CKD

Remote I/O RT Series Configuration Software

RTXTools

INSTRUCTION MANUAL

Read this Instruction Manual before using the product.
Read the safety notes carefully.
Keep this Instruction Manual in a safe and convenient place for future reference.

2024-07-10 SM-A90084-A

PREFACE

This Instruction Manual describes basic matters such as how to install and use RTXTools, the configuration software for the Remote I/O RT Series, in order to use it fully. Please read this Instruction Manual thoroughly and use the product properly.
Keep this Instruction Manual in a safe place and be careful not to lose it.

Product specifications and appearances presented in this Instruction Manual are subject to change without notice.

CKD Corporation provides no warranty of any kind regarding the information provided in this software, including any warranty of content, accuracy, safety, merchantability, or fitness for a particular use or purpose.
CKD Corporation shall not be responsible for any damage arising from this software.

SAFETY INFORMATION

In order to use our products safely, it is important to select, use, handle, and maintain the products properly.
Observe the warnings and precautions described in this Instruction Manual to ensure device safety.
Handling not described in this Instruction Manual may lead to an accident. Thoroughly read and understand this Instruction Manual before using the product.

To explicitly indicate the severity and likelihood of a potential harm or damage, precautions are classified into three categories: "DANGER," "WARNING," and "CAUTION."

DANGER	Indicates an imminent hazard. Improper handling will cause death or serious injury to people.
WARNING	Indicates a potential hazard. Improper handling may cause death or serious injury to people.
CAUTION	Indicates a potential hazard. Improper handling may cause injury to people or damage to property.

Some statements classified as "CAUTION" may still lead to serious results depending on the situation.
All statements that follow these labels are important and must be observed.

<Types of warning symbols>

	A general symbol indicating a prohibited (not permitted) action.		A symbol prohibiting touching objects or equipment.
	A symbol prohibiting putting fingers into openings.		A general symbol warning of dangers such as electric shock and burns.
	A symbol warning of dangers that occur when starting an automatic equipment.		A general symbol indicating that a specific course of action must be taken.
	A symbol instructing to read an instruction manual carefully.		A symbol indicating that the earth terminal must be connected to the ground.

Other general precautions, tips on using the product, or technical information and terminology are indicated by the following icon.

- Contains useful information such as general precautions, supplementary information, and reference information.

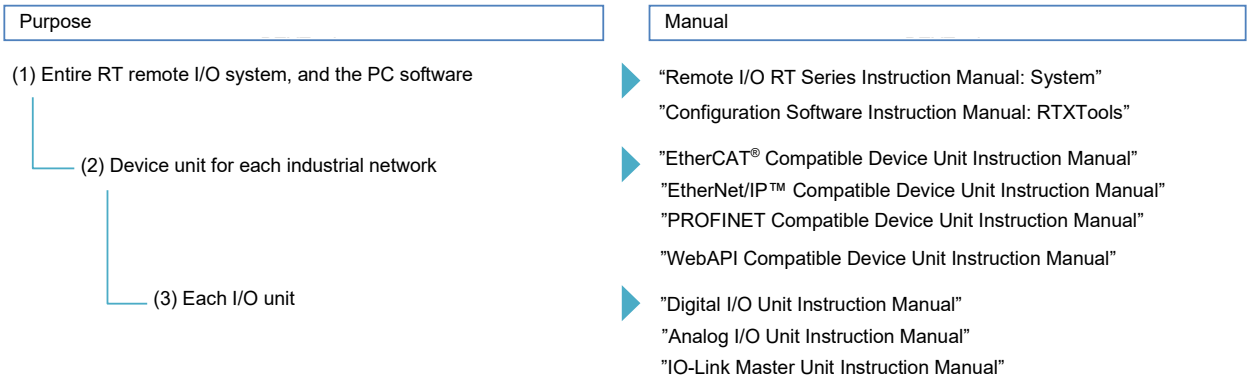
CONTENTS

INSTRUCTION MANUALS FOR THIS PRODUCT

The manuals related to the Remote I/O RT Series are separated by purpose as follows.

(1) Entire Remote I/O, PC software
(2) Device units for each industrial network
(3) Each I/O unit

"Remote I/O RT Series Instruction Manual: System Construction" is mandatory. Other manuals are not mandatory but must be referred to according to the units used.



LIST OF RELATED INSTRUCTION MANUALS

Instruction Manual No.	Instruction Manual Title	Content
SM-A46342	Remote I/O RT Series Instruction Manual: System Construction	Instruction manual for the entire remote I/O RT Series system. Includes explanations of the PC software RTXTools, the power supply unit RT-XP24A01N, and the End unit RT-XEE□N00N
SM-A90084	Configuration Software Instruction Manual: RTXTools (this manual)	Instruction manual for RTXTools: setting software
SM-A46343	EtherCAT® Compatible Device unit Instruction Manual	Instruction manual for the EtherCAT compatible device unit RT-XTECN00N
SM-A71112	EtherNet/IP™ Compatible Device unit Instruction Manual	Instruction manual for the EtherNet/IP compatible device unit RT- XTENN00N
SM-A87934	PROFINET Compatible Device unit Instruction Manual	Instruction manual for the PROFINET compatible device unit RT-XTEPN00N
SM-A95119	WebAPI Compatible Device unit Instruction Manual	Instruction manual for the WebAPI compatible device unit RT-XTEAN00N
SM-A46344	IO-Link Master Unit Instruction Manual	Instruction manual for the IO-Link master unit RT-XLMSA08N
SM-A46345	Digital I/O Unit Instruction Manual	Instruction manual for the digital I/O unit RT-X□DG□□□□
SM-A46347	Analog I/O Unit Instruction Manual	Instruction Manual for the analog I/O unit RT-X □ AGA0 2N
SM-A46346	Valve I/F Unit Instruction Manual	Instruction manual for the valve I/F unit RT-XVVCN32□(TVG□P-TB-□-KA1□)

Always read the Instruction Manual for each product to connected to the Remote I/O RT Series. The product types that can be connected are:

- Upper master unit of each industrial network (connected to device unit)
- IO-Link device (connected to IO-Link master unit)
- Other sensors/devices (connected to digital I/O unit, analog I/O unit, IO-Link master unit)

1. PRODUCT OVERVIEW

CAUTION
Before using the device unit, thoroughly read and understand the Instruction Manual of the industrial network communication system to be used. • Unexpected operation of the product may lead to injury or damage to equipment.
Do not put Windows into sleep mode (standby) while RTXTools is starting. • This may cause communication failure when switching back from sleep mode.
Do not connect or disconnect the USB communication cable or turn the unit's power on or off while transmitting to or receiving from the unit. • The unit may malfunction or RTXTools may malfunction.
Do not start and use RTXTools on one computer at the same time. • This may cause communication failure and may lead to unexpected operation of the unit or valve.
Exit RTXTools when connecting or disconnecting connectors or turning the power on or off. **If a communication error occurs, check the connection status of the USB communication cable (whether or not it is disconnected, etc.).** **Close other communication software when using this software.** • This cannot be used at the same time as other communication software that use the USB communication interface.
Use a USB communication cable to communicate with the unit. • To connect to a USB communication cable, refer to the Instruction Manual for the corresponding device.

1.1. Operating Environment

The following environment is required to operate this software.

OS	Windows®11, Windows®10, Windows®7 Professional Service Pack 1
Display	640 x 480 or higher (1280 x 800 pixels or higher recommended)
Required memory size	4 GB or more recommended
Hard disk	500 MB of free space or more
Interface	One or more USB Type-A ports

- Windows is a registered trademark of Microsoft Corporation in the United States, Japan, and other countries.
- Other company and product names mentioned herein are trademarks or registered trademarks of their respective companies.
- Driver installation is required separately for use on Windows 7. Driver files are created on the computer after RTXTools is downloaded and installed. For details, refer to the video "Driver installation (required for Windows 7 only)" on the Remote I/O product page of the CKD website: (https://www.ckd.co.jp/kiki/en/).

1.2. RTXTools Compatible Models

RTXTools is a configuration software for the following products:
• Various RT Series units (various RT Series units for Remote I/O)
• Valve I/F Unit for TVG

Depending on the version of RTXTools, some units cannot be connected and some functions cannot be used. Use the latest version of RTXTools. The following is a list of units to be used and the corresponding RTXTools versions.

Unit name	Model No.	Specification	RTXTools version			
			V2.01	V2.00	V1.02	Up to V1.01
Digital	RT-XADGA16A	Input 16 points (PNP), M12	●	●	●	●
	RT-XADGA16B	Input 16 points (NPN), M12	●	●	●	●
	RT-XBDGA16A	Output 16 points (PNP), M12	●	●	●	●
	RT-XBDGA16B	Output 16 points (NPN), M12	●	●	●	●
	RT-XADGB08A	Input 8 points (PNP), M8	●	●	●	●
	RT-XADGB08B	Input 8 points (NPN), M8	●	●	●	●
	RT-XADGC32A	Input 32 points (PNP), Terminal	●	●	N/A	N/A
	RT-XADGC32B	Input 32 points (NPN), Terminal	●	●	N/A	N/A
	RT-XBDGC32A	Output 32 points (PNP), Terminal	●	●	N/A	N/A
	RT-XBDGC32B	Output 32 points (NPN), Terminal	●	●	N/A	N/A
Analog	RT-XAAGA02N	Input 2 ports, M12	●	●	●	●
	RT-XBAGA02N	Output 2 ports, M12	●	●	●	●
IO-Link Master	RT-XLMSA08N	8 ports, M12	●	●	●	●
Valve I/F	RT-XVVCN32A	TVG□P-TB-□-KA1D	●	●	●	N/A
	RT-XVVCN32B	TVG□P-TB-□-KA1C	●	●	●	N/A
Device	RT-XTECN00N	EtherCAT	●	●	●	●
	RT-XTENN00N	EtherNet/IP	●	●	●	●
	RT-XTEPN00N	PROFINET	●	●	N/A	N/A
	RT-XTEAN00N	WebAPI	●	N/A	N/A	N/A

Note : "●"indicates available and "N/A" indicates not available.

1.3. License Agreement

CKD Corporation retains all rights to this software (including programs, data, text, photographs, manuals, etc.). Customers may use this software by agreeing to each of the following articles.

- Customers shall not reproduce or modify the contents of this software, nor transfer, sell, lend, or distribute the software to any third party.
- Customers shall not reverse-engineer, decompile, or disassemble this software.
- Customers shall not reproduce the manual or any other printed materials.
- CKD Corporation may terminate this License Agreement if the customer breaches this Agreement. In such case, the customer shall not be able to use the software at all.
- CKD Corporation provides no warranty of any kind regarding the information provided in this software, including any warranty of content, accuracy, safety, merchantability, or fitness for a particular use or purpose.
- CKD Corporation shall not be responsible for any damage arising from this software.
- The contents of this software are subject to change without notice.

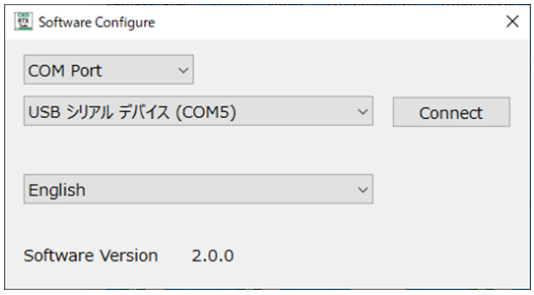
1.4. RTXTools Screen Transition

The RTXTools screen transitions as follows after starting:

Start

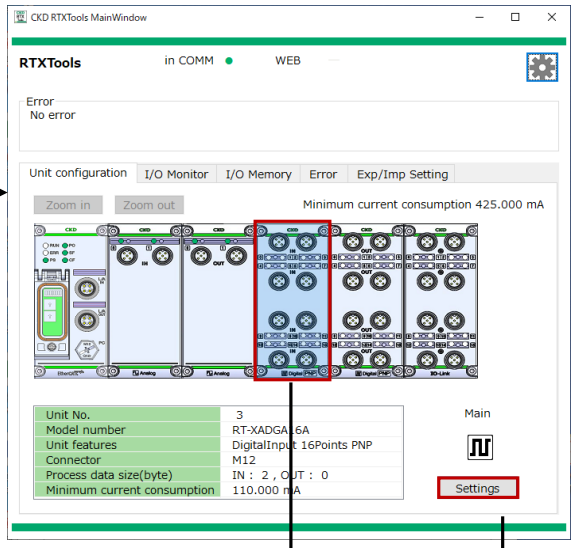
↓

[Software Configure] window

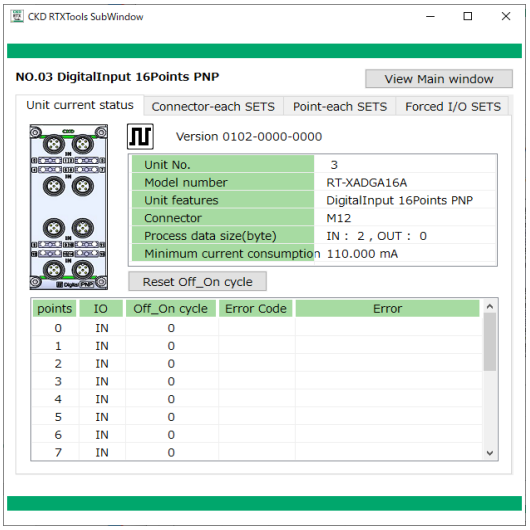


Select the communication port and click［Connect］.

Main window



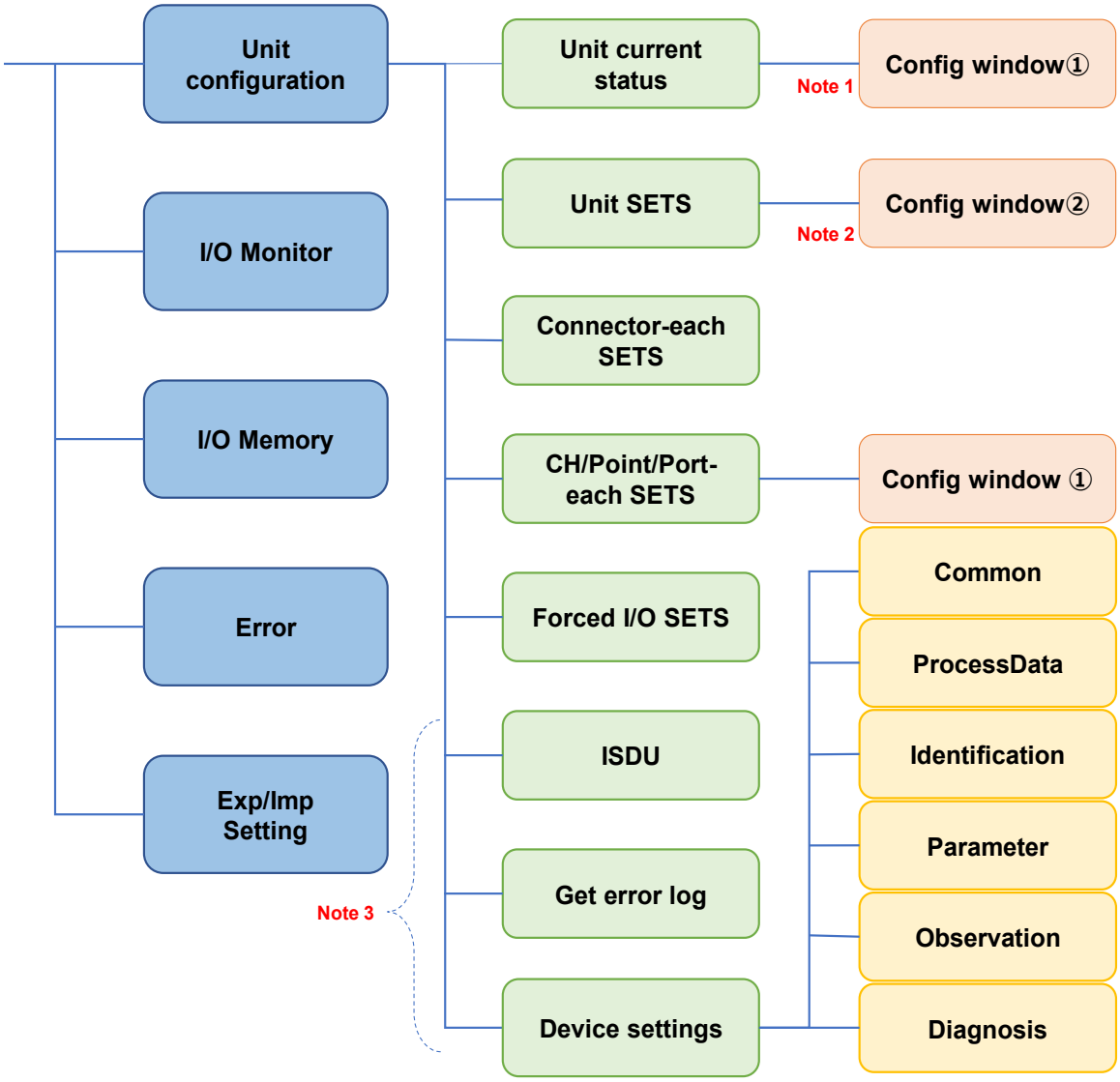
Sub window



1.5. RTXTools Screen Structure

1.5.1. Window structure

The RTXTools screen consists of the following elements:

