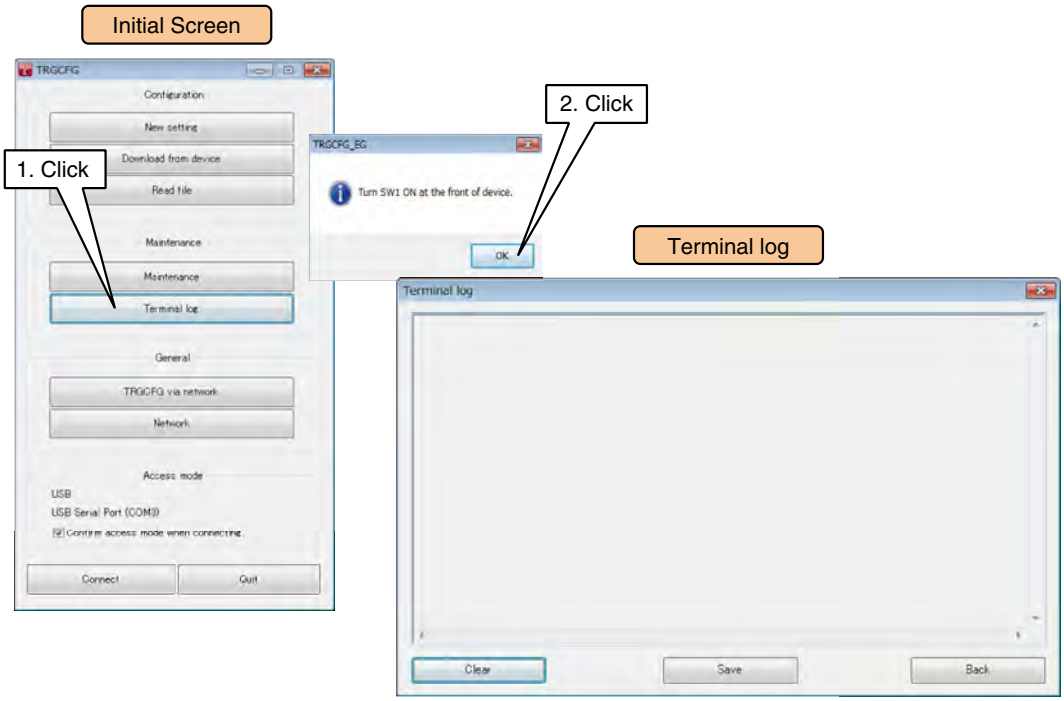
Checking by TRGCFG

(1) Connect the TR30 to a PC with an USB cable.

(2) Turn ON the function setting DIP SW1.



(3) Start up the TRGCFG and click [Terminal log] on the initial screen to open [Terminal log] window.



Item	Description
Clear	All terminal logs shown on the screen are deleted.
Save	The terminal logs shown on the screen are saved as file in a text format.
Back	Returning to the initial screen.

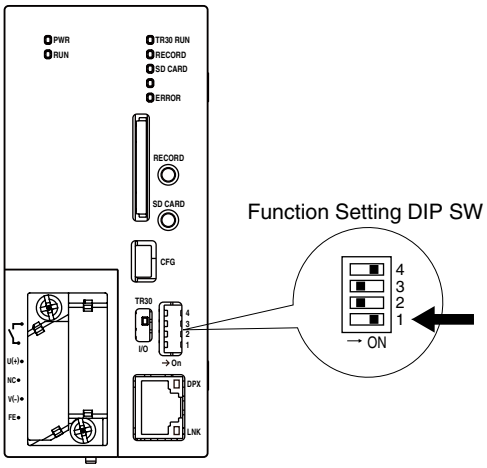
(4) When an FTP transfer starts, you can confirm its terminal log on the screen. Confirm the FTP and other settings until the transfer is completed normally.

(5) After confirmation, click [Back] to exit the [Terminal log] window and turn OFF the DIP SW1.

Checking by a terminal software program

(1) Connect the TR30 to a PC with an USB cable.

(2) Turn ON the function setting DIP SW1.



(3) Start up the terminal software program and set as follows:

Transmission speed: 38400 bps
Data bit: 8
Start bit: 1
Stop bit: 1
Parity bit: None

(4) When an FTP transfer starts, you can confirm its terminal log on the program. Confirm the FTP and other settings until the transfer is completed normally.

(5) After confirmation, turn OFF the DIP SW1.

NOTES

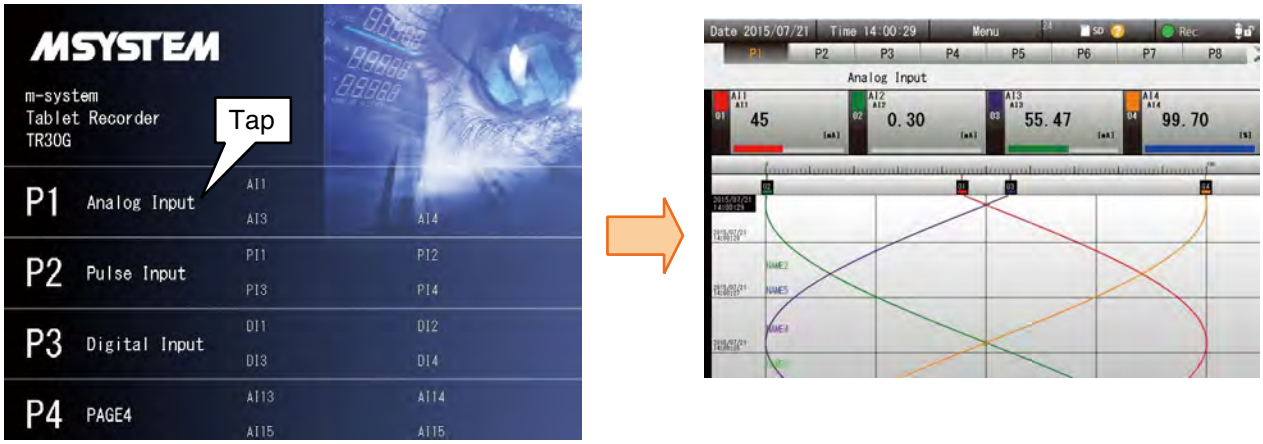
The above methods are also useful to monitor mail delivery status.

4. How to use the Web server

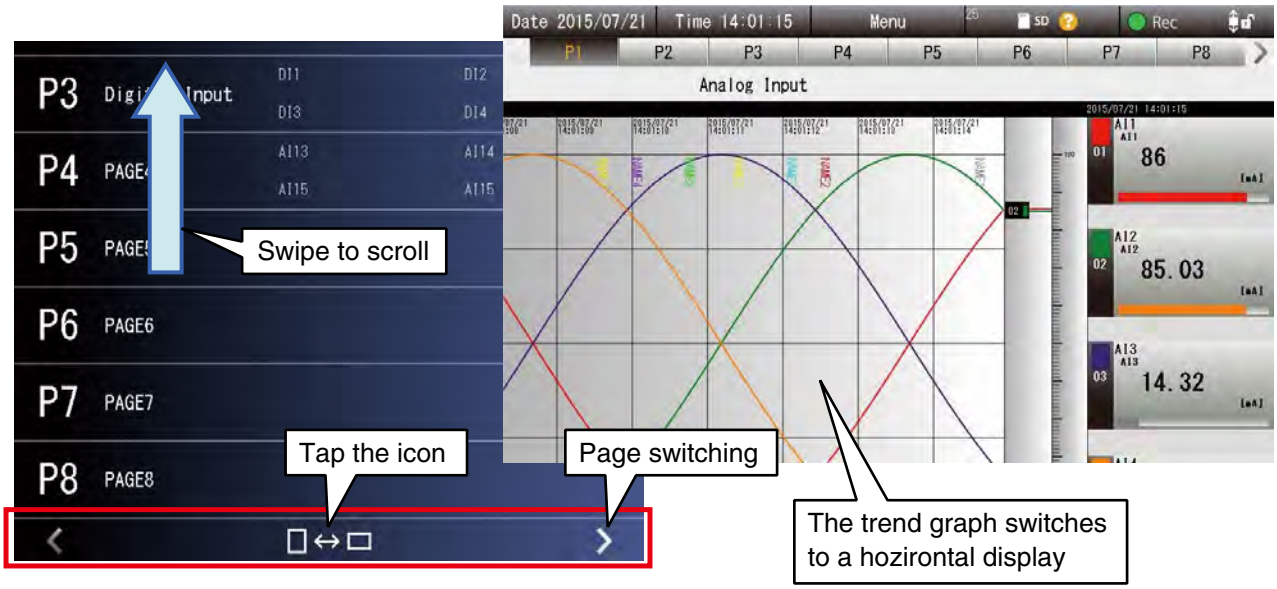
Please enter the domain name or IP address in the URL entry field of the browser.
The [Group selection] screen is displayed.
We shall now describe the method of operation method based on a tablet terminal (iPad).

4.1 Initial screen (Group selection screen)

The trend screen consists of P1 - P30. This screen displays the summary of those pages.
Tap to switch to the main screen (trend) of the relevant page.
To display pages from P8 onwards, tap the left/right arrow icons.



In its initial state, the time axis of the trend graph is the vertical axis, but this can be changed to the horizontal axis by tapping the vertical/horizontal change icon at the bottom of the screen.



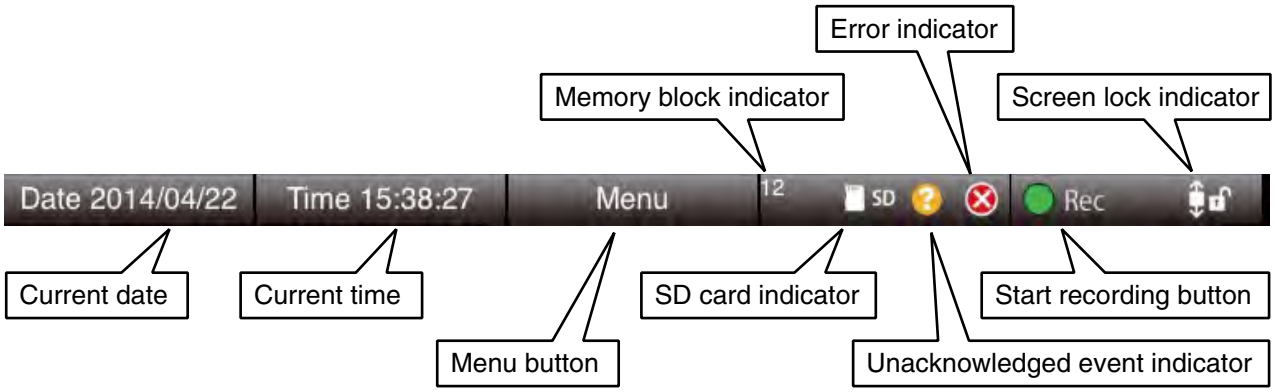
NOTES

- Please see [7.3.1 Compatible terminals and browsers] for information on compatible terminals.
- If the group selection screen is not displayed, please check [3.3 Network setting].

4.2 Menu bar

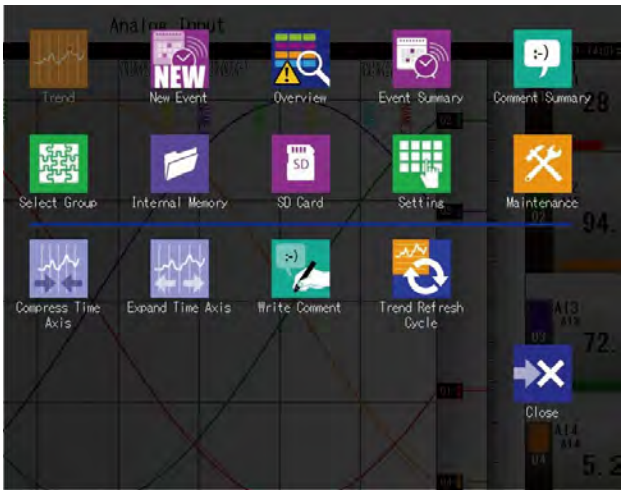
A common menu bar is displayed in screens other than the [Group selection] screen.

4.2.1 Display contents



Menu button

Tap the Menu button Menu to display the menu dialog.



View Selector

Dark icon means the relevant view is currently on the screen

Sub-menu

lists the icons for the functions available for the selected view

Memory block indicator

The memory block which is being recorded at present is displayed.

SD card indicator

When an SD card is inserted into the device, the SD mark is displayed.

Unacknowledged event indicator

For an event which has been set as [Acknowledge: required], the mark is displayed if it is an unacknowledged event.

Error indicator

If a module which has been set is not actually inserted, the  mark is displayed.
➔ 7.2 Troubleshooting

Start recording button

When recording into the device is in progress, the green color is ON (

), and while recording is stopped, it is OFF (

).
Tap to start/stop recording.

Screen lock indicator

If the screen scroll is not locked, an icon with an open lock  is displayed, and when it is locked, an icon with a closed lock  is displayed.
Tap to switch the screen lock status.

NOTES

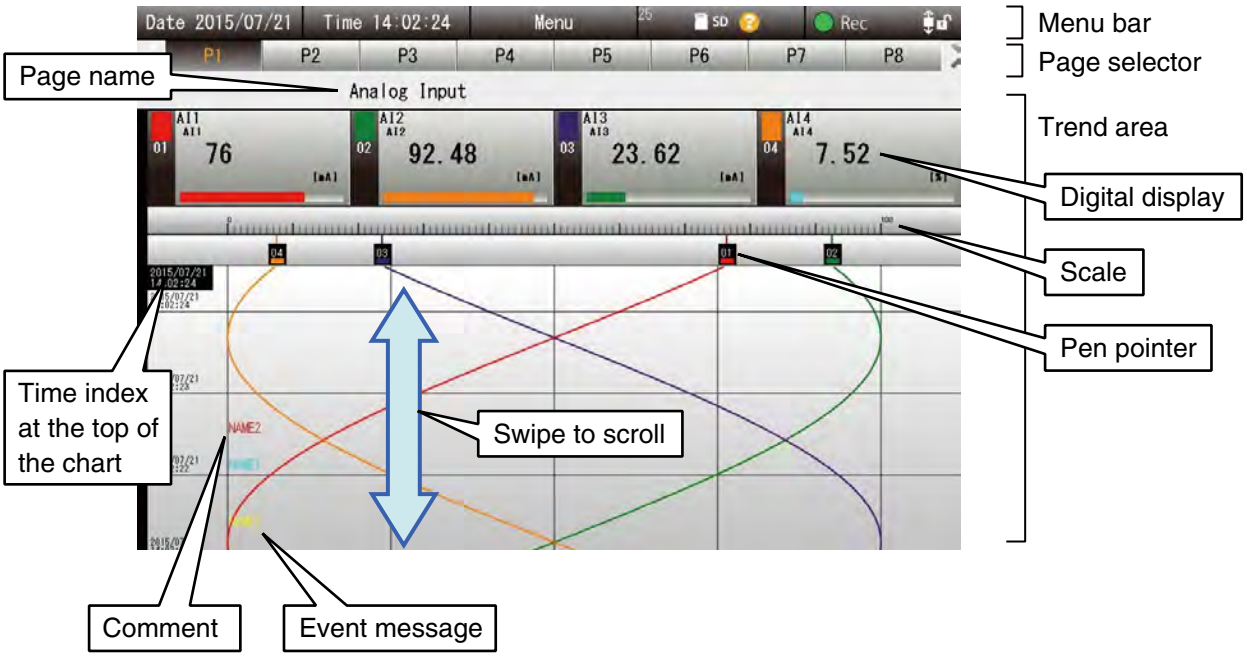
The selection of the screen lock status is available with “Trend”, “New event” and “Event summary”.

4.3 Trend

Tap the [Menu button Menu] and select [Trend] to switch to the [Trend] screen.

4.3.1 Display contents

The [Trend] screen consists of a [Menu bar], [Page selector] and [Trend area].

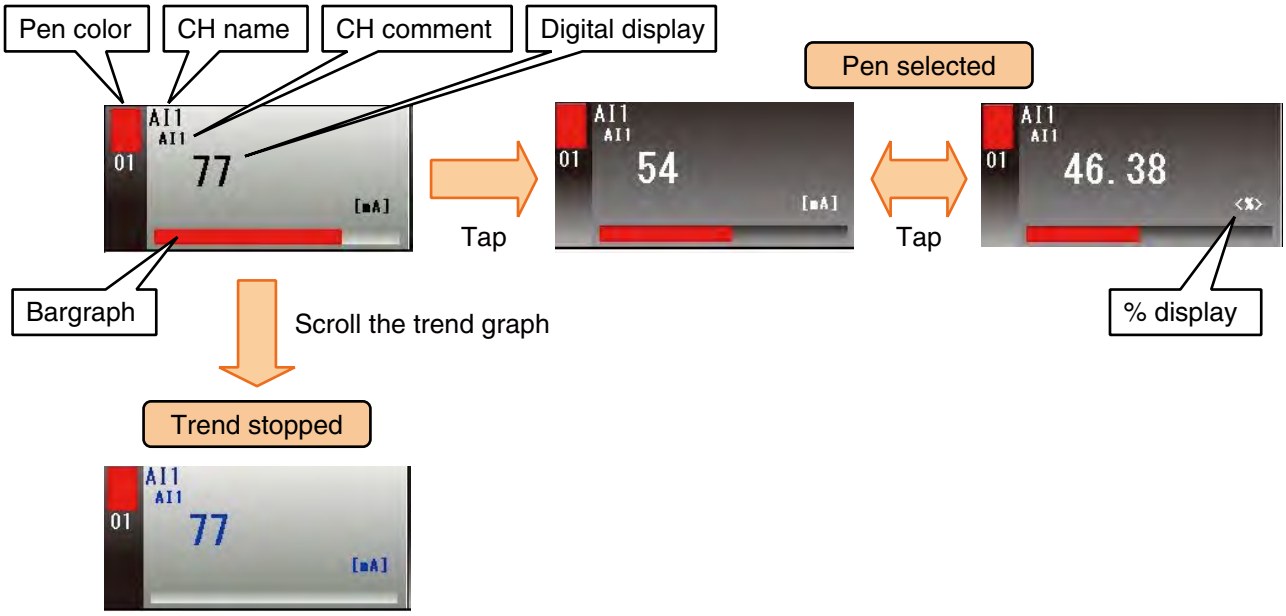


Page name

The set page name is displayed. ➔ 3.9.2 Trend screen display setting

Digital display

If the color of the characters is black, it means that the current value is being displayed.
When you scroll the trend graph, the top values of the graph are displayed, and the color of the characters becomes blue.
Tap the [Digital display] to make the pen selected. The background becomes black.
To unselect the pen, tap the [Scale].



NOTES

- The changed display status (%, scaling value) is only enabled while the [Trend] screen is being displayed.
- The value changed in [Reset local calibration] can be cleared.
  ➔ 4.12.4 Reset local calibration
- The most updated trend data is read in for display. Past trend data can be read in when the chart is scrolled down to the point where the figures in the digital displays are in blue color.

4.3.2 Operation

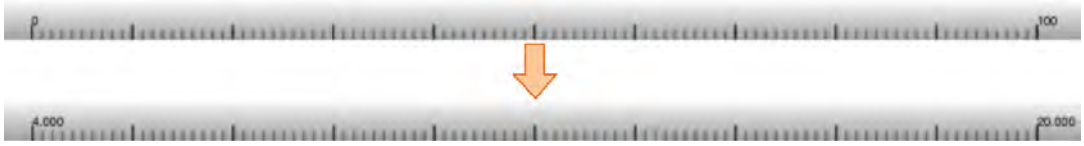
Switch pages

Tap the [Page selector] to switch pages.

A maximum of 4 pens are assigned to 1 page.
Even when the [Menu] is displayed, you can tap the button and switch pages.

Switch scale (%, scaling value)

You can switch the scale display between % and scaling value.

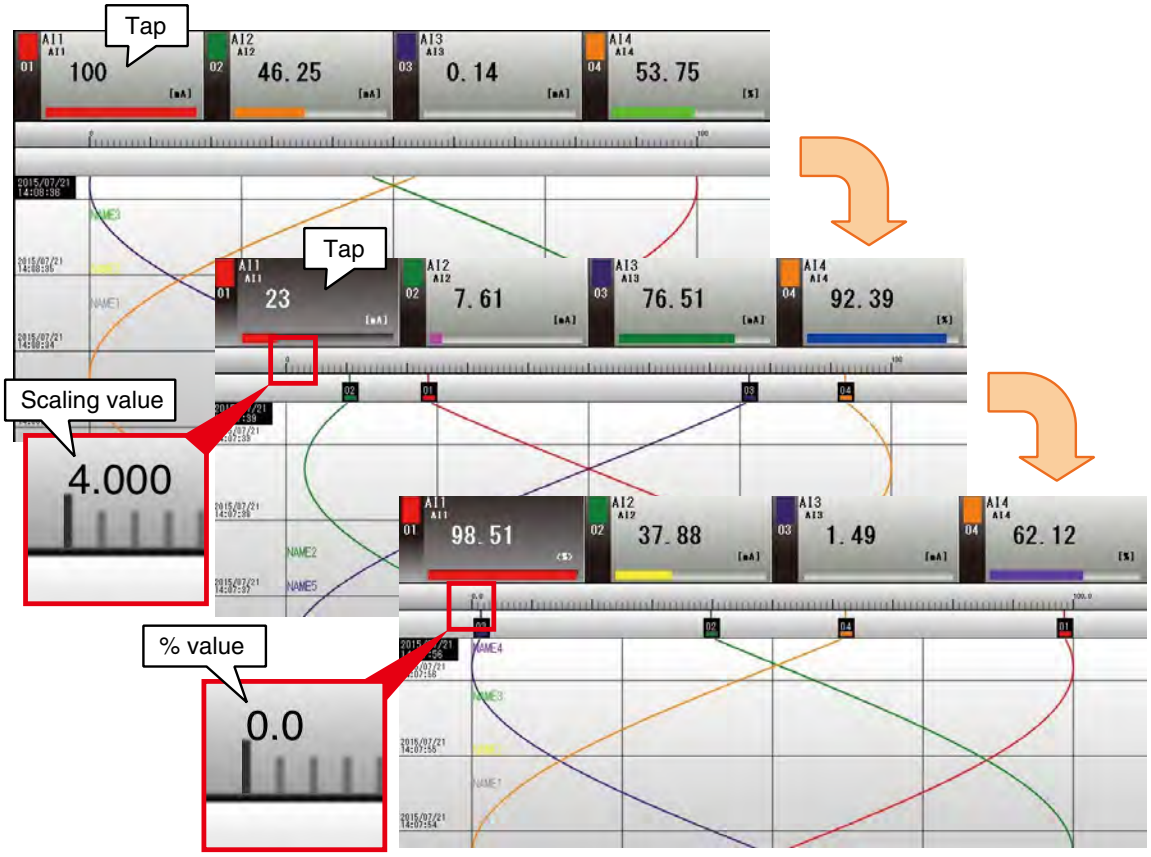


(1) Tap the [Digital display] of the pen which you want to switch to scaling value to make the pen selected.

(2) The scale display changes according to the status of the selected pen.

If the digital display of the pen is scaling value, the scale also displays the scaling value, and if it is %, the scale also displays %.

(3) If you tap the [Digital display] once again while the pen is selected, the display toggles between scaling value and %value.



(4) To unselect the pen, tap the [Scale].

Change the maximum/minimum value of the scale

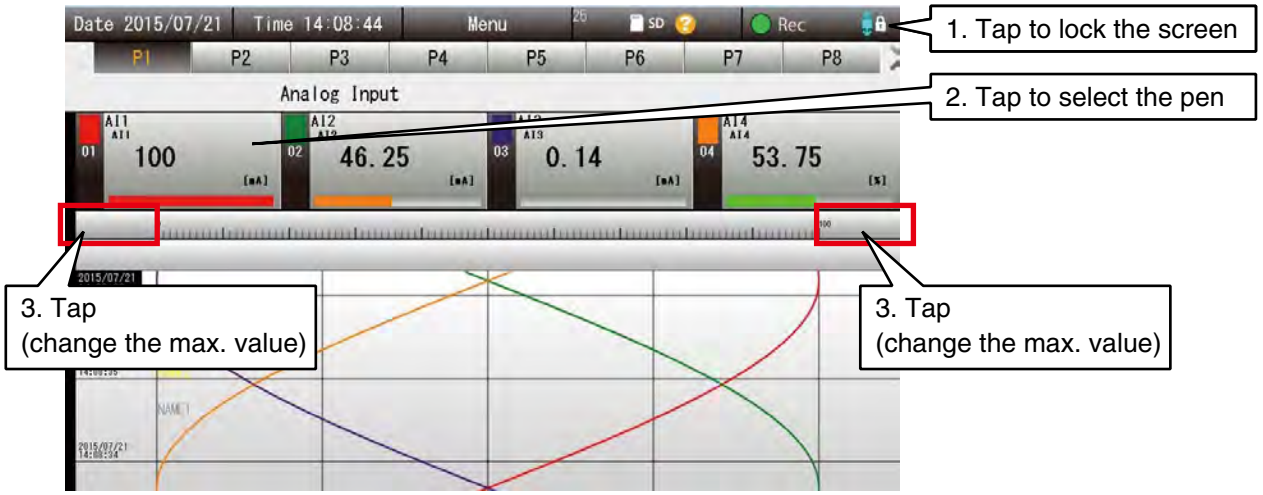
You can change the maximum value and minimum value of the scale.

(1) Lock the screen.

(2) Tap the [Digital display] for the pen that you want to change, and select the pen.

(3) If you want to change the maximum value, tap the blank area to the right of the scale, and to change the minimum value, tap the blank area to the left of the scale. The maximum value/minimum value change dialog is displayed.

(4) Enter the value that you want to change, and tap the [OK] button. The maximum value/minimum value of the scale changes.



(5) To unselect the pen, tap the [Scale].

NOTES

- The changed maximum value/minimum value is active only while the [Trend] screen is displayed.
- You can clear the changed value using [Reset local calibration].
  ➔ 4.12.4 Reset local calibration

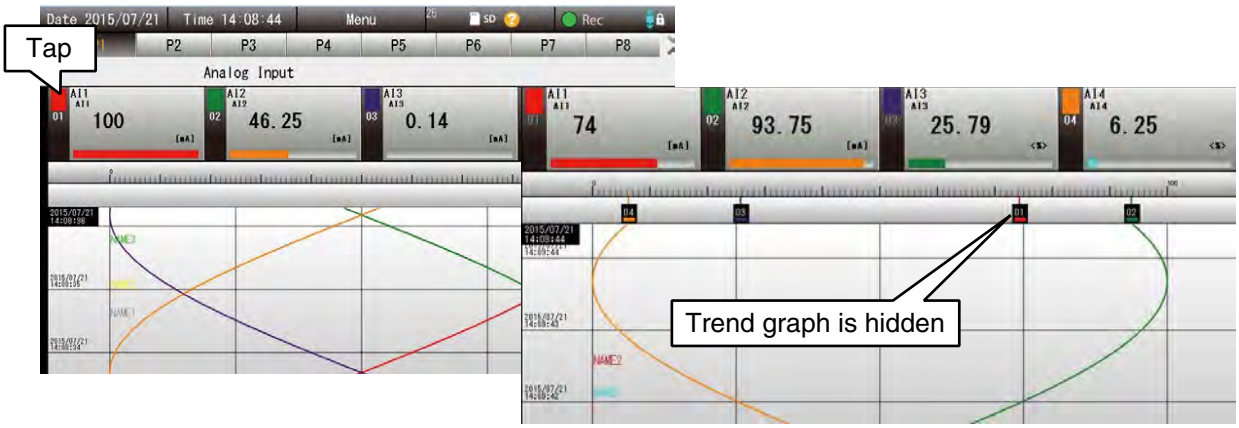
Switch between show / hide pen

You can hide the trend graph for the selected pen.

(1) Tap the [Pen color] in the [Digital display] of the pen that you want to hide.

(2) The color of the characters for that pen number turns dark, and the trend graph for that pen is hidden. The [Pen pointer] is displayed as usual.

(3) To display once again, tap the [Pen color] in the [Digital display] once again.



NOTES

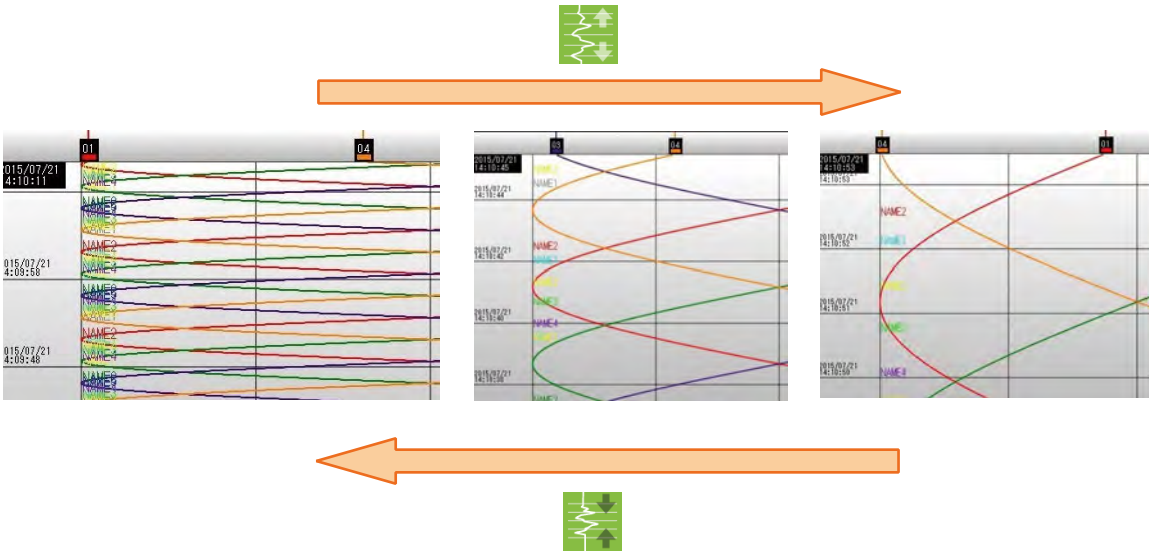
- The changed display status (show/hide) is enabled only while the [Trend] screen is displayed.
- You can clear the changed value using [Reset local calibration].
  ➔ 4.12.4 Reset local calibration

Expand / compress the time axis

You can hide the trend graph for the selected pen.

(1) Tap the [Menu button Menu] and display the [Menu].

(2) Tap [Compress time axis ], or [Expand time axis ] in the sub-menu.
Each tap of the button causes the time axis on the trend graph to compress/expand.



In case of a touch panel such as an iPad, you can also Pinch in to compress, and Pinch out to expand.

NOTES

- The axis can be selected from 7 levels among followings: 100% (same size), 50%, 25%, 10%, 5%, approx. 3.3%, approx. 1.6%.
- If you Pinch in/ Pinch out while the pen is selected, the browser screen expands/contracts.

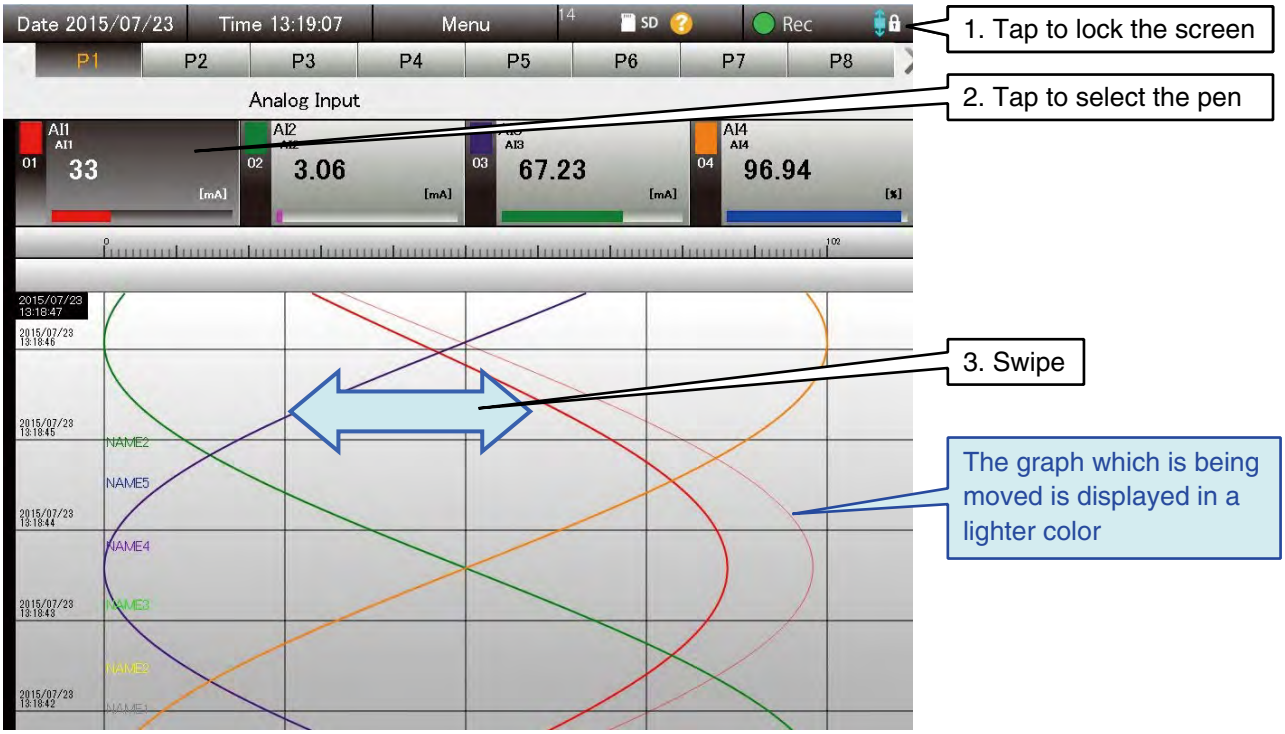
Compare graphs (Shifting the scale orientation)

You can shift the trend graph for a selected pen.

(1) Tap [Screen lock indicator] and lock the screen.

(2) Tap [Digital display] for the pen that you want to move, and make the pen selected.

(3) Swipe the trend graph area in the desired direction.

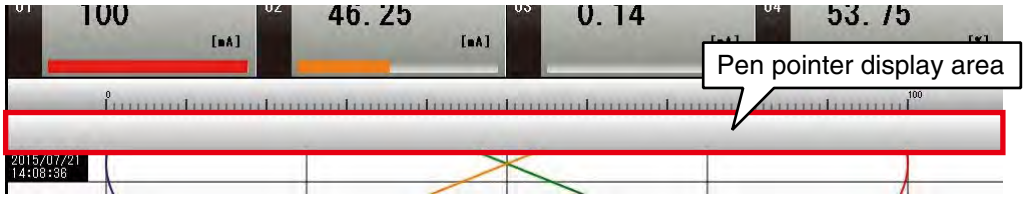


(4) To unselect the pen, tap the scale area.

The changed graph remains even after the pen is unselected. You can continue and change the graph of another pen.

NOTES

- The changed position is active only while the [Trend] screen is displayed.
  You can clear the changed value using [Reset local calibration].
  ➔ 4.12.4 Reset local calibration
- If you are using the mouse for operation, please drag and drop the pen mark display area.



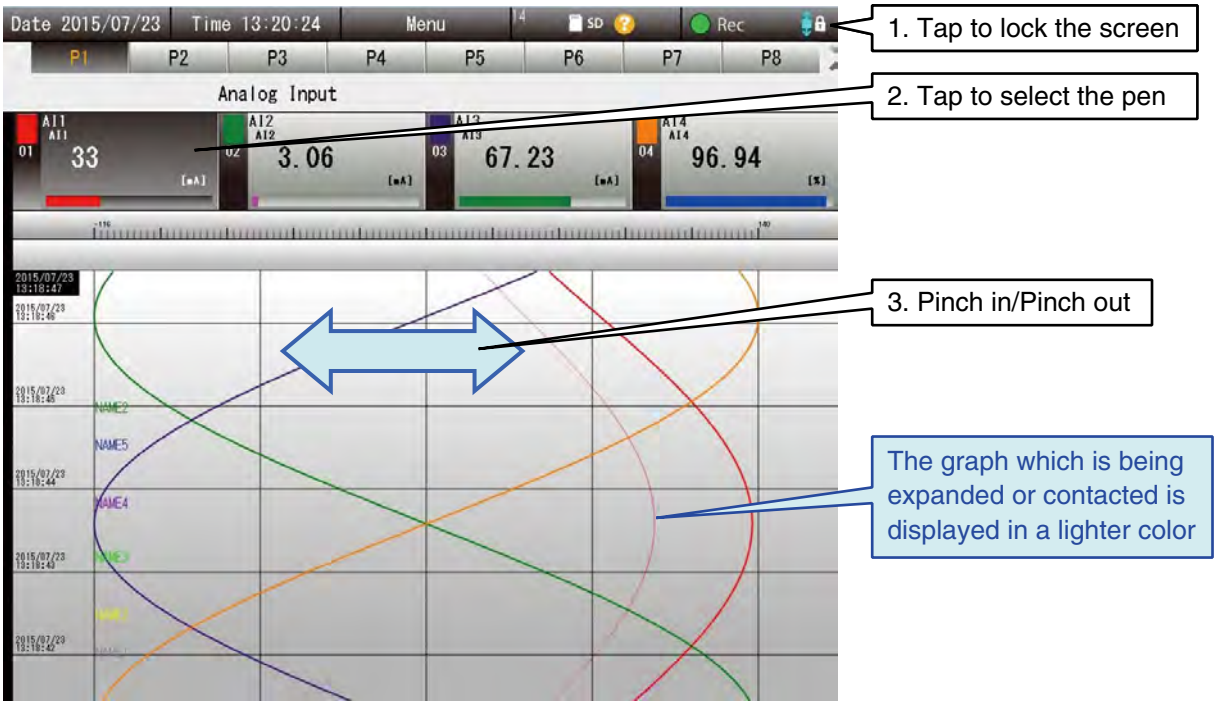
Compare graphs (Scale expansion / contraction)

You can expand/contract the trend graph of the selected pen.

(1) Tap the [Screen lock indicator] and lock the screen.

(2) Tap the [Digital display] for the pen that you want to move and make the pen selected.

(3) If you Pinch in/Pinch out in the trend graph area, the graph expands/contracts.



(4) To unselect the pen, tap the scale area.

The changed graph remains even after the pen is unselected. You can continue and change the graph of another pen.

NOTES

- The changed scale is active only while the [Trend] screen is displayed.
  You can clear the changed value using [Reset local calibration].
  ➔ 4.12.4 Reset local calibration
- If you are using the mouse for operation, drag and drop the trend graph area.

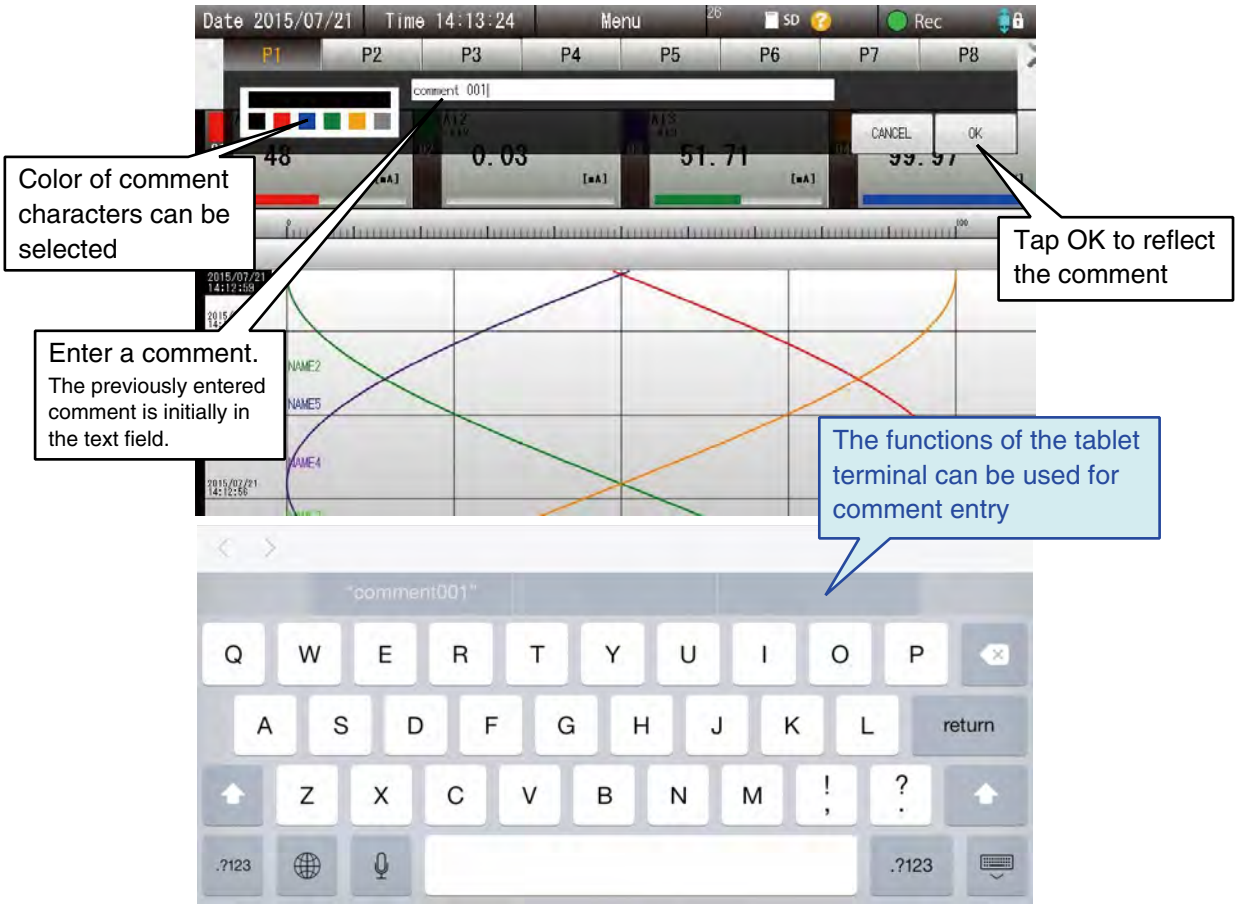
Comment entry

You can write comments in a trend graph. Comments are displayed across all pages.
The list of comments which have been entered can be checked in the [Comment summary] screen.

(1) Tap the [Menu button Menu].

(2) Tap [Write comment ] in the sub-menu.

(3) Enter the comment and tap the [OK] button. The comment is displayed on the time axis at the time when the [OK] button is pressed.



CAUTION

Comment is entered at a position where the data is read in and plotted.

Change screen refresh cycle

You can change the screen refresh cycle of trend graph. The refresh cycle can be specified between 0.1 and 999.9 seconds.

(1) Tap the [Menu button Menu].

(2) Tap [Trend refresh cycle ] in the sub-menu.

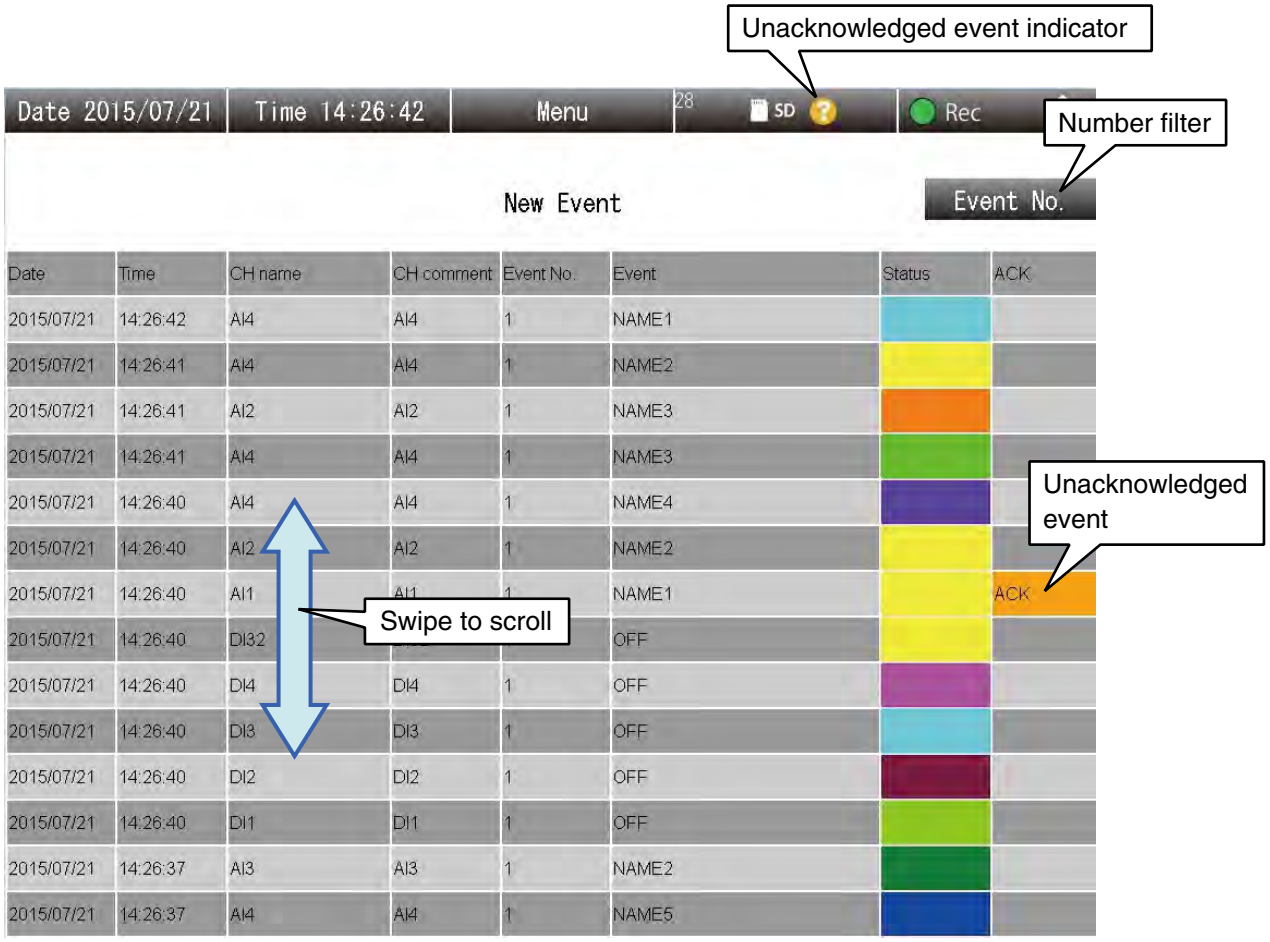
(3) Enter the auto refresh cycle and tap the [OK] button. The refresh cycle of the displayed screen is changed.

4.4 New event

Tap the [Menu button Menu] and select [New event NEW] to go to the [New event] screen.

4.4.1 Display contents

The list of new events is displayed.
During I/O setting in TRGCFG, if there are events for which there is a check against [Register new event] in the status setting for the zone in each channel, the information on such events is displayed in this screen.
In the new event screen, the most recent 512 events are displayed, and they are not cleared even when there is a memory block transition. And, they are updated even while recording has been stopped.
New event data is stored only temporarily, and hence if the power supply to the device is disconnected, the data is cleared.



Date	Time	CH name	CH comment	Event No.	Event	Status	ACK
2015/07/21	14:26:42	AI4	AI4	1	NAME1		
2015/07/21	14:26:41	AI4	AI4	1	NAME2		
2015/07/21	14:26:41	AI2	AI2	1	NAME3		
2015/07/21	14:26:41	AI4	AI4	1	NAME3		
2015/07/21	14:26:40	AI4	AI4	1	NAME4		
2015/07/21	14:26:40	AI2	AI2	1	NAME2		
2015/07/21	14:26:40	AI1	AI1	1	NAME1		ACK
2015/07/21	14:26:40	DI32			OFF		
2015/07/21	14:26:40	DI4	DI4	1	OFF		
2015/07/21	14:26:40	DI3	DI3	1	OFF		
2015/07/21	14:26:40	DI2	DI2	1	OFF		
2015/07/21	14:26:40	DI1	DI1	1	OFF		
2015/07/21	14:26:37	AI3	AI3	1	NAME2		
2015/07/21	14:26:37	AI4	AI4	1	NAME5		

Unacknowledged event (New event)

If there is even one unacknowledged event in any of the memory blocks in internal memory, the mark is displayed.

4.4.2 Operation

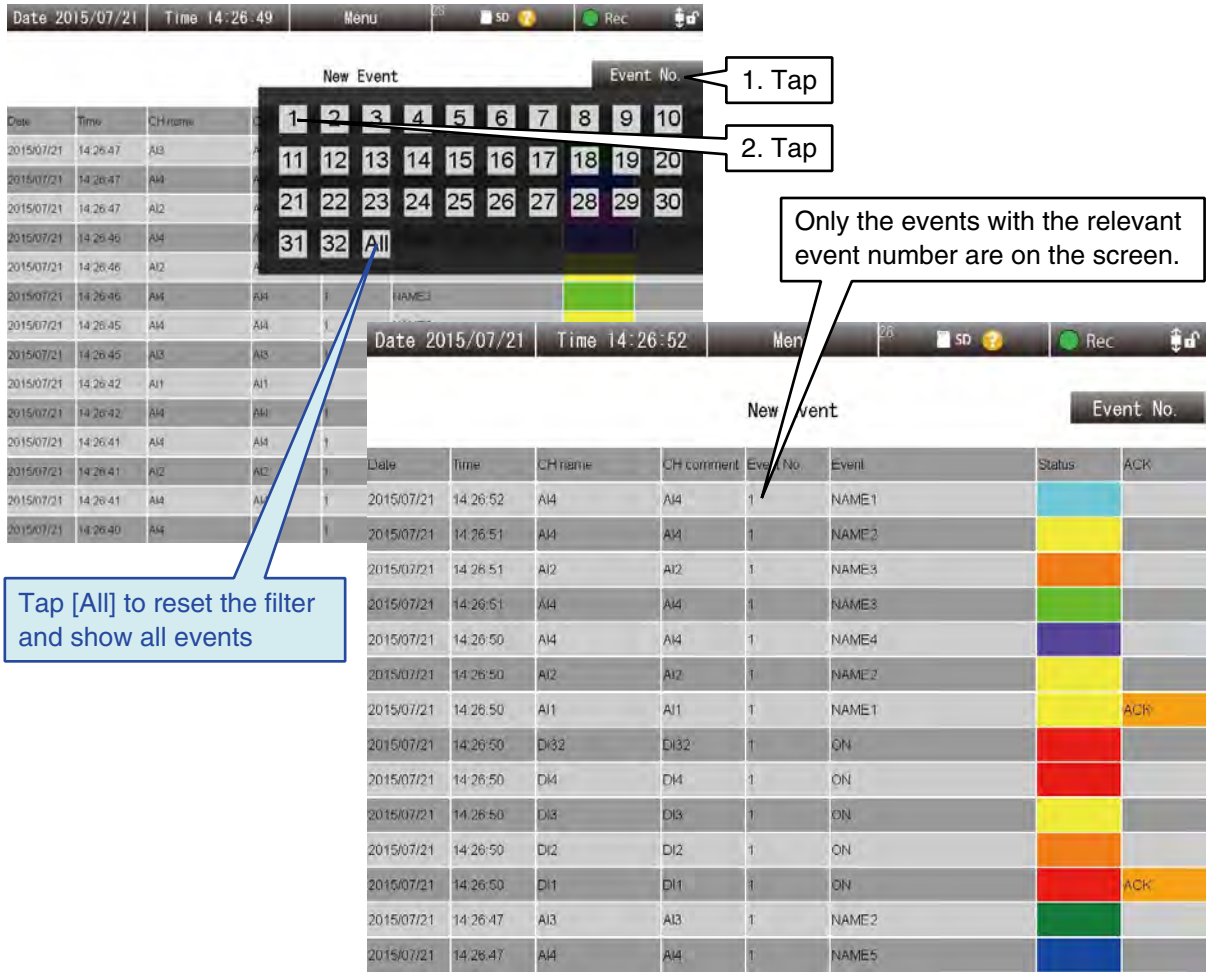
Filter the display by event number (New event)

You can filter the display by event number.

(1) Tap the [Event No.] button.

(2) The [Event No.] is displayed. Tap the number that you want to display. Only the event for the selected event number is displayed.

(3) To remove the filter, once again tap the [Event No.] button, and tap the [All] button in the [Number filter].



Confirm an unacknowledged event (New event)

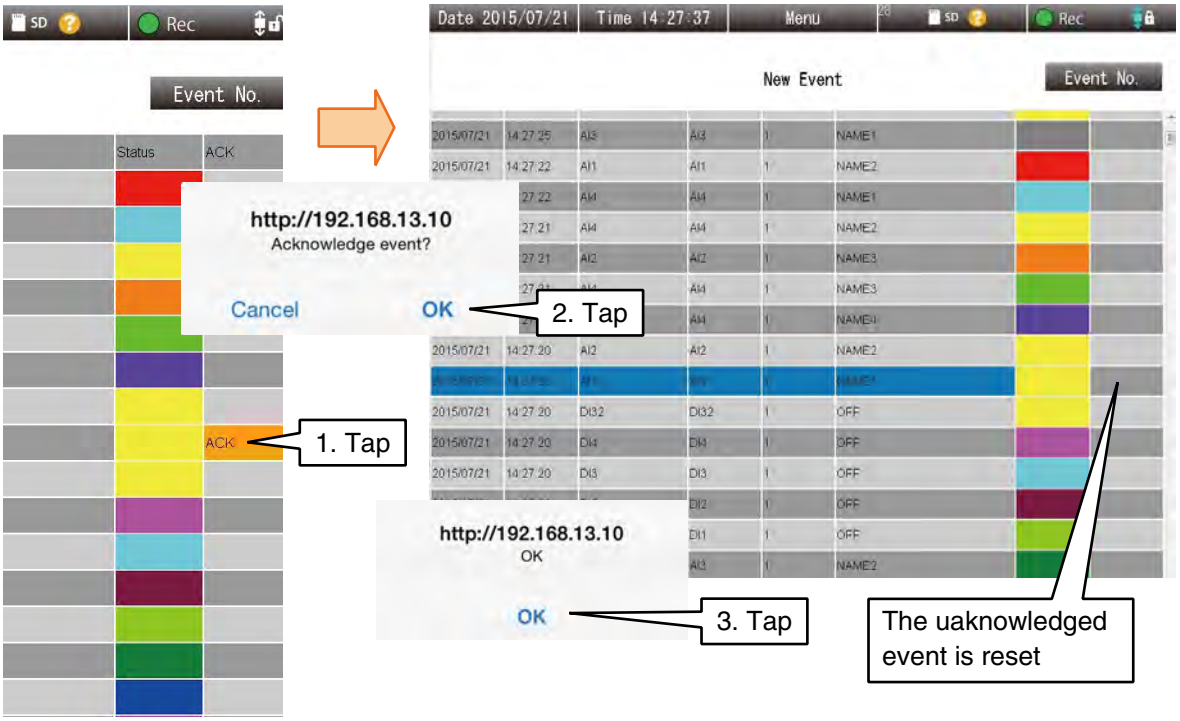
An event which has been set as [Acknowledge: required] in the event log setting is displayed in orange color as an [Unacknowledged event]. It can be changed into a confirmed event by tapping.

(1) Tap [ACK] for the event that you want to confirm.

(2) The dialog [Acknowledge event?] is displayed. Tap the [OK] button.

(3) After internal processing, the [OK] is displayed. Tap the [OK] button.

(4) The [ACK] mark disappears for the confirmed event.



(5) Once you confirm the unacknowledged events in all the memory blocks, the [Unacknowledged event indicator ] mark in the menu bar disappears.

CAUTION

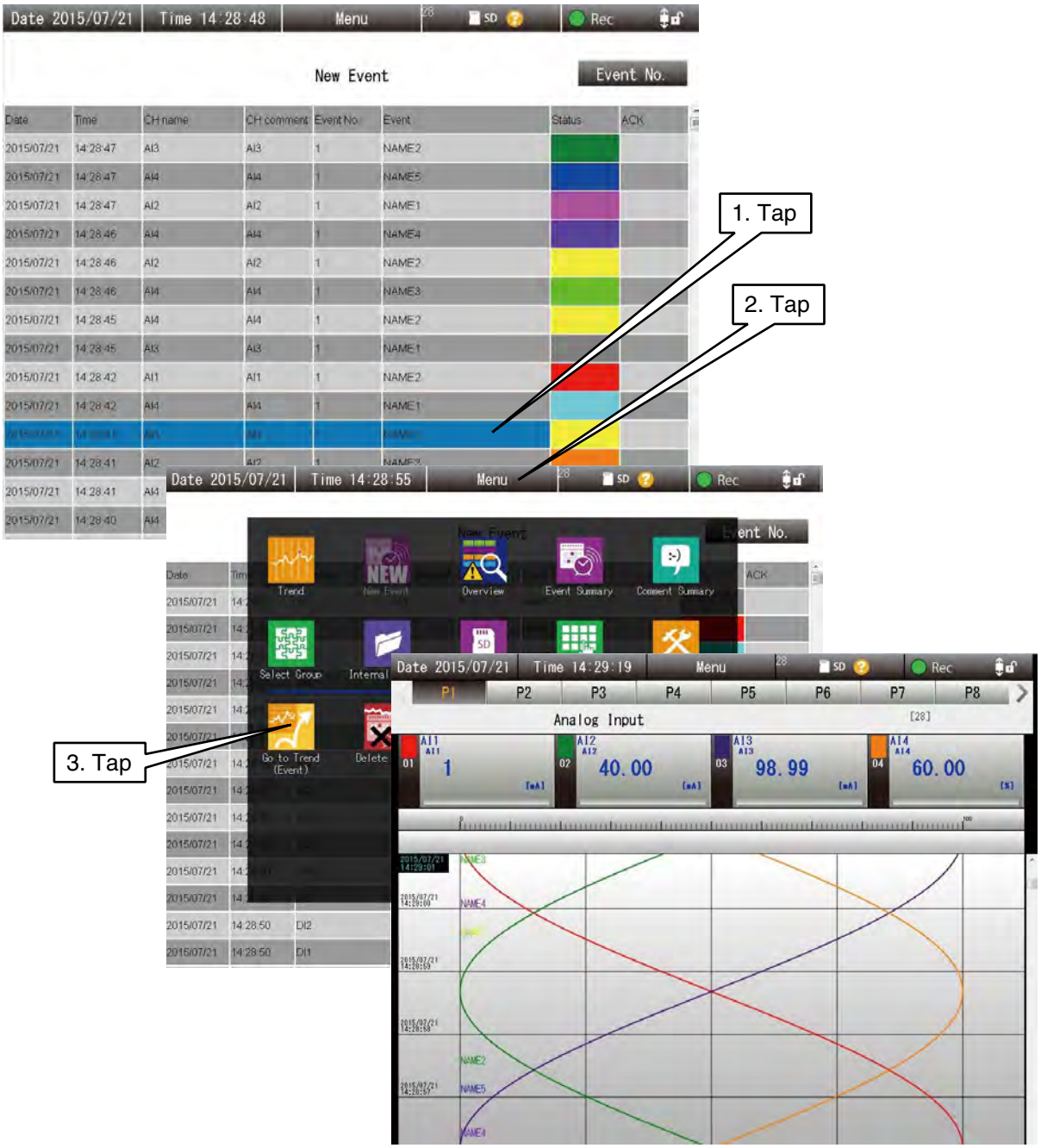
Some browsers such as Google Chrome and Firefox may display check boxes such as [Do not generate any more dialog boxes], or [Suppress additional dialog display], but do not check them. If you check them, subsequent dialogs are not displayed, and this also prevents the operation of displaying the confirmation dialog.
➔ 7.2.3 Web server

Display historical trend

(1) Tap the event for which you want to display the trend and make it selected.

(2) Tap the [Menu button Menu] and tap the [Go to Trend (Event)] button.

(3) The historical trend screen containing the selected event is displayed.

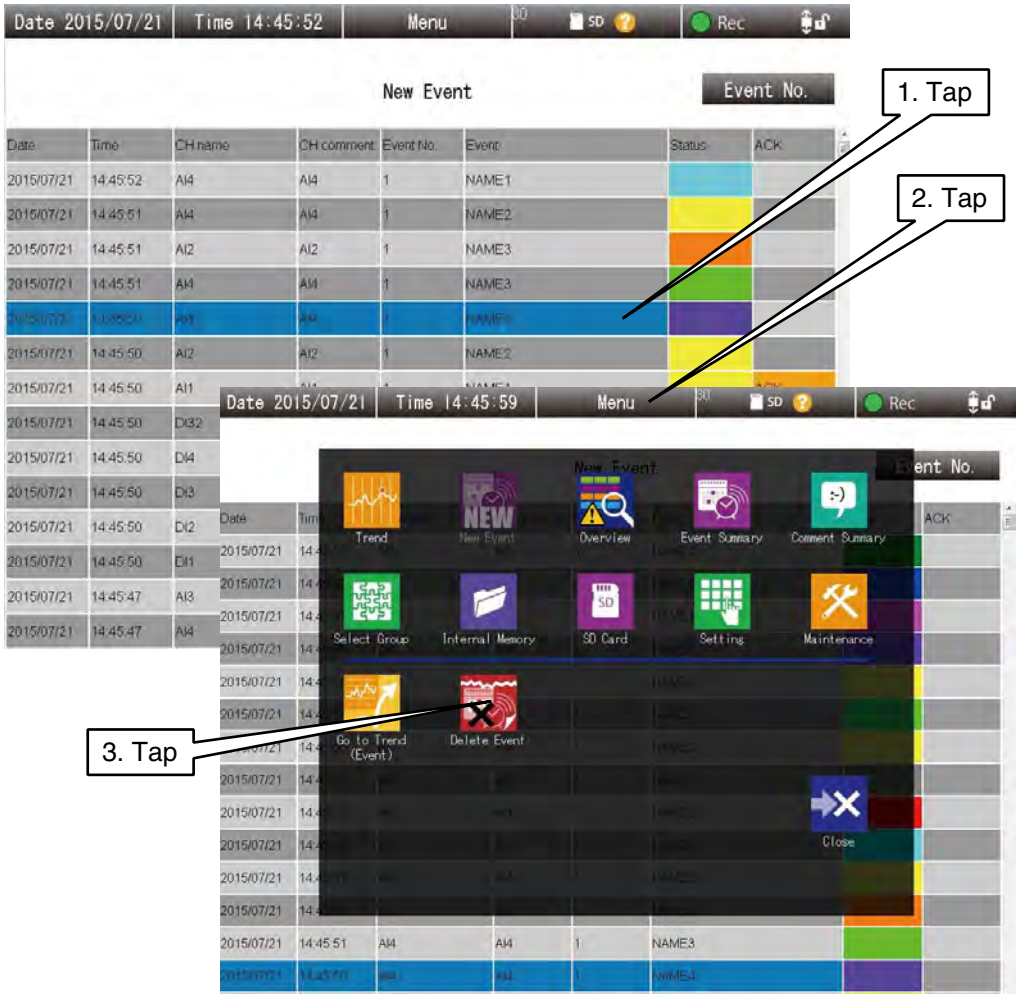


Delete from new events

(1) Tap the new event that you want to delete and make it selected.

(2) Tap the [Menu button Menu] and tap the [Delete event] button.

(3) The event is deleted from the new event list.



NOTES

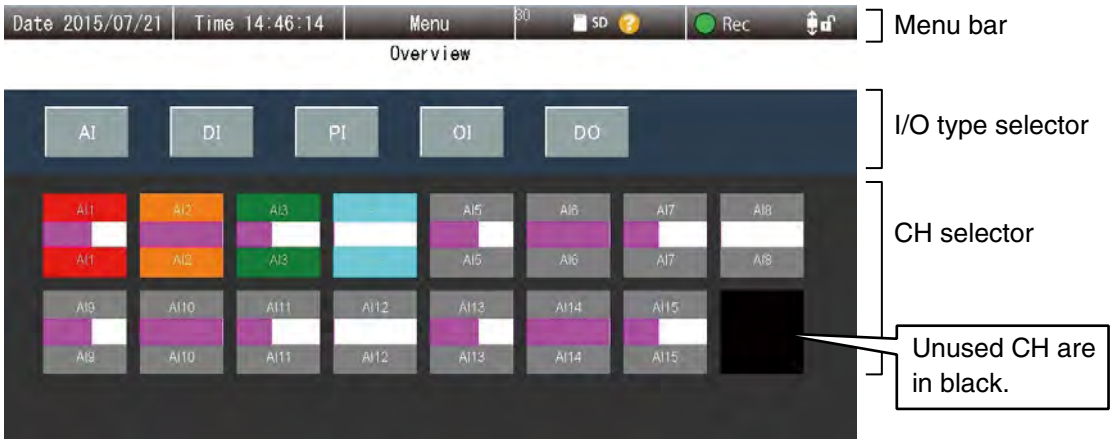
- Tap the [Date] header to select all, and tap the [ACK] header to select all the confirmed events.
- The event is only deleted from the new event screen. The recorded event data is not deleted.