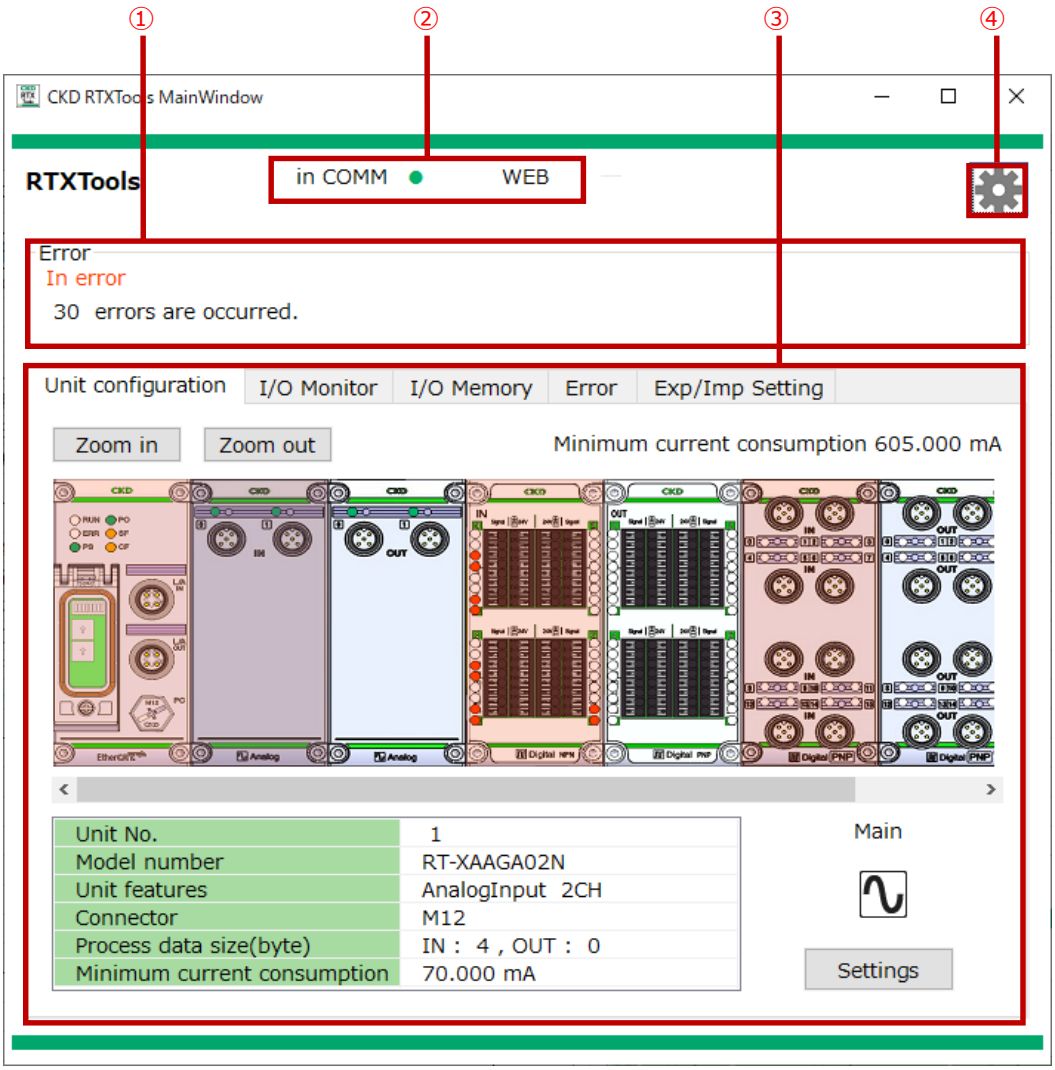


Note 1: Device unit and analog unit only

Note 2: Digital input unit only

Note 3: IO-Link master unit only

1.5.2. Main window

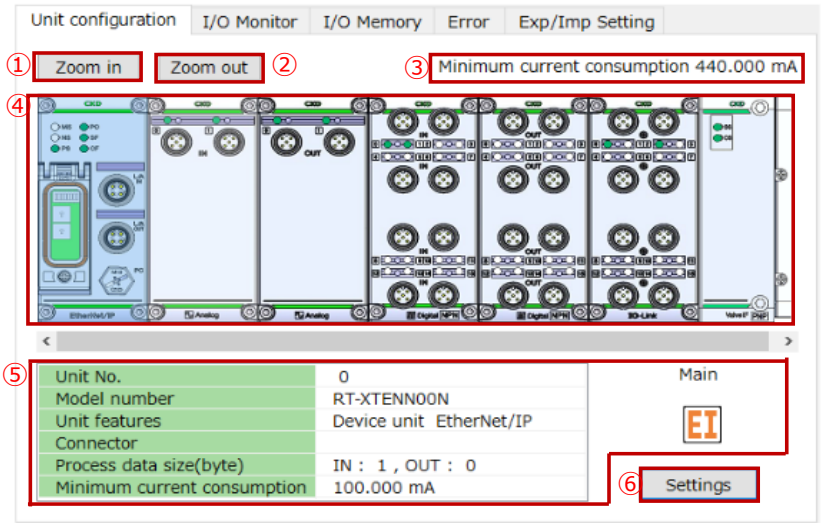


No.	Name	Content	Reference
①	**Error display area**	Displays the error status.	3.3.5
②	**Communication status display area**	Displays the communication status.	3.3.10
③	**Tab switching area**	Switches tabs or selects units.	-
④	**[Software configuration window] button**	Opens the software configuration window [Software Configure].	3.4.5

- The main window and sub windows can be displayed at the same time. Up to 18 sub windows can be opened at a time
- The actual screens vary depending on the RT unit configuration.

■ [Unit configuration] main tab

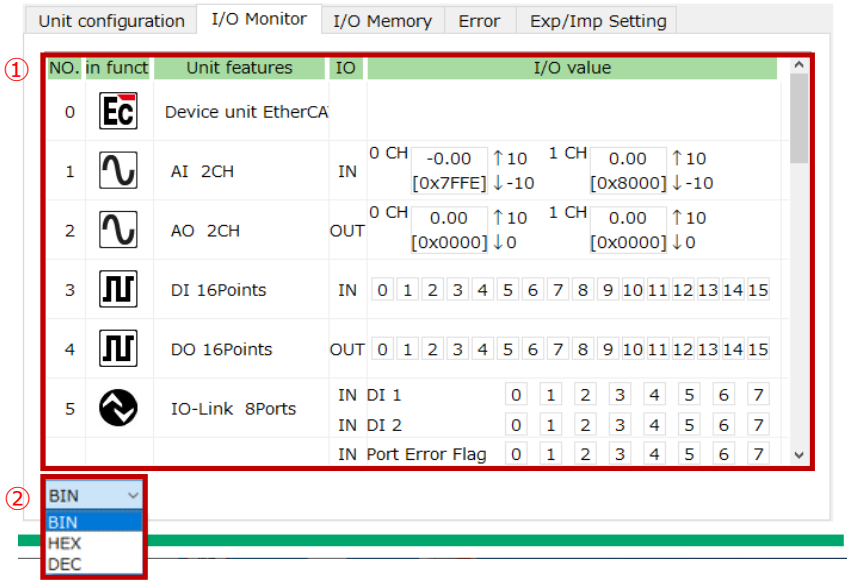
Displays the configuration of each Remote I/O system unit connected.



No.	Name	Content	Reference
①	**[Zoom in] button**	Displays an enlarged view.	-
②	**[Zoom out] button**	Zooms out.	-
③	**Current consumption display**	Displays the total minimum current consumption.	-
④	**Unit configuration display**	Displays the unit configuration.	-
⑤	**Unit details display**	Displays details of the selected unit.	-
⑥	**[Setting] button**	Opens a sub window of the selected unit.	-

■ [I/O monitor] main tab

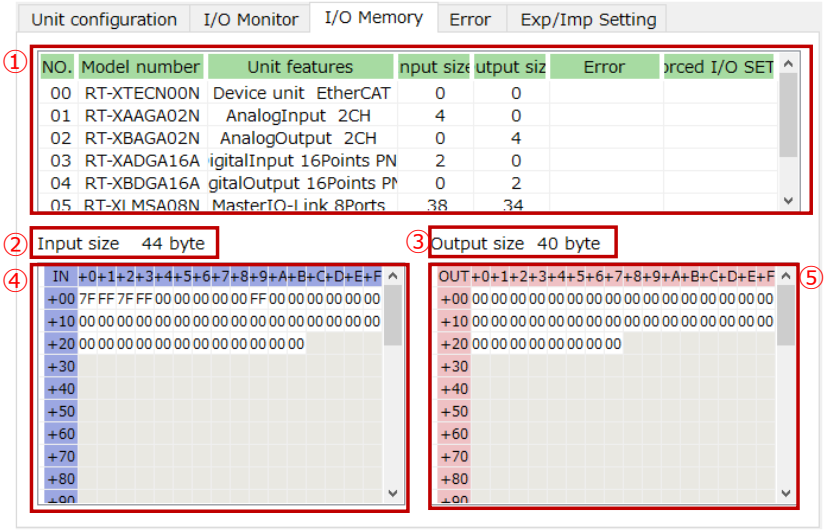
Displays the process data and forced I/O status of each Remote I/O system unit connected.



No.	Name	Content	Reference
①	**Display area**	Displays process data and forced I/O status.	3.3.7
②	**Drop-down list (BIN)**	Displays bits ON (green) and OFF (white) in each point.	Same as above
	Drop-down list (DEC)	Displays decimal numbers in each unit.	Same as above
	Drop-down list (HEX)	Displays hexadecimal numbers in each unit.	Same as above

■ [I/O memory] main tab

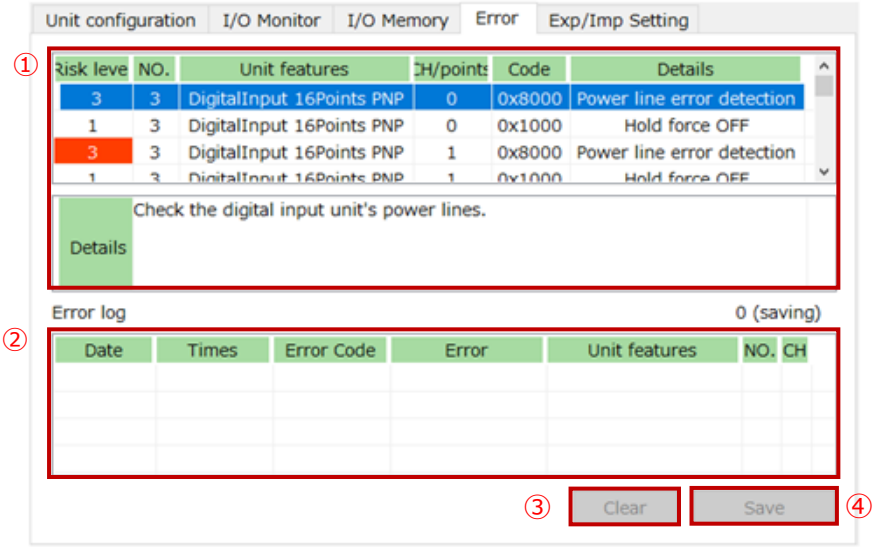
Displays in hexadecimal the input size, output size, error, forced I/O setting, input process data, and output of process data of each Remote I/O system unit connected.



No.	Name	Content	Reference
①	**Process data size list**	Displays the process data size, error occurrence status, and forced I/O setting of each unit.	3.3.1
②	**Input size**	Displays the input size of all Remote I/O system units connected.	Same as above
③	**Output size**	Displays the output size of all Remote I/O system units connected.	Same as above
④	**Input process data area**	Displays the input process data of all Remote I/O system units connected. The area where data is allocated is indicated in blue.	Same as above
⑤	**Output process data area**	Displays the output process data of all Remote I/O system units connected. The area where the data of the unit selected in the “Process data size list” is allocated is indicated in red.	Same as above

■ [Error] main tab

Displays errors and error logs for each Remote I/O system unit connected in order of importance.



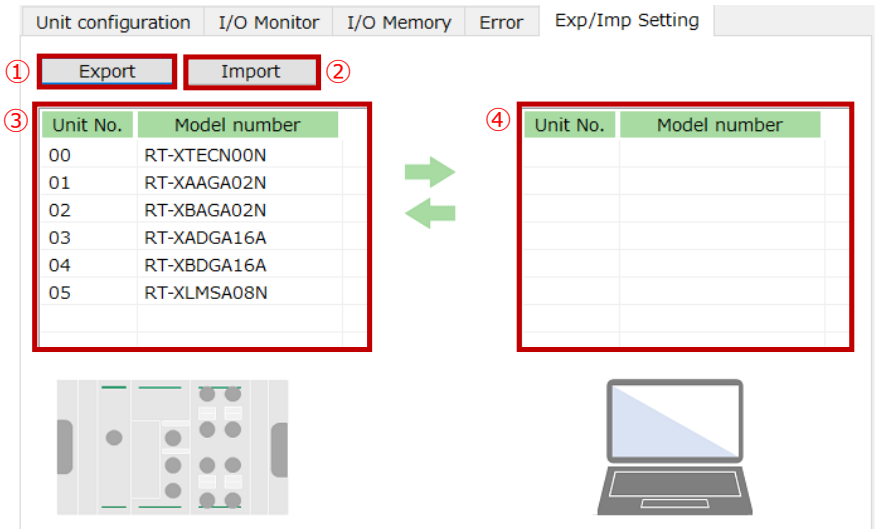
No.	Name	Content	Reference
①	**Diagnostic information list**	Displays the unit's CH/point/port diagnostic information in the "code" column as a hexadecimal number with the corresponding bit set to 1.	3.3.5
②	**Log data list**	Displays a list of past errors in the order of occurrence.	3.2.4
③	**[Clear] button**	Clears the log.	Same as above
④	**[Save] button**	Outputs the error log to a CSV file. **Note 1**	Same as above

Note 1: CSV file is a file of comma-separated value.

- For details on the "code" and "error code" that appear in the list, refer to the Instruction Manual for each unit.

■ [Exp/Imp Setting] main tab

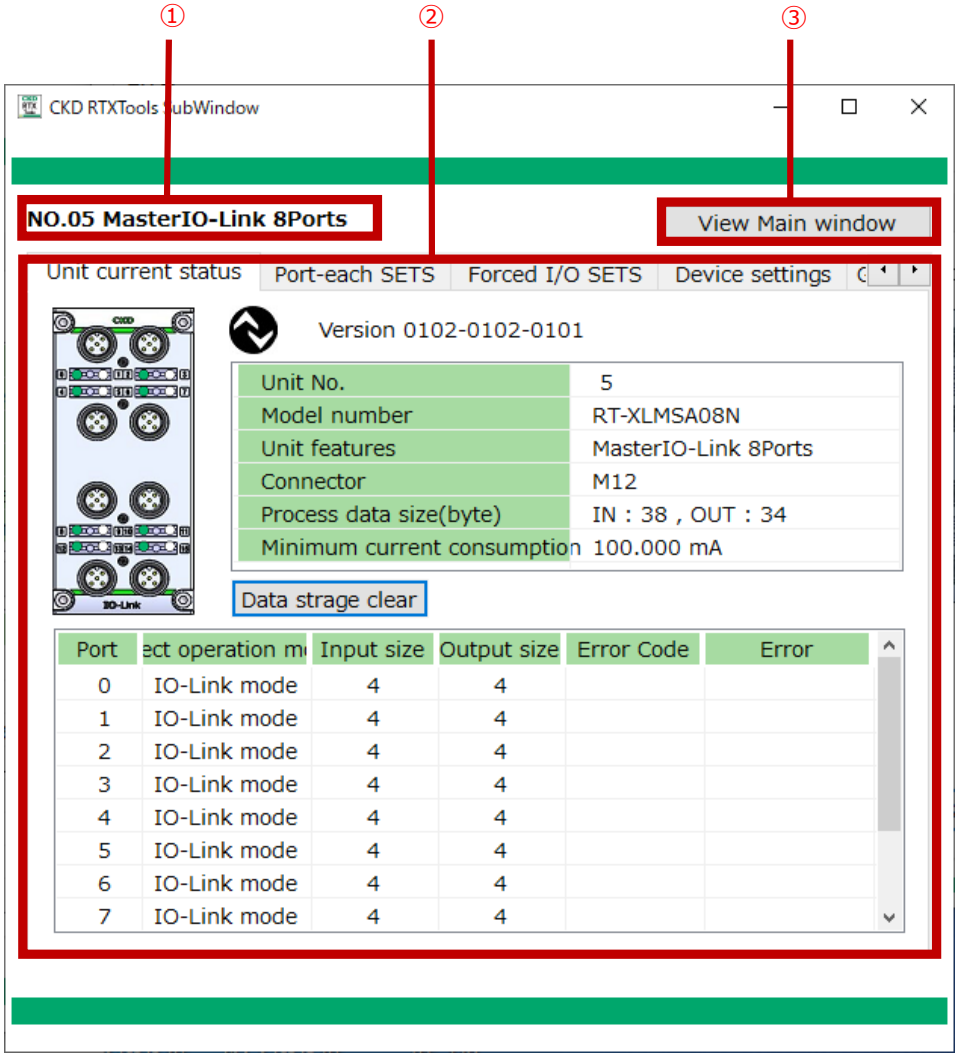
Export or import setting data.



No.	Name	Content	Reference
①	**[Export] button**	Saves the setting data of all connected Remote I/O system units (left list) as an external file (.conf).	3.4.1
②	**[Import] button**	Specifies an external setting data file (.conf) and imports the setting data of the units in it (right list) to the connected Remote I/O system.	3.4.2
③	**Unit configuration list**	Displays the configuration of the connected unit.	-
④	**Unit configuration list for import files**	Displays the unit configuration for imported files.	3.4.2

1.5.3. Sub window

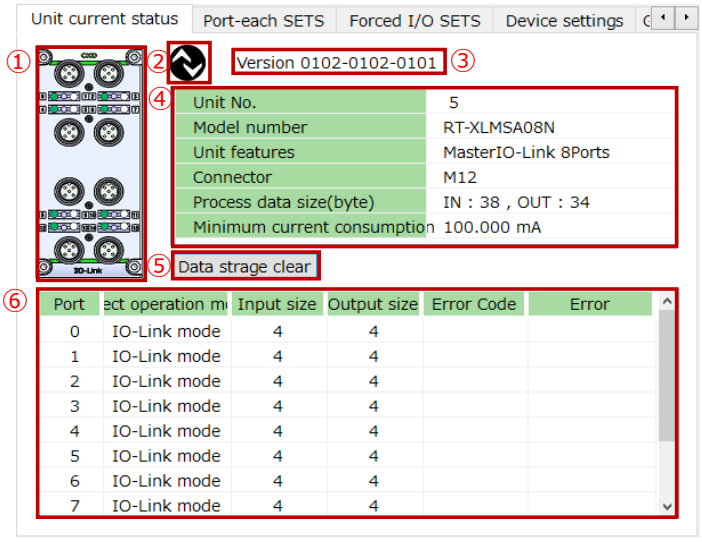
Open the [Unit Configuration] tab in the main window, and double-click the RT configuration unit or select the unit and click the [Setting] button to display a sub window.