4.5 Overview

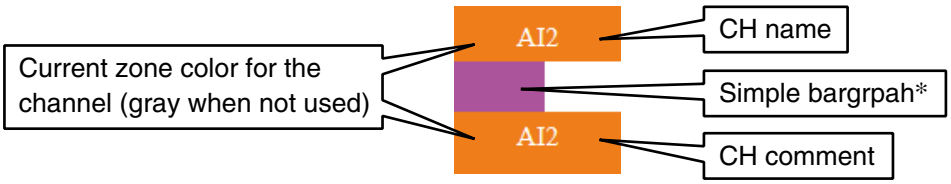
Tap the [Menu button Menu] and select [Overview] to switch to the [Overview] screen.

4.5.1 Display contents

The alarm generation status of all channels is displayed.
Specifically, in the background of the display area for each channel, the color of the area and status corresponding to its current value are displayed.
If the AI data type is set as [%], the current values are displayed as a simple bar graph.

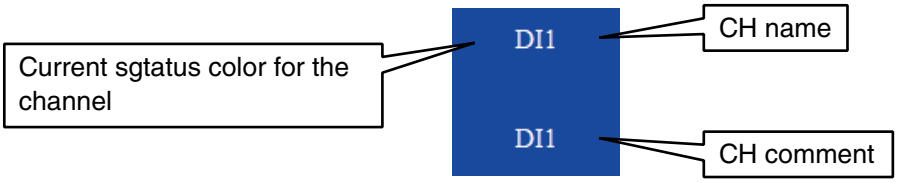


■AI Display

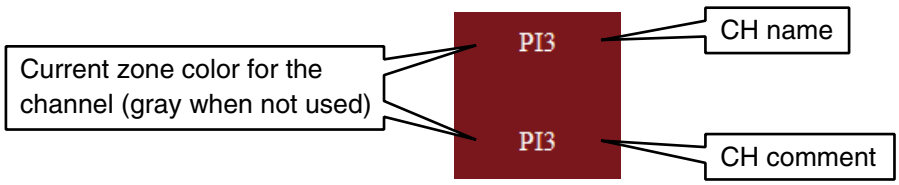


*Bargraph is shown when % is specified as data type.

■DI, DO display



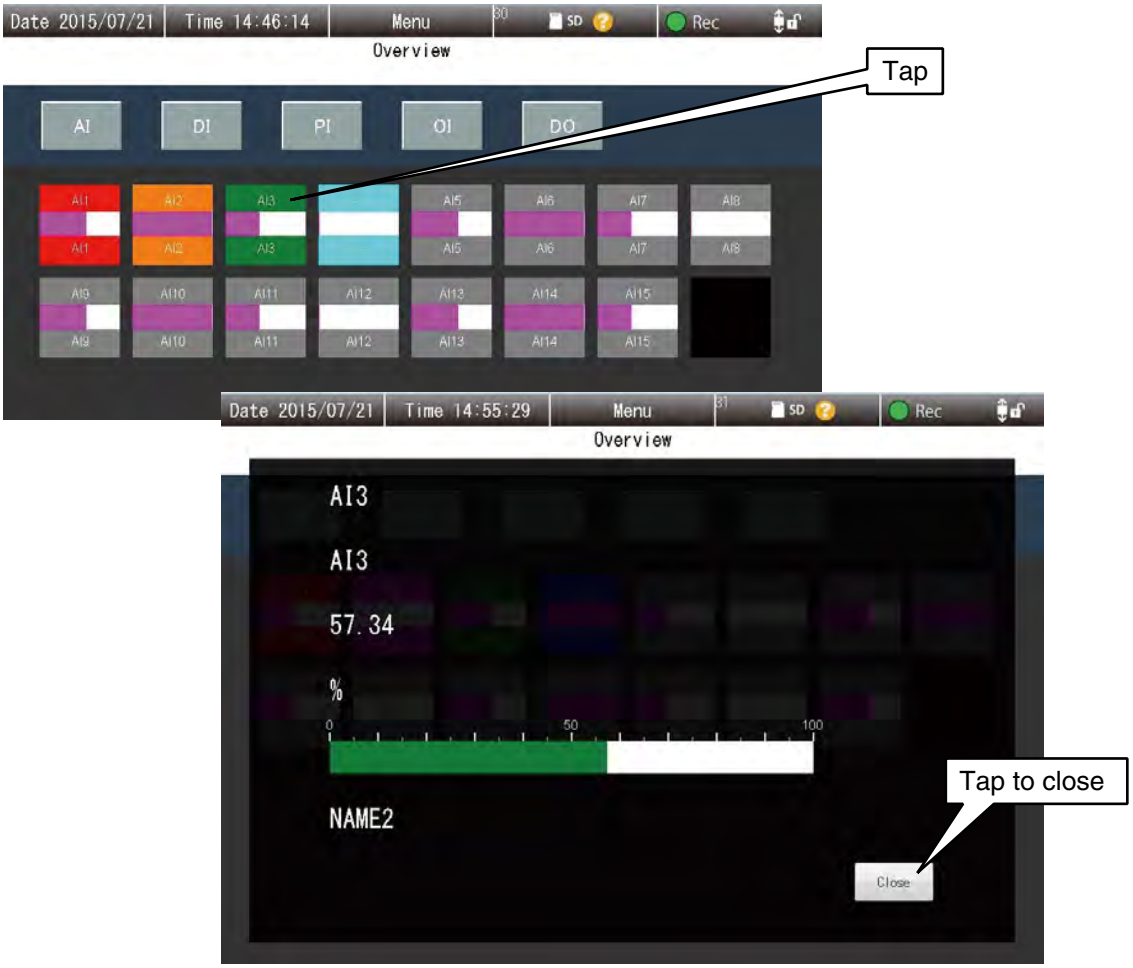
■PI, OI display



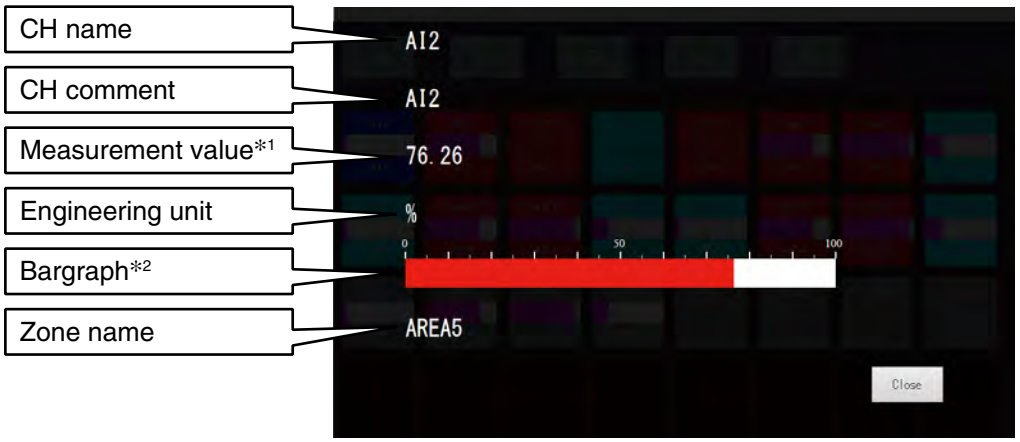
4.5.2 Operation

Display the enlarged screen

Tap the [CH selection button] to display the enlarged screen.
If the AI data type has been set as [%], you can switch between the [Actual value] and [%] by tapping the measurement value.

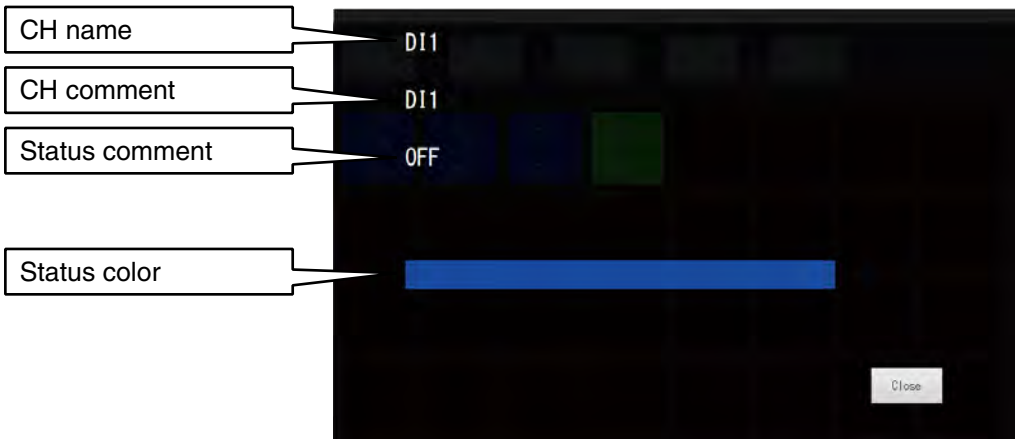


■**Enlarged screen of AI**

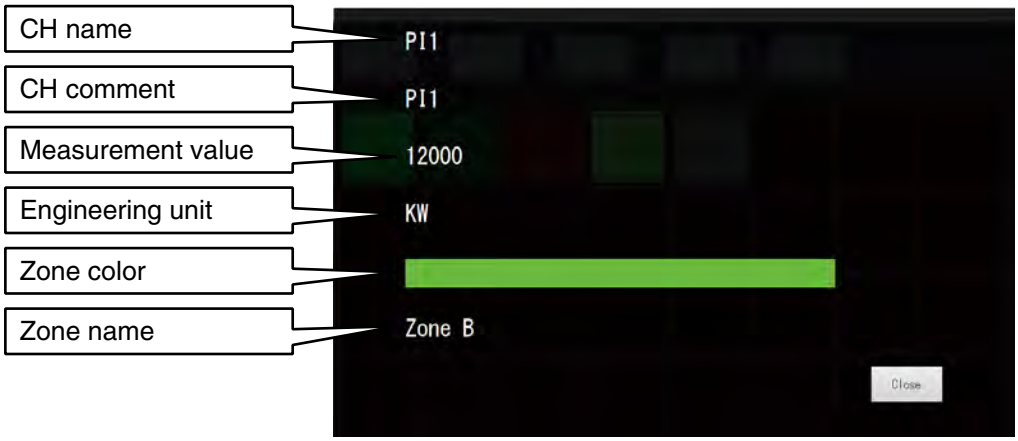


*1. When data type is %, tapping measurement value enables to switch between engineering unit value and % value.
*2. When data type is %, 0 to 100% bargraph is shown in zone colors.
When data type is other than %, zone color bar is shown. Bar turns gray for unused zones.

■**Enlarged screen of DI, DO**



■**Enlarged screen of PI, OI**

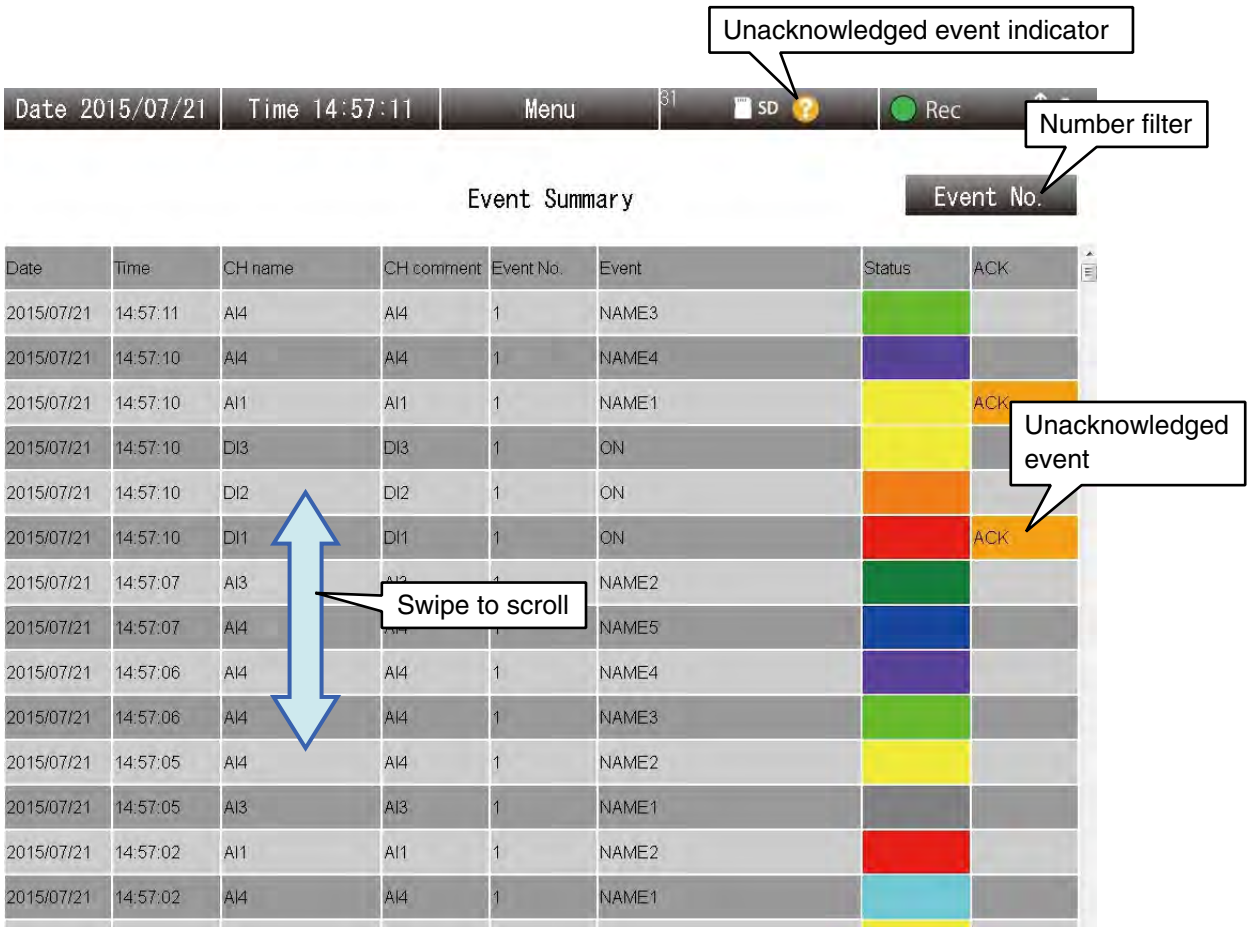


4.6 Event summary

Tap the [Menu button Menu] and select [Event summary] to switch to the [Event summary] screen.

4.6.1 Display contents

The list of event logs is displayed.



Date	Time	CH name	CH comment	Event No.	Event	Status	ACK
2015/07/21	14:57:11	AI4	AI4	1	NAME3		
2015/07/21	14:57:10	AI4	AI4	1	NAME4		
2015/07/21	14:57:10	AI1	AI1	1	NAME1		ACK
2015/07/21	14:57:10	DI3	DI3	1	ON		
2015/07/21	14:57:10	DI2	DI2	1	ON		
2015/07/21	14:57:10	DI1	DI1	1	ON		ACK
2015/07/21	14:57:07	AI3			NAME2		
2015/07/21	14:57:07	AI4			NAME5		
2015/07/21	14:57:06	AI4	AI4	1	NAME4		
2015/07/21	14:57:06	AI4	AI4	1	NAME3		
2015/07/21	14:57:05	AI4	AI4	1	NAME2		
2015/07/21	14:57:05	AI3	AI3	1	NAME1		
2015/07/21	14:57:02	AI1	AI1	1	NAME2		
2015/07/21	14:57:02	AI4	AI4	1	NAME1		

Unacknowledged event (Event summary)

If there is even one unacknowledged event in any of the memory blocks in internal memory, the mark is displayed.

4.6.2 Operation

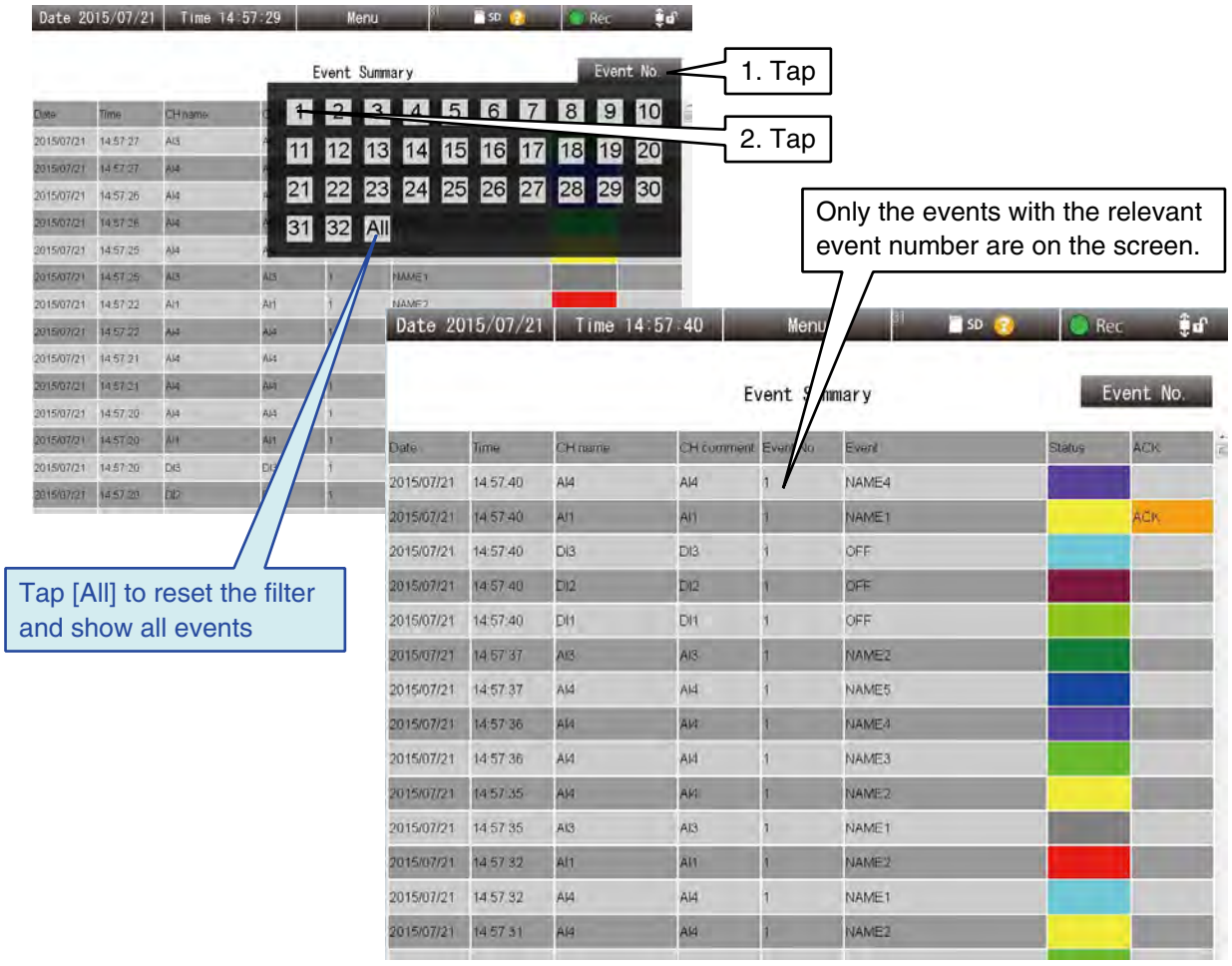
Filter the display by event number (Event summary)

You can filter the display by event number.

(1) Tap the [Event No.] button.

(2) The [Event No.] is displayed. Tap the number that you want to display. Only the event for the selected event number is displayed.

(3) To remove the filter, once again tap the [Event No.] button, and tap the [All] button in the [Number filter].



Confirm an unacknowledged event (Event summary)

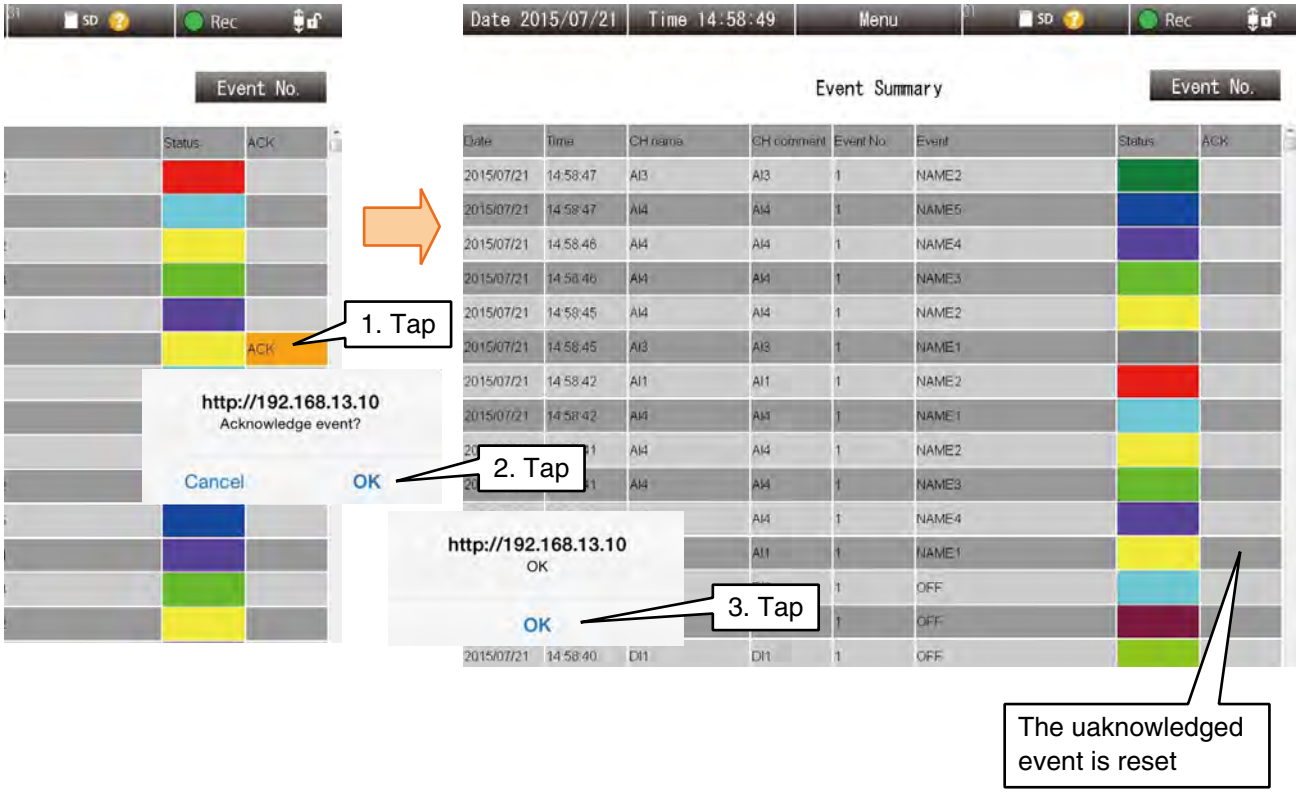
In the event log setting, events which have been set as [Acknowledge: required] are displayed in orange as [Unacknowledged events]. Tap to confirm the event.

(1) Tap [ACK] for the event that you want to confirm.

(2) The dialog [Acknowledge event?] is displayed. Tap the [OK] button.

(3) After internal processing, the [OK] is displayed. Tap the [OK] button.

(4) The [ACK] display disappears for the confirmed event.



(5) Once you confirm the unconfirmed events in all the memory blocks, the [Unacknowledged event indicator ] mark in the menu bar disappears.

CAUTION

Some browsers such as Google Chrome and Firefox may display check boxes such as [Do not generate any more dialog boxes], or [Suppress additional dialog display], but do not check them. If you check them, subsequent dialogs are not displayed, and this also prevents the operation of displaying the confirmation dialog.
➔ 7.2.3 Web server

NOTES

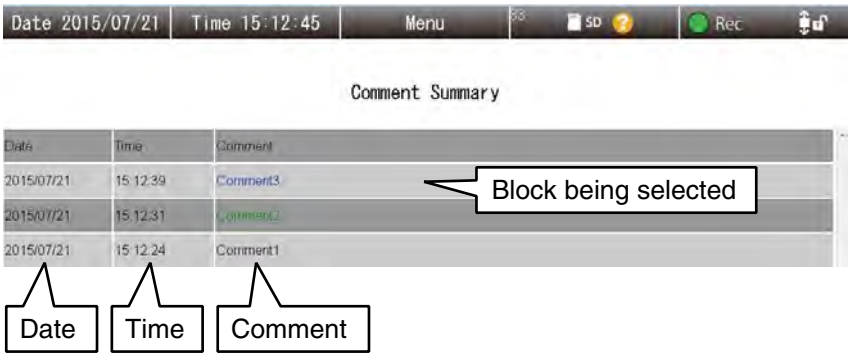
When event summary of historical trend is displayed, unacknowledged events will not be displayed.

4.7 Comment summary

Tap the [Menu button Menu] and select [Comment summary ] to go to the [Comment summary] screen.

4.7.1 Display contents

The list of comments is displayed. The color of the characters during comment entry is also displayed as it is.



4.7.2 Operation

Edit comment

You can edit any comment.

(1) Tap on the comment that you want to edit to select it. The row containing the selected comment turns blue in color.

(2) Tap the [Menu button Menu].

(3) Tap [Edit comment ] in the sub-menu.

(4) Enter the comment and tap the [OK] button. The comment is rewritten.

NOTES

You can also display the comment editing dialog by tapping on the row containing the selected comment.

Delete comment

You can delete any comment.

(1) Tap on the comment that you want to delete to select it. The row containing the selected comment turns blue in color.

(2) Tap the [Menu button 

].

(3) Tap [Delete comment ] in the sub-menu.

(4) The confirmation dialog [Do you want to delete the selected comment?] is displayed. Tap the [OK] button. The comment is deleted.

CAUTION

Some browsers such as Google Chrome and Firefox may display check boxes such as [Do not generate any more dialog boxes], or [Suppress additional dialog display], but do not check them. If you check them, subsequent dialogs are not displayed, and this also prevents the operation of displaying the confirmation dialog.
➔ 7.2.3 Web server

4.8 Group selection

Tap the [Menu button 

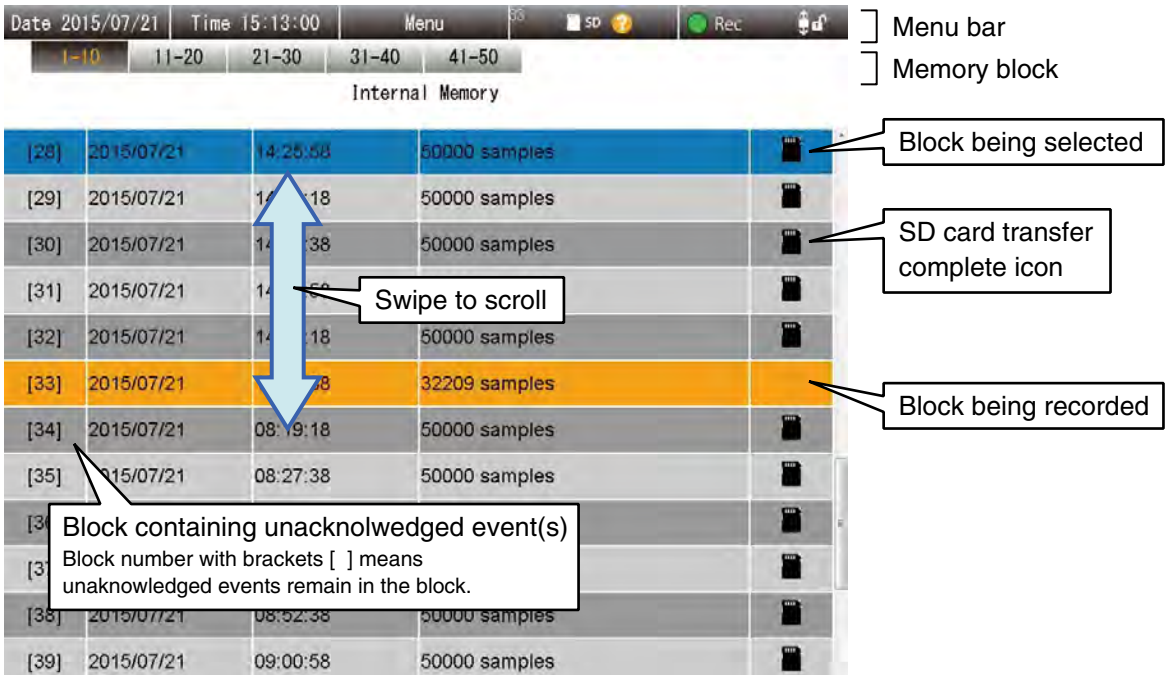
] and select [Select group ] to return to the [Initial screen (group selection screen)].
For details, please see [4.1 Initial screen (Group selection screen)].

4.9 Internal memory

Tap the [Menu button Menu] and select [Internal memory] to go to the [Internal memory] screen.

4.9.1 Display contents

The list of memory blocks in internal memory is displayed.



4.9.2 Operation

Call up data

You can display the trend graph of the selected memory block.

(1) Tap the memory block that you want to display to select it. The row containing the selected memory block turns blue in color.

(2) Tap the [Menu button 

].

(3) Tap [Open historical trend ] in the sub-menu.

(4) The [Historical trend] screen is displayed. ➔ 4.11 Historical trend

(5) To return to the [Internal Memory] screen after switching to the [Historical trend] screen, tap the [Menu button 

] and tap [Return 

] in the sub-menu which is displayed.

NOTES

You can also display the [Historical trend] screen by tapping the row containing the selected memory block once again.

Delete data

You can delete data in a memory block.

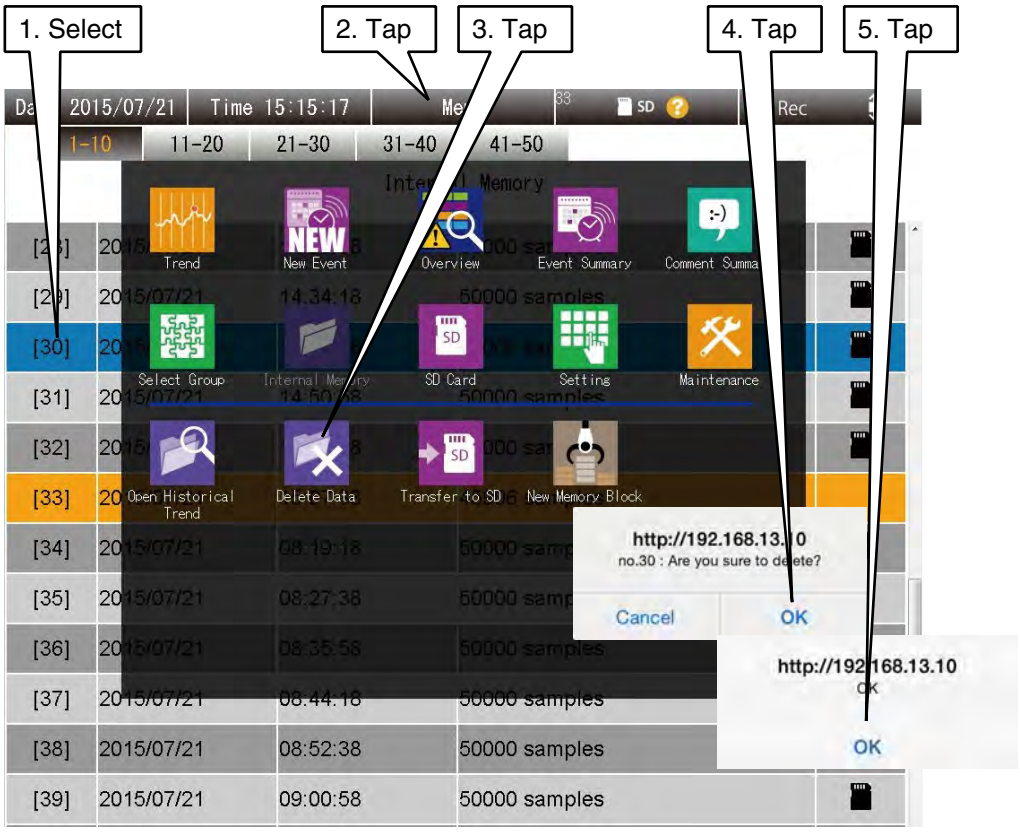
(1) Tap the memory block that you want to delete to select it. The row containing the selected memory block turns blue in color.

(2) Tap the [Menu button Menu].

(3) Tap [Delete data ] in the sub-menu.

(4) The confirmation dialog [no.x : Are you sure to delete?] is displayed. Tap the [OK] button.

(5) After data deletion, the [OK] is displayed. Tap the [OK] button.
The deleted memory block remains as an empty block.