No.	Name	Content	Reference
①	**Unit display**	Displays the unit number and unit name.	-
②	**Tab switching area**	Switches tabs. The type and content of the tabs vary for each unit.	-
③	**[View Main window] button**	Displays the main window.	-

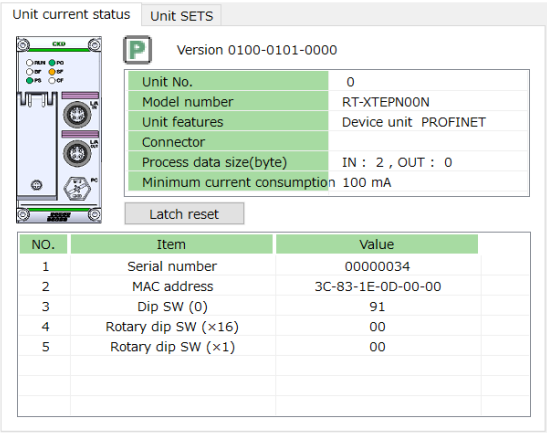
■ [Unit current status] tab

Displays information for each unit or its CH/point/port.
Displays error codes and errors for CH/point/port.

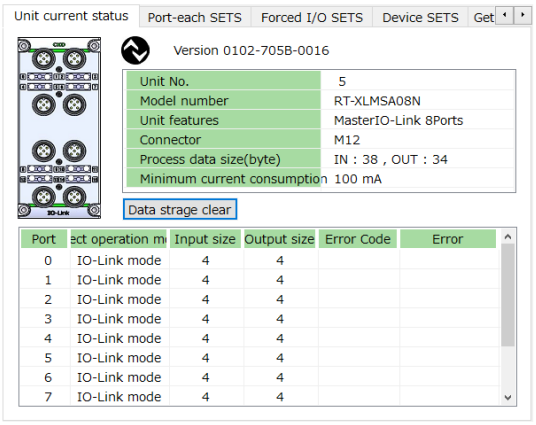


No.	Name	Content	Reference
①	**Unit image**	Image of the selected unit.	-
②	**Unit icon**	Icon indicating the unit. This one indicates the IO-Link master.	-
③	**Version information**	Displays version information.	3.3.4
④	**Unit details display**	Displays details of the selected unit.	-
⑤	**[- clear] [- reset] button** Note 1	These buttons are for data storage clear, Off_On cycle reset, and latch reset. Note 1	3.2.3 3.2.7 3.2.10
⑥	**Status display area**	Displays the status of each unit, including error codes. Contents vary for each unit. Note 1	-

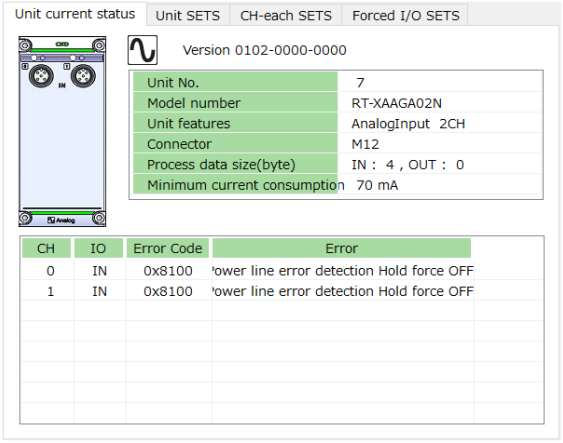
Note 1: For details, refer to the table below.



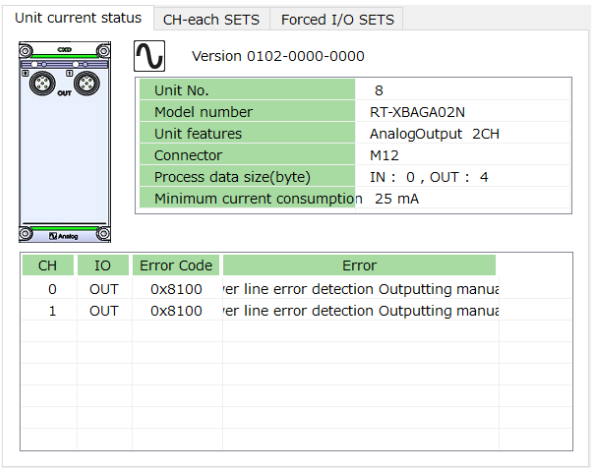
EtherCAT, EtherNet/IP, PROFINET, WebAPI device



IO-Link Master

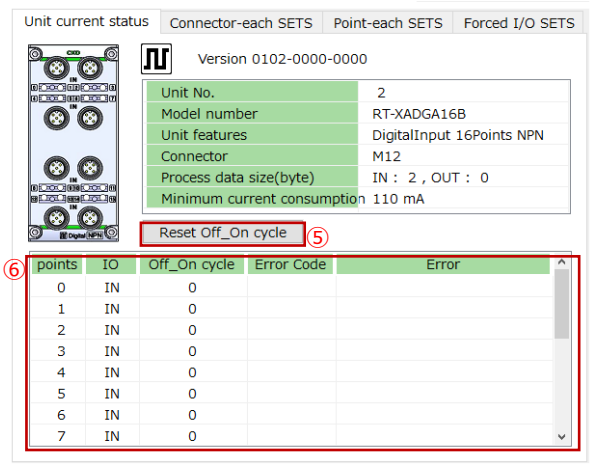


Analog input

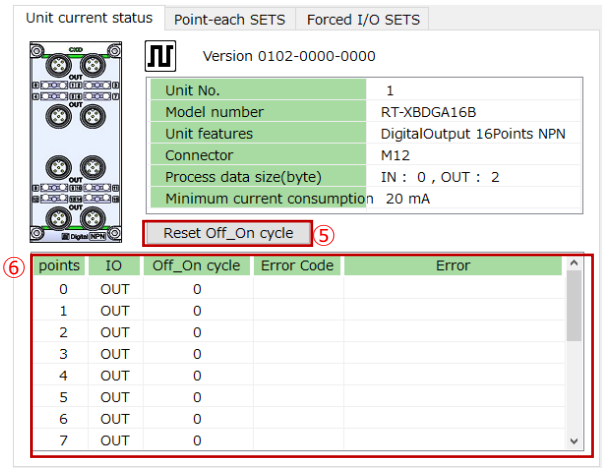


Analog output

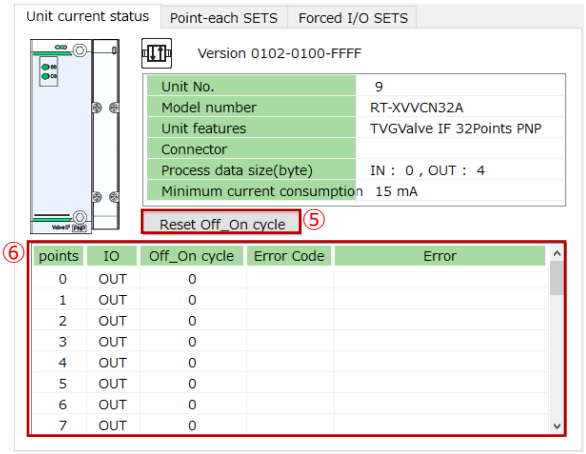
Unit	Button name (⑤)	Status display type (⑥)	Reference
EtherCAT, EtherNet/IP and PROFINET device, WebAPI **unit**	Latch reset	No./item/value	3.2.2
IO-Link master	Data storage clear	Port / IO / input size / output size / error code / error	3.2.10
Analogue input	-	CH / IO / error code / error	
Analog output	-	CH / IO / error code / error	



デジタル入力



デジタル出力

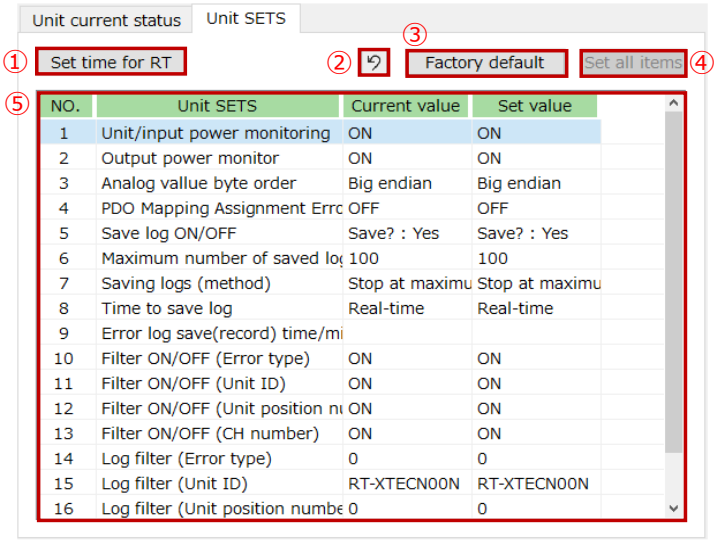


バルブ I/F

Unit	Button name (⑤)	Status display type (⑥)	Reference
Digital input	Reset Off_On cycle	Point / IO / Off_On cycle / error code / error	3.2.7
Digital output	Reset Off_On cycle	Point / IO / Off_On cycle / error code / error	3.2.7
Valve I/F	Reset Off_On cycle	Point / IO / Off_On cycle / error code / error	3.2.7

■ [Unit SETS] tab (Device unit and analog input unit only)

Configures settings in each unit.

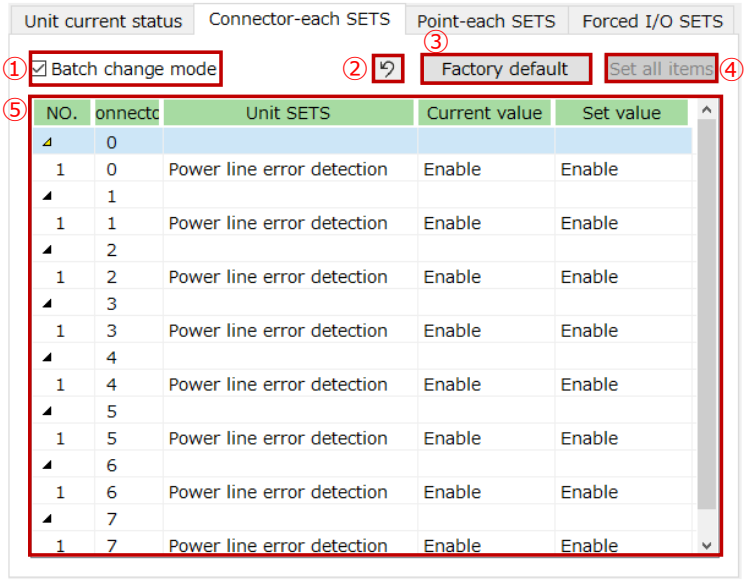


No.	Name	Content	Reference
①	**[Set time for RT] button** Note 1	Set the time of the device unit. Note 2	3.2.1
②	**[←] button**	[Back] button. Returns to the previous status.	3.4.7
③	**[Factory default] button**	Reads the initial values (factory setting values) of the unit.	3.2.3
④	**[Set all items] button**	Reflects the changed settings.	-
⑤	**Setting list**	Displays and changes each setting item. Changes are made in the "set value" column. Note 3	3.2.3

Note 1: For device units.
Note 2: Click to open the "Set time window."
Note 3: Depending on the setting, it may be displayed only.

■ [Connector-each SETS] tab (digital input unit only)

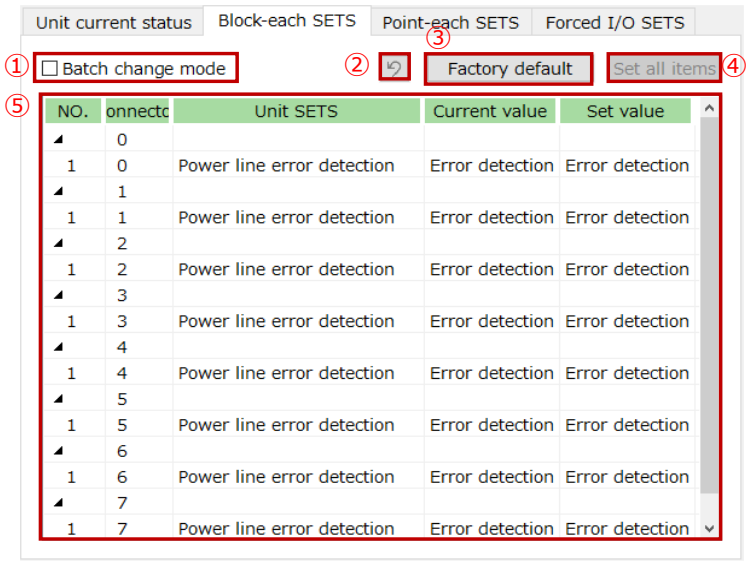
Sets the power line error detection for digital input units in each connector.



No.	Name	Content	Reference
①	**[Batch change mode] check box**	Check the checkbox to reflect a change in one location to all connectors' settings.	3.2.1
②	**[←] button**	[Back] button. Returns to the previous status.	3.4.6
③	**[Factory default] button**	Reads the initial values (factory setting values) of the unit.	3.2.1
④	**[Set all items] button**	Reflects the changed settings.	3.2.1
⑤	**Setting list**	Displays and changes the power line error detection for each connector. Changes are made in the "set value" column.	3.2.1

■ [Block-each SETS] tab (digital input unit (push-in terminal type) only)

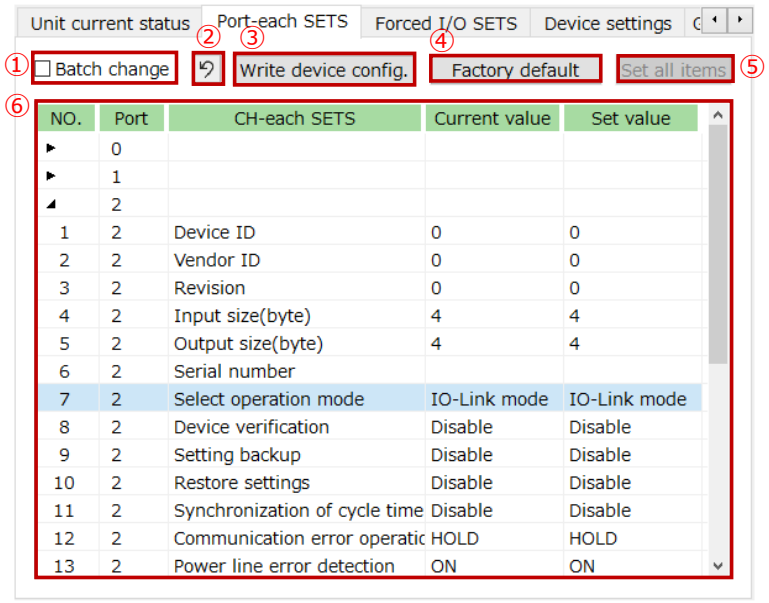
Sets the power line error detection for digital input units in each connector.



No.	Name	Content	Reference
①	**[Batch change mode] check box**	Check the checkbox to reflect a change in one location to all blocks' settings.	3.2.1
②	**[←] button**	[Back] button. Returns to the previous status.	3.4.6
③	**[Factory default] button**	Reads the initial values (factory setting values) of the unit.	3.2.1
④	**[Set all items] button**	Reflects the changed settings.	3.2.1
⑤	**Setting list**	Displays and changes the power line error detection for each connector. Changes are made in the "set value" column.	3.2.1

■ [CH/Point/Port-each SETS] tab

Configures settings in each CH/point/port. Each unit has a different setting unit, so it is either [CH/Point/Port-each SETS] tab.

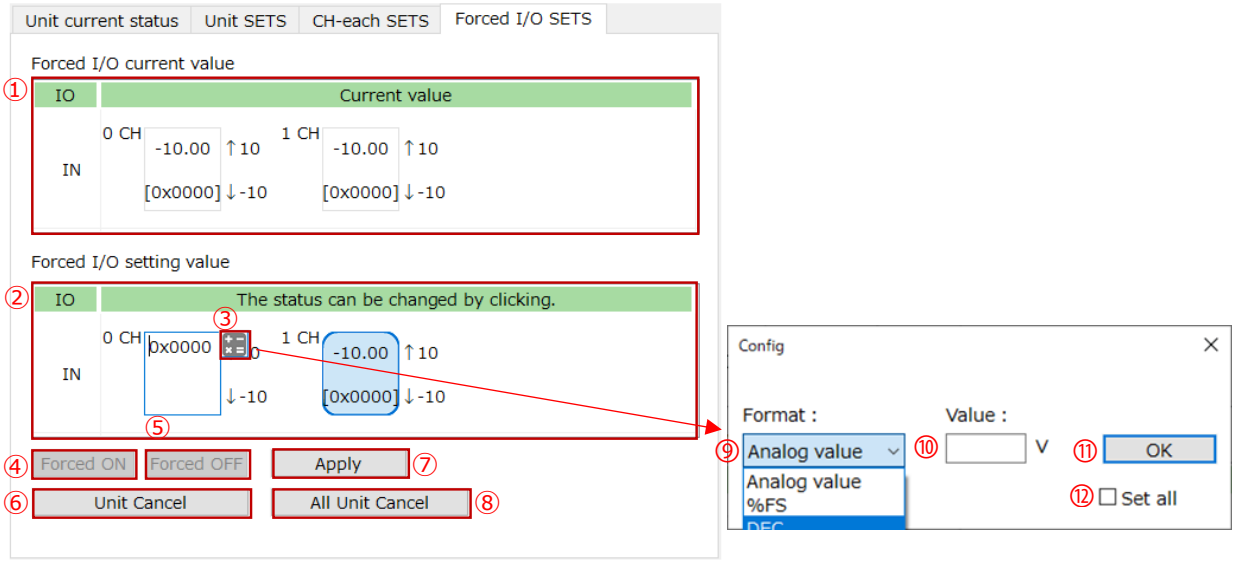


No.	Name	Content	Reference
①	**[Batch change mode] check box**	Check the checkbox to reflect a change in one location to the settings of all CHs/points/ports.	3.2.1
②	**[←] button**	[Back] button. Returns to the previous status.	3.4.6
③	**[Write device config.] button** Note 1	Writes the configuration information of the IO-Link device connected to the port to the IO-Link master unit. Note 2	3.2.8
④	**[Factory default] button**	Reads the initial values (factory setting values) of the unit.	3.2.1
⑤	**[Set all items] button**	Reflects the changed settings.	3.2.1
⑥	**CH/point/port list**	Displays and changes setting items for each CH/point/port. Changes are made in the "set value" column.	3.2.1

Note 1: For IO-Link master unit.
Note 2: Configuration information includes device ID, vendor ID, revision, input size, output size, and serial number.