CAUTION

Some browsers such as Google Chrome and Firefox may display check boxes such as [Do not generate any more dialog boxes], or [Suppress additional dialog display], but please do not check them. If you check them, subsequent dialogs are not displayed, and this also prevents the operation of displaying the confirmation dialog.
➔ 7.2.3 Web server

Transfer data to the SD card

You can forcibly transfer memory block data to the SD card.

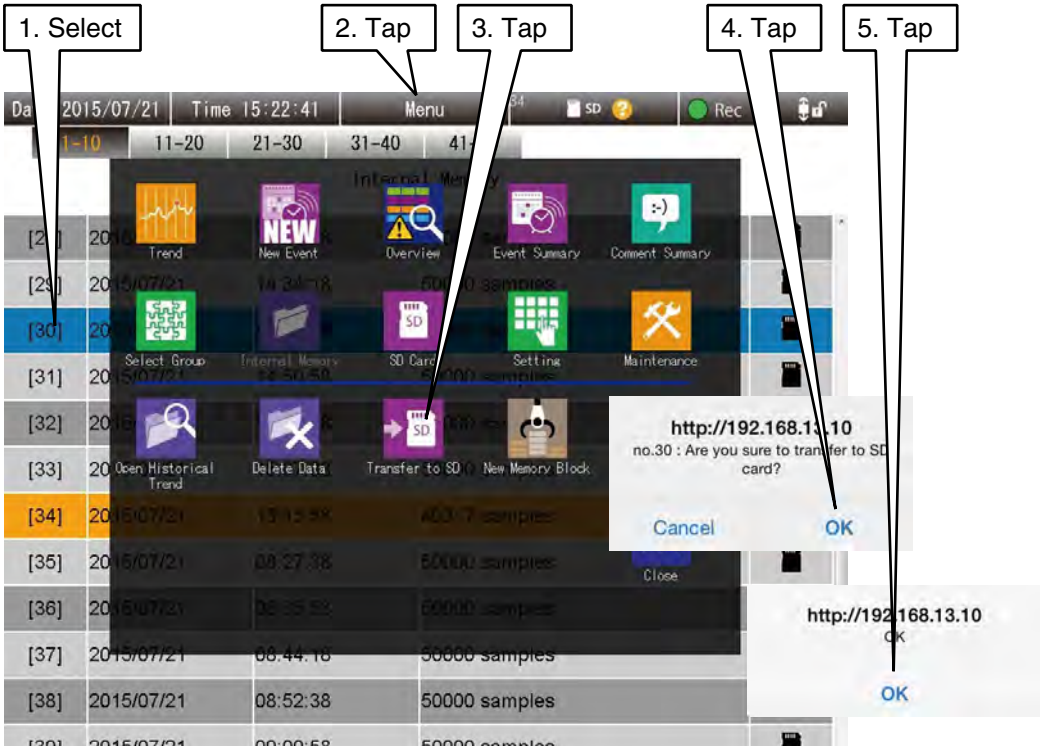
(1) Tap the memory block whose data you want to transfer to the SD card. The row containing the selected memory block turns blue in color.

(2) Tap the [Menu button Menu].

(3) Tap [Transfer to SD] in the sub-menu.

(4) The confirmation dialog [no.x : Are you sure to transfer to SD card?] is displayed. Tap the [OK] button.

(5) After data transfer, the [OK] is displayed. Tap the [OK] button.
The data remains in the memory block even after the transfer.



CAUTION

- A memory block which is being recorded cannot be transferred to the SD card. To move a memory block which is currently being recorded to the SD card, perform the New memory block operation.
- If there is a file with the same name in the destination folder in the SD card, it is overwritten.
- Some browsers such as Google Chrome and Firefox may display check boxes such as [Do not generate any more dialog boxes], or [Suppress additional dialog display], but do not check them. If you check them, subsequent dialogs are not displayed, and this also prevents the operation of displaying the confirmation dialog.
  ➔ 7.2.3 Web server
- When data is transferred manually, the SD card file format set at that time is applied.
  ➔ 3.10 Recording method setting ‘SD card file format

New memory block

You can forcibly perform transition of a memory block which is to be recorded.

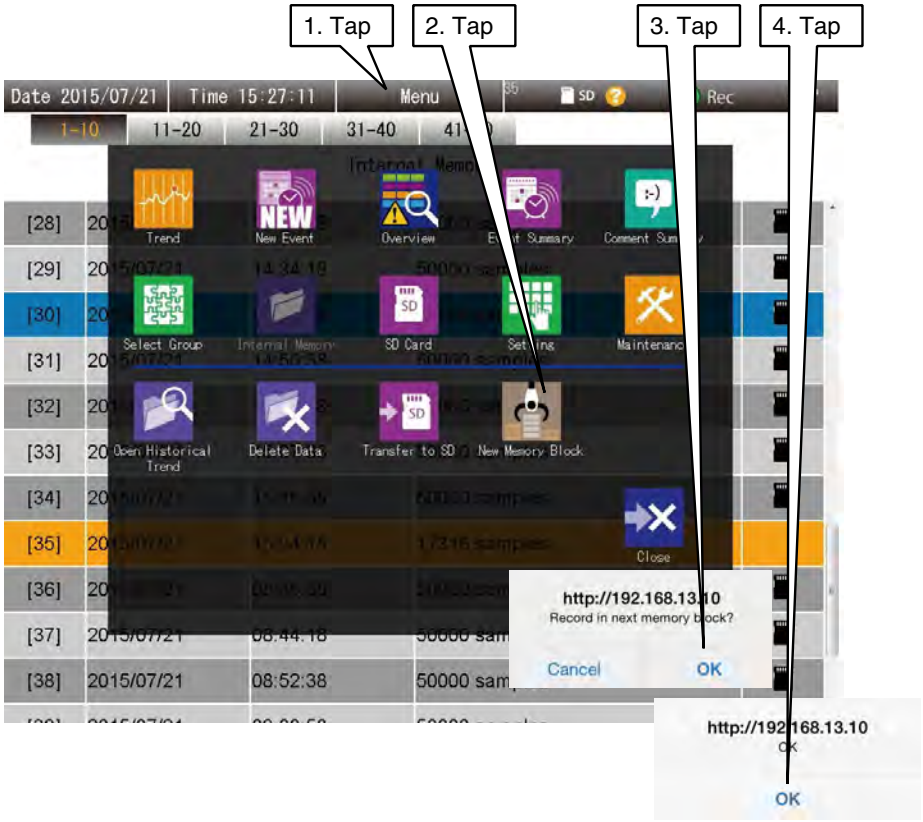
(1) Tap the [Menu button 

].

(2) Tap [New memory block ] in the sub-menu.

(3) The confirmation dialog [Record in the next memory block?] is displayed. Tap the [OK] button.

(4) After the transition, the [OK] is displayed. Tap the [OK] button.
Recording starts in the next memory block.
If an SD card has been inserted, the recorded data from the specified memory block is transferred to the SD card.



NOTES

The memory block which is currently being recorded is also displayed in the menu bar.

CAUTION

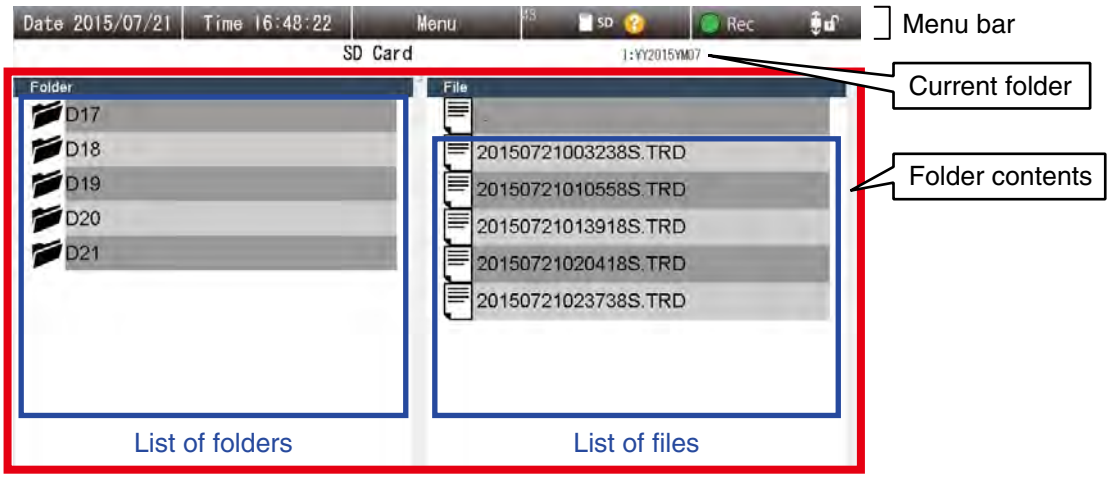
Some browsers such as Google Chrome and Firefox may display check boxes such as [Do not generate any more dialog boxes], or [Suppress additional dialog display], but do not check them. If you check them, subsequent dialogs are not displayed, and this also prevents the operation of displaying the confirmation dialog.
➔ 7.2.3 Web server

4.10 SD card

Tap the [Menu button Menu] and select [SD card SD] to go to the [SD card] screen.

4.10.1 Display contents

The list of data stored in the SD card is displayed.



4.10.2 Operation

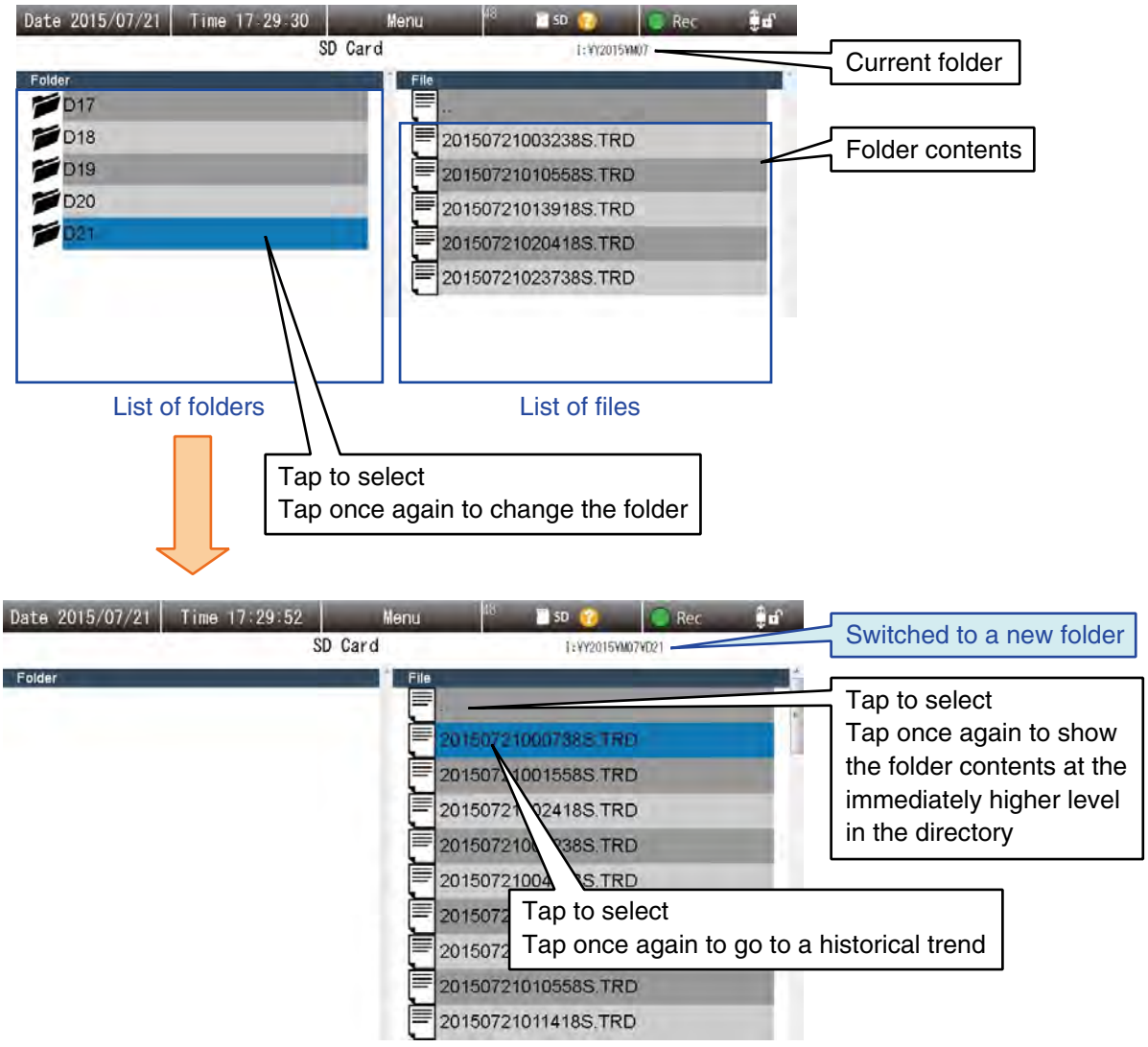
Select SD card file

The data stored in the SD card is stored in a specified folder during each storing rate. ➔ 7.3.4 SD card
Please change the folder to be displayed as described below, and select the desired data file.

• Display the list of files in the subordinate folder
From the list of folders displayed on the left, tap the desired folder to select it. Tap the selected folder once again to display the list of files contained in that folder on the right.

• Display the list of files in the immediately higher folder
Tap [..] displayed on the right and select. Tap the selected [..] once again to display the list of files contained in immediately higher folder on the right.

• Select file
After the desired folder has been displayed, tap the row containing the file name displayed on the right. The row turns blue in color, and the data file gets selected. Tap the selected data file once again to display the historical trend (TRD format only).



Call up data

You can display a trend graph for the selected data file.

(1) Select the data file that you want to display. The row containing the selected data file turns blue in color.

(2) Tap the [Menu button 

].

(3) Tap [Display data ] in the sub-menu.

(4) The [Historical trend] screen is displayed. ➔ 4.11 Historical trend

(5) To return to the [SD card] screen after moving to the [Historical trend] screen, tap the [Menu button 

] and tap [Return 

] in the sub-menu which is displayed.

CAUTION

- You can also display the [Historical trend] screen by tapping the row containing the selected data file.
- Only TRD format files can be displayed.

Delete data

You can delete a selected data file.

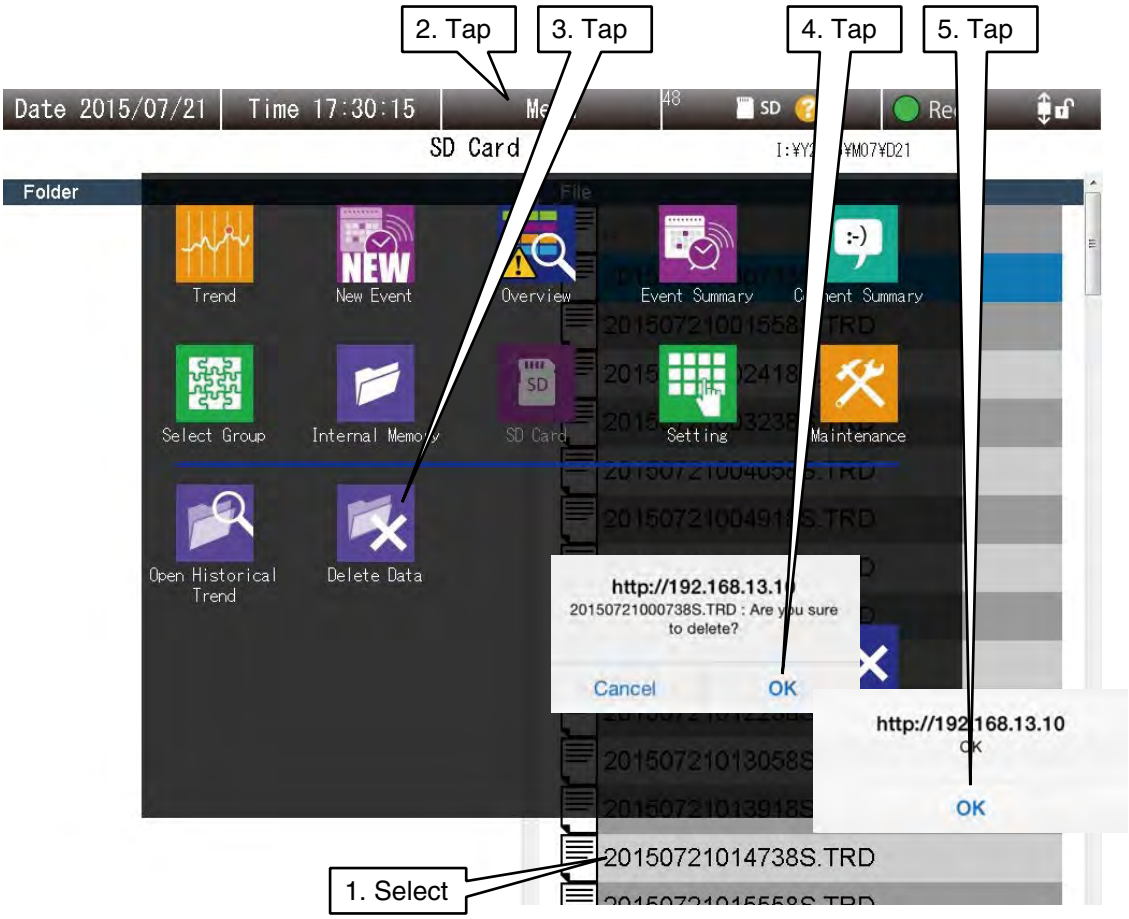
(1) Tap the data file that you want to delete to select it. The row containing the selected data file turns blue in color.

(2) Tap the [Menu button Menu].

(3) Tap [Delete data ] in the sub-menu.

(4) The confirmation dialog [xxxxx.TRD: Are you sure to delete?] is displayed. Tap the [OK] button.

(5) After data file deletion, the [OK] is displayed. Tap the [OK] button.



CAUTION

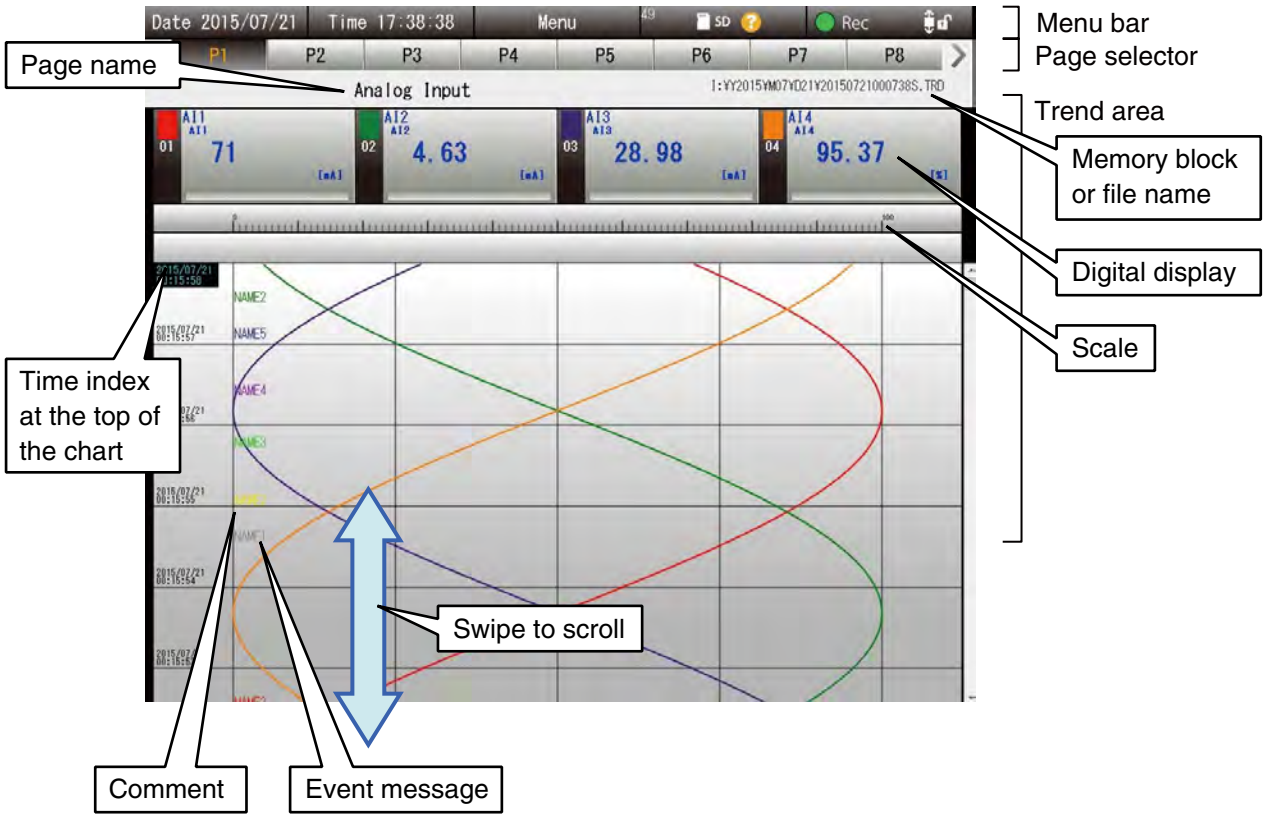
Some browsers such as Google Chrome and Firefox may display check boxes such as [Do not generate any more dialog boxes], or [Suppress additional dialog display], but do not check them. If you check them, subsequent dialogs are not displayed, and this also prevents the operation of displaying the confirmation dialog.
➔ 7.2.3 Web server

4.11 Historical trend

You can display the trend for data stored in the SD card in internal memory (in TRD format).
We now describe the method of operation of this screen.

4.11.1 Display contents

The [Historical trend] screen broadly consists of a [Menu bar], [Page selector] and [Trend area].

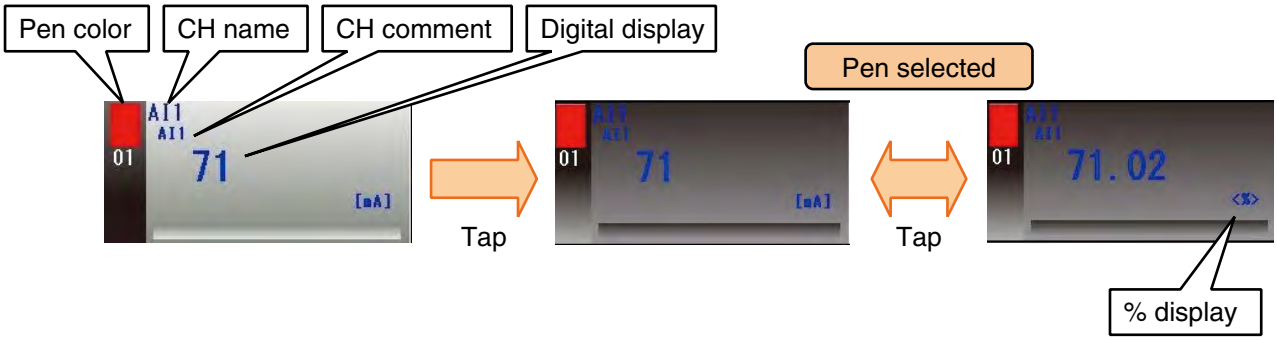


Page name

The set page name is displayed. ➔ 3.9.2 Trend screen display setting

Digital display

The value at the top of the graph is displayed.
Tap [Digital display] to make the pen selected. The background turns black.
To unselect the pen, tap the scale display.



NOTES

Event data, comment data and the most updated trend data are read in and displayed on the screen. Past trend data is read in and plotted in turn.

4.11.2 Operation

The method of operation is basically the same as the [Trend] screen. Please see [4.3 Trend].
Here, we describe the operations which are different from the [Trend] screen.

Write comment

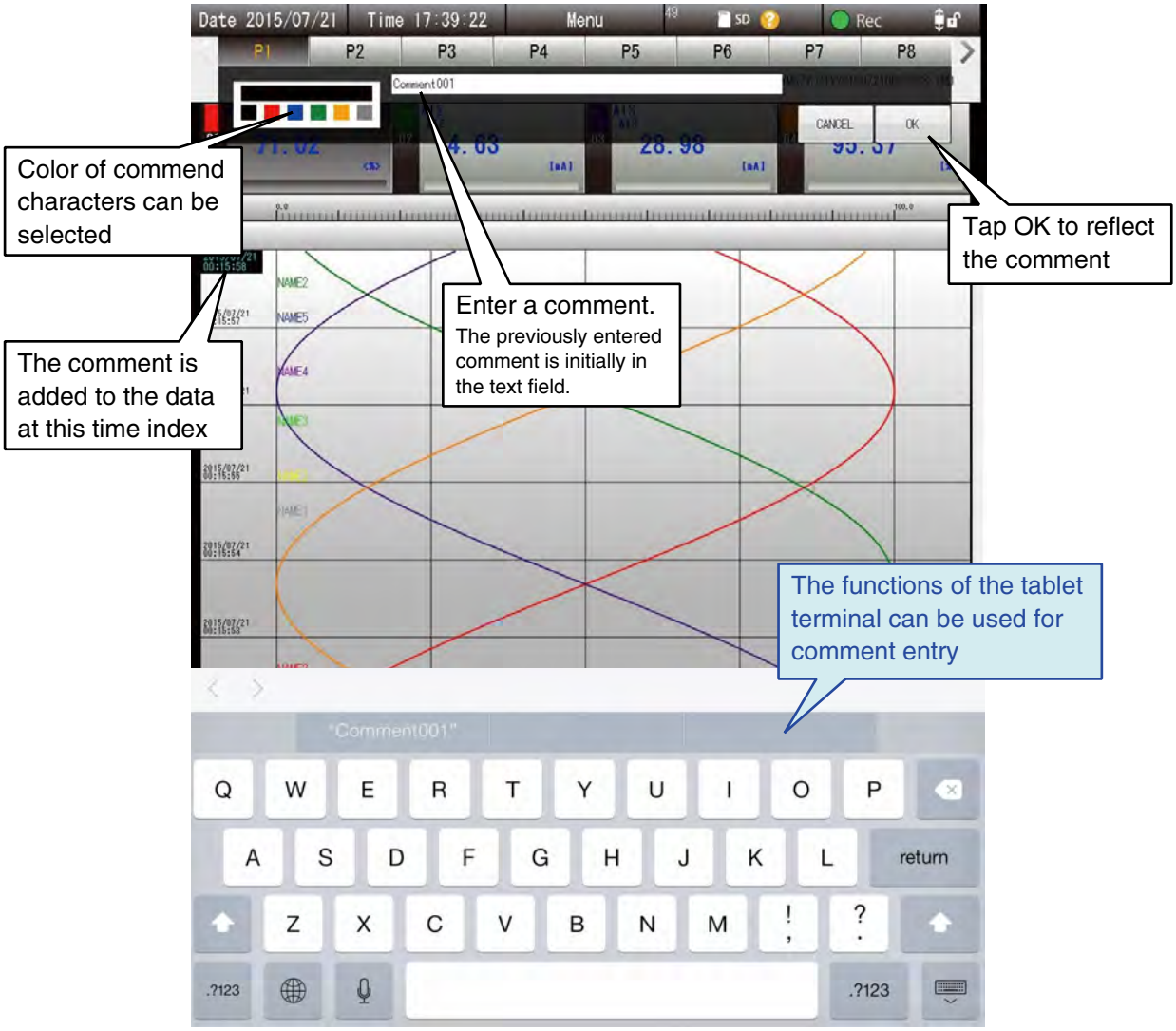
You can add comments in the trend graph. Comments are displayed across all pages.
The list of comments which have been entered can be checked in the [Comment summary] screen.

(1) Swipe and scroll to bring the position at which you want to add the comment to the topmost part of the trend graph.

(2) Tap the [Menu button Menu].

(3) Tap [Write comment ] in the sub-menu.

(4) Enter the comment and tap the [OK] button.



CAUTION

Comment is entered at a position where the data is read in and plotted.

Open event summary

You can display the summary of events containing the displayed data.

(1) Tap the [Menu button Menu].

(2) Tap the [Go to event summary ] in the sub-menu.

(3) The [Event summary] screen is displayed.
Please see [4.6 Event summary] for the method of operation.

Open comment summary

You can display the summary of comments containing the displayed data.

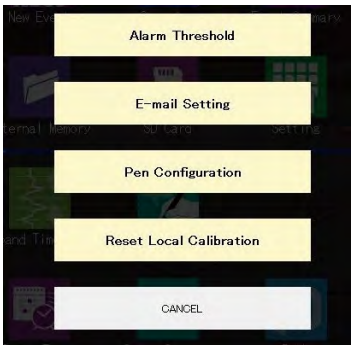
(1) Tap the [Menu button Menu].

(2) Tap the [Go to comment summary ] in the sub-menu.

(3) The [Comment summary] screen is displayed.
Please see [4.7 Comment summary] for the method of operation

4.12 Change setting

Tap the [Menu button Menu] and tap [Setting] to display the [Setting] menu.



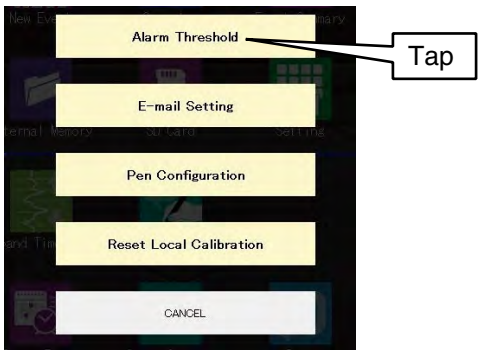
NOTES

To display screens other than [Reset local calibration], network connection permission is required for TRGCFG.
➔ 3.3.4 Enable setup via a network

4.12.1 Alarm threshold

You can change the alarm threshold for analog input, pulse input and function input.

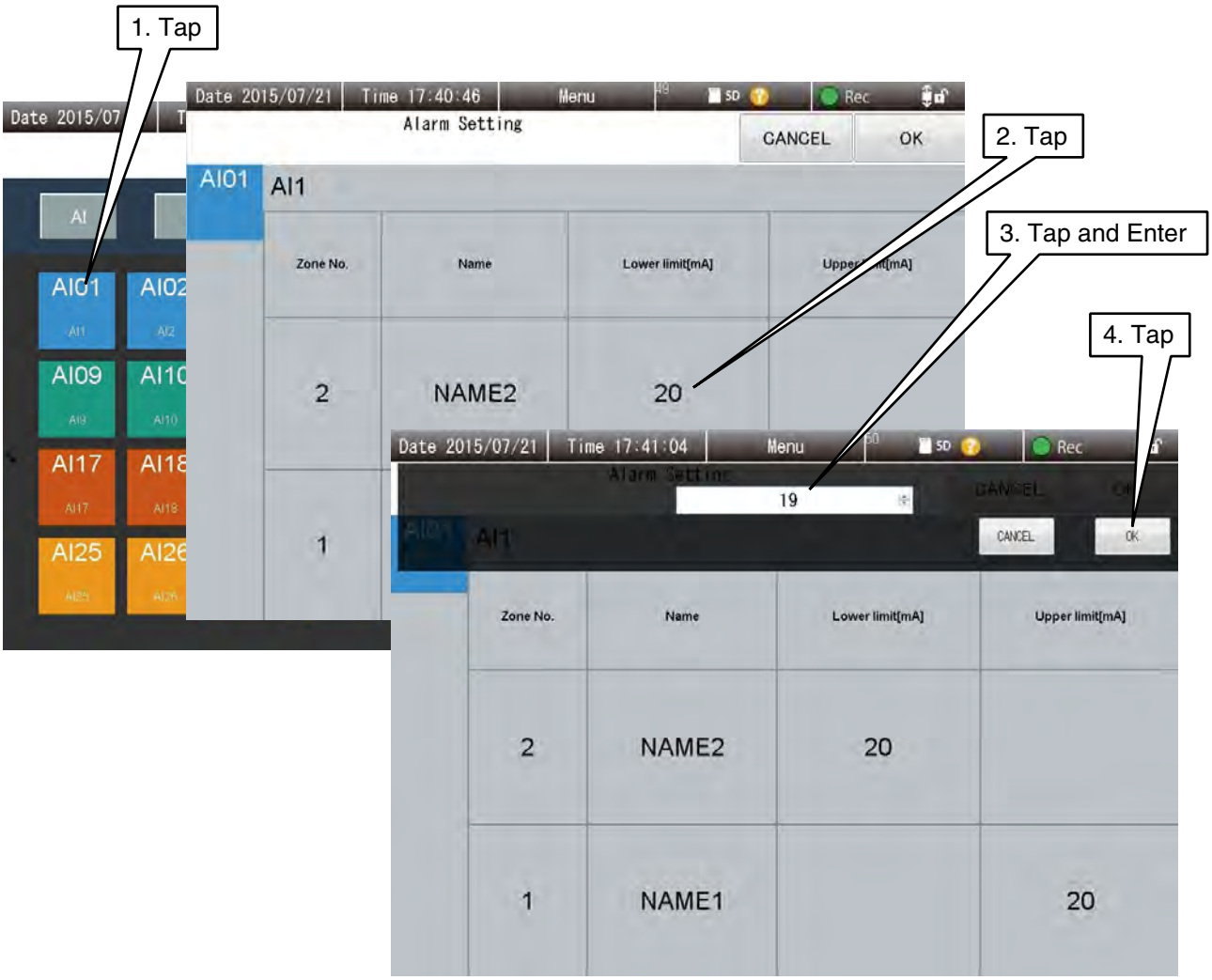
(1) Tap the [Alarm threshold] button from the [Setting].



(2) The [Alarm selection] screen for analog input is displayed. To change the alarm threshold for pulse input, tap the [PI] button, and to change the alarm threshold for function input, tap the [OI] button.

(3) Tap the channel for which you want to change the alarm threshold. The current [Alarm setting] screen is displayed.

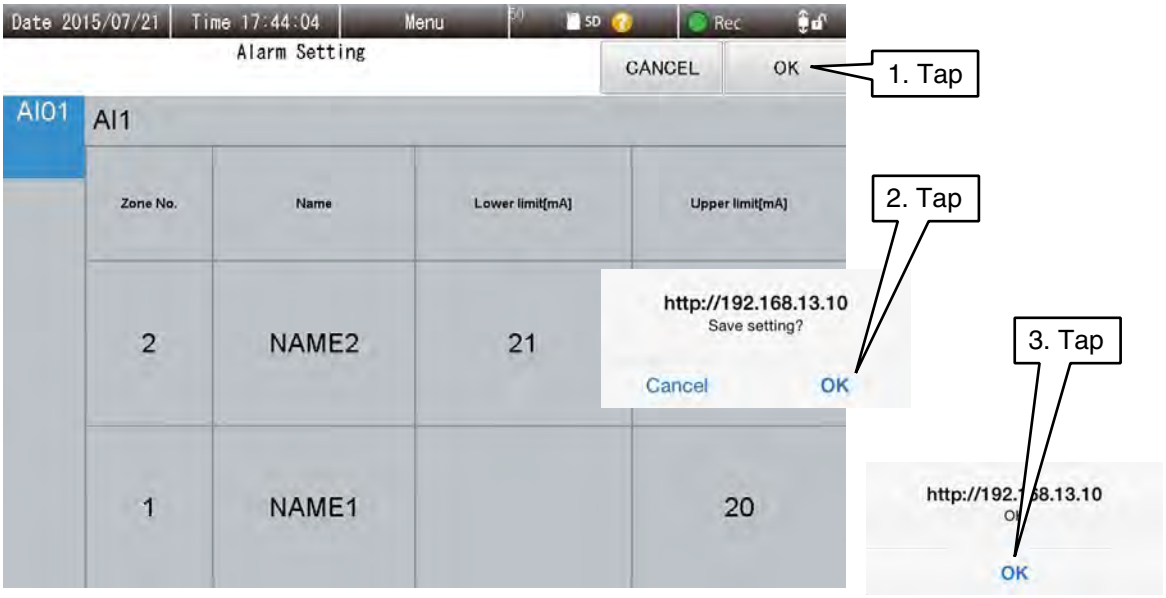
(4) Tap the value for the zone that you want to change, change the value and tap the [OK] button.



(5) Once all the zones have been changed, tap the [OK] button on the top right.

(6) The [confirmation] is displayed. Please tap the [OK] button.

(7) After the setting are reflected, the [OK] is displayed. Please tap the [OK] button.



NOTES

- When the input value in the set zone changes, an alarm is generated, and by changing the upper and lower limit value for the zone, the alarm threshold can be changed.
- The alarm cannot be turned ON/OFF from the Web screen.
- The alarm for discrete input cannot be changed.

CAUTION

Some browsers such as Google Chrome and Firefox may display check boxes such as [Do not generate any more dialog boxes], or [Suppress additional dialog display], but do not check them. If you check them, subsequent dialogs are not displayed, and this also prevents the operation of displaying the confirmation dialog.

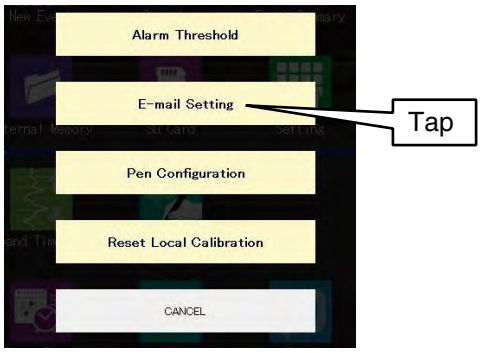
➔ 7.2.3 Web server

4.12.2 E-mail setting

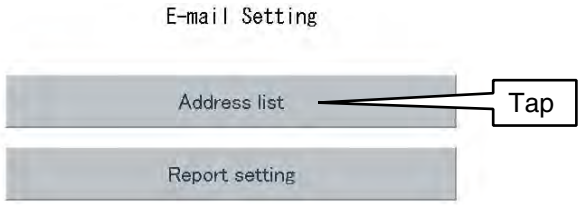
You can change the Address list and the report content setting.

Address list setting

(1) Tap the [E-mail setting] button from the [Setting].

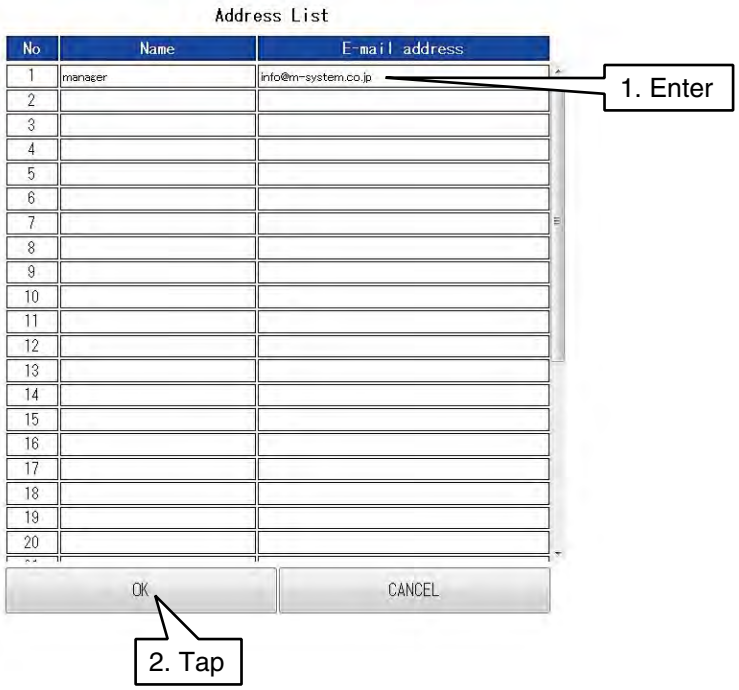


(2) The [E-mail setting] screen is displayed. Tap the [Address list] button.



(3) Enter the [Name] and [E-mail address].

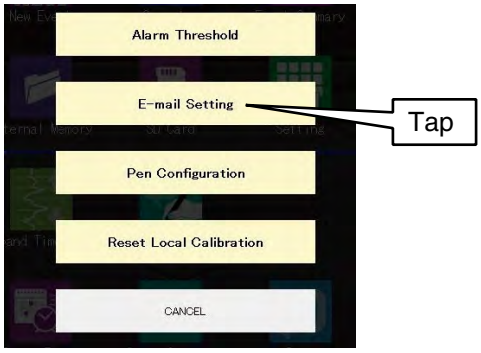
(4) Once all the changes are complete, tap the [OK] button.



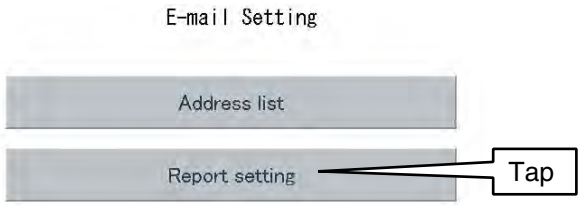
(5) After the setting are reflected, the [OK] is displayed. Tap the [OK] button.
You will return to the E-mail setting screen.

Report setting

(1) Tap the [E-mail setting] button from the [Setting].



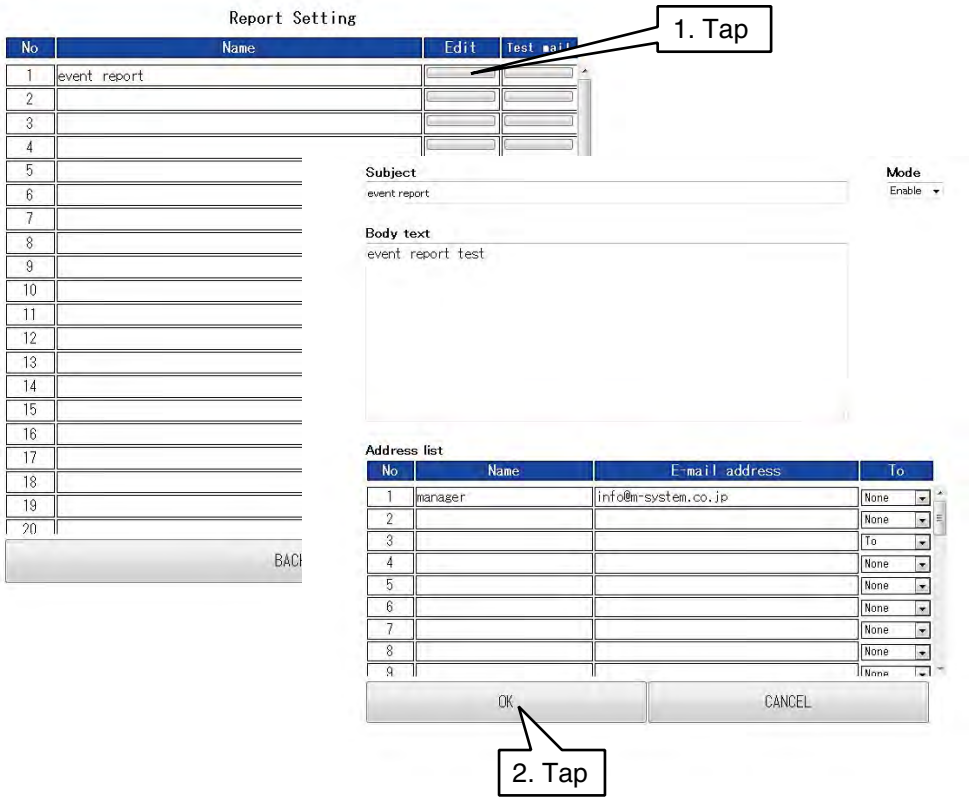
(2) The [E-mail setting] screen is displayed. Tap the [Report setting] button.



(3) Tap the [Edit] which is on the right of the report for which you want to make changes.

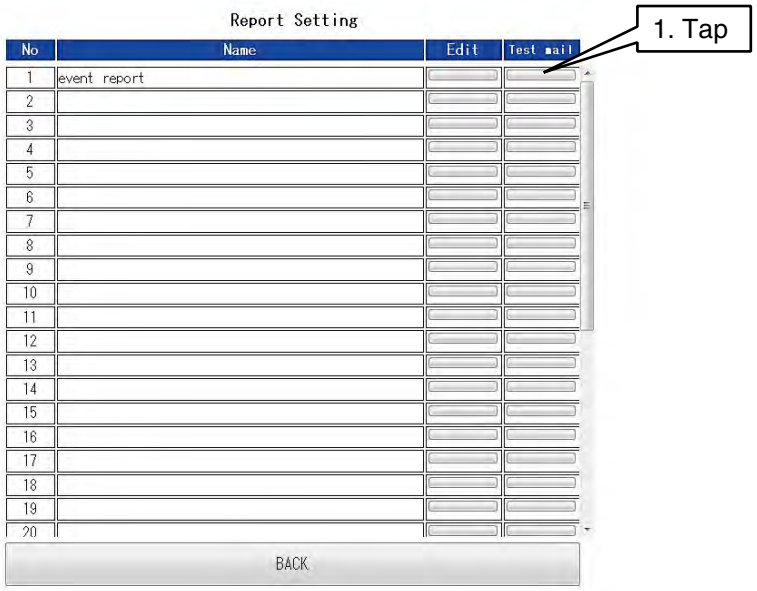
(4) Set the [Subject, Body text, Mode and Address list]. If you set the [Mode] as disable, mails will not be sent.

(5) Once all the changes are complete, tap the [OK] button.



(6) After the setting are reflected, the [OK] is displayed. Tap the [OK] button.
You will return to the report setting screen.

(7) To generate a test mail, tap the [Test mail].



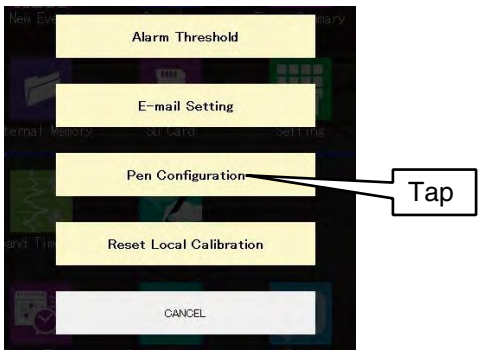
CAUTION

When the [Mode] is disabled, the relevant event report setting is also changed accordingly.
For temporarily disabling a particular mail registration, choose [None] in [Address list].

4.12.3 Pen configuration

You can change the pen assignment.

(1) Tap the [Pen configuration] button from the [Setting].

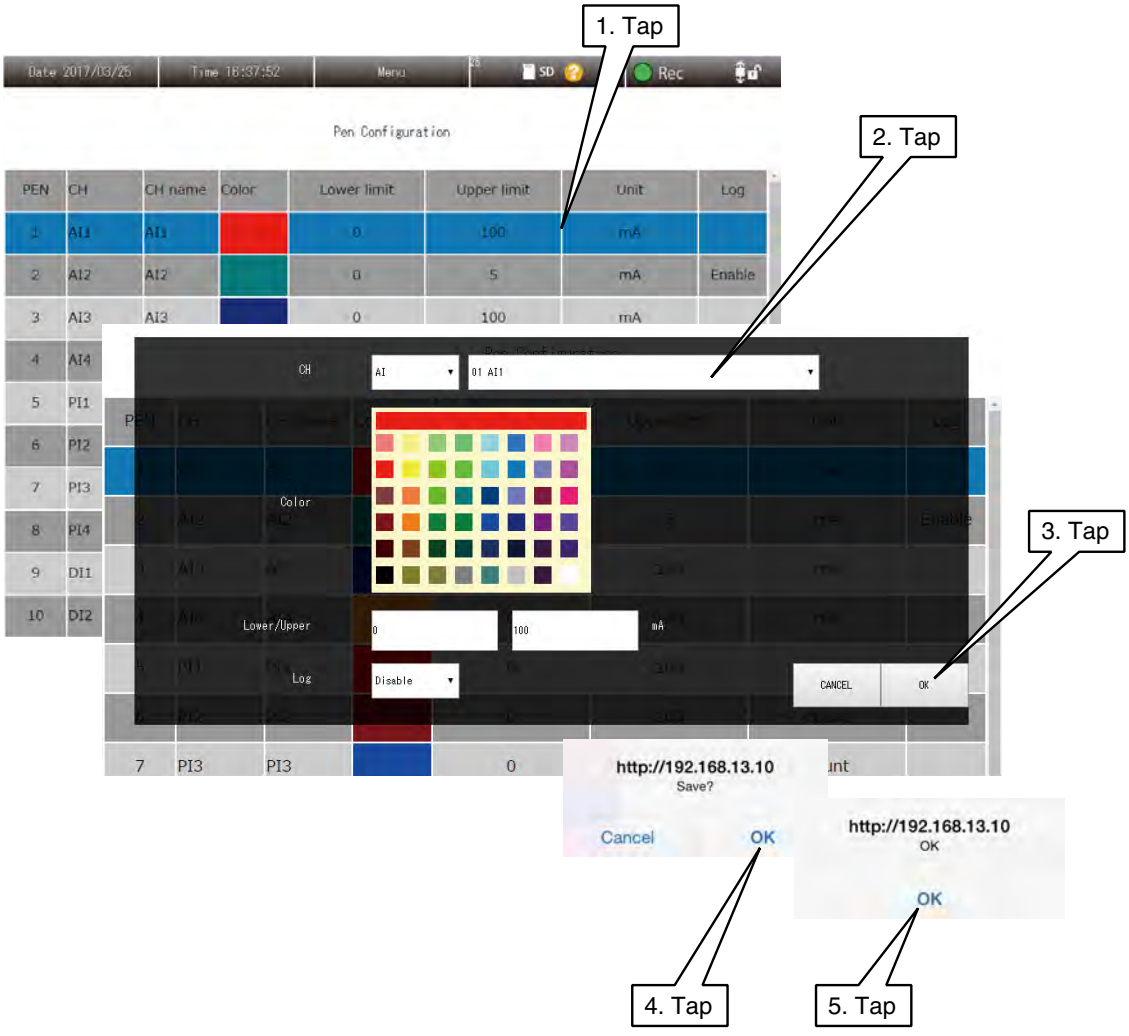


(2) Tap the pen that you want to change to make it selected. The background turns blue in color. Tap once again to display the [Edit pen configuration] screen.

(3) Change the assignment, color and the lower limit/upper limit values, and tap the [OK] button.

(4) The [Confirmation] is displayed. Tap the [OK] button.

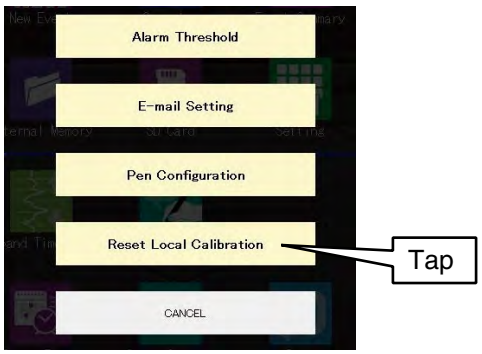
(5) After the setting are reflected, the [OK] is displayed. Tap the [OK] button.



4.12.4 Reset local calibration

You can reset the setting values such as the maximum and minimum values for each pen in the trend graph.

(1) Tap the [Reset local calibration] button from the [Setting].



(2) The confirmation dialog [OK to reset local calibration?] is displayed. Tap the [OK] button.

(3) The local adjustment value is reset, and the trend graph position returns to the reset value.

NOTES

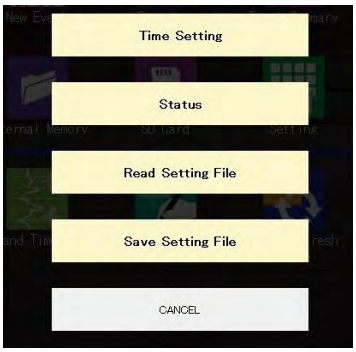
The [Reset local calibration] sub-menu is displayed only in the [Trend] screen.

CAUTION

Some browsers such as Google Chrome and Firefox may display check boxes such as [Do not generate any more dialog boxes], or [Suppress additional dialog display], but do not check them. If you check them, subsequent dialogs are not displayed, and this also prevents the operation of displaying the confirmation dialog.
➔ 7.2.3 Web server

4.13 Maintenance

Tap the [Menu button Menu] and select [Maintenance] to display the [Maintenance].



For details, please see [6.2 Maintenance from the Web screen].

4.14 User defined screens

Using HTML or JavaScript, you can freely create Web screens.
Create a working folder on the PC, and copy the HTML or similar content file. Specify this folder in TRGCFG and send.

You can retrieve the current values of data measured using the device as JavaScript data files.
Please see [7.3.13 Data files for user defined screen creation].

Please access [http://<TR30-IP address>/user/<content file name>] from the browser.

NOTES

- Please see [6.1.2 Maintenance 'User defined browser view'] for the method of transfer.
- You cannot create a sub-folder below a working folder.
- Set a file name which is 24 single byte characters or less, including the extension.
- The maximum number of files that can be stored in a working folder is 1024.
- The maximum size of 1 file is 1 MB.
- The maximum total size of files in a working folder is 4 MB.

CAUTION

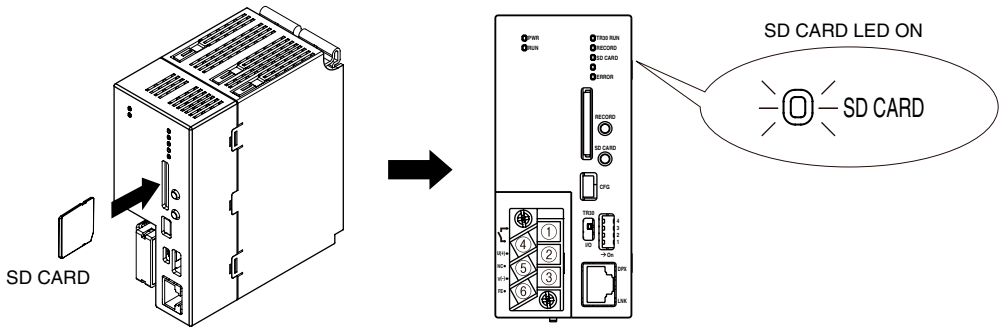
This function is targeted at users who have knowledge about the Web in terms of HTML, Javascript, etc. Please note that we will be unable to entertain queries about the Web.

5. Unit operation

5.1 SD card

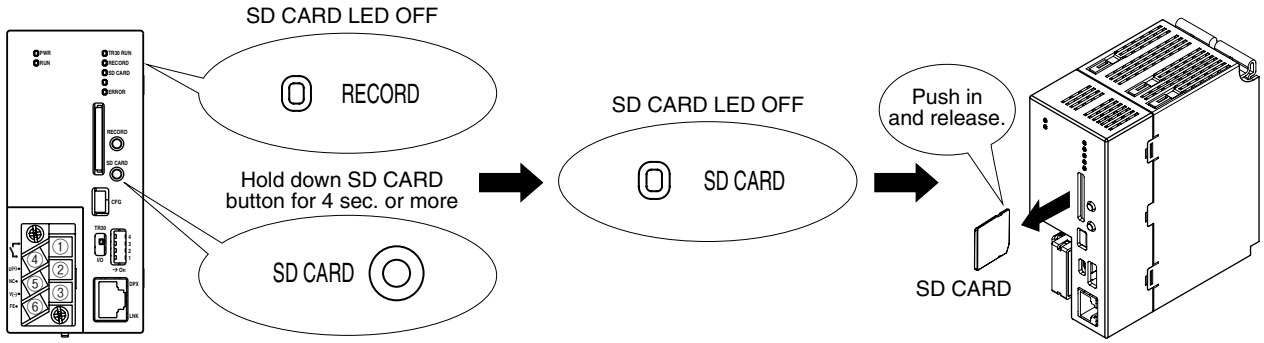
SD card insertion

With the terminal surface of the SD card on your left, slowly push the SD card completely into the slot and then remove your hand. If it is correctly recognized, the [SD CARD] lamp comes ON.



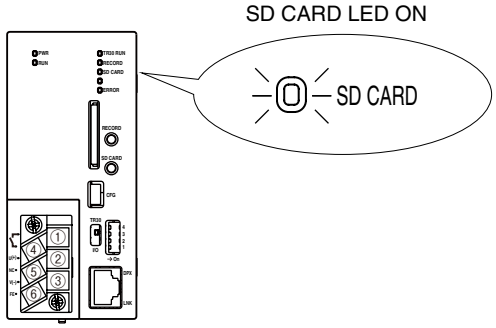
SD card removal

Keep the [SD CARD] button pressed for at least 4 seconds to turn the [SD CARD] lamp OFF.
Push the SD card completely in the slot and then remove your hand. The lock is released and it can now be removed. Slowly pull it out.



[SD CARD] lamp

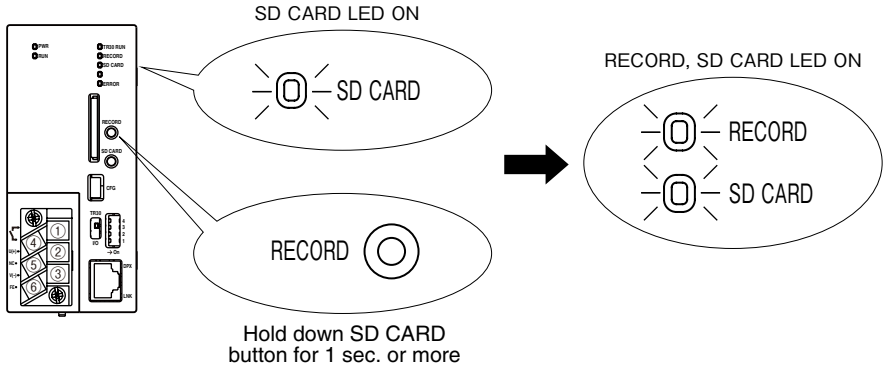
It remains ON as long as the SD card is being recognized. And, it blinks while the SD card is being accessed.



5.2 Recording

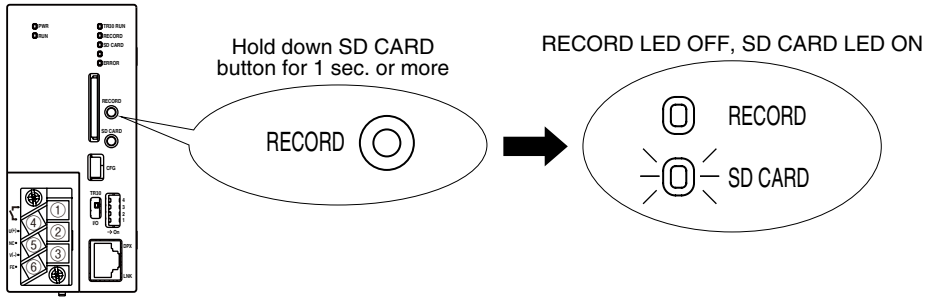
Start recording

Check that the SD card has been recognized.
Keep the [RECORD] button pressed for at least 1 second to start recording.



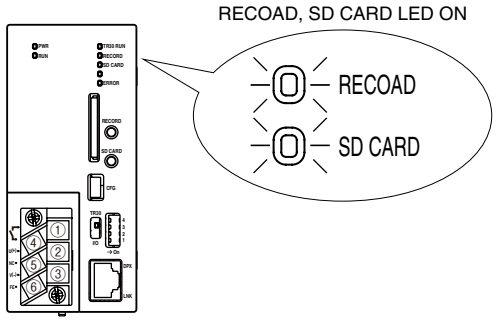
Stop recording

While recording is in progress, keep the [RECORD] button pressed for at least 1 second to stop recording.



[RECORD] lamp

Always ON while recording is in progress.



5.3 Stopping the unit

Stop recording, remove the SD card and then disconnect the power supply.

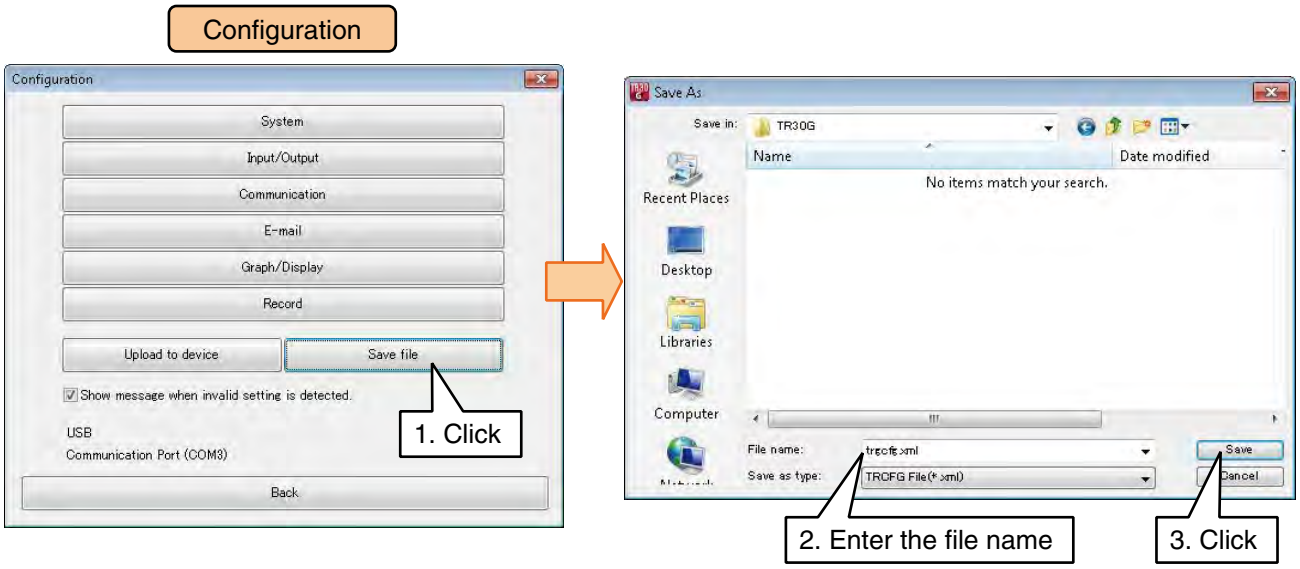
6. Maintenance

6.1 Maintenance using TRGCFG

6.1.1 Storage and retrieval of setting values

Storage of the setting file

TRGCFG can be used to store the setting information in a file.
Click on the [Save file] button in the [Configuration] and specify the file path.



NOTES

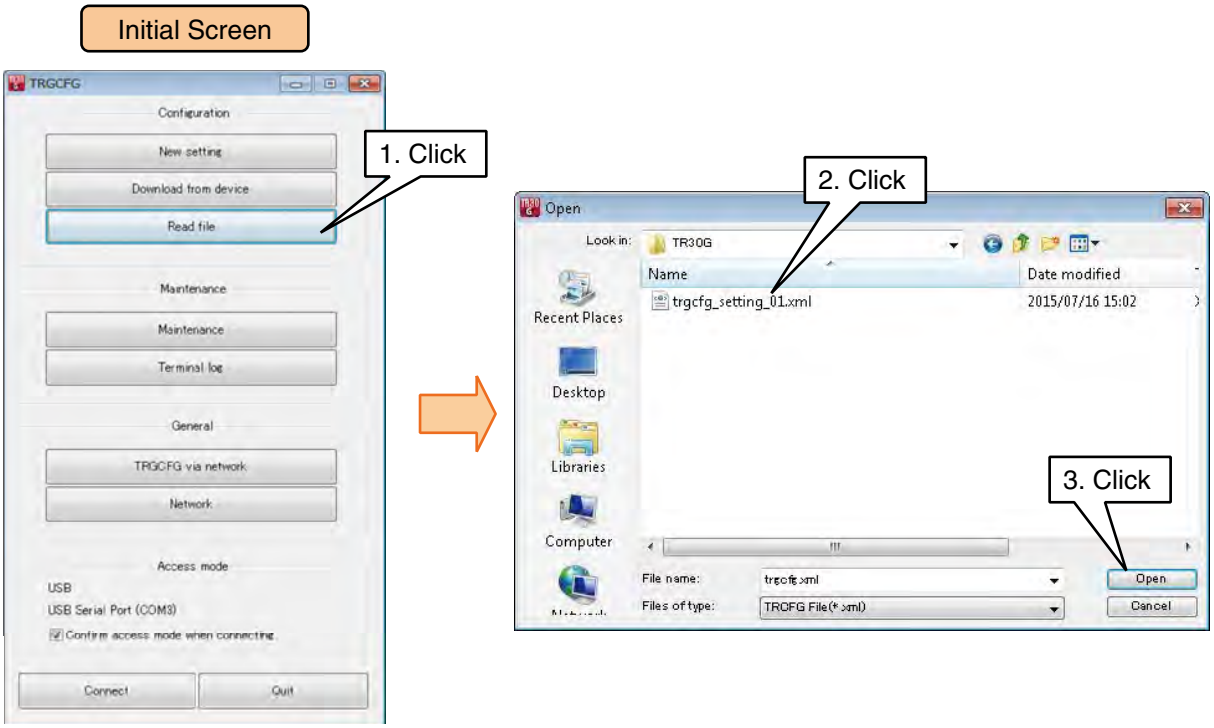
The setting file which is stored in the root folder of the SD card can be retrieved from the Web screen. To do so, specify the file name using single byte alphanumeric characters.

Retrieval of the setting file

The setting information stored in the file can be retrieved using TRGCFG.

(1) Click on the [Read file] button in the TRGCFG [Initial screen].