■ [Forced I/O SETS] tab (for analog units)

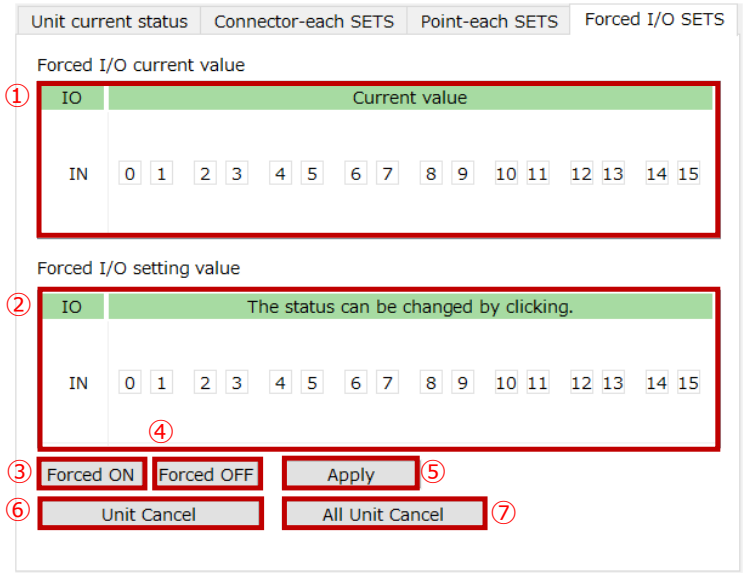
Displays and sets the forced I/O for the selected unit.



No.	Name	Content	Reference
①	**Forced I/O current value area**	Displays the forced I/O current value.	3.2.5 3.2.6
②	**Forced I/O setting value area**	Select CH, and input values directly or using the [Analog I/O value conversion window].	Same as above
③	**[Analog I/O value conversion window] button**	Click the input area in the set value area to display it in the upper right corner.	Same as above
④	**[Forced ON] button**	0xFFFF in a batch.	Same as above
⑤	**[Forced OFF] button**	0x0000 in a batch.	Same as above
⑥	**[Unit Cancel] button**	Cancels the forced status.	Same as above
⑦	**[Apply] button**	Reflects the contents of the "forced I/O setting value area" to RT.	Same as above
⑧	**[All Unit Cancel] button**	Instructs RT to cancel the forced status on the entire Remote I/O system.	Same as above
⑨	**Format list**	Drop-down list of [Analog value], [%FS], and [DEC]. Select a display format.	Same as above
⑩	**Input window**	Input values directly.	Same as above
⑪	**[OK] button**	Input the format and value, then press to confirm.	Same as above
⑫	**[Set all] check box**	Check the checkbox to apply the setting change to all the CHs.	Same as above

■ [Forced I/O SETS] tab (for digital and valve I/F units)

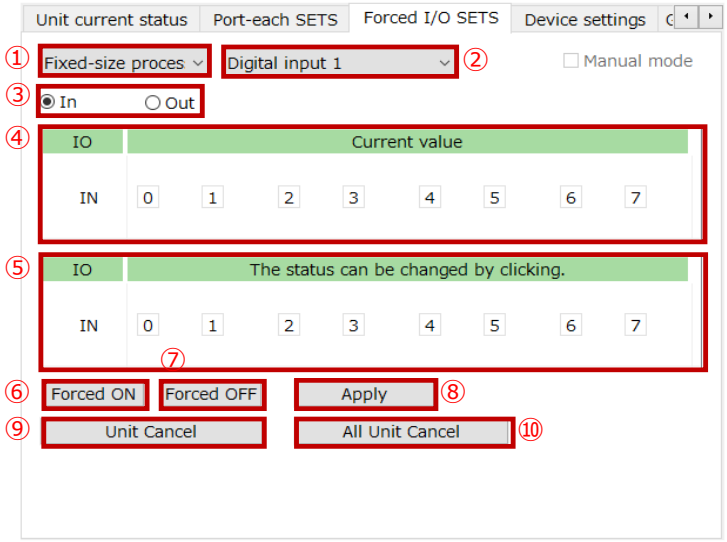
Displays and sets the forced I/O for the selected unit.



No.	Name	Content	Reference
①	**Forced I/O current value area**	Displays the forced I/O current value.	3.2.5 3.2.6
②	**Forced I/O setting value area**	Click the point to switch between [Forced OFF]/ [Forced ON]/[Forced cancel] in that order.	Same as above
③	**[Forced ON] button**	Turns ON all points in a batch. This is reflected in the set value.	Same as above
④	**[Forced OFF] button**	Turns OFF all points in a batch. This is reflected in the set value.	Same as above
⑤	**[Unit Cancel] button**	Cancels the forced status of all points in a batch. Reflects to the setting value.	Same as above
⑥	**[Apply] button**	Reflects the contents of the "Forced I/O setting value area" to RT.	Same as above
⑦	**[All Unit Cancel] button**	Instructs RT to cancel the forced status on the entire Remote I/O system.	Same as above

■ [Forced I/O SETS] tab (for IO-Link master units ①)

Displays and sets the forced I/O for the selected unit. This is for fixed-size process data.

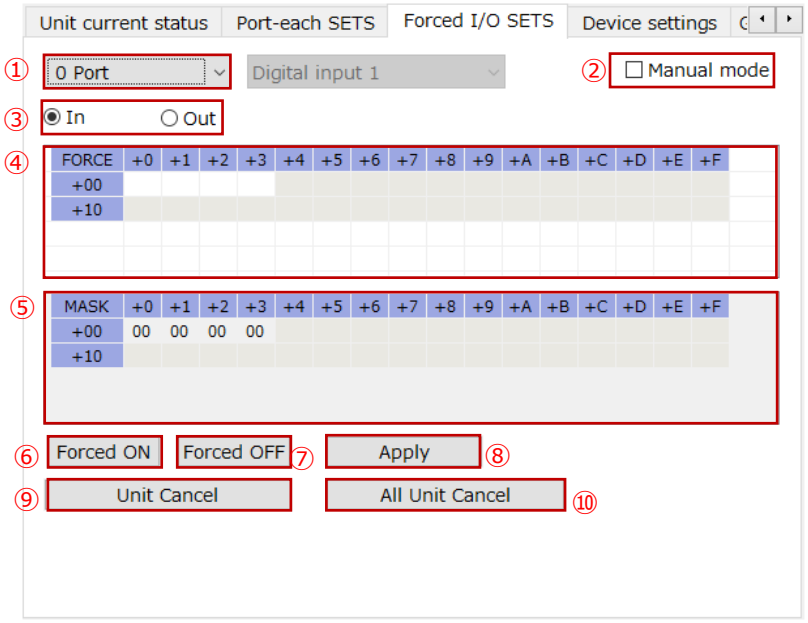


No.	Name	Content	Reference
①	**Target select list**	Selects the setting item from the drop-down list. **Note 1**	3.2.5 3.2.6
②	**[Fixed-size process data] type list**	Selects the data type from the drop-down list. **Note 2**	Same as above
③	**In/Out select button**	Selects [In] (forced input) or [Out] (forced output).	Same as above
④	**Forced I/O current value area**	Displays the forced I/O current value.	Same as above
⑤	**Forced I/O setting value area**	Click the point number to change the forced I/O. Changes in the order of [Forced OFF]/ [Forced ON]/[Forced cancel] **Note 3**	Same as above
⑥	**[Forced ON] button**	Turns all of the display range ON in a batch.	Same as above
⑦	**[Forced OFF] button**	Turns all of the display range OFF in a batch.	Same as above
⑧	**[Unit Cancel] button**	Cancels the forced status of the displayed area in a batch.	Same as above
⑨	**[Apply] button**	Reflects the contents of the "forced I/O setting value area" to RT.	Same as above
⑩	**[All Unit Cancel] button**	Instructs RT to cancel the forced status on the entire Remote I/O system.	Same as above

Note 1: Drop-down list of [Fixed-size process data], [0 Port] to [7 Port].
Note 2: Enabled only when "Fixed-size process data" is selected. The list content varies depending on [In/Out select button] selection.
Note 3: Operation is not possible when the "Reflect setting waiting" is occurring on the IO-Link master unit.

■ [Forced I/O SETS] tab (for IO-Link master units ②)

Displays and sets the forced I/O for the selected unit. This is for when the “Target select list” is chosen to “Port 0” to “Port 7”.

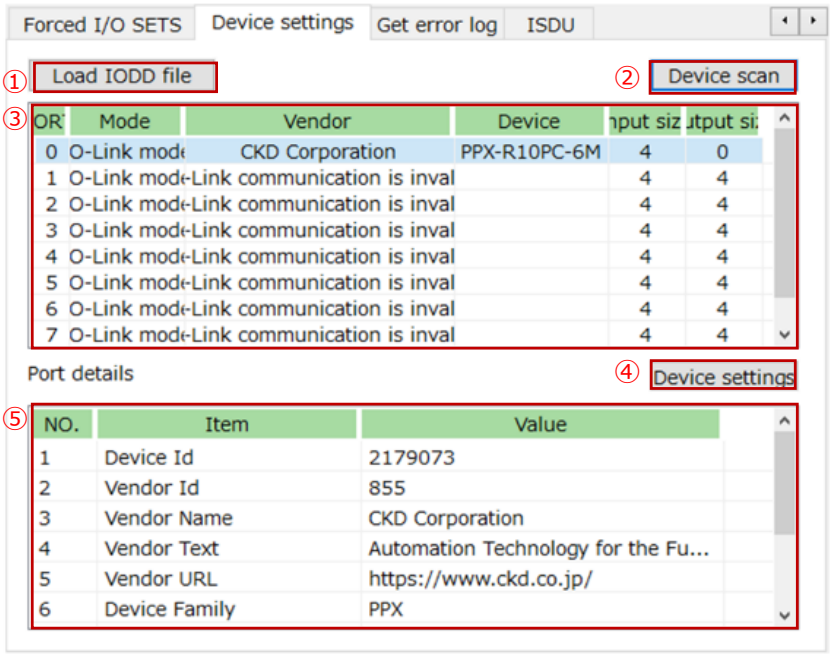


No.	Name	Content	Reference
①	**Target select list**	Selects the port to be set from the drop-down list. **Note 1**	3.2.5 3.2.6
②	**[Manual mode] check box**	Selects enable/disable of the manual mode.	Same as above
③	**In/Out select button**	Selects [In] (forced input) or [Out] (forced output).	Same as above
④	**Forced I/O FORCE area**	Specifies the setting value of forced input and forced output in hexadecimal.	Same as above
⑤	**Forced I/O MASK area**	Specifies the bit to enable forced I/O in hexadecimal when [Manual mode]. **Note 2**	Same as above
⑥	**[Forced ON] button**	Turns all of the display range 0xFF in a batch.	Same as above
⑦	**[Forced OFF] button**	Turns all of the display range 0x00 in a batch.	Same as above
⑧	**[Unit Cancel] button**	Cancels the forced status of all of the display range in a batch.	Same as above
⑨	**[Apply] button**	Reflects the contents of the "FORCE Area" and "MASK Area" to RT.	Same as above
⑩	**[All Unit Cancel] button**	Instructs RT to cancel the forced status on the entire Remote I/O system.	Same as above

Note 1: Drop-down list of [Fixed-size process data], [0 Port] to [7 Port].
Note 2: Operation is not possible when the "Reflect setting waiting" is occurring on the IO-Link master unit.

■ [Device SETS] tab (IO-Link master unit only)

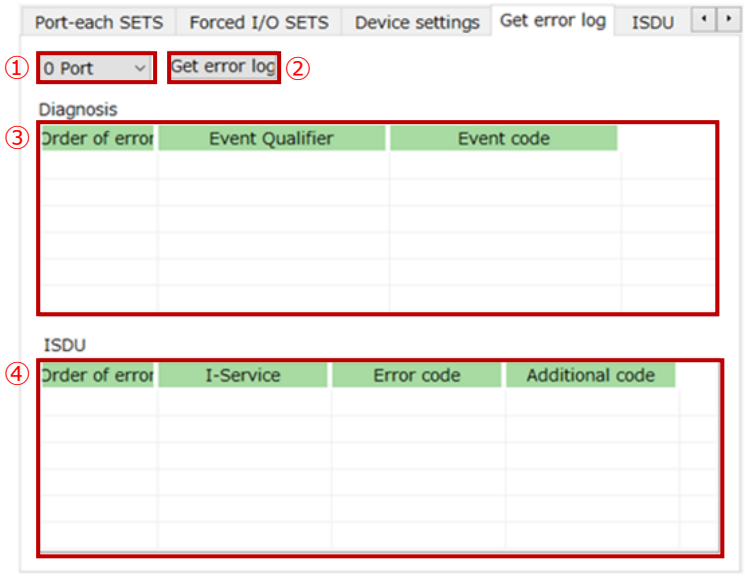
Loads the IODD file of the connected device and displays device information.



No.	Name	Content	Reference
①	**[Load IODD file] button**	Specifies the IODD to be loaded. The specified IODD will be stored in the [¥Users¥¥AppData¥Roaming¥CKD¥RTXTools¥iodd] folder.	3.2.12
②	**[Device scan] button**	Scans the connected IO-Link device and verifies it against the loaded IODD file. Requires data necessary for verification from RT.	Same as above
③	**PORT list**	Displays information about the IO-Link device scanned.	Same as above
④	**[Device settings] button**	Displays the device sub window selected in the PORT list.	Same as above
⑤	**[Port details] area**	Displays details of the IO-Link device selected in the PORT list.	Same as above

■ [Get error log] tab (IO-Link master unit only)

Acquire the error log and display it in the "Diagnosis" and "ISDU" areas. **Note 1**



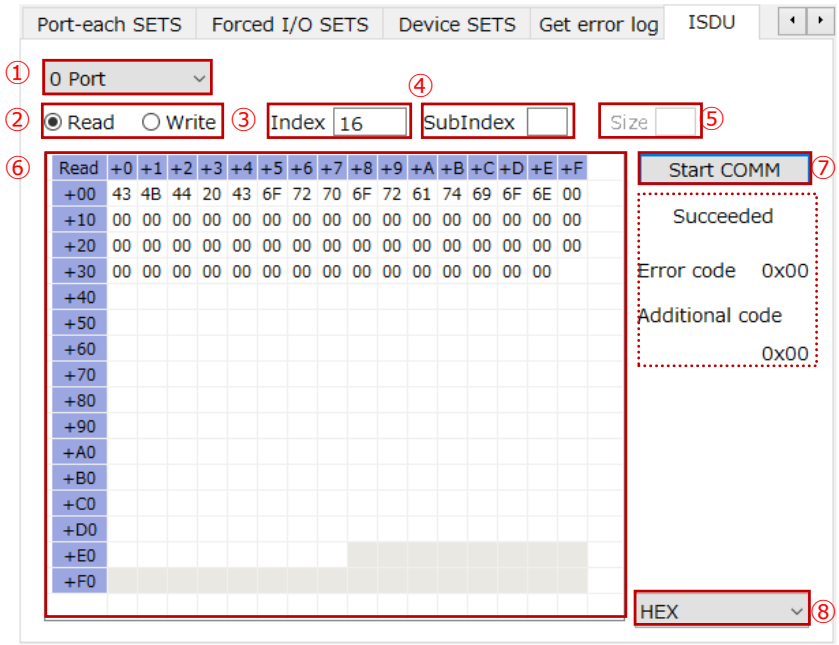
No.	Name	Content	Reference
①	**Target select list**	Select the target port from the drop-down list. **Note 2**	3.2.11
②	**[Get error log] button**	Displays error logs in the Diagnosis and ISDU areas. Displays "No error" if there is no error. **Note 1**	Same as above
③	**Diagnosis area**	Displays event codes in event communications.	Same as above
④	**ISDU area**	Displays error responses in ISDU communications.	Same as above

Note 1: For details on error logs, refer to the Instruction Manual for the IO-Link master unit.
Note 2: This is the drop-down list of [0 Port] to [7 Port].

- When "Get error log" is performed, the error log data held at IO-Link master unit is acquired. Once the error log data is loaded, it is cleared from the IO-Link master unit.

■ [ISDU] tab (IO-Link master unit only)

Displays and changes information on ISDU communications. Reads and writes service data of IO-Link device corresponding to index/sub index.

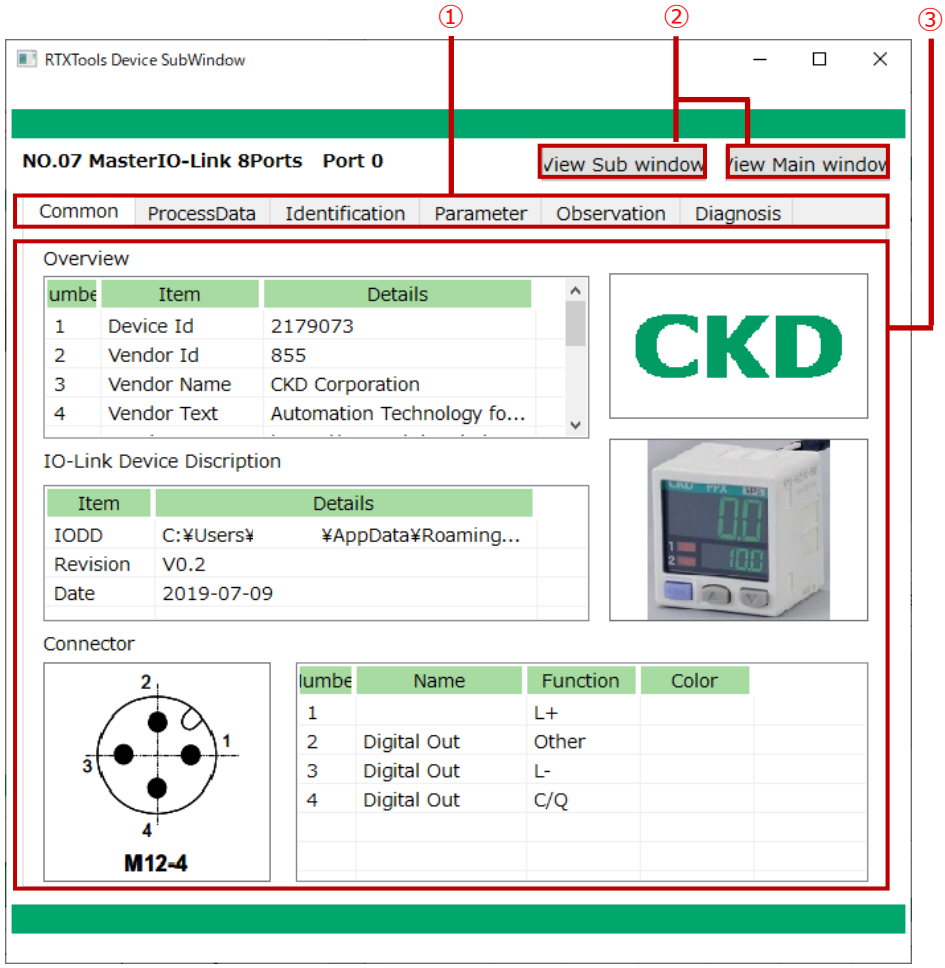


No.	Name	Content	Reference
①	**Target select list**	Select a port from the drop-down list. **Note 1**	3.2.9
②	**[Read]/[Write] button**	Select [Read] or [Write].	Same as above
③	**[Index] input area**	Specifies the index number of the service data of IO-Link device. **Note 2**	Same as above
④	**[SubIndex] input area**	Specifies the sub index number of the service data of IO-Link device. **Note 3**	Same as above
⑤	**[Size] input area**	(When writing) Specifies the size of the service data of IO-Link device.	Same as above
⑥	**Service data area**	Displays write/read service data.	Same as above
⑦	**[Start COMM] button**	Performs write/read. The performed result is displayed under the button as [Succeeded], [Failed], [Not used], etc.	Same as above
⑧	**Display format select list**	Switch the format of the service data area (⑥) by selecting from the drop-down list. **Note 4**	Same as above

Note 1: Drop-down list of [0 Port] to [7 Port].
Note 2: When entering hexadecimal, enter "0x" at the beginning. Otherwise, it is processed as a decimal.
Note 3: If there is no input, it is processed as "0."
Note 4: Drop-down list of [HEX], [DEC], and [ASCII].

1.5.4. Device sub window

Click the [Device SETS] button in the [Device SETS] tab of the IO-Link master unit to display the device sub window.

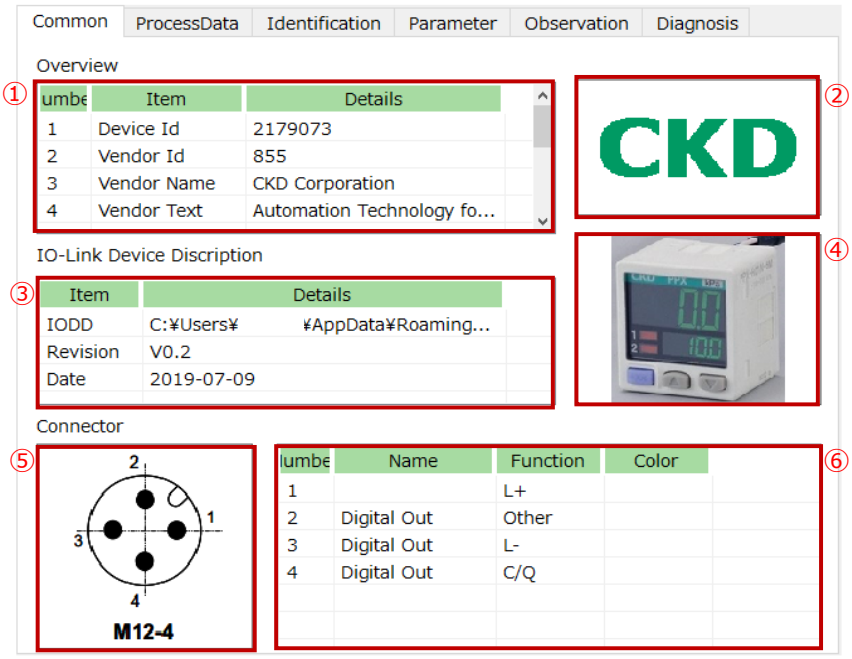


No.	Name	Content	Reference
①	**[Sub window]/[Main window] display button**	Displays **[Sub window]/[Main window]**.	-
②	**Various tabs**	Tabs for each item of the IODD file. Displays according to the contents of the IODD file. **Note 1**	
③	**Device details area**	Displays details of the device loaded in the IODD file.	

Note 1: [Common][ProcessData][Identification][Parameter][Observation][Diagnosis] tabs. Displays to match the contents of the IODD.

■ [Common] tab

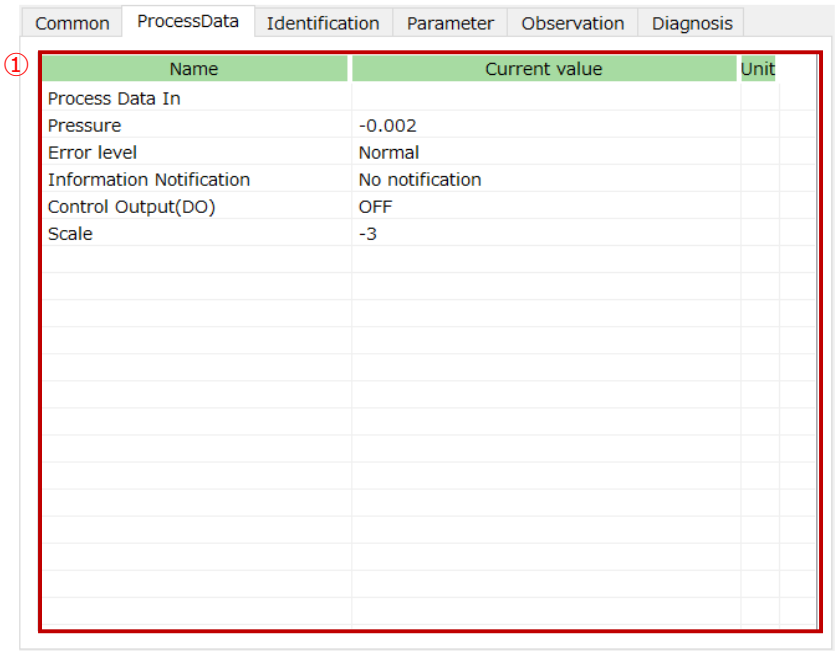
Displays data registered in the IODD.



No.	Name	Content	Reference
①	**Device details**	Displays device details, including vendor ID.	3.2.12
②	**Logo**	Displays the logo registered on the device.	Same as above
③	**Device Description**	Displays the description defined in the IODD file.	Same as above
④	**Device image**	Displays an image of the device.	Same as above
⑤	**Connector diagram**	Displays connector diagrams of the device, etc.	Same as above
⑥	**Connector details**	Displays details of the device, such as connectors, etc. Contents vary for each device.	Same as above

■ [ProcessData] tab

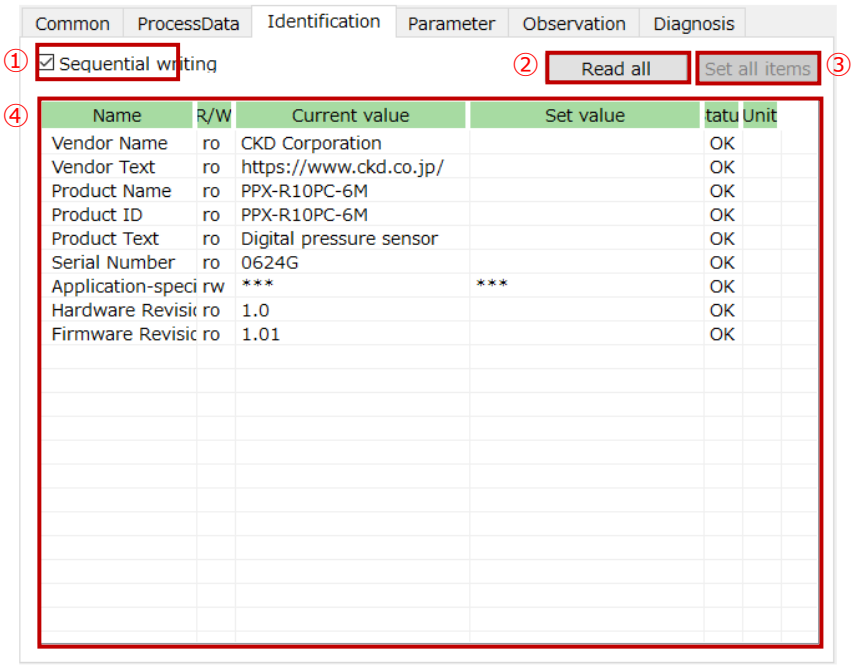
Displays process data loaded in the IODD.



No.	Name	Content	Reference
①	**Process data details area**	Displays details of the process data.	3.2.12

■ [Identification] tab

Displays and changes identification information of the IO-Link device connected.

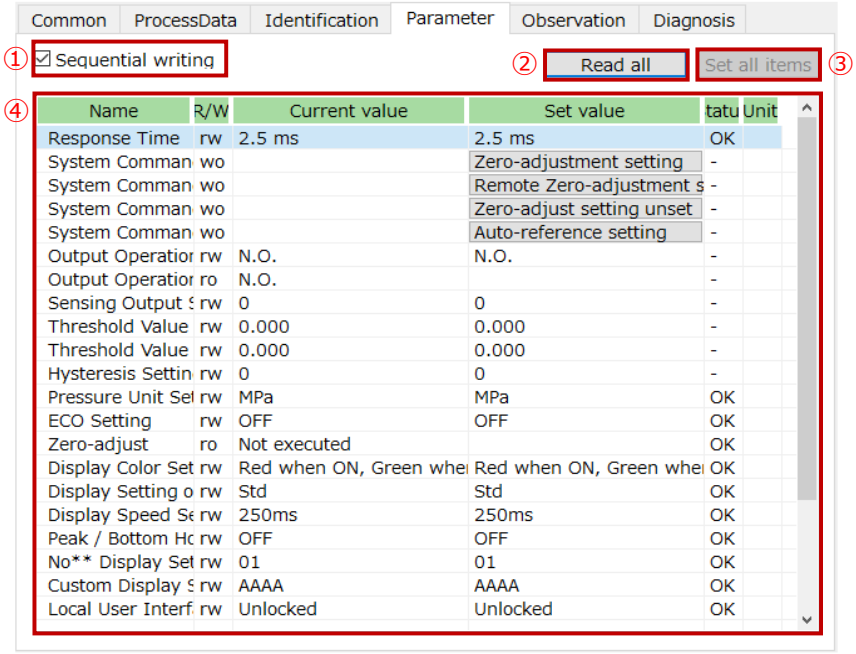


No.	Name	Content	Reference
①	**[Sequential writing] button**	Writes sequentially.	3.2.12
②	**[Read all] button**	Reads data from the device.	Same as above
③	**[Set all items] button**	Reflects the changed settings. **Note 1**	Same as above
④	**Details display area**	Displays identification details of the selected device.	Same as above

Note 1: Enabled when the "set value" has been changed.

■ [Parameter] tab

Displays and changes the parameters of the IO-Link device connected.

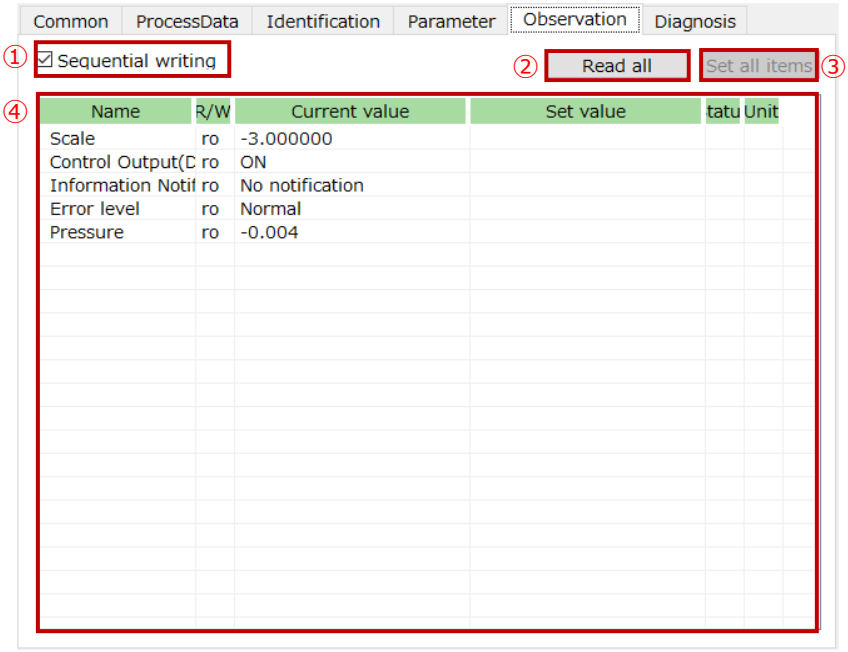


No.	Name	Content	Reference
①	**[Sequential writing] button**	Writes sequentially.	3.2.12
②	**[Read all] button**	Reads data from the device.	Same as above
③	**[Set all items] button**	Reflects the changed settings. **Note 1**	Same as above
④	**Details display area**	Displays parameter details of the selected device.	Same as above

Note 1: Enabled when the "set value" has been changed.

■ [Observation] tab

Displays and changes observation information of the IO-Link device connected.

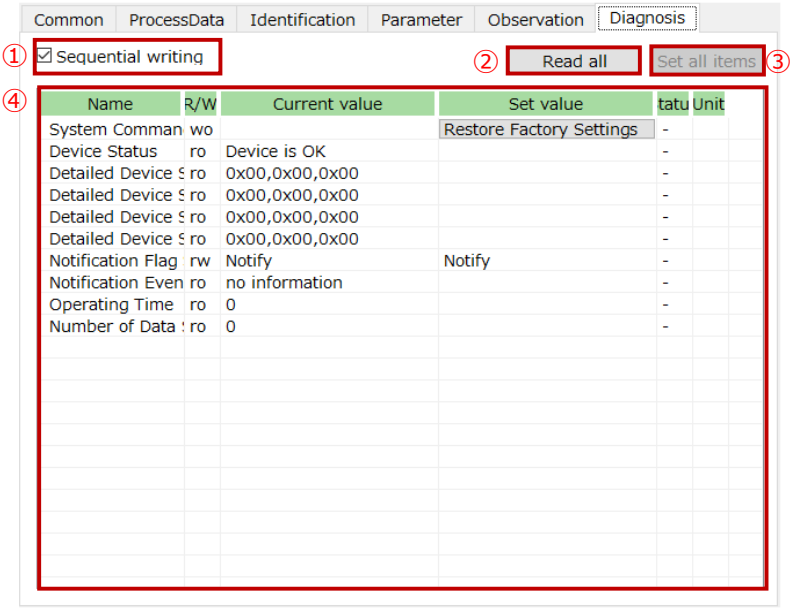


No.	Name	Content	Reference
①	**[Sequential writing] button**	Writes sequentially.	3.2.12
②	**[Read all] button**	Reads data from the device.	Same as above
③	**[Set all items] button**	Reflects the changed settings. **Note 1**	Same as above
④	**Details display area**	Displays observation details of the selected device.	Same as above

Note 1: Enabled when the "set value" has been changed.

■ [Diagnosis] tab

Displays and changes diagnosis information of the IO-Link device connected.



No.	Name	Content	Reference
①	**[Sequential writing] button**	Writes sequentially.	3.2.12
②	**[Read all] button**	Reads data from the device.	Same as above
③	**[Set all items] button**	Reflects the changed settings. **Note 1**	Same as above
④	**Details display area**	Displays diagnosis details of the selected device.	Same as above

Note 1: Enabled when the "set value" has been changed.

2. INSTALLATION

2.1. Obtaining the installer

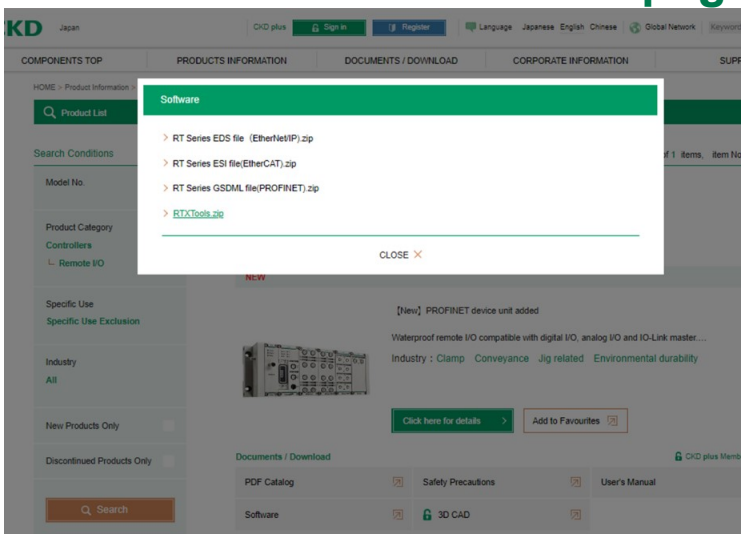
Obtain the RTXTools installer from the company's website.
Product detail page: https://www.ckd.co.jp/kiki/jp/product/list?cid=190&sid=0

<Procedure to obtain>

1. Click the above URL or select from the CKD website to display the product detail page

Select in this order: CKD website → COMPONENTS TOP → Controllers (Category) → Remote I/O (Product Category). Also searchable with the "RT."

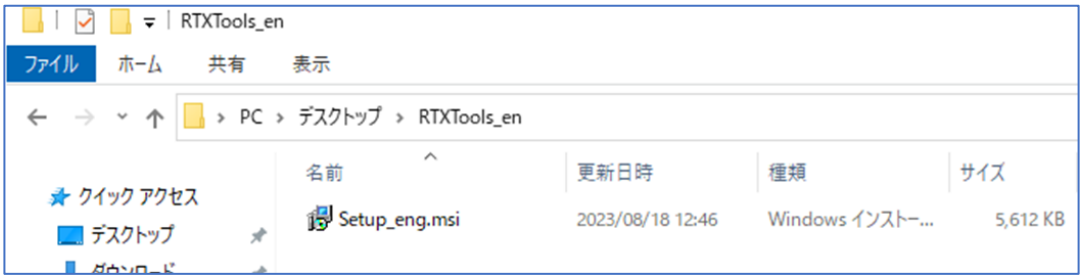
2. Click "Software" on the "Remote I/O" page



3. Click the installer [RTXTools.zip] on the "Software" select screen to download

4. Download complete

Extract the zip file and an "RTXTools" folder containing "Setup_eng.msi" will be created on the desktop.