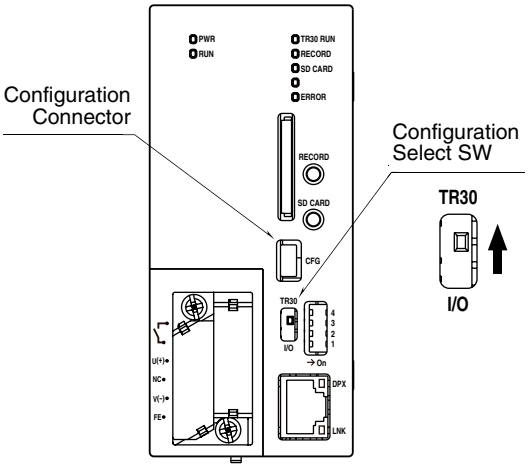
(2) Select the file and click on the [Open] button to retrieve the setting file.



6.1.2 Maintenance

Maintenance of the TR30 can be carried out from the [Maintenance] screen.

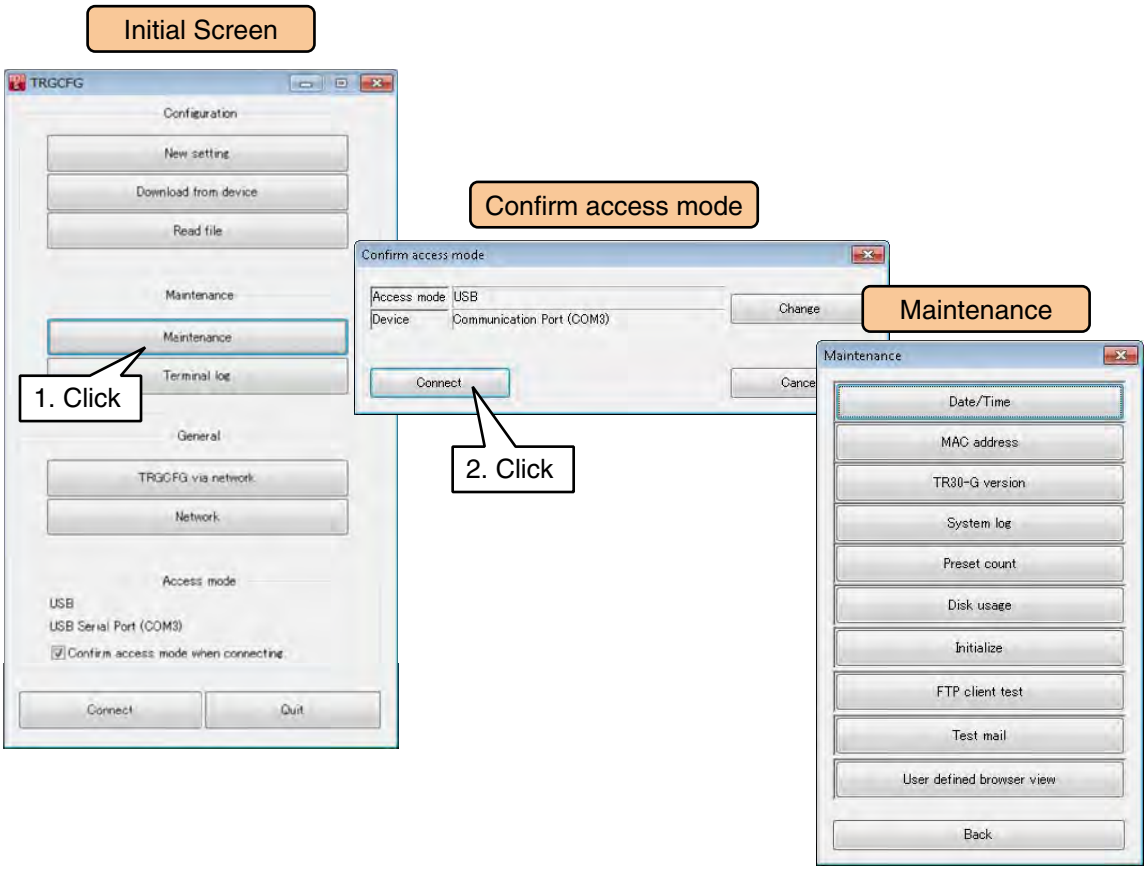
(1) Set the [Configuration Select Switch] of the device as [TR30].



(2) Connect the PC in which TRGCFG is installed with the device, and start up TRGCFG.

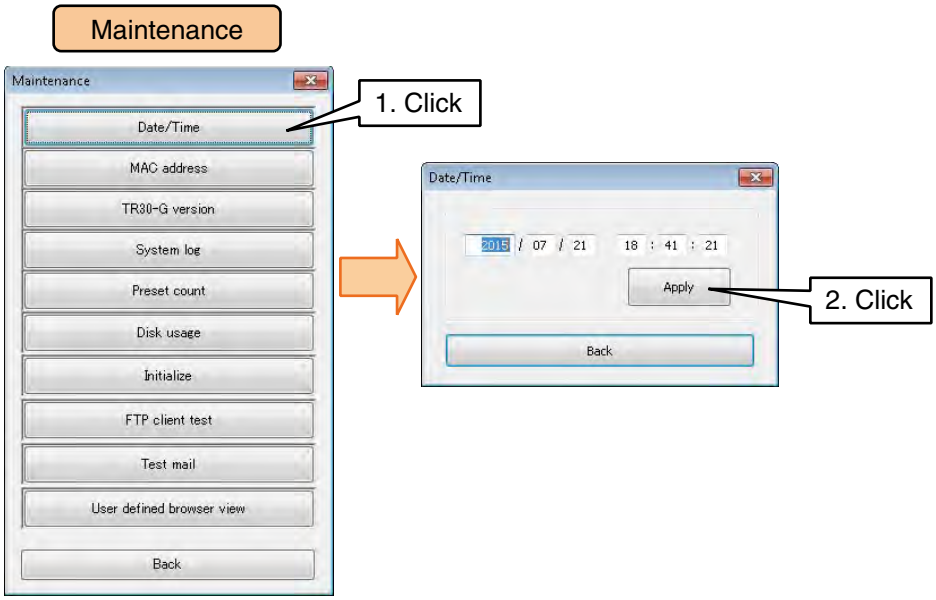
(3) Click on the [Maintenance] button.

(4) If the [Confirm access mode] is displayed, check that the device is correct, and click on the [Connect] button. The [Maintenance] screen is displayed.



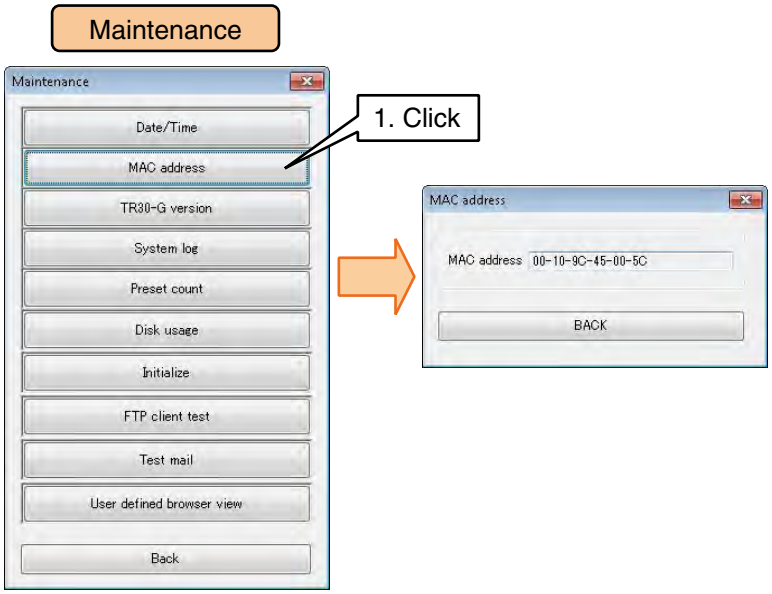
Time correction

Set the calendar clock in the TR30.
Click on the [Date/Time] button in the [Maintenance] screen to display the [Date/Time] screen. The current time in the PC which is being used is initially displayed.
Enter the time to be set and click on the [Apply] button to reflect the set time in the internal RTC (Real Time Clock) of the device.



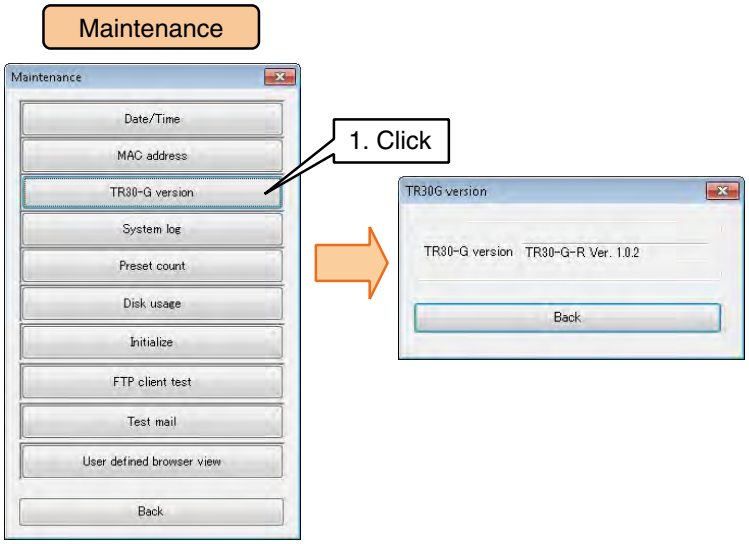
MAC address

Click on the [MAC address] button in the [Maintenance] screen to display the MAC address of the unit. After checking the contents, use the [Back] button to end.



Unit version

Click on the [TR30-G version] button in the [Maintenance] screen to display the firmware version for the unit. After checking the contents, use the [Back] button to end.

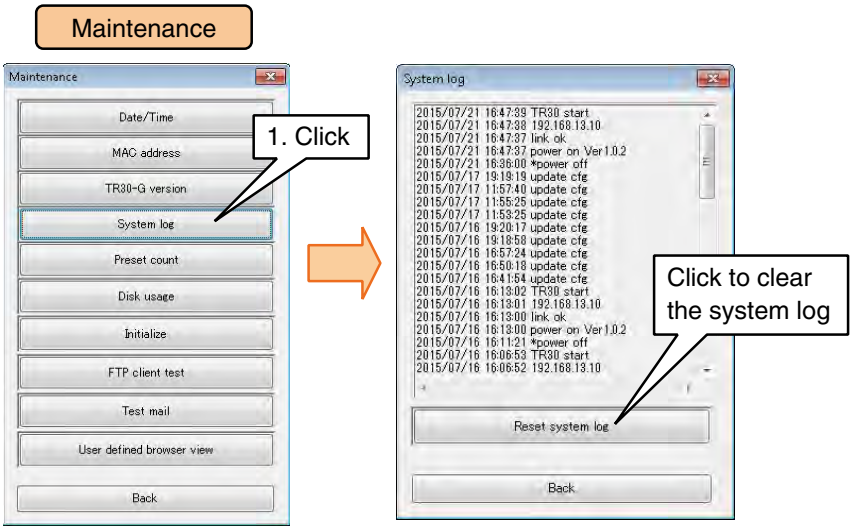


NOTES

Please check the version of the I/O modules by using the R30CFG.

System log

Click on the [System log] button in the [Maintenance] screen to display the system log.
The log of the 64 most recent events is stored in nonvolatile memory. Click on the [Reset system log] button to clear the log.

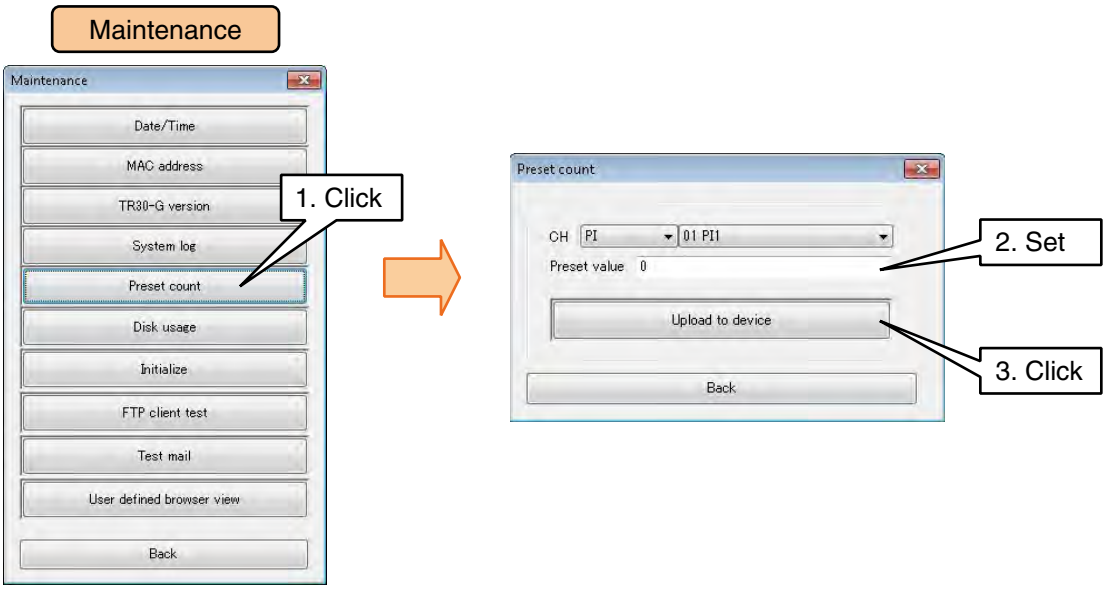


■System log message list (Partial list)

Message	Description
Power on VerX.X.X	Power supply ON firmware version
*power off	Power supply OFF
link ok	Ethernet LINK OK
link error	Ethernet LINK error

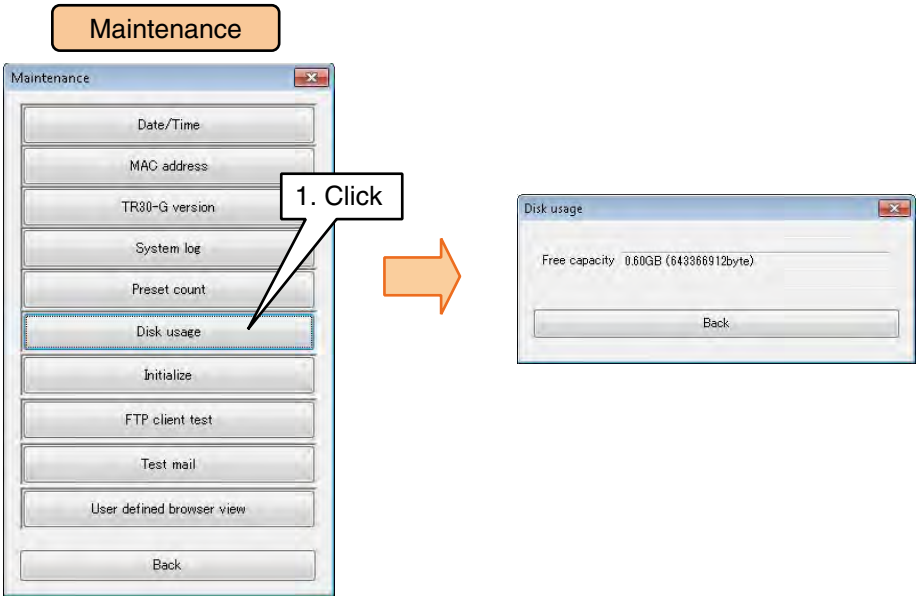
Preset count

Click on the [Preset count] button in the [Maintenance] screen to set the preset value for the PI cumulative total data.
Select the channel that you want to change, enter the preset value, and then click on the [Upload to device] button.



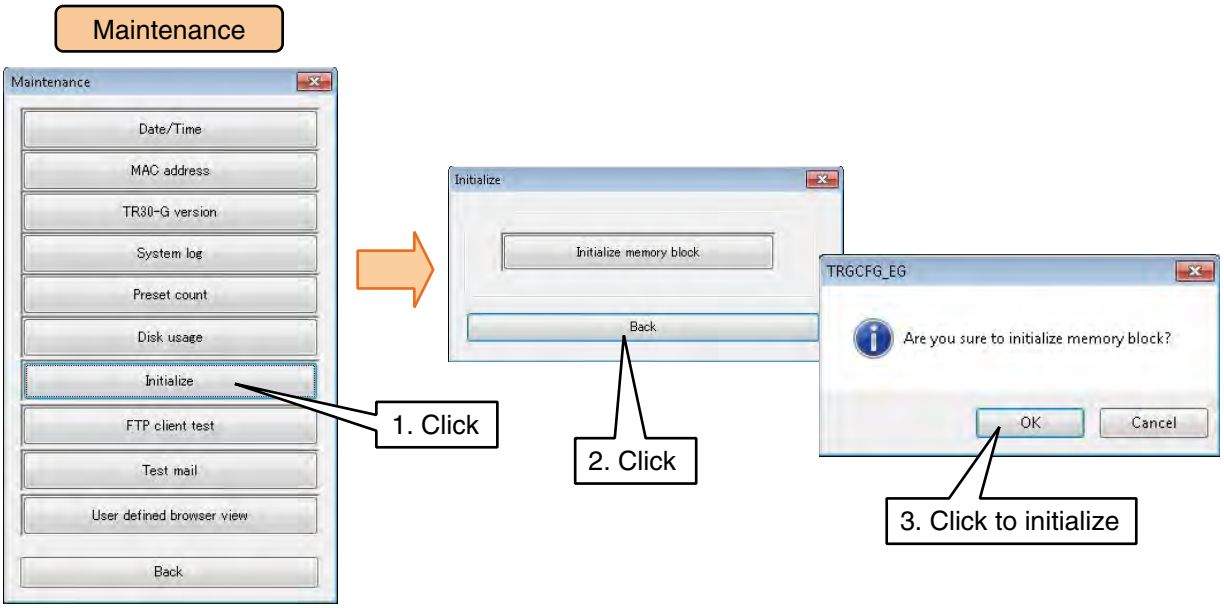
Disk usage status

Click on the [Disk usage] button in the [Maintenance] screen to check the free space in the SD card which has been inserted in the unit. After checking the contents, use the [Back] button to end.



Initialization

Memory blocks can be initialized using the [Initialize] button in the [Maintenance] screen.
Click on the [Initialize] button to display the [Initialize].
Click on the [Initialize memory block] button. The [confirmation] is displayed. Click on the [OK] button to initialize the memory block in the unit.

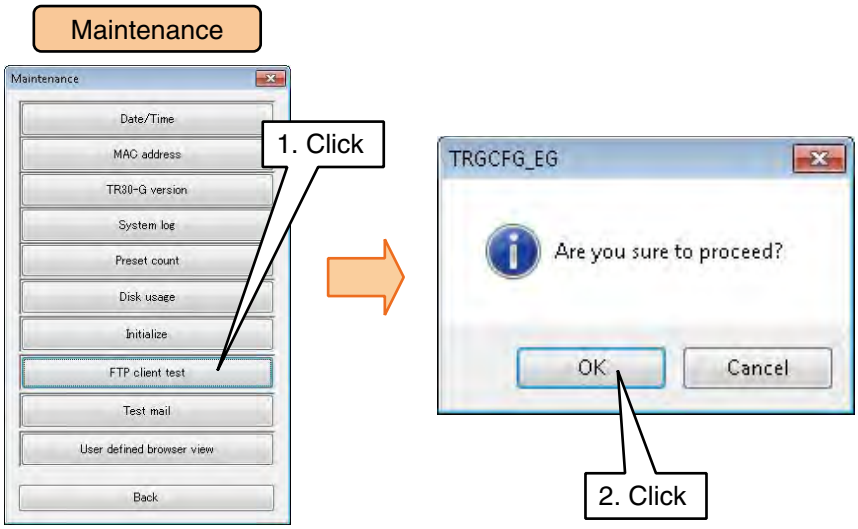


CAUTION

- Initialization is not possible while recording is in progress.
- Please note that initialization will erase the data in all the memory blocks.

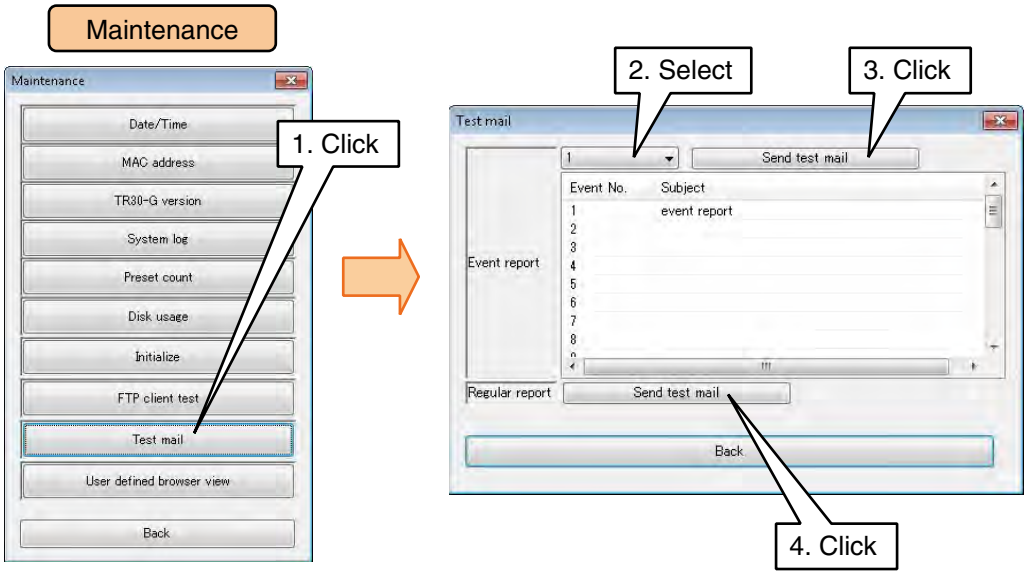
FTP client test

You can send a test FTP request using the [FTP client test] button in the [Maintenance] screen.
Click on the [FTP client test] button to display the confirmation dialog.
Click on the [OK] button to send the test file.
If it cannot be sent, the ERROR lamp blinks.



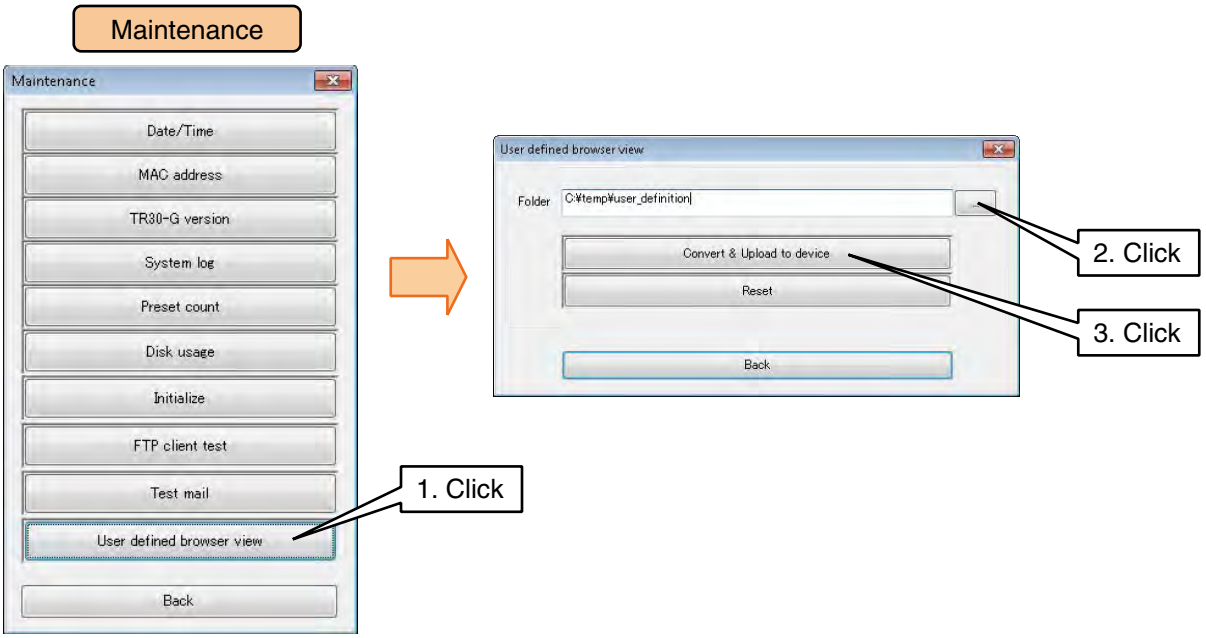
Mail report test

You can send a test mail report using the [Test mail] button in the [Maintenance] screen.
In case of an event report, select the event number from the [Test mail] screen and click on the [Send test mail] button.
In case of a regular report, click on the [Send test mail] button located to the right of the regular report in the [Test mail] screen.
If it cannot be sent, an entry is recorded in the system log.



User defined browser view

The screen can be freely built by creating html, js, css etc. files.
Click on the [User defined browser view] button to display the [Select folder] screen.
Select the working folder and click on the [Convert & Upload to device] button to transfer the data to the TR30 unit.
Access [http://<TR30-IP address>/user/<content file name>] from the browser.
In order to delete the transferred data of user-defined screens from the unit, click on the [Initialize] button.



6.2 Maintenance from the Web screen

Some parameters can be changed even from the Web screen.

NOTES

To display screens other than the [Display status] screen, network connection authorization is required for TRGCFG.
➔ 3.3.4 Enable setup via a network

6.2.1 Storage and retrieval of setting values

Retrieval of the setting file

The setting file which is stored in the root folder of the SD card can be retrieved.

(1) Tap the [Menu button Menu] to display the menu dialog.

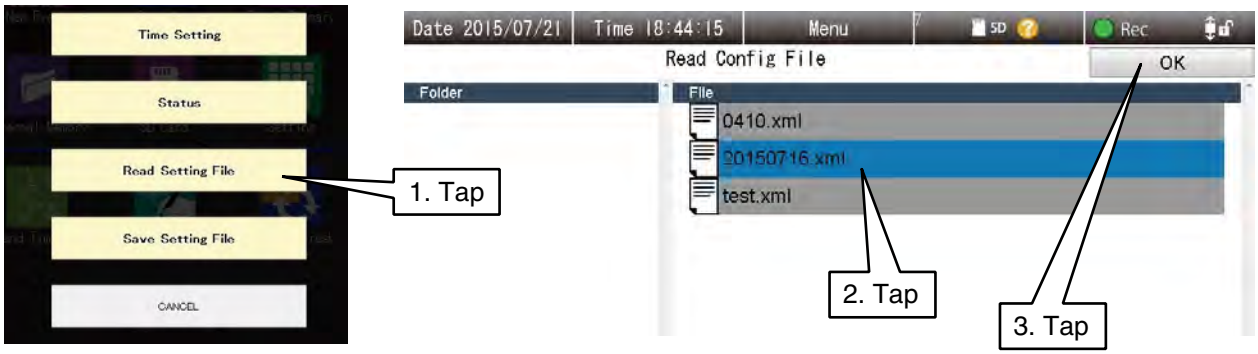
(2) Tap the [Maintenance] button to switch the display.
The [Maintenance] is displayed. Tap the [Read Setting File] button.

(3) The [Read Config File] screen is displayed.

(4) Tap the desired file to select it, and tap the [OK] button.

(5) The confirmation dialog [Do you want to read setting file?] is displayed. Tap the [OK] button.

(6) After the setting file has been loaded, the [OK] is displayed. Tap the [OK] button.



NOTES

- The file name of the setting file is [*****.xml].
- You can also retrieve setting files stored in TRGCFG.

CAUTION

- Please use single byte alphanumeric characters for the file name. We cannot guarantee the working of the files if the file name contains characters other than single byte alphanumeric characters.
- Some browsers such as Google Chrome and Firefox may display check boxes such as [Do not generate any more dialog boxes], or [Suppress additional dialog display], but do not check them. If you check them, subsequent dialogs are not displayed, and this also prevents the operation of displaying the confirmation dialog.
➔ 7.2.3 Web server

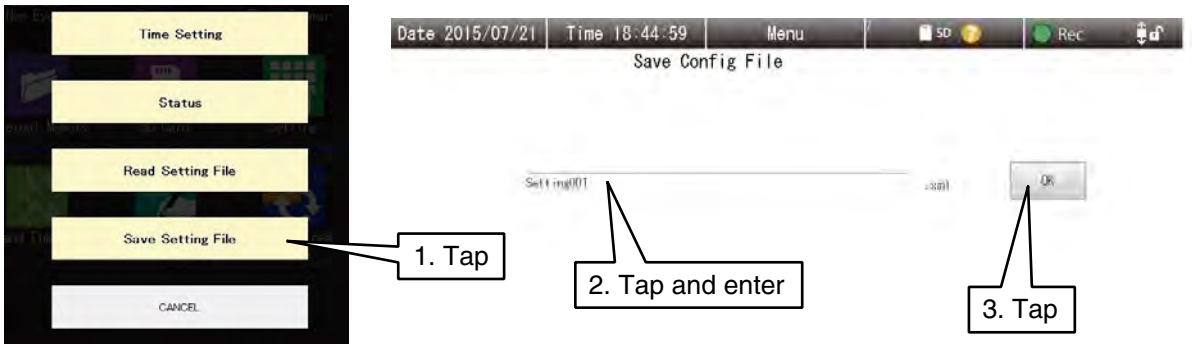
Storage of the setting file

(1) Tap the [Menu button Menu] to display the menu dialog.

(2) Tap [Maintenance] from the display switching buttons.
The [Maintenance] is displayed. Tap the [Save Setting File] button.

(3) The [Save Config File] screen is displayed.

(4) Tap the input box and enter the file name using single byte alphanumeric characters.



(5) Tap the [OK] button. The confirmation dialog [Do you want to save the setting?] is displayed. Tap the [OK] button.

(6) After saving, the [OK] is displayed. Tap the [OK] button.
The file is saved in the root folder of the SD card.

CAUTION

- The file cannot be saved if the name contains characters other than single byte alphanumeric characters.
- Some browsers such as Google Chrome and Firefox may display check boxes such as [Do not generate any more dialog boxes], or [Suppress additional dialog display], but do not check them. If you check them, subsequent dialogs are not displayed, and this also prevents the operation of displaying the confirmation dialog.
➔ 7.2.3 Web server

6.2.2 Maintenance

Time correction

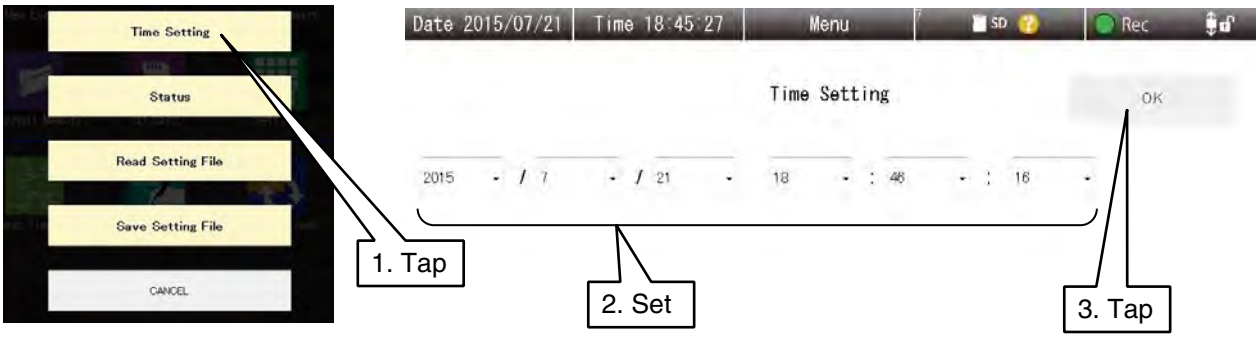
(1) Tap the [Menu button Menu] to display the menu dialog.

(2) Tap [Maintenance] from the display switching buttons.
The [Maintenance] is displayed. Tap the [Time Setting] button.

(3) The [Time Setting] screen is displayed. The current time on the terminal being used is initially displayed.

(4) Set the date and time and tap the [OK] button.

(5) After the time is set, the [OK] is displayed. Tap the [OK] button.