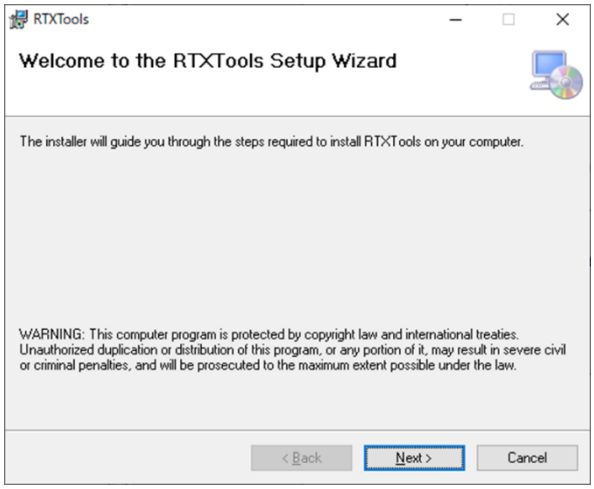


2.2. Installation procedure

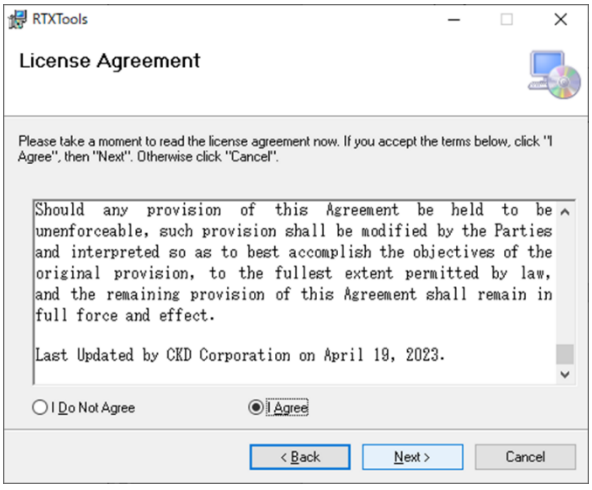
1. Double-click "Setup_eng.msi" to start the "Setup Wizard”

If a message that warns of installing a program from an unknown publisher is displayed at the start of the installation, select [Yes] to continue the installation.

2. Click [Next] in the "Setup Wizard" dialog box

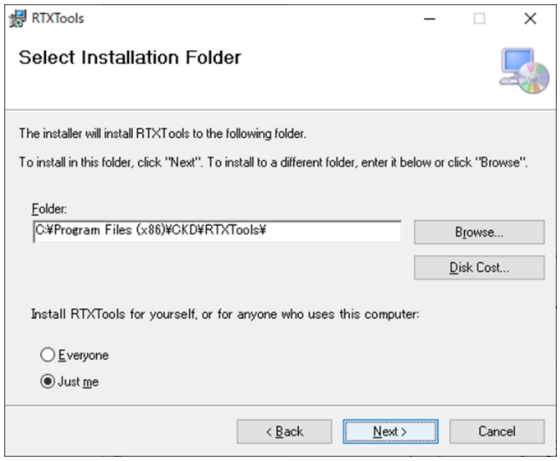


3 Read the "License Agreement" dialog box and check the "Agree," then click [Next]

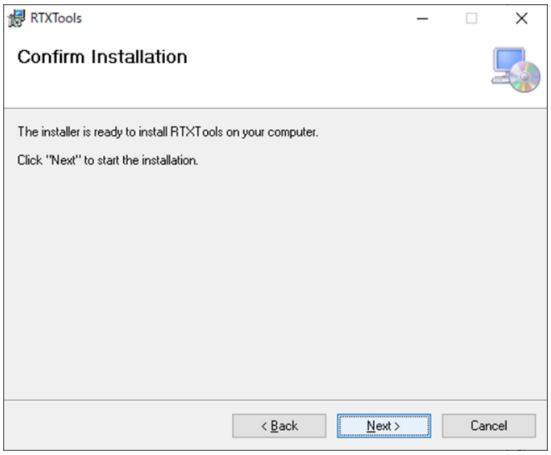


4 Check the destination folder and click [Next]

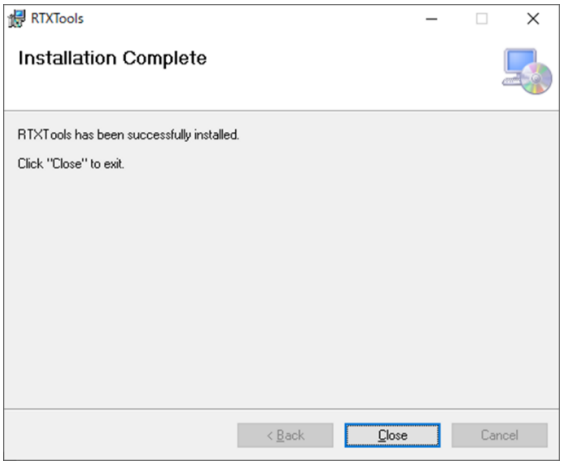
The folder name is displayed by default. To save the file in a different folder, select it with "Browse."



5. Follow the "Confirm Installation" dialog box and click [Next]



6. Follow the ”Installation Complete” dialog box and click [Close] to close the dialog box



- When RTXTools is installed, a PDF file of the driver for Windows 7 and its installation instructions is included in the same folder as the execution file (4: Installation folder above).

2.3. Driver installation procedure

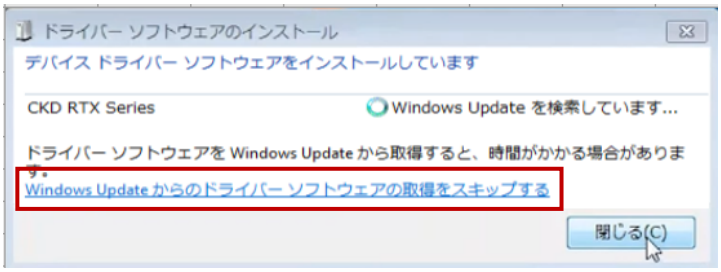
This describes how to install the driver.

- For Windows 7. For Windows 10, the standard driver is used.
- Do this after 2.2 "Installation procedure." Once installed, the necessary files are saved on the PC.

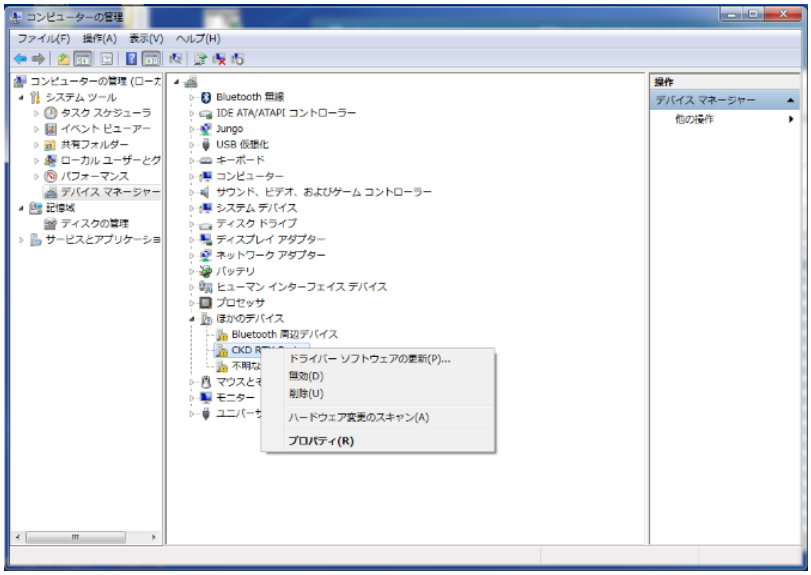
1. Connect the PC and device unit with a USB cable

2. Cancel the "Driver software installation" dialog box

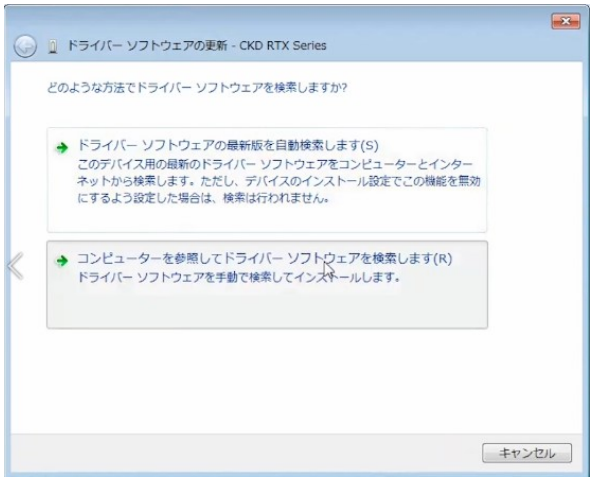
A dialog box will appear, select the "Skip retrieving driver software from Windows Update" message to cancel.



3. Open [Device manager], go to [PC name] - [Other devices], right-click [CKD RTX Series], and select [Driver software update]

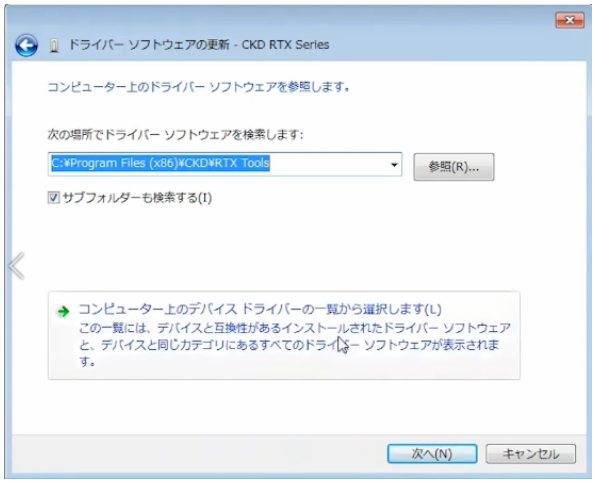


4. When the "Driver software update" dialog box is displayed, select "Browse the computer to find driver software (R)"

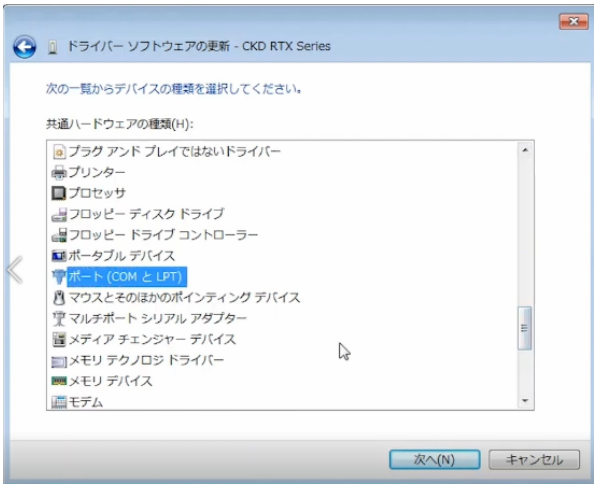


5. Select "Select from the list of device drivers on the computer (L)"

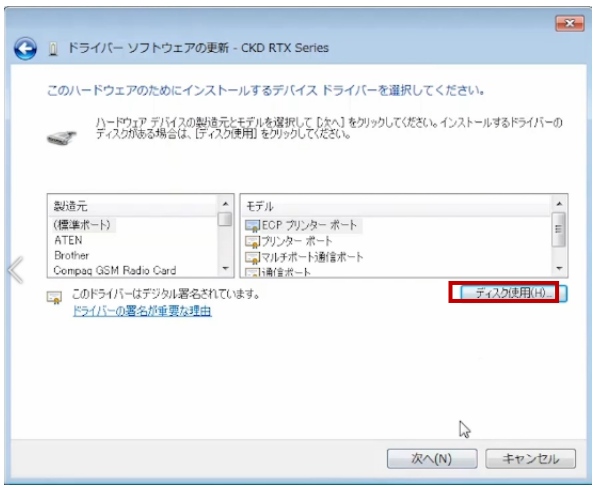
The folder name is displayed by default. To save the file in a different folder, select it with "Reference (R)."



6. Select "Port (COM and LPT)" and click [Next]

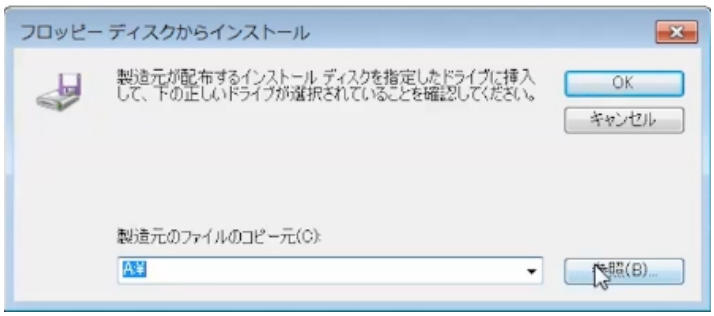


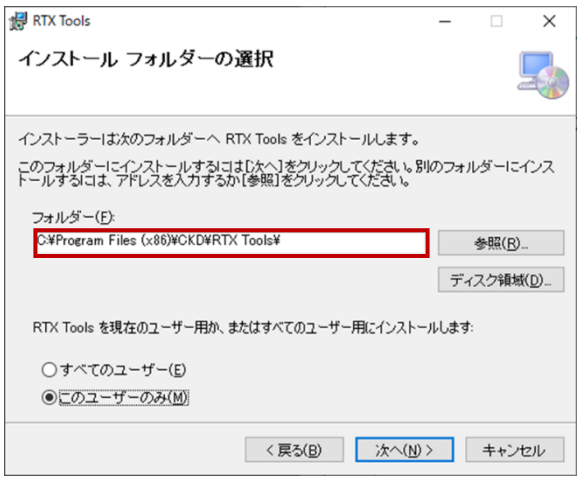
7. Click "Use disk (H).."



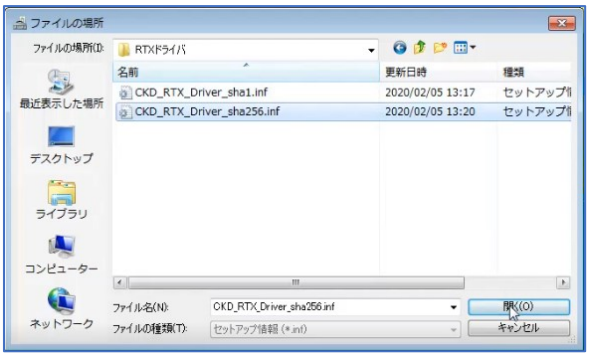
8. When the "Install from floppy disk" dialog box is displayed, click "Browse (B).." to open the driver software file

The downloaded driver software file is saved in the folder selected in "4" of "2.2 Installation procedure."

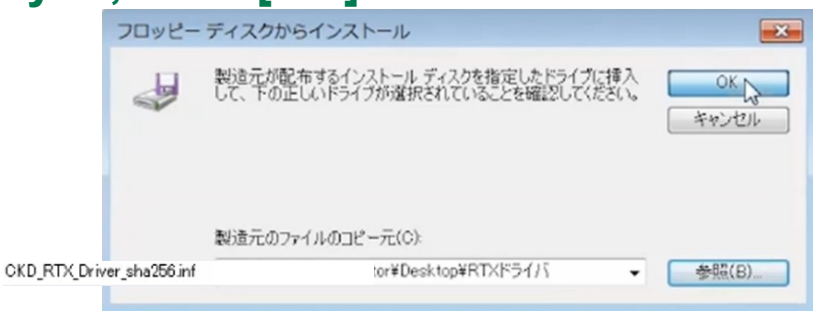




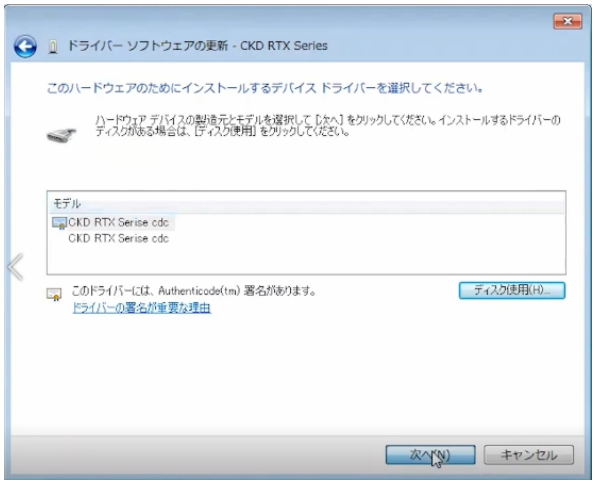
9. Select "USBDriver(CKD_RTX_Driver_sha256.inf)" in the downloaded file and click [Open]



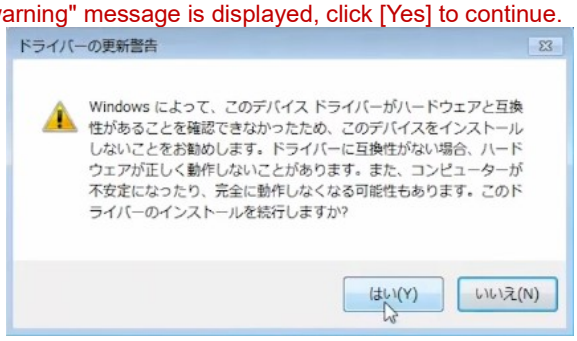
10. When the "Install from floppy disk" dialog box is displayed, click [OK]



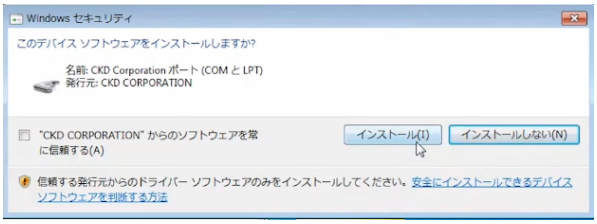
11. When the "Driver software update" dialog box is displayed, select [Next]



Note: If a "Driver update warning" message is displayed, click [Yes] to continue.

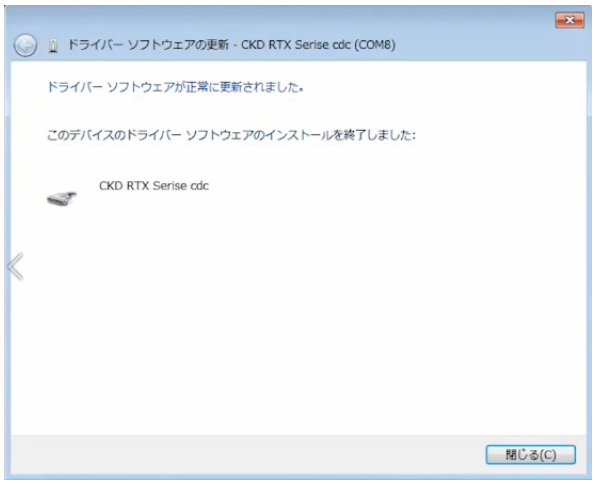


12. When the "Windows security" dialog box is displayed, select [Install]



13. When the "Driver software update" dialog box is displayed, click [Close]

A message will be displayed saying, "Installation of the driver software for this device has finished."



- For details, refer to the video on the company's website.
  Product detail page:https://www.ckd.co.jp/kiki/jp/product/list?cid=190&sid=0

3. HOW TO USE

CAUTION

When using RTXTools to adjust equipment, thoroughly read the Instruction Manual for the equipment and use it properly.

- During the setting phase, the unit and its peripherals may operate unexpectedly.

3.1. Usage procedure

3.1.1. Powering up RT

Power up RT.

- If there are multiple power supply units, turn them on at the same time (within 3 seconds). If the timing of the power supply is misaligned between power supply units by 3 seconds or more, a "Unit configuration error" may occur.

3.1.2. Cable connection

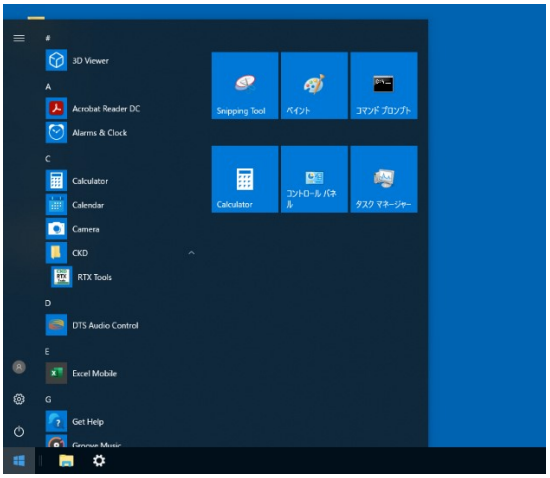
Connect the cables to prepare to use RTXTools.
Connect RT and the computer and turn on RT.
There are two types of connections:

- USB connection **Note 1**
- WebAPI connection (LAN connection)

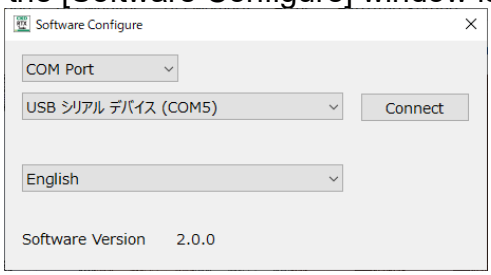
Note 1: Use USB cable which connector for RT side is micro B type.

3.1.3. Start

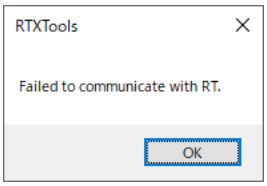
Select RTXTools from the [CKD] folder in the Windows start menu.



When RTXTools starts up, the [Software Configure] window is displayed.



Check that power is supplied to the power supply unit of the Remote I/O system and that the computer and device unit are connected with a USB cable before starting. If there is no USB connection, an error message is displayed.

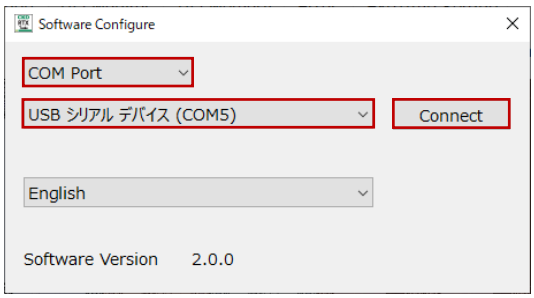


- RTXTools cannot be started at the same time. If RTXTools does not start, check whether it has already started. Refer to "4.2 Causes of problems and troubleshooting."

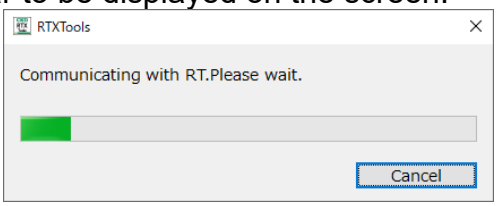
3.1.4. How to connect communication network

■ USB connection

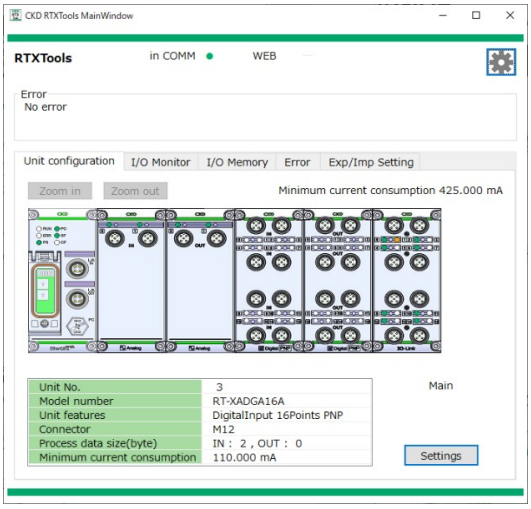
1) Select the communication method to "COM port".
2) Select the communication destination device. **Note 1**
   This software automatically detects RTs that are connected to the PC via USB and enumerates them as candidates for communication destinations. If PC is connected to multiple RTs , select the appropriate port.
3) Click the [Connect] button.



4) Wait for the progress bar to be displayed on the screen.



5) Once connected, the main window launches and the RT unit configuration screen is displayed.

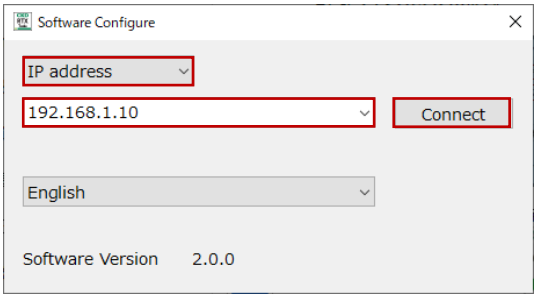


Check that the unit configuration screen is the same as the actual unit and the communication status of the device unit with the LED. If the "CF" LED is blinking, it is normal. **Note 2**

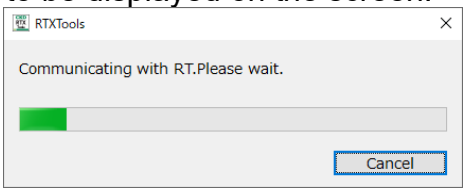
Note 1: Check the destination device (COM port) in the device manager. (Refer to Figure ⑤ in 4.1 RTXTools operation-related flowchart)
Note 2: End units and power supply units are not displayed on the unit configuration screen.

■ WebAPI(LAN) Communication

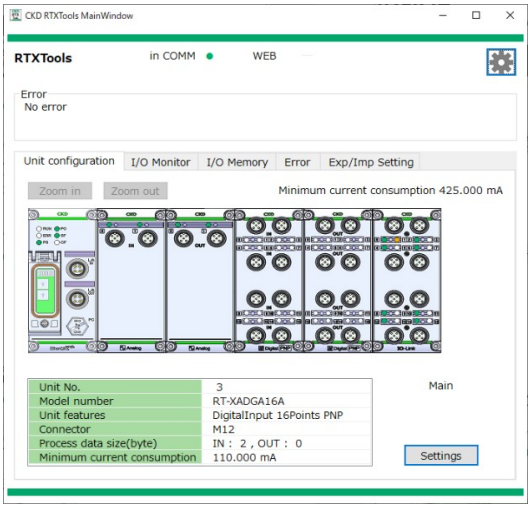
1) Select the communication method to "IP address".
2) Input the IP address.
3) Click the [Connect] button.



4) Wait for the progress bar to be displayed on the screen.



5) Once connected, the main window launches and the RT unit configuration screen is displayed.



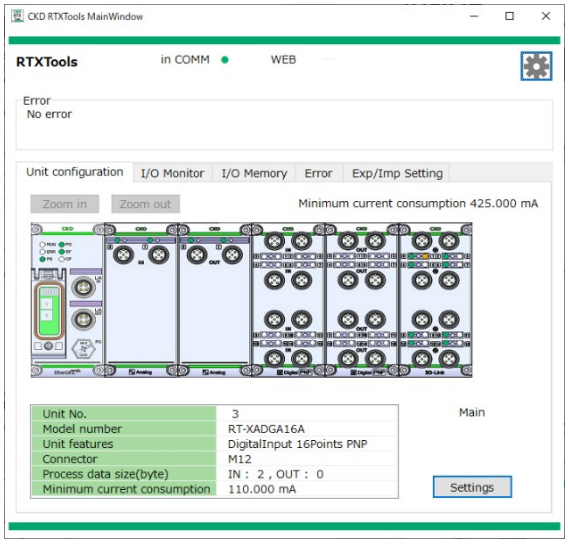
Check that the unit configuration screen is the same as the actual unit and the communication status of the device unit with the LED.
If the "CF" LED is blinking, it is normal. **Note 1**

Note 1: End units and power supply units are not displayed on the unit configuration screen.

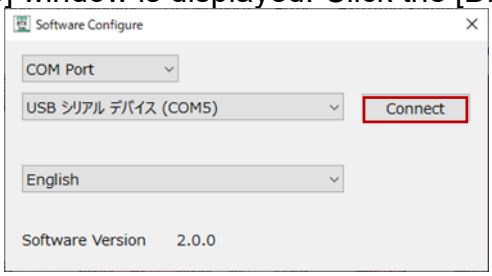
- The language used can be changed at any time. The displayed language can be switched in the [Software Configure] window. For details, refer to "3.2.25 Switch display language."

■ Disconnection

1) Click the [Software configuration window] button in the upper right corner of the main window.

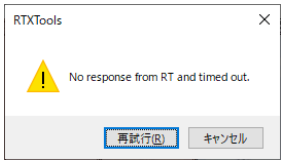


2) The [Software Configure] window is displayed. Click the [Disconnect] button.



3) To reconnect, click the [Connect] button.

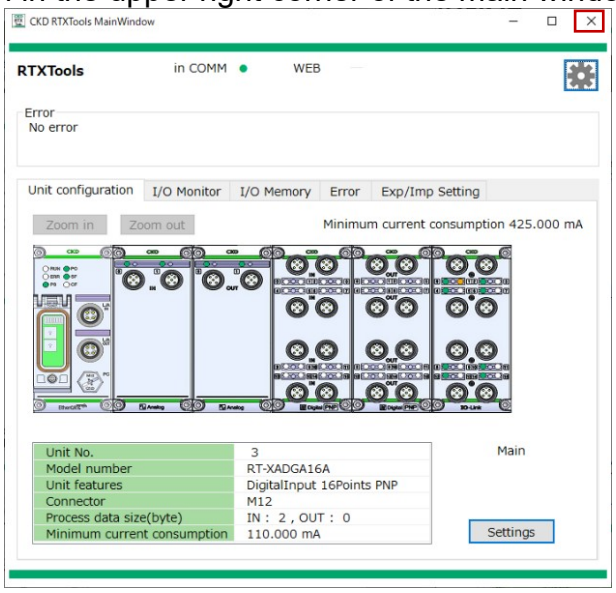
- This software communicates with the device unit at all times and automatically retrieves information from the Remote I/O system during communication. Communication status can be checked in the main window.
- Communication is also disconnected in the following cases. A message is displayed in such cases.
  *When there is no response from RT
  *When there is an unknown unit in the destination IO units
  *When 18 or more destination IO units are connected



- When reconnecting, any sub windows that were open at the time of disconnection are temporarily closed. Also, data that is being set or is not yet set (not confirmed by pressing the "Apply" button) is reset when reconnecting.

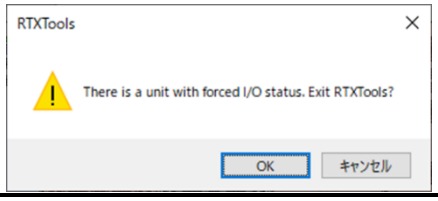
3.1.5. Exit

1) Click the [X] button in the upper right corner of the main window.



If any sub windows are open, they are closed at the same time.

- If there is a unit in I/O forcing, a message is displayed. Check the message and either cancel the forced I/O or exit RTXTools.

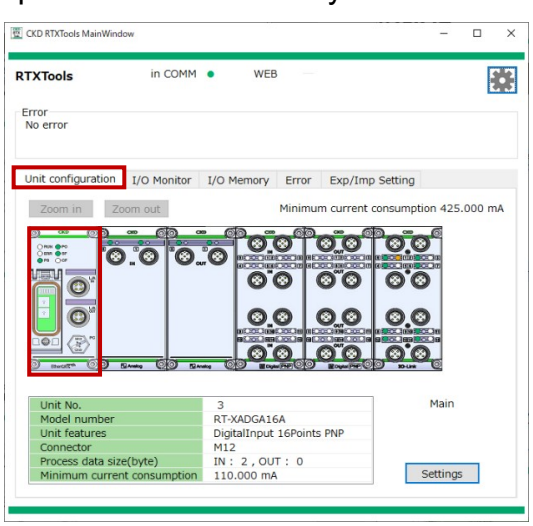


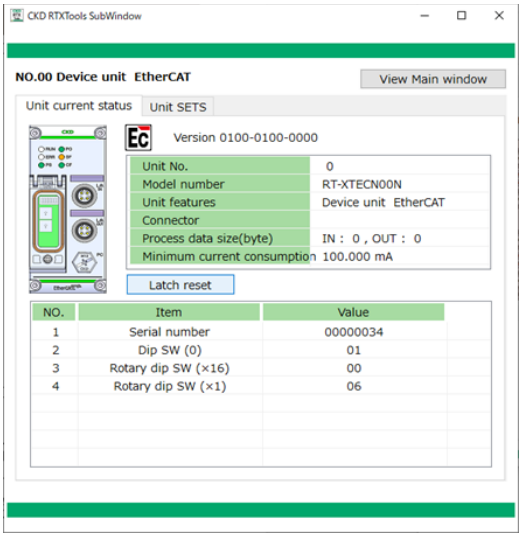
3.2. RT settings

3.2.1. Date and time settings

Set the date and time of the device unit. The date and time of the device unit is used as the date and time of the log data.

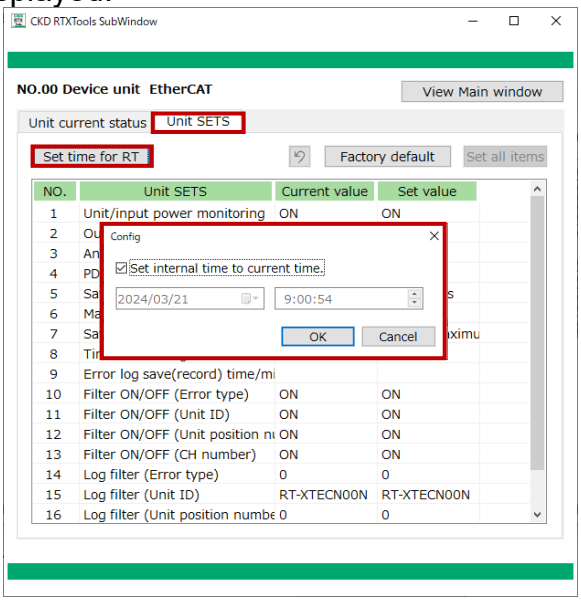
1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the device unit.



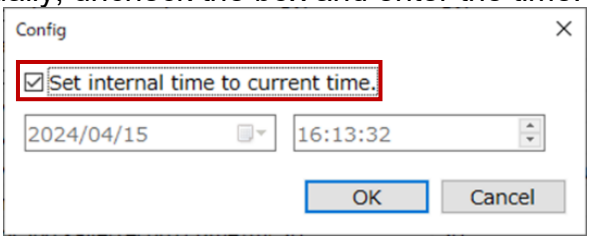


Main window → Sub window

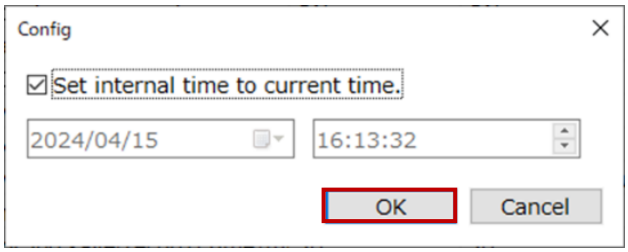
3) Click the [Set time for RT] button on the [Unit SETS] tab
[Config] window is displayed.



4) Check "Set internal time to current time".
To set the time manually, uncheck the box and enter the time.



5) and click the [OK] button.

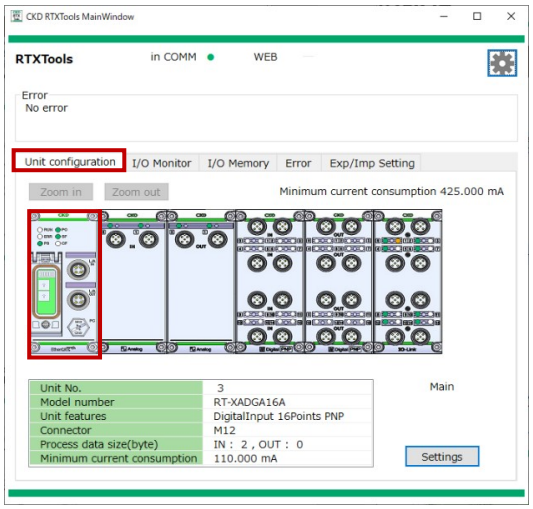


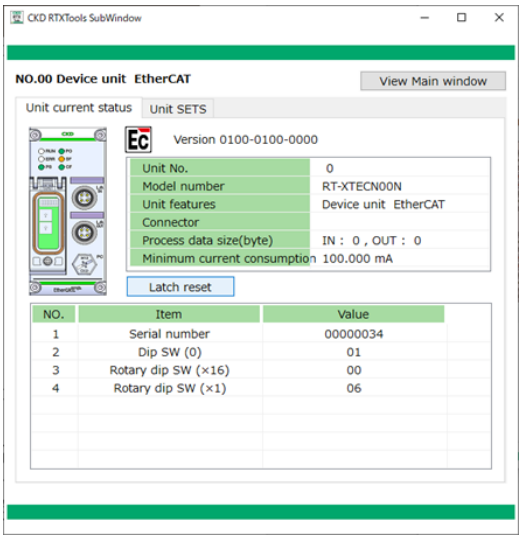
- The current time on the PC is displayed in the [Config] window by default.
- The effective range of the calendar is from January 1, 2000 to June 6, 2179.
- The initial value is set to 00:00:00 on January 1, 2000.
- The date and time settings are cleared when RT is turned off.