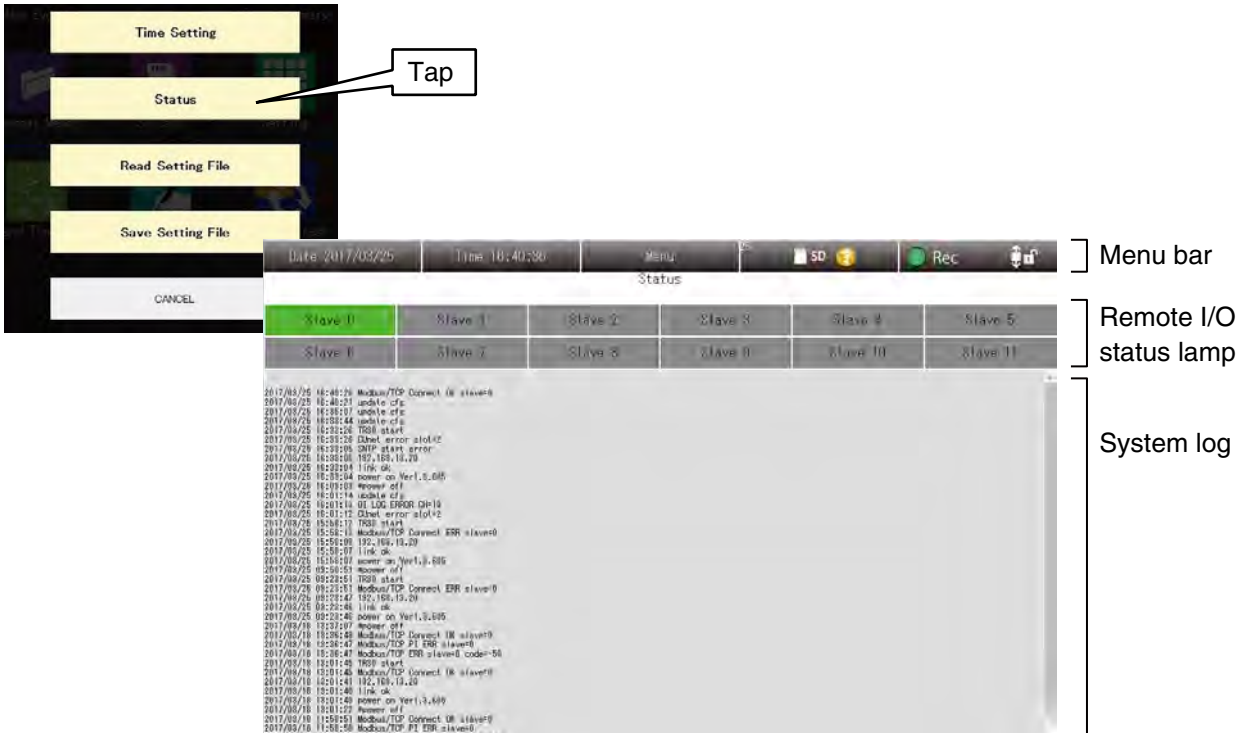


System log/remote I/O status display

(1) Tap the [Menu button Menu] to display the menu dialog.

(2) Tap [Maintenance] from the display switching buttons.
The [Maintenance] is display. Tap the [Status] button.

(3) The [Status] screen is displayed. The [Remote I/O status lamp] and [System log] are displayed.



Remote I/O status lamp indicates the remote I/O communication status.

Yellowish-green color: Communication in progress
Red color: Communication error
Gray color: Not used

7. Appendix

7.1 Primary method of operation of the touch panel

The primary method of operation of the touch panel used in this User Manual is explained below.

■Tap

Lightly tap any point on the screen with your finger and immediately remove your finger. (a light rap)
Use to select an item such as an icon or menu. Equivalent to the click operation in relation to the mouse.

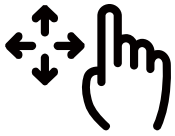
■Pinch in

Touch the screen with 2 fingers, and close the gap between the fingers. Use to shrink the display.

■Pinch out

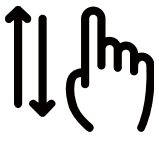
Touch the screen with 2 fingers, and increase the gap between the fingers. Use to enlarge the display.

■Flick



Touch a point or specific position on the screen, and move your finger without taking it off from the screen.
Similar to the drag and drop operation in relation to the mouse.

■Swipe



Rather than touching a particular point as when flicking, move (slide) a wide area of the screen.
Similar to the wheel scroll operation in relation to the mouse.

7.2 Troubleshooting

7.2.1 Lamp display

Problem faced	Checks to be done	Method of handling
The PWR LED does not come on.	Is the tablet recorder powered ON?	Check the power supply.
The RUN LED does not come on.	Perform the same checks as in [7.2.8 Error display lamp].	----
The TR30 RUN LED does not come on.	Is the tablet recorder powered ON?	Check the power supply.
	Has the IP address been set?	Set the IP address. ➔ 3.3.3 Set the IP address
The ERROR LED is blinking.	Perform the same checks as in [7.2.8 Error display lamp].	

7.2.2 SD card

Problem faced	Checks to be done	Method of handling
Unable to record in the SD card.	Has the SD card been inserted? (Is the SD CARD lamp ON?)	Insert an SD card specified by us. ➔ 7.3.4 SD card
	Is the RECORD lamp ON?	Keep the [RECORD] button in the TR30 pressed for at least 1 second. ➔ 5.2 Recording
	If there space available for storage on the SD card?	Check for space availability, and delete unnecessary data from the SD card. ➔ 6.1.2 Maintenance 'Disk usage status'
Unable to find the latest TRD file in the SD card.	Has the memory block data been transferred to the SD card?	Transfer the data to the SD. ➔ 4.9.2 Operation 'Transfer data to the SD card'

7.2.3 Web server

Problem faced	Checks to be done	Method of handling
There is no response when a logging button and menu button are pressed.	Is the confirmation dialog being displayed?	Close and restart the browser.

7.2.4 TRGCFG

Problem faced	Checks to be done	Method of handling
Unable to connect to the TR30. (When using a USB cable to connect)	Is the COM port correct?	Check the COM port. It should be the same as the COM number in the [USB Serial Port]. ➔ 2.3.1 Configurator software for the TR30: TRGCFG
	Is the Configuration Select Switch set as [TR30]?	Set the Configuration Select Switch as [TR30]. ➔ 1.3 Component identification
Unable to connect to the TR30. (When connecting via the LAN)	Has [Connection via a network] been enabled?	Connect using a USB cable, and set [Connection via a network] as [Enable]. ➔ 3.3.4 Enable setup via a network
	Is the IP address correct?	Connect using a USB cable, and check the IP address. ➔ 3.3.3 Set the IP address
	Has the LAN cable come out of the HUB?	Connect the LAN cable securely.
	Has the same network address been specified in the IP address of the TR30 and PC?	Check the IP address. Issue the ping command from the PC and check whether there is a response. [Example] Paperless recorder : 192.168.0.1 PC : 192.168.0.2 Subnet mask: 255.255.255.0
	Is the password correct?	Connect using a USB cable, and check the password set in the [TRGCFG] screen. ➔ 3.3.4 Enable setup via a network
Unable to connect to the TR30. (When connecting via the Internet)	Has [Connection via a network] been enabled?	Connect using a USB cable, and set [Connection via a network] as [Enable]. ➔ 3.3.4 Enable setup via a network
	Is the IP address correct?	Connect using a USB cable, and check the IP address. ➔ 3.3.3 Set the IP address
	Has the LAN cable come out of the HUB?	Connect the LAN cable securely.
	Is the password correct?	Connect using a USB cable, and check the password set in the [TRGCFG] screen. ➔ 3.3.4 Enable setup via a network
	Is the port address on the router used by TRGCFG (Initial setting: 30321) open?	Set the IP address and port address of the TR30 manually in the NAT setting of the router. (Please see the User Manual for the router.)

7.2.5 LAN connection

Problem faced	Checks to be done	Method of handling
Unable to display the Web server screen via the LAN.	Is the IP address correct?	Connect using a USB cable, and check the IP address. ➔ 3.3.3 Set the IP address
	Has the LAN cable come out of the HUB?	Connect the LAN cable securely.
	Is the IP address overlapping with another device?	Check the IP address.
	Has the same network address been specified in the IP address of the TR30 and PC?	Check the IP address. Issue the ping command from the PC and check whether there is a response. [Example] Paperless recorder : 192.168.0.1 PC : 192.168.0.2 Subnet mask: 255.255.255.0
	Have firewall or proxy server setting been configured on the PC?	Check the contents of the firewall and proxy server setting with the network administrator.
	Are you using a compatible terminal and compatible browser?	Check the version of the terminal/browser software. ➔ 7.3.1 Compatible terminals and browsers
	Is there a problem in the terminal or PC being used?	Use a different terminal/PC.

7.2.6 Wi-Fi connection

Problem faced	Checks to be done	Method of handling
Unable to connect to the access point from a terminal/PC.	Is the password to the access point correct?	Check the password to the access point. (Please see the User Manual for the access point)
	Has an IP address been assigned to the terminal/PC?	Check that the access point has a DHCP server function. If not, please enter the IP address manually. (Please see the User Manual for the access point)

7.2.7 Internet

Problem faced	Checks to be done	Method of handling
Unable to connect to the Internet (provider).	Does the information used to connect to the provider match the setting in the router (User name, password, etc.)?	Check the setting of the router related to the provider. (Please see the provider information and the User Manual of the router)
	If a mobile router is being used, is the signal weak?	Check the signal strength.
	Have the IP address and default gateway of the TR30 been correctly set?	Check the IP address and default gateway setting for the TR30. ➔ 3.3.3 Set the IP address
Unable to display the Web server screen via the Internet.	Is the URL correct?	Check the fixed IP address or domain name of the WAN as per the agreement with the provider. (Please see the contents of the agreement with the provider)
	If the IP address of the TR30 is manually set, is the port open?	Set the IP address and port address of the TR30 (Initial setting: 80) manually in the NAT setting of the router. (Please see the User Manual of the router)
	If the IP address of the TR30 is set as [Automatic setting (DHCP)], has the IP address been assigned by the router?	Obtain the IP address from the router and set the IP address and port address (Initial setting: 80) from the NAT setting manually. (Please see the User Manual of the router)

7.2.8 Error display lamp

Problem faced	Checks to be done	Method of handling
An [Error display] mark is displayed on the menu bar.	Has an R30 I/O module been installed?	If “module” has been specified in the CH setting for the TRGCFG [Input/Output] - [Analog input (AI)], [Discrete input (DI)], [pulse input (PI)] and [Discrete output (DO)], check if an I/O module has been installed in the specified slot.
	Are you able to communicate with the Modbus slave device?	If “Modbus/TCP” has been specified in the CH setting for the TRGCFG [Input/Output] - [Analog input (AI)], [Discrete input (DI)], [pulse input (PI)] and [Discrete output (DO)], check if the specified [Modbus/TCP slave No.] and the [Modbus/TCP register address] are matching. If the setting are matching, but you are unable to communicate with the slave, please see [7.2.10 Modbus/TCP (Master)].
	Can the SD card be accessed from the Web server screen?	Check if it can be accessed. ➔ 4.10 SD card If it cannot be accessed, the SD card may be corrupted. Please arrange for a new SD card and replace it.
	Can the internal memory be accessed from the Web server screen?	Check if it can be accessed. ➔ 4.9 Internal memory If it cannot be accessed, the internal memory may be corrupted. You need to return the TR30 so that it can be repaired.

7.2.9 RUN contact

Problem faced	Checks to be done	Method of handling
Run contact is off.	Has an R30 I/O module been installed?	If “module” has been specified in the CH setting for the TRGCFG [Input/Output] - [Analog input(AI)], [Discrete input (DI)], [Pulse input (PI)] and[Discrete output (DO)], check if an I/O module has been installed in the specified slot.
	Are you able to communicate with the Modbus slave device?	If “Modbus/TCP” has been specified in the CH setting for the TRGCFG [Input/Output] - [Analog input (AI)], [Discrete input (DI)], [Pulse input (PI)] and [Discrete output (DO)], check if the specified [Modbus/TCP slave No.] and the [Modbus/TCP register address] are matching. If the setting are matching, but you are unable to communicate with the slave, please see [7.2.10 Modbus/TCP (Master)].
	Can the SD card be accessed from the Web server screen?	Check if it can be accessed. ➔ 4.10 SD card (hyperlink) If it cannot be accessed, the SD card may be corrupted. Please arrange for a new SD card and replace it.
	Can the internal memory be accessed from the Web server screen?	Check if it can be accessed. ➔ 4.9 Internal memory (hyperlink) If it cannot be accessed, the internal memory may be corrupted. You need to return the TR30 so that it can be repaired.
	Do you fail in transmission FTP?	Check if specified FTP server can be matched setting TRGCFG[Communication]-[FTP server client].

7.2.10 Modbus/TCP (Master)

Problem faced	Checks to be done	Method of handling
Unable to connect to the Modbus slave device from the TR30.	Is the LAN cable disconnected or has it come out from the HUB?	Connect the LAN cable securely. Please check the connected lamp on the HUB.
	Has the IP address of the TR30 been manually set?	Set the IP address manually. ➔ 3.3.3 Set the IP address
	Has the same network address been specified in the TR30 and Modbus slave device?	Check the network address. [Example] Paperless recorder: 192.168.0.1 Slave: 192.168.0.2 Subnet mask: 255.255.255.0
	Does the IP address of the slave device coincide with the one registered on TRCFG?	Check the IP address. ➔ 3.8.1 I/O slave setting
	Has the IP address been set for the slave device?	Set the IP address for the slave device. And, if you are using a remote I/O which is our product, disconnect and restart the power supply after setting the IP address. (Please see the respective remote I/O User Manual for information on the method of setting the IP address)
	Have you replaced the communication module?	When you replace the communication module in the remote I/O in Modbus/TCP, it may take time to connect. If you want to connect immediately, disconnect and restart the power supply to the TR30.

7.2.11 FTP server

Problem faced	Checks to be done	Method of handling
Unable to make an FTP connection to the TR30 via the LAN.	Have the setting of the FTP server function for the TR30 been enabled?	Set the mode in the FTP server setting in TRGCFG as [Enable]. ➔ 3.11 Communication function setting
	Are the IP address, Login ID and the password for the TR30 correct?	Check the IP address.
		Check the Login ID and password set in TRGCFG. ➔ 3.11 Communication function setting
	Are you able to login to the TR30 from an FTP client such as a PC?	Check whether a DOS command can be used to login to the TR30.
Unable to make an FTP connection to the TR30 via the Internet.	Is the TR30 able to connect to the Internet?	Check whether you can connect to the Internet from the PC.
	Is the URL correct?	Check the fixed IP address or domain name of the WAN as per the agreement with the provider. (Please see the contents of the agreement with the provider)
	Is port 21 open on the router used by the FTP for the TR30?	Set port address 21 on the NAT setting for the router manually. (Please see the User Manual of the router)
	Is it being blocked by security software or a firewall?	Try disabling the security software or firewall.
Unable to carry out maintenance of files in the TR30 using the FTP client.	Is the FTP client software specified in this User Manual being used?	Use an FTP client whose working has been checked. ➔ 7.3.6 FTP server
Unable to find the TRD file.	Has the memory block data been transferred to the SD card?	Transfer the data to the SD card. ➔ 4.9.2 Operation 'Transfer data to the SD card'

7.3 Reference documents

7.3.1 Compatible terminals and browsers

The following environments are verified operation.

Terminal	Compatible browser
iPad (iPadOS 17.4.1)	Safari
Android tablet (Android 14)	Chrome
Windows (10, 11)	Edge, Firefox, Chrome

OS	Browser	Mouse operation	Touch operation
iPadOS 17.4.1	Safari	No	Yes
Android 14	Chrome	Yes	Yes
Windows 10, 11 (*2)	Edge	Yes	Yes (*1)
	Firefox	Yes	Yes (*1)
	Chrome	Yes	Yes

(*1) 2 point touch operation is not supported. The operation specifications depend on the mouse.
(*2) The automatic screen size adjustment function is disabled.

7.3.2 Web server

The following environments are supported.

Terminal	Compatible browser
Port address	Variable (Initial value: 80)
Number of simultaneous connections	Up to 4
Character code	UTF-8
Number of pixels in the horizontal width	1024 (Automatic screen size adjustment function for scaling according to the screen width (viewport))
Browser setup conditions	Set JavaScript as [Enable] Set Cookies as [Enable]

7.3.3 Storing rate and sampling cycle

The event detection interval is the same as the sampling cycle. During new memory block, data is automatically transferred to the SD card.

Storing rate	Sampling cycle
5 ms	5 ms
10 ms	5 ms
50 ms	5 ms
100 ms	100 ms
500 ms	100 ms
1 second	100 ms
2 seconds	1 second
5 seconds	1 second
10 seconds	1 second
1 minute	1 second
2 minutes	1 second
5 minutes	1 second
10 minutes	1 second
15 minutes	1 second
30 minutes	1 second
1 hour	1 second

7.3.4 SD card

Item	Description
Type	SDHC
Format	FAT32 Do not use a format other than the one provided by the SD Association for the SD card.
File name	Create a file name using the YYMMDDHHMMSS of the first sample. Last character S: Standard time (When Daylight saving time is not used) D: Daylight saving time [Example] Memory block conformed: 20130802140000S.TRD CSV format Trend : 20130802140000S_T.CSV Event : 20130802140000S_E.CSV Comment : 20130802140000S_C.CSV)
Automatic transfer	Automatically transferred during new memory block.
Folder partitioning	• If the interval is not less than 1 day (Created in the YYMM folder) \Y2014\M10\20141012100000S.TRD • If the interval is less than 1 day (Created in the YYMMDD folder) \Y2014\M10\D12\20141012100000S.TRD
Auto file delete	When the remaining space in the SD card becomes 100 MB or less, data files and folders can be automatically deleted. If the oldest DD folder exists, below that folder is deleted. If the oldest MM folder exists, below that folder is deleted. If the oldest YY folder exists, below that folder is deleted.

■Specified SD card

Hagiwara Solutions: NSD6-004GH(B21SEI
NSD6-016GH(B20SEI
(NSD6-004GH(A00SDI ... discontinued)
Apacer : AP-ISD04GIS4B-3T

■Formatting SD card

When formatting SD card, use a dedicated software “SD Card Formatter”.

“SD Card Formatter” is downloadable at SD Association’s web site.
https://www.sdcard.org

■SD card replacement guidelines

The approximate time for the SD card to become full is shown in the table below. Since these are only approximate values, they do not guarantee the time for which data can be recorded in the SD card. Further, the life of the SD card has not been considered.

[Assumptions]

Calculated for a 4 GB and 16 GB SD card
1 sample is calculated as 4 bytes
Events and comment data are not included.
To include them, please calculate each item as roughly 250 bytes.
If storing is possible for 10 years or more, it has been indicated as 10.

If it is stored in a 4 GB SD card in the TRD format:

Storing rate	Transfer interval	16 pens	32 pens	64 pens	
5 ms	3 minutes (36,000 points)	3 days			
10 ms	5 minutes (30,000 points)	6 days			
50 ms	10 minutes (12,000 points)	25 days			
100 ms	10 minutes (6,000 points)	50 days	30 days		
500 ms	30 minutes (3,600 points)	8 months	4 months		
1 second	1 hour (3,600 points)	1 year	9 months		
2 seconds	1 hour (1,800 points)	2 years	1 year		
5 seconds	6 hours (4,320 points)	7 years	4 years		
10 seconds	6 hours (2,160 points)		7.5 years		
1 minute	All intervals	10 years			
2 minutes					
5 minutes					
10 minutes					
15 minutes					
30 minutes					
1 hour					

If it is stored in a 16 GB SD card in the TRD format:

Storing rate	Transfer interval	16 pens	32 pens	64 pens	120 pens
5 ms	3 minutes (36,000 points)	12 days			
10 ms	5 minutes (30,000 points)	24 days			
50 ms	10 minutes (12,000 points)	116 days			
100 ms	10 minutes (6,000 points)	7 months	4 months		
500 ms	30 minutes (3,600 points)	2.5 years	1.5 years		
1 second	1 hour (3,600 points)	5.5 years	3 years		
2 seconds	1 hour (1,800 points)	9 years	5.5 years		
5 seconds	6 hours (4,320 points)				
10 seconds	6 hours (2,160 points)				
1 minute	All intervals	10 years			
2 minutes					
5 minutes					
10 minutes					
15 minutes					
30 minutes					
1 hour					

If it is stored in a 4 GB SD card in the CSV format:

Storing rate	Transfer interval	16 pens	32 pens	64 pens	120 pens
5 ms	3 minutes (36,000 points)	34 hours			
10 ms	5 minutes (30,000 points)	69 hours			
50 ms	10 minutes (12,000 points)	14 days			
100 ms	10 minutes (6,000 points)	28 days	15 days		
500 ms	30 minutes (3,600 points)	4 months	78 days		
1 second	1 hour (3,600 points)	9 months	5 months		
2 seconds	1 hour (1,800 points)	1.5 years	10 months		
5 seconds	6 hours (4,320 points)	3.5 years	2 years		
10 seconds	6 hours (2,160 points)	7 years	4 years		
1 minute	All intervals	10 years			
2 minutes					
5 minutes					
10 minutes					
15 minutes					
30 minutes					
1 hour					

If it is stored in a 16 GB SD card in the CSV format:

Storing rate	Transfer interval	16 pens	32 pens	64 pens	120 pens
5 ms	3 minutes (36,000 points)	5 days			
10 ms	5 minutes (30,000 points)	11 days			
50 ms	10 minutes (12,000 points)	58 days			
100 ms	10 minutes (6,000 points)	115 days	63 days		
500 ms	30 minutes (3,600 points)	1.5 years	10 months		
1 second	1 hour (3,600 points)	3 years	1.5 years		
2 seconds	1 hour (1,800 points)	6 years	3 years		
5 seconds	6 hours (4,320 points)	10 years	8 years		
10 seconds	6 hours (2,160 points)				
1 minute	All intervals				
2 minutes					
5 minutes					
10 minutes					
15 minutes					
30 minutes					
1 hour					

7.3.5 Memory block

■Basic specifications

Item	Description
Total space	4 GB (Uses around 2.5 GB)
Number of blocks	50

■Trend data

Item	Description
Space	32 MB (50000 samples per block)
Storing rate (Primary storing cycle/ RTC synchronous)	5, 10, 50, 100, 500 ms, 1, 2, 5, 10 seconds, 1, 2, 5, 10, 15, 30 minutes, 1 hour
Data format	Record 4 bytes/sample with each pen Attach time data (YYMMDDHHMMSS, 1/1000 seconds) for each sample 512 bytes/sample

■Event data

Item	Description
Space	Around 9.7 MB
Recording contents	Time, Color, Event number, Event string, Confirmation seal
Number of records	3000 (After arrival, discard the data which was moved)
Data format	128 bytes/record
Event string	Less than 32 characters

■Comment data

Item	Description
Space	Around 0.97 MB
Recording contents	Time, Color, Comment string
Number of records	1000 (After arrival, discard the data which was moved)
Data format	128 bytes/record
Comment string	Less than 32 characters

7.3.6 FTP server

Item	Description			
FTP client	OS	Windows 10, 11		
	Application (Verified operation environment)	FFFTP (5.6)		
Maximum number of connections	4			
Port address	For FTP connection: can be changed (initial value : 21) For passive: 45967			
Function	Function	Browser	Explorer	FFFTP
	Display of the list of folders and files	Yes	Yes	Yes
	File download (1 file only)	Yes	Yes	Yes
	File download (Multiple files)	No	Yes	Yes
	File deletion (1 file/multiple files)	No	Yes	Yes
	Folder download (Including the files stored in the folder)	No	Yes	Yes
	Folder deletion (Including the files stored in the folder)	No	Yes	Yes

7.3.7 Modbus/TCP slave

Register map

1X

Register	Channel	Register	Channel
10001	DI1	10033	DI33
10002	DI2	10034	DI34
10003	DI3	10035	DI35
10004	DI4	10036	DI36
10005	DI5	10037	DI37
10006	DI6	10038	DI38
10007	DI7	10039	DI39
10008	DI8	10040	DI40
10009	DI9	10041	DI41
10010	DI10	10042	DI42
10011	DI11	10043	DI43
10012	DI12	10044	DI44
10013	DI13	10045	DI45
10014	DI14	10046	DI46
10015	DI15	10047	DI47
10016	DI16	10048	DI48
10017	DI17	10049	DI49
10018	DI18	10050	DI50
10019	DI19	10051	DI51
10020	DI20	10052	DI52
10021	DI21	10053	DI53
10022	DI22	10054	DI54
10023	DI23	10055	DI55
10024	DI24	10056	DI56
10025	DI25	10057	DI57
10026	DI26	10058	DI58
10027	DI27	10059	DI59
10028	DI28	10060	DI60
10029	DI29	10061	DI61
10030	DI30	10062	DI62
10031	DI31	10063	DI63
10032	DI32	10064	DI64

3X

Register	Channel	Register	Channel
30001	AI1	30033	AI33
30002	AI2	30034	AI34
30003	AI3	30035	AI35
30004	AI4	30036	AI36
30005	AI5	30037	AI37
30006	AI6	30038	AI38
30007	AI7	30039	AI39
30008	AI8	30040	AI40
30009	AI9	30041	AI41
30010	AI10	30042	AI42
30011	AI11	30043	AI43
30012	AI12	30044	AI44
30013	AI13	30045	AI45
30014	AI14	30046	AI46
30015	AI15	30047	AI47
30016	AI16	30048	AI48
30017	AI17	30049	AI49
30018	AI18	30050	AI50
30019	AI19	30051	AI51
30020	AI20	30052	AI52
30021	AI21	30053	AI53
30022	AI22	30054	AI54
30023	AI23	30055	AI55
30024	AI24	30056	AI56
30025	AI25	30057	AI57
30026	AI26	30058	AI58
30027	AI27	30059	AI59
30028	AI28	30060	AI60
30029	AI29	30061	AI61
30030	AI30	30062	AI62
30031	AI31	30063	AI63
30032	AI32	30064	AI64

Register	Channel	Register	Channel
30201	PI1 (low)	30233	PI17 (low)
30202	PI1 (high)	30234	PI17 (high)
30203	PI2 (low)	30235	PI18 (low)
30204	PI2 (high)	30236	PI18 (high)
30205	PI3 (low)	30237	PI19 (low)
30206	PI3 (high)	30238	PI19 (high)
30207	PI4 (low)	30239	PI20 (low)
30208	PI4 (high)	30240	PI20 (high)
30209	PI5 (low)	30241	PI21 (low)
30210	PI5 (high)	30242	PI21 (high)
30211	PI6 (low)	30243	PI22 (low)
30212	PI6 (high)	30244	PI22 (high)
30213	PI7 (low)	30245	PI23 (low)
30214	PI7 (high)	30246	PI23 (high)
30215	PI8 (low)	30247	PI24 (low)
30216	PI8 (high)	30248	PI24 (high)
30217	PI9 (low)	30249	PI25 (low)
30218	PI9 (high)	30250	PI25 (high)
30219	PI10 (low)	30251	PI26 (low)
30220	PI10 (high)	30252	PI26 (high)
30221	PI11 (low)	30253	PI27 (low)
30222	PI11 (high)	30254	PI27 (high)
30223	PI12 (low)	30255	PI28 (low)
30224	PI12 (high)	30256	PI28 (high)
30225	PI13 (low)	30257	PI29 (low)
30226	PI13 (high)	30258	PI29 (high)
30227	PI14 (low)	30259	PI30 (low)
30228	PI14 (high)	30260	PI30 (high)
30229	PI15 (low)	30261	PI31 (low)
30230	PI15 (high)	30262	PI31 (high)
30231	PI16 (low)	30263	PI32 (low)
30232	PI16 (high)	30264	PI32 (high)

Register	Channel	Register	Channel
30401	OI1 (low)	30433	OI17 (low)
30402	OI1 (high)	30434	OI17 (high)
30403	OI2 (low)	30435	OI18 (low)
30404	OI2 (high)	30436	OI18 (high)
30405	OI3 (low)	30437	OI19 (low)
30406	OI3 (high)	30438	OI19 (high)
30407	OI4 (low)	30439	OI20 (low)
30408	OI4 (high)	30440	OI20 (high)
30409	OI5 (low)	30441	OI21 (low)
30410	OI5 (high)	30442	OI21 (high)
30411	OI6 (low)	30443	OI22 (low)
30412	OI6 (high)	30444	OI22 (high)
30413	OI7 (low)	30445	OI23 (low)
30414	OI7 (high)	30446	OI23 (high)
30415	OI8 (low)	30447	OI24 (low)
30416	OI8 (high)	30448	OI24 (high)
30417	OI9 (low)	30449	OI25 (low)
30418	OI9 (high)	30450	OI25 (high)
30419	O10 (low)	30451	OI26 (low)
30420	OI10 (high)	30452	OI26 (high)
30421	OI11 (low)	30453	OI27 (low)
30422	OI11 (high)	30454	OI27 (high)
30423	OI12 (low)	30455	OI28 (low)
30424	OI12 (high)	30456	OI28 (high)
30425	OI13 (low)	30457	OI29 (low)
30426	OI13 (high)	30458	OI29 (high)
30427	OI14 (low)	30459	OI30 (low)
30428	OI14 (high)	30460	OI30 (high)
30429	OI15 (low)	30461	OI31 (low)
30430	OI15 (high)	30462	OI31 (high)
30431	OI16 (low)	30463	OI32 (low)
30432	OI16 (high)	30464	OI32 (high)

OI1 through OI32 are single-precision floating point format.

Internal registers

■Operation (recording and transition)

Register	Item	Type	Description
08001	Recording	R/W	0 : Stop 1 : Record
08002	Transition	W	1 : Run (Automatically returns to 0 after executed)

■Status

Register	Item	Type	Description
18001	SD card recording	R	0 : Standing by 1 : Recording in progress
18002	FTP client	R	0 : Standing by 1 : Sending
18101	SD card error	R	0 : OK 1 : Error
18102	R30 module error	R	0 : OK 1 : Error
18103	Modbus/TCP master error	R	0 : OK 1 : Error

■Comment writing

Register	Item	Type	Description
08003	Comment writing	W	1 : Run (Automatically returns to 0 after executed)
48001 : 48096	Comment string	R/W	Set the string using UTF-8 code. Lower 8 bits are valid. Set 0 at the end of the string.
48101 : 48103	Comment character color	R/W	48101: R 48102: G 48103: B Lower 8 bits are valid.

When max. character number is set, 0 at the end of the string is not required.

■SD card operation (Sub-folder creation and deletion)

Register	Item	Type	Description
48301 : 48332	Sub-folder name 1 (1st level)	R/W	Set the string using ASCII code. (Only alphanumeric characters and _ allowed) Lower 8 bits are valid. Set 0 at the end of the string.
48401 : 48432	Sub-folder name 2 (2nd level)	R/W	Set the string using ASCII code. (Only alphanumeric characters and _ allowed) Lower 8 bits are valid. Set 0 at the end of the string.
48501 : 48532	Sub-folder name 3 (3rd level)	R/W	Set the string using ASCII code. (Only alphanumeric characters and _ allowed) Lower 8 bits are valid. Set 0 at the end of the string.
48201	Run	R/W	0 : Wait status (response : Success) 1 : Create sub-folder >> Write folder specification 2 : Delete sub-folder FFFF (-1) : (response : Failure)

- If [Create sub-folder >> Specify the write folder] is run with 48301=0, the write folder returns to its default.
- If a sub-folder is specified in this function, the folder will not be automatically deleted. But, if the sub-folder name is set as the same name in the default specifications, it will be automatically deleted.
- When max. character number is set, 0 at the end of the string is not required.

■SD card operation (file name specification)

Register	Item	Type	Description
48601 : 48632	File name (The extension is TRD, CSV fixed)	R/W	Set the string using ASCII code. (Only alphanumeric characters and _ allowed) Lower 8 bits are valid. Set 0 at the end of the string.
48202	Run	R/W	0 : Wait status (response : Success) 1 : Run FFFF (-1): (response: Failure)

- If it is run with the status as 48601=0, the file name returns to its default.
- When max. character number is set, 0 at the end of the string is not required.

■FTP client operation (destination folder name specification)

Register	Item	Type	Description
48701 : 48732	Destination folder name	R/W	Set the string using ASCII code. (Only alphanumeric characters and _ allowed) Lower 8 bits are valid. Set 0 at the end of the string.
48203	Run	R/W	0 : Wait status (response : Success) 1 : Run FFFF (-1): (response: Failure)

- If it is run with the status as 48701=0, the folder name returns to its default.
- When max. character number is set, 0 at the end of the string is not required.