3.2.2. Latch reset

Perform a latch reset. Latch reset is to release the latch state.

1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the device unit.

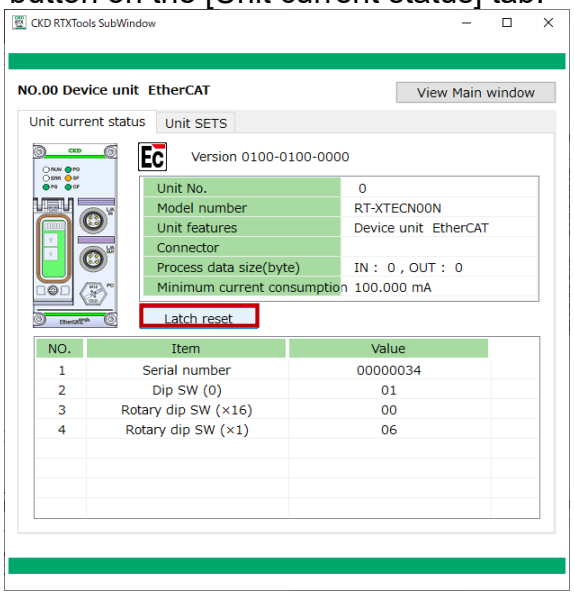




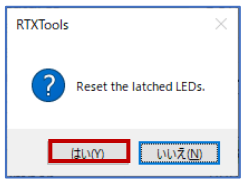
Main window

Sub window

3) Click the [Latch reset] button on the [Unit current status] tab.



4) Check the message and click "Yes". Latch reset is performed.



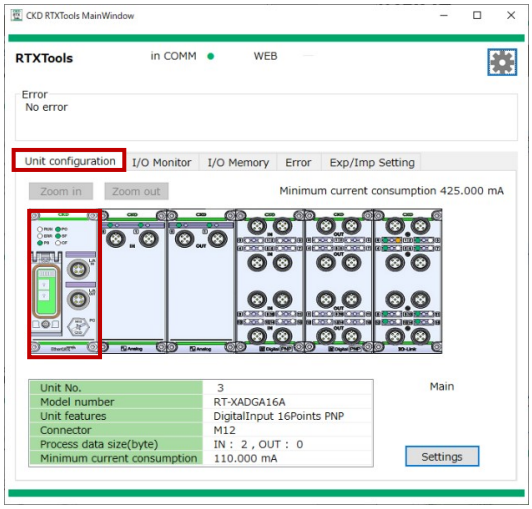
- For the latched LED, refer to the Instruction Manual for the device unit.
- When a latch reset is performed, the latch state is released for the entire RT.
- In addition to using RTXTools, the latched state is also released when RT is restarted.

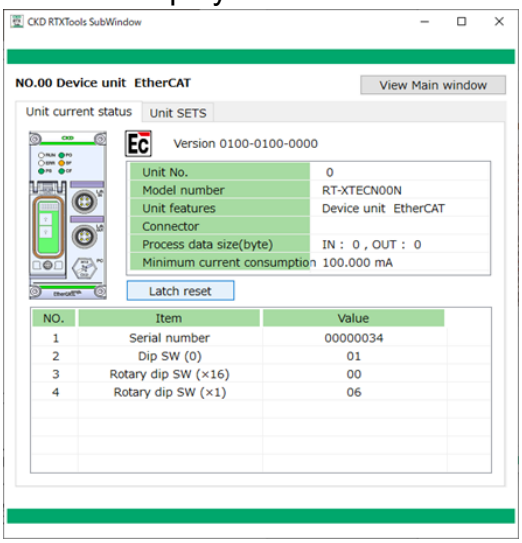
3.2.3. Displaying, changing, and loading factory default values of setting data

Displays and changes the setting data of the connected unit and loads the factory default values.

■ Displaying

1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the unit to be displayed.



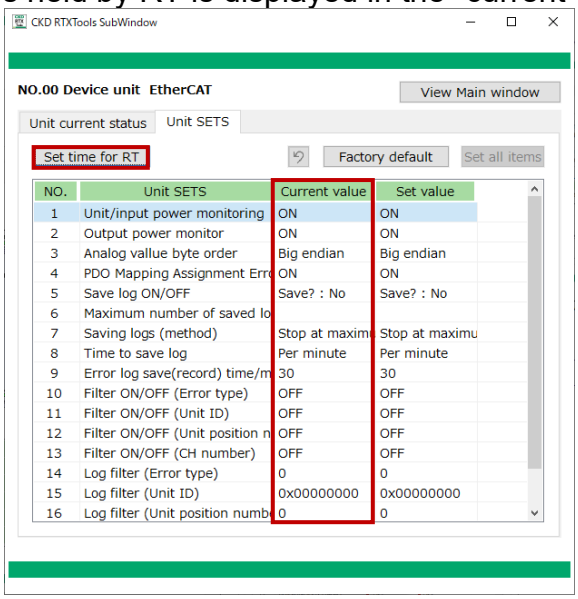


Main window

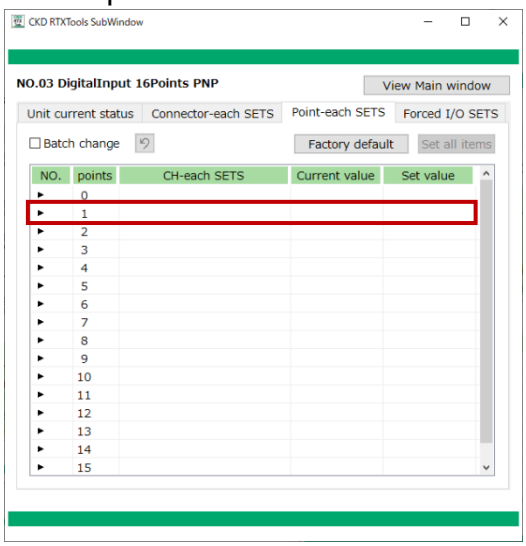
Sub window

3) Click the setting ([xxxxxSETS]”) tab.

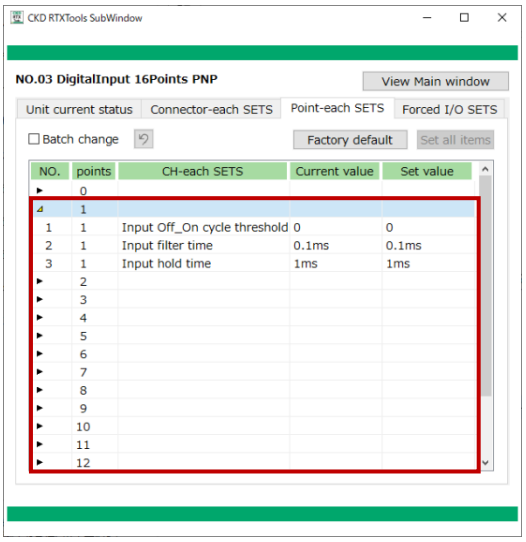
4) The current set values held by RT is displayed in the "current value" column.



If there is "▶" mark in the "No." column, clicking the mark displays a list of settings of each port.



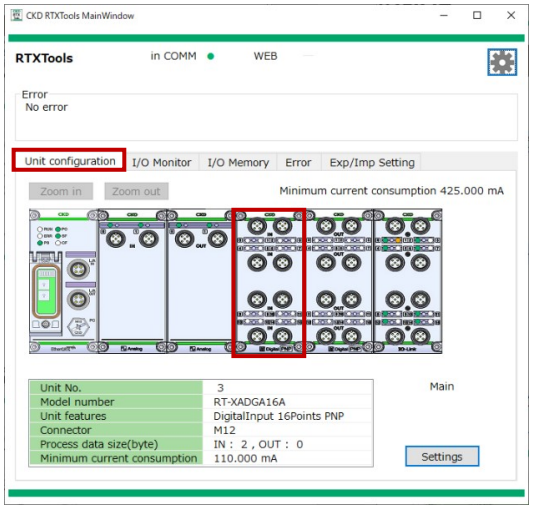
→



- The type of tab varies depends on the scope of the setting and unit. Types are as follows.
  * When there is no response from RT
  *[Unit SETS]: Device unit, analog input unit
  *[Connector-each SETS]: Digital input unit
  *[Block-each SETS]: Digital input unit Push-in terminal type
  *[CH-each SETS]: Analog input/output unit
  *[Point-each SETS]: Digital input/output unit, valve I/F unit
  *[Port-each SETS]: IO-Link master unit

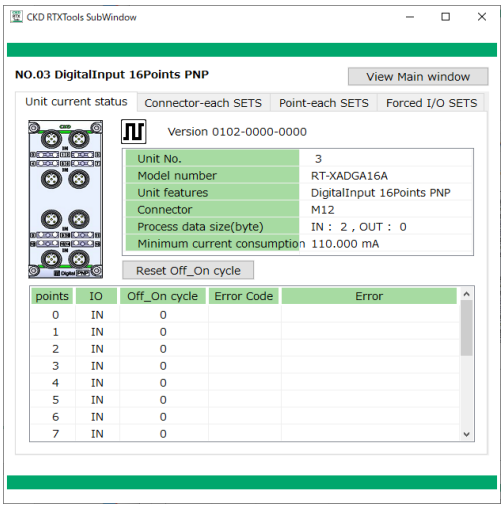
■ Changing

1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the unit to be displayed.



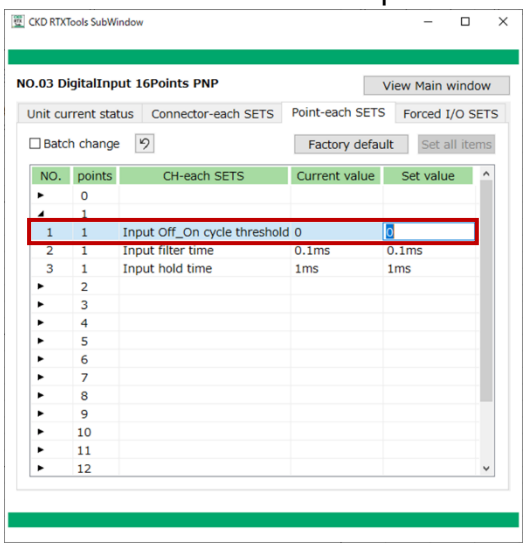
Main window

→

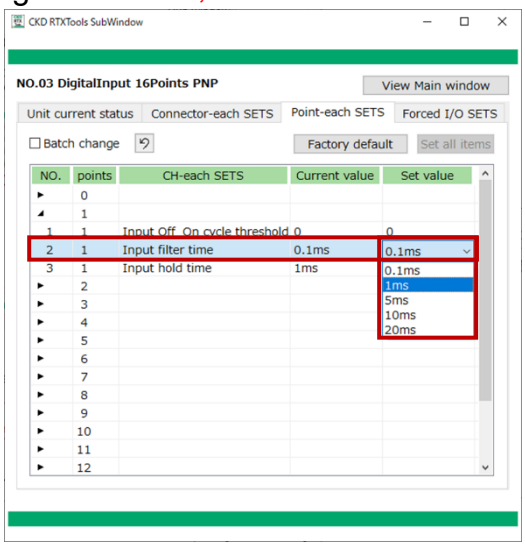


Sub window

3) Click the setting ([xxxxxSETS]") tab. **Note 1**
4) Click the [Set value] column.
5) Input field, or drop-down list is displayed according to the settings.
   Enter or select from the drop-down list for setting value. **Note 2, Note 3**

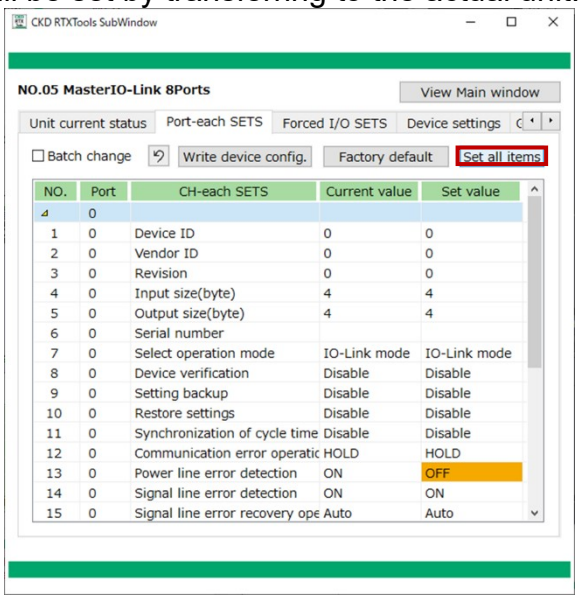


Input field



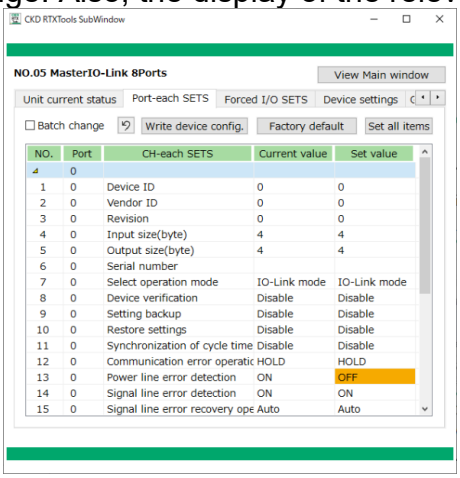
Drop-down list

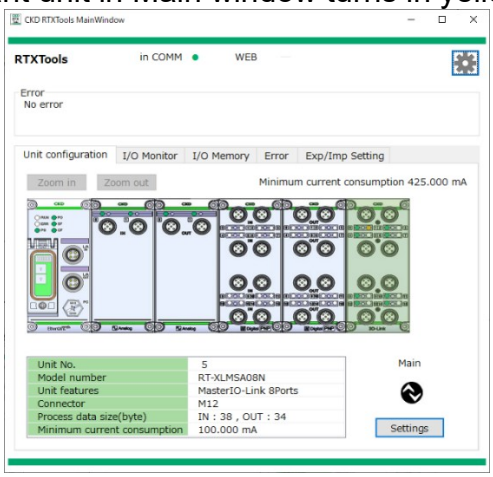
6) Click the [Set all items] button.
The input contents will be set by transferring to the actual unit.



Note 1: [xxxxxSETS] is either of [Unit SETS], [Connector-each SETS], [Block-each SETS], [CH-each SETS], [Point-each SETS], [Port-each SETS] depending on the unit.
Note 2: For details on settings, refer to the Instruction Manual ("List of settings") for each unit
Note 3: For details on the drop-down list, refer to the Instruction Manual ("List of settings") for each unit

- Leading with 0x makes it a hexadecimal number.
- If the set value differs from the current value, the set value is displayed in orange. Also, the display of the relevant unit in Main window turns in yellow.

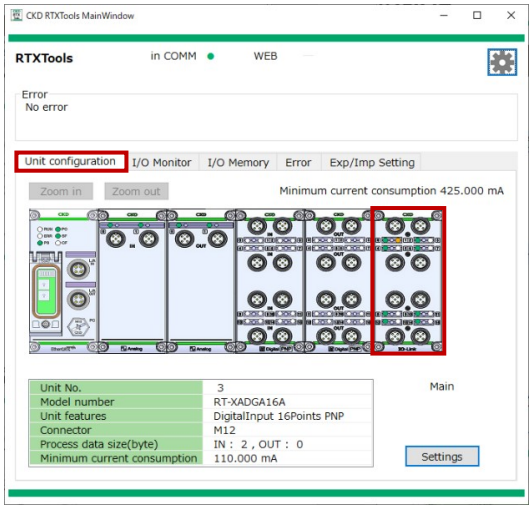


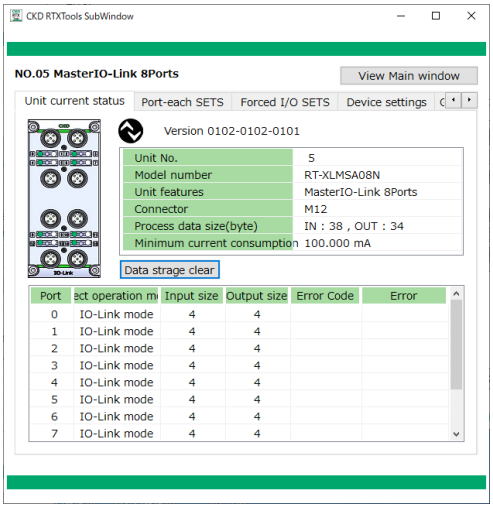


- When there is no change or no communication with RT, the [Set all items] button is grayed out.
- When "Batch change mode" is checked, input in a single connector / CH / point / port can be applied to all connectors / CH / points / ports.

■ Loading factory default values

1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the unit to be displayed.

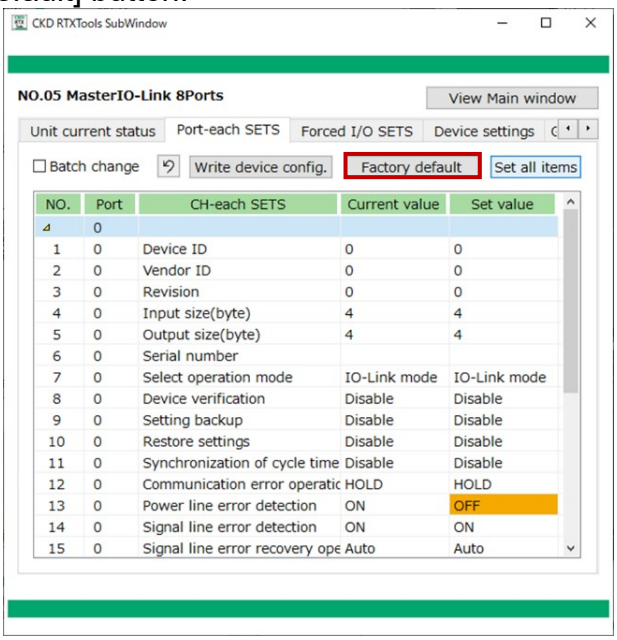