Control input (AI)

Register	Channel	Register	Channel
44001	AI1	44033	AI33
44002	AI2	44034	AI34
44003	AI3	44035	AI35
44004	AI4	44036	AI36
44005	AI5	44037	AI37
44006	AI6	44038	AI38
44007	AI7	44039	AI39
44008	AI8	44040	AI40
44009	AI9	44041	AI41
44010	AI10	44042	AI42
44011	AI11	44043	AI43
44012	AI12	44044	AI44
44013	AI13	44045	AI45
44014	AI14	44046	AI46
44015	AI15	44047	AI47
44016	AI16	44048	AI48
44017	AI17	44049	AI49
44018	AI18	44050	AI50
44019	AI19	44051	AI51
44020	AI20	44052	AI52
44021	AI21	44053	AI53
44022	AI22	44054	AI54
44023	AI23	44055	AI55
44024	AI24	44056	AI56
44025	AI25	44057	AI57
44026	AI26	44058	AI58
44027	AI27	44059	AI59
44028	AI28	44060	AI60
44029	AI29	44061	AI61
44030	AI30	44062	AI62
44031	AI31	44063	AI63
44032	AI32	44064	AI64

Control input (DI)

Register	Channel	Register	Channel
04001	DI1	04033	DI33
04002	DI2	04034	DI34
04003	DI3	04035	DI35
04004	DI4	04036	DI36
04005	DI5	04037	DI37
04006	DI6	04038	DI38
04007	DI7	04039	DI39
04008	DI8	04040	DI40
04009	DI9	04041	DI41
04010	DI10	04042	DI42
04011	DI11	04043	DI43
04012	DI12	04044	DI44
04013	DI13	04045	DI45
04014	DI14	04046	DI46
04015	DI15	04047	DI47
04016	DI16	04048	DI48
04017	DI17	04049	DI49
04018	DI18	04050	DI50
04019	DI19	04051	DI51
04020	DI20	04052	DI52
04021	DI21	04053	DI53
04022	DI22	04054	DI54
04023	DI23	04055	DI55
04024	DI24	04056	DI56
04025	DI25	04057	DI57
04026	DI26	04058	DI58
04027	DI27	04059	DI59
04028	DI28	04060	DI60
04029	DI29	04061	DI61
04030	DI30	04062	DI62
04031	DI31	04063	DI63
04032	DI32	04064	DI64

Control input (PI)

Register	Channel	Register	Channel
44201	PI1 (low)	44233	PI17 (low)
44202	PI1 (high)	44234	PI17 (high)
44203	PI2 (low)	44235	PI18 (low)
44204	PI2 (high)	44236	PI18 (high)
44205	PI3 (low)	44237	PI19 (low)
44206	PI3 (high)	44238	PI19 (high)
44207	PI4 (low)	44239	PI20 (low)
44208	PI4 (high)	44240	PI20 (high)
44209	PI5 (low)	44241	PI21 (low)
44210	PI5 (high)	44242	PI21 (high)
44211	PI6 (low)	44243	PI22 (low)
44212	PI6 (high)	44244	PI22 (high)
44213	PI7 (low)	44245	PI23 (low)
44214	PI7 (high)	44246	PI23 (high)
44215	PI8 (low)	44247	PI24 (low)
44216	PI8 (high)	44248	PI24 (high)
44217	PI9 (low)	44249	PI25 (low)
44218	PI9 (high)	44250	PI25 (high)
44219	PI10 (low)	44251	PI26 (low)
44220	PI10 (high)	44252	PI26 (high)
44221	PI11 (low)	44253	PI27 (low)
44222	PI11 (high)	44254	PI27 (high)
44223	PI12 (low)	44255	PI28 (low)
44224	PI12 (high)	44256	PI28 (high)
44225	PI13 (low)	44257	PI29 (low)
44226	PI13 (high)	44258	PI29 (high)
44227	PI14 (low)	44259	PI30 (low)
44228	PI14 (high)	44260	PI30 (high)
44229	PI15 (low)	44261	PI31 (low)
44230	PI15 (high)	44262	PI31 (high)
44231	PI16 (low)	44263	PI32 (low)
44232	PI16 (high)	44264	PI32 (high)

Commands

■Data and control functions

CODE	NAME		
01	Read Coil Status	Yes	Digital output from the slave
02	Read Input Status	Yes	Status of digital Inputs to the slave
03	Read Holding Registers	Yes	General purpose register within the slave
04	Read Input Registers	Yes	Collected data from the field by the slave
05	Force Single Coil	Yes	Digital output from the slave
06	Preset Single Register	Yes	General purpose register within the slave
07	Read Exception Status		
08	Diagnostics		
09	Program 484		
10	Poll 484		
11	Fetch Comm. Event Counter		
12	Fetch Comm. Event Log		
13	Program Controller		
14	Poll Controller		
15	Force Multiple Coils	Yes	Digital output from the slave
16	Preset Multiple Registers	Yes	General purpose register within the slave
17	Report Slave ID		
18	Program 884/M84		
19	Reset Comm. Link		
20	Read General Reference		
21	Write General Reference		
22	Mask Write 4X Register		
23	Read/Write 4X Registers		
24	Read FIFO Queue		

■Exception code

CODE	NAME		
01	Illegal Function	Yes	Function code is not allowable for the slave
02	Illegal Data Address	Yes	Address is not available within the slave
03	Illegal Value		
04	Slave Device Failure		
05	Acknowledge		
06	Slave Device Busy		
07	Negative Acknowledge		
08	Memory Parity Error		

■Diagnostic subfunctions

CODE	NAME		
00	Return Query Data		
01	Restart Comm. Option		
02	Return Diagnostic Register		
03	Change Input Delimiter Character		
04	Force Slave to Listen Only Mode		

Data range

When the TR30-G device is used as a Modbus/TCP slave, the range of data returned from the slave to the Modbus master and data written by the master is as shown in the table below.

Item	Description
AI	• When the data type is [%] (0 to 10000; voltage/current data of R30 I/O modules or remote I/O devices): -2000 to 12000 • When the data type is [Int] (signed integer): Signed 16 bit integer (-32768 to 32767) • When the data type is [Uint]: Unsigned 16 bit integer (0 to 65535)
PI	• When the data type is [Accumulation] in Measurement mode: Unsigned 32 bit integer • When the data type is [Actual value] in Measurement mode: Signed 32 bit integer • When the data type is [Float] in Measurement mode: 32 bit single precision floating point
OI	32 bit single precision floating point

7.3.8 SLMP Client

Request Message

Header	Subheader	Request destination station network number	Request destination station number	Request destination unit I/O number	Request destination multidrop station number	Request destination multidrop station number	Monitoring timer	Request data	Footer

Parameter	Description
Header	Automatically added
Subheader	Fixed at 0x5000
Request destination station network number	Network No. specified in the TRGCFG I/O slave setting
Request destination station number	Station No. specified in the TRGCFG I/O slave setting
Request destination unit I/O number	Processor No. specified in the TRGCFG I/O slave setting
Request destination multidrop station number	Fixed at 0
Request data length	Automatically added
Monitoring timer	SLMP Timeout specified in the TRGCFG Communication setting
Request data	Automatically generated by the device specified by the TRGCFG
Footer	Automatically added

Command list

The following table lists the commands and subcommands used to read in data from an SLMP device.

Device	Device code	Command	Subcommand
Special register (SD)	00A9H	0403H	0002H
Data register (D)	00A8H	0403H	0002H
Link register (W)	00B4H	0403H	0002H
Timer, Current value (TN)	00C2H	0403H	0002H
Retentive timer, Current value (STN)	00C8H	0403H	0002H
Counter, Current value (CN)	00C5H	0403H	0002H
Link special register (SW)	00B5H	0403H	0002H
Index register (Z)	00CCH	0403H	0002H
File register (R) -- Block switching method	00AFH	0403H	0002H
File register (ZR) -- Serial number access method	00B0H	0403H	0002H
Module refresh register (RD)	002CH	0403H	0002H
Special register (SD)	A9H	0403H	0000H
Data register (D)	A8H	0403H	0000H
Link register (W)	B4H	0403H	0000H
Timer, Current value (TN)	C2H	0403H	0000H
Retentive timer, Current value (STN)	C8H	0403H	0000H
Counter, Current value (CN)	C5H	0403H	0000H
Link special register (SW)	B5H	0403H	0000H
Index register (Z)	CCH	0403H	0000H
File register (R) -- Block switching method	AFH	0403H	0000H
File register (ZR) -- Serial number access method	B0H	0403H	0000H
Special relay (SM)	0091H	0403H	0002H
Input (X)	009CH	0403H	0002H
Output (Y)	009DH	0403H	0002H
Internal relay (M)	0090H	0403H	0002H
Latch relay (L)	0092H	0403H	0002H
Annunciator (F)	0093H	0403H	0002H
Edge relay (V)	0094H	0403H	0002H
Link relay (B)	00A0H	0403H	0002H
Timer, Contact (TS)	00C1H	0401H	0003H
Timer, Coil (TC)	00C0H	0401H	0003H
Long timer, Contact (LTS)	0052H	0401H	0002H
Long timer, Coil (LTC)	0052H	0401H	0002H
Retentive timer, Contact (STS)	00C7H	0401H	0003H
Retentive timer, Coil (STC)	00C6H	0401H	0003H
Long retentive timer, Contact (LSTS)	005AH	0401H	0002H
Long retentive timer, Coil (LSTC)	005AH	0401H	0002H
Counter, Contact (CS)	00C4H	0401H	0003H
Counter, Coil (CC)	00C3H	0401H	0003H
Long counter, Contact (LCS)	0055H	0401H	0003H
Long counter, Coil (LCC)	0054H	0401H	0003H
Link special relay (SB)	00A1H	0403H	0002H

Command list (continued)

The following table lists the commands and subcommands used to read in data from an SLMP device.

Device	Device code	Command	Subcommand
Special relay (SM)	91H	0403H	0000H
Input (X)	9CH	0403H	0000H
Output (Y)	9DH	0403H	0000H
Internal relay (M)	90H	0403H	0000H
Latch relay (L)	92H	0403H	0000H
Annunciator (F)	93H	0403H	0000H
Edge relay (V)	94H	0403H	0000H
Link relay (B)	A0H	0403H	0000H
Step relay (S)	98H	0403H	0000H
Timer, Contact (TS)	C1H	0401H	0001H
Timer, Coil (TC)	C0H	0401H	0001H
Retentive timer, Contact (STS)	C7H	0401H	0001H
Retentive timer, Coil (STC)	C6H	0401H	0001H
Counter, Contact (CS)	C4H	0401H	0001H
Counter, Coil (CC)	C3H	0401H	0001H
Link special relay (SB)	A1H	0403H	0000H
Long counter, Contact (LCS)	55H	0403H	0000H
Long counter, Coil (LCC)	54H	0403H	0000H
Long timer, Current value (LTN)	0052H	0403H	0002H
Long retentive timer, Current value (LSTN)	005AH	0403H	0002H
Long counter, Current value (LCN)	0056H	0403H	0002H
Long index register (LZ)	0062H	0403H	0002H
Long counter, Current value (LCN)	56H	0403H	0000H
Long index register (LZ)	62H	0403H	0000H

Command list (continued)

The following table lists the commands and the subcommands used to write data to an SLMP device.

Device	Device code	Command	Subcommand
Special relay (SM)	0091H	1402H	0003H
Input (X)	009CH	1402H	0003H
Output (Y)	009DH	1402H	0003H
Internal relay (M)	0090H	1402H	0003H
Latch relay (L)	0092H	1402H	0003H
Annunciator (F)	0093H	1402H	0003H
Edge relay (V)	0094H	1402H	0003H
Link relay (B)	00A0H	1402H	0003H
Timer, Contact (TS)	00C1H	1402H	0003H
Timer, Coil (TC)	00C0H	1402H	0003H
Long timer, Contact (LTS)	0052H	1402H	0003H
Long timer, Coil (LTC)	0052H	1402H	0003H
Retentive timer, Contact (STS)	00C7H	1402H	0003H
Retentive timer, Coil (STC)	00C6H	1402H	0003H
Long retentive timer, Contact (LSTS)	005AH	1402H	0003H
Long retentive timer, Coil (LSTC)	005AH	1402H	0003H
Counter, Contact (CS)	00C4H	1402H	0003H
Counter, Coil (CC)	00C3H	1402H	0003H
Long counter, Contact (LCS)	0055H	1402H	0003H
Long counter, Coil (LCC)	0054H	1402H	0003H
Link special relay (SB)	00A1H	1402H	0003H

The following table lists the commands and the subcommands used to write data to an SLMP device.

Device	Device code	Command	Subcommand
Special relay (SM)	91H	1402H	0003H
Input (X)	9CH	1402H	0003H
Output (Y)	9DH	1402H	0003H
Internal relay (M)	90H	1402H	0003H
Latch relay (L)	92H	1402H	0003H
Annunciator (F)	93H	1402H	0003H
Edge relay (V)	94H	1402H	0003H
Link relay (B)	A0H	1402H	0003H
Step relay (S)	98H	1402H	0003H
Timer, Contact (TS)	C1H	1402H	0003H
Timer, Coil (TC)	C0H	1402H	0003H
Retentive timer, Contact (STS)	C7H	1402H	0003H
Retentive timer, Coil (STC)	C6H	1402H	0003H
Counter, Contact (CS)	C4H	1402H	0003H
Counter, Coil (CC)	C3H	1402H	0003H
Link special relay (SB)	A1H	1402H	0003H
Long counter, Contact (LCS)	55H	1402H	0003H
Long counter, Coil (LCC)	54H	1402H	0003H

7.3.9 Communication volume

The communication volume when the trend screen is continuously drawn every 0.2 second is shown below.

Number of pens assigned	Communication volume
2 pens	Around 1.5 GB/day
16 pens	Around 1.9 GB/day
32 pens	Around 2.2 GB/day

7.3.10 Number of characters that can be displayed on each screen

The approximate number of characters that can be displayed on a Web screen is shown below. The number of characters that can actually be displayed depends on the character size setting in the browser.

Item		iOS	Android	Windows		
		Safari	Chrome	Edge	Chrome	Firefox
Group selection screen	Name 1	16	16	16	16	16
	Name 2	16	16	16	16	16
	Name 3	16	16	16	16	16
	Page name	8	8	8	8	8
	CH name	12	12	12	12	12
Trend screen	Page name	27	27	28	28	28
	CH name	11	11	11	11	11
	CH comment	15	15	15	13	13
	Digital display	10 digits (single byte)	10 digits (single byte)	10 digits (single byte)	10 digits (single byte)	10 digits (single byte)
	Unit	8	8	8	8	8
Alarm selection screen	CH name	6	6	9	9	9
Overview screen	CH name	6	6	6	6	6
	CH comment	6	6	6	6	6
Overview enlarged screen	CH name	16	16	16	16	16
	CH comment	16	16	16	16	16
	Unit	8	8	8	8	8
	Zone name	26	26	26	26	26

The numbers in the table represent the number of characters (double byte).

7.3.11 FTP client

File transfer by FTP client function is executed as follows.

- Files in the format specified for the SD card are registered in the transmission queue. They are sent to the FTP server in order of registering in the queue.
- Maximum 16 sets of data are stored in the queue. The data exceeded the max. limit is not registered and discarded.
- When a transfer is failed, it is resent after every 1 minute.
- Failed file transfers are retried as many times until a next set of data is registered in the queue. When a next set of data is registered in the queue while resending, discard the failed data and starts to send new data.

7.3.12 Mail report

Event report and regular report of device operate as follows.

- Occurred event report and regular report are registered in a report queue. Mail is sent in order of registering in the report queue.
- Maximum 64 of report are stored in the report queue. The report exceeded the max. limit is not registered and discarded.
- When a report is failed, it is resent in 30 seconds after the timeout period. When a report is failed to send 5 times, the report is discarded. Then next report registered in the report queue is sent.
- The report queue is reset with power cycle.

7.3.13 Data files for user defined screen creation

File name: ch_monitor.js
Character code: UTF-8

Variable	Description	Variable definition format
n_date	Current date YYMMDD	var n_date ="2015/04//04";
n_time	Current time HHMMSS	var n_time="11: 45: 00";
n_name	Name	var n_name="Osaka";
n_error	Error status (0: OK 1: error)	var n_error=1;
n_event	Unconfirmed event (0: No 1: Yes)	var n_event=1;
n_sd	SD card status (0: not recognized 1: recognized)	var n_sd=1;
n_mb	Current memory block number (0 - 49)	var n_mb=0;
n_rec	Recording status (0: stopped 1: recording in progress)	var n_rec=0;
n_mac	Unit MAC address	var n_mac="00: 10: 9C: 3F: 00: 01";
chs_ai	AI available number of channels	var chs_ai=64;
chs_di	DI available number of channels	var chs_di=64;
chs_pi	PI available number of channels	var chs_pi=32;
chs_oi	OI available number of channels	var chs_oi=32;
chs_do	DO available number of channels	var chs_do=64;
type_ai[chs_ai]	AI channel type 0: Disable 1: % 2: actual	var type_ai=[1,0,2,…,0];
name_ai[chs_ai]	AI channel name	var name_ai=["AI1",…,"AI10"];
comm_ai[chs_ai]	AI channel comment	var comm_ai=["AI1",…,"AI10"];
unit_ai[pens]	AI engineering unit	var unit=["kg","m","km",…,"F"];
type_di[chs_di]	DI channel type 0: Disable 1: Enable	var type_di=[1,0,1,…,0];
name_di[chs_di]	DI channel name	var name_di=["DI1",…,"DI10"];
comm_di[chs_di]	DI channel comment	var comm_di=["DI1",…,"DI10"];
type_pi[chs_pi]	PI channel type 0: Disable 1: Enable	var type_pi=[1,0,1,…,0];
name_pi[chs_pi]	PI channel name	var name_pi=["PI1",…,"PI10"];
comm_pi[chs_pi]	PI channel comment	var comm_pi=["PI1",…,"PI10"];
unit_pi[pens]	PI engineering unit	var unit=["kg","m","km",…,"F"];
type_oi[chs_oi]	OI channel type 0: Disable 1: Enable	var type_oi=[1,0,1,…,0];
name_oi[chs_oi]	OI channel name	var name_oi=["OI1",…,"OI10"];
comm_oi[chs_oi]	OI channel comment	var comm_oi=["OI1",…,"OI10"];
unit_oi[pens]	OI engineering unit	var unit=["kg","m","km",…,"F"];
type_do[chs_do]	DO channel type 0: Disable 1: Enable	var type_do=[1,0,1,…,0];
name_do[chs_do]	DO channel name	var name_do=["DO1",…,"DO10"];
comm_do[chs_do]	DO channel comment	var comm_do=["DO1",…,"DO10"];
data_ai[chs_ai]	AI data (actual quantity)	var data_ai=[0,100,…];
data_ai_p[chs_ai]	AI data (%)	var data_ai_p=[0.00,100.00,…];
data_ai_point[chs_ai]	AI data decimal point position	var data_ai_point[1,2,3,0,…0];
data_di[chs_di]	DI data (0: OFF 1: ON)	var data_di=[0,1,…0];
data_di_s[chs_di]	DI data (string)	var data_di_s=["DI1",…,"DI10"];

Variable	Description	Variable definition format
data_pi[chs_pi]	PI data (actual quantity)	var data_pi=[0,100,…];
data_pi_point[chs_pi]	PI data decimal point position	var data_pi_point[1,2,3,0,…0];
data_oi[chs_oi]	OI data (actual quantity)	var data_oi=[0,100,…];
data_oi_point[chs_oi]	OI data decimal point position	var data_oi_point[1,2,3,0,…0];
data_do[chs_do]	DO data (0: OFF 1: ON)	var data_do=[0,1,…0];
data_do_s[chs_do]	DO data (string)	var data_do_s=["DO1",…,"DO10"];
alarm_color_ai[chs_ai]	AI alarm zone color	var alarm_color_ai =["#00FF00",...,"#000000"];
alarm_color_ai_s[chs_ai]	AI alarm zone name	var alarm_color_ai_s=["area1",…];
alarm_color_pi[chs_pi]	PI alarm zone color	var alarm_color_pi =["#00FF00",...,"#000000"];
alarm_color_pi_s[chs_pi]	PI alarm zone name	var alarm_color_pi_s=["area1",…];
alarm_color_oi[chs_oi]	OI alarm zone color	var alarm_color_oi =["#00FF00",...,"#000000"];
alarm_color_oi_s[chs_oi]	OI alarm zone name	var alarm_color_oi_s=["area1",…];
status_color_di[chs_di]	DI color	var status_color_di =["#00FF00",...,"#000000"];
status_color_do[chs_do]	DO color	var status_color_do =["#00FF00",...,"#000000"];
exp_ai[chs_ai]	AI exponent notation	var exp_ai=[1,0,1,....,0];
exp_pi[chs_pi]	PI exponent notation	var exp_pi=[1,0,1,....,0];
exp_oi[chs_oi]	OI exponent notation	var exp_oi=[1,0,1,....,0];

File name: ch_monitor.json
Character code: UTF-8

Variable	Description	Variable definition format
n_date	Current date YYMMDD	"n_date ": "2015/04/04",
n_time	Current time HHMMSS	"n_time": "11: 45: 00",
n_name	Name	"n_name": "Osaka",
n_error	Error status (0: OK 1: error)	"n_error": 1,
n_event	Unconfirmed event (0: No 1: Yes)	"n_event": 1,
n_sd	SD card status (0: not recognized 1: recognized)	"n_sd": 1,
n_mb	Current memory block number (0 - 49)	"n_mb": 0,
n_rec	Recording status (0: stopped 1: recording in progress)	"n_rec": 0,
n_mac	Unit MAC address	"n_mac": "00: 10: 9C: 3F: 00: 01",
chs_ai	AI available number of channels	"chs_ai": 64,
chs_di	DI available number of channels	"chs_di": 64,
chs_pi	PI available number of channels	"chs_pi": 32,
chs_oi	OI available number of channels	"chs_oi": 32,
chs_do	DO available number of channels	"chs_do": 64,
type_ai[chs_ai]	AI channel type 0: Disable 1: % 2: Actual quantity	"type_ai": [1,0,2,…,0],
name_ai[chs_ai]	AI channel name	"name_ai": ["AI1",...,"AI10"],
comm_ai[chs_ai]	AI channel comment	"comm_ai": ["AI1",...,"AI10"],
unit_ai[pens]	AI engineering unit	"var unit": ["kg","m","km",...,"F"],
type_di[chs_di]	DI channel type 0: Disable 1: Enable	"type_di": [1,0,1,…,0],
name_di[chs_di]	DI channel name	"name_di": ["DI1",...,"DI10"],
comm_di[chs_di]	DI channel comment	"comm_di": ["DI1",...,"DI10"],
type_pi[chs_pi]	PI channel type 0: Disable 1: Enable	"type_pi": [1,0,1,…,0],
name_pi[chs_pi]	PI channel name	"name_pi": ["PI1",...,"PI10"],
comm_pi[chs_pi]	PI channel comment	"comm_pi": ["PI1",...,"PI10"],
unit_pi[pens]	PI engineering unit	"var unit": ["kg","m","km",...,"F"],
type_oi[chs_oi]	OI channel type 0: Disable 1: Enable	"type_oi": [1,0,1,…,0],
name_oi[chs_oi]	OI channel name	"name_oi": ["OI1",...,"OI10"],
comm_oi[chs_oi]	OI channel Comment	"comm_oi": ["OI1",...,"OI10"],
unit_oi[pens]	OI engineering unit	"var unit": ["kg","m","km",...,"F"],
type_do[chs_do]	DO channel type 0: Disable 1: Enable	"type_do": [1,0,1,…,0],
name_do[chs_do]	DO channel name	"name_do": ["DO1",...,"DO10"],
comm_do[chs_do]	DO channel comment	"comm_do": ["DO1",...,"DO10"],
data_ai[chs_ai]	AI data (actual quantity)	"data_ai": [0,100,…],
data_ai_p[chs_ai]	AI data (%)	"data_ai_p": [0.00,100.00,…],
data_ai_point[chs_ai]	AI data decimal point position	"data_ai_point": [1,2,3,0,…0],
data_di[chs_di]	DI data (0: OFF 1: ON)	"data_di": [0,1,…0],
data_di_s[chs_di]	DI data (string)	"data_di_s": ["DI1",…,"DI10"],
data_pi[chs_pi]	PI data (actual quantity)	"data_pi": [0,100,…],
data_pi_point[chs_pi]	PI data decimal point position	"data_pi_point": [1,2,3,0,…0],
data_oi[chs_oi]	OI data (actual quantity)	"data_oi": [0,100,…],

Variable	Description	Variable definition format
data_oi_point[chs_oi]	OI data decimal point position	"data_oi_point": [1,2,3,0,…0],
data_do[chs_do]	DO data (0: OFF 1: ON)	"data_do": [0,1,…0],
data_do_s[chs_do]	DO data (string)	"data_do_s": ["DO1",…,"DO10"],
alarm_color_ai[chs_ai]	AI alarm zone color	"alarm_color_ai" : ["#00FF00",...,"#000000"],
alarm_color_ai_s[chs_ai]	AI alarm zone name	"alarm_color_ai_s": ["area1",…],
alarm_color_pi[chs_pi]	PI alarm zone color	"alarm_color_pi" : ["#00FF00",...,"#000000"],
alarm_color_pi_s[chs_pi]	PI alarm zone name	"alarm_color_pi_s": ["area1",…],
alarm_color_oi[chs_oi]	OI alarm zone color	"alarm_color_oi" : ["#00FF00",...,"#000000"],
alarm_color_oi_s[chs_oi]	OI alarm zone name	"alarm_color_oi_s": ["area1",…],
status_color_di[chs_oi]	DI color	"status_color_di" : ["#00FF00",...,"#000000"],
status_color_do[chs_oo]	DO color	"status_color_do" : ["#00FF00",...,"#000000"],
exp_ai[chs_ai]	AI exponent notation	"exp_ai":[1,0,1,....,0],
exp_pi[chs_pi]	PI exponent notation	"exp_pi":[1,0,1,....,0],
exp_oi[chs_oi]	OI exponent notation	"exp_oi":[1,0,1,....,0],

7.3.14 Storing rate and new memory block

Storing rate	Transfer interval	Storing No. of points	Timing of transfer
5 msec.	180 sec.	36000	”Multiple of 3” min.
	Max. (250 sec.)	50000	When 50000 points are recorded
10 msec.	300 sec.	30000	”Multiple of 5” min.
	Max. (500 sec.)	50000	When 50000 points are recorded
50 msec.	10 min.	12000	0, 30 min.
	30 min.	36000	”Multiple of 10” min.
	Max. (41 min.)	50000	When 50000 points are recorded
100 msec.	10 min.	6000	”Multiple of 10” min.
	30 min.	18000	0, 30 min.
	60 min.	36000	On the hour every hour
	Max. (83 min.)	50000	When 50000 points are recorded
500 msec.	30 min.	3600	0, 30 min.
	60 min.	7200	On the hour every hour
	360 min.	43200	0, 6, 12, 18 o'clock
	Max. (416 min.)	50000	When 50000 points are recorded
1 sec.	1 hour	3600	On the hour every hour
	6 hours	21600	0, 6, 12, 18 o'clock
	12 hours	43200	0, 12o'clock
	Max. (13 hours 53 min. 20 sec.)	50000	When 50000 points are recorded
2 sec.	1 hour	1800	On the hour every hour
	6 hours	10800	0, 6, 12, 18 o'clock
	1 day	43200	On the hour (0 to 23 o'clock)
	Max. (27 hours 46 min. 40 sec.)	50000	When 50000 points are recorded
5 sec.	6 hours	4320	0, 6, 12, 18 o'clock
	12 hours	8640	0, 12 o'clock
	1 day	17280	On the hour (0 to 23 o'clock)
	Max. (69 hours 26 min. 40 sec.)	50000	When 50000 points are recorded
10 sec.	6 hours	2160	0, 6, 12, 18 o'clock
	12 hours	4320	0, 12 o'clock
	1 day	8640	On the hour (0 to 23 o'clock)
	Max. (138 hours 53 min. 20 sec.)	50000	When 50000 points are recorded
1 min.	1 day	1440	On the hour (0 to 23 o'clock)
	1 week	10080	Sunday to Saturday 0 o'clock
	Max. (833 hours 20 min.)	50000	When 50000 points are recorded
2 min.	1 day	720	On the hour (0 to 23 o'clock)
	1 week	5040	Sunday to Saturday 0 o'clock
	Max. (1666 hours 40 min.)	50000	When 50000 points are recorded

Storing rate	Transfer interval	Storing No. of points	Timing of transfer
5 min.	1 day	288	On the hour (0 to 23 o'clock)
	1 week	2016	Sunday to Saturday 0 o'clock
	1 month	8064 to 8928	Every first day of the month 0 o'clock
	Max. (173 days 14 hours 40 min.)	50000	When 50000 points are recorded
10 min.	1 day	144	On the hour (0 to 23 o'clock)
	1 week	1008	Sunday to Saturday 0 o'clock
	1 month	4032 to 4464	Every first day of the month 0 o'clock
	Max. (347 days 5 hours 20 min.)	50000	When 50000 points are recorded
15 min.	1 day	96	On the hour (0 to 23 o'clock)
	1 week	672	Sunday to Saturday 0 o'clock
	1 month	2688 to 2976	Every first day of the month 0 o'clock
	Max. (520 days 20 hours)	50000	When 50000 points are recorded
30 min.	1 day	48	On the hour (0 to 23 o'clock)
	1 week	336	Sunday to Saturday 0 o'clock
	1 month	1344 to 1488	Every first day of the month 0 o'clock
	Max. (1041 days 16 hours)	50000	When 50000 points are recorded
1 hour	1 week	168	Sunday to Saturday 0 o'clock
	1 month	720	Every first day of the month 0 o'clock
	Max. (2083 days 8 hour)	50000	When 50000 points are recorded

7.4 Version history

7.4.1 Supporting signature algorithm of SSL certificate for mail server, SHA-2

- The problem that for e-mail sending, when the signature algorithm of SSL certificate for an e-mail server connected to the TR30 is SHA-2, an e-mail sending error may occur is resolved.

  During recent years, as signature algorithm of SSL certificate migrates from SHA-1 to SHA-2, sending e-mail is not available even with an e-mail server which sends e-mail correctly. For users who are using the firmware version earlier than listed above, consult us.

7.4.2 TR30-G version 1.3 revision history

- Time taken to display a trend chart is shortened.
- Time taken to display a historical trend chart is shortened.
- 15-minute storing rate is added.
- “Inverse logarithm” and “Scaling” are added to the function input (OI).
- “Exponent notation” is added to the analog input (AI).
- “Exponent notation” is added to the pulse input (PI).
- “Exponent notation” is added to the function input (OI).
- “Log” plotting is added to trend graph function.

7.4.3 TR30-G version 1.4 revision history

- A counter of Discrete input(DI) is added to Pulse Input(PI).
- Transaction ID management is added to the slave setting of the Modbus/TCP master.
- Initial values of ID password of connection via a network is changed from [(blank)]to[Admin].

7.4.4 TR30-G version 1.5 revision history

- Totalized Pulse Input Module (model: R30PA2) is supported.
- Time synchronization failure of SNTP has been addressed in version 1.4.

7.4.5 TR30-G version 2.0 revision history

- SLMP is supported.
- Security is enhanced for the network communications between the TR30-G and the TRGCFG.
- An alert message appears at the moment of setting data transfer if login IDs and/or passwords are blank or at the default values.
- “UINT (unsigned integer)” is added to the AI input types.
- “AI BIT” assignment is added to the DI input types.
- Bug fixed: Totalized value counted during a network error may be partially missing at the recovery from the error status, for PI channels set to “Modbus/TCP” and “Accumulation” mode.

7.4.6 TRGCFG version 2.1.20 revision history

- The problem that connection to the designated domain name fails on TRGCFG version 2.0.19 when connecting to the TR30-G is resolved.

7.4.7 TR30-G version 2.1 revision history

- The problem that files in an SD card cannot be accessed when using the FTP client or FTP server function is resolved.

7.4.8 TR30-G version 2.2 revision history

- 16 bit SLMP devices are available to be assigned to PI channels.

7.4.9 TR30-G version 2.3 revision history

- Mouse operability and touch operability on Web screens are improved.
- Processing of SNTP time correction is improved.
- The problem that sometimes the PI cumulative count is not correctly reset to the preset value by using the [Preset count] function on TRGCFG under the condition that [Scaling] of the PI channel is set to a decimal value and "Preset value" of [Preset count] is set to a decimal value, is solved.

7.4.10 TR30-G version 2.4 revision history

- Fixed the problem that when accumulating Modbus/TCP or SLMP of PI, the value is may not accumulated correctly if the difference value when overflow occurs exceeds 2147483647.

7.4.11 TR30-G version 2.5 revision history

- Added the function to set pulse range when "I/O module" is selected for CH setting in the pulse input (PI) of the I/O setting.

7.4.12 TR30-G version 2.6 revision history

- Fixed the problem that DO channels cannot be assigned to the pen in the pen assignment setting in Web screen.

7.4.13 TRGCFG version 2.5.24 revision history

- Windows 11 was supported.

7.5 Licenses

exPat is built into TR30 and TRGCFG.

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TR30 incorporates MD5.

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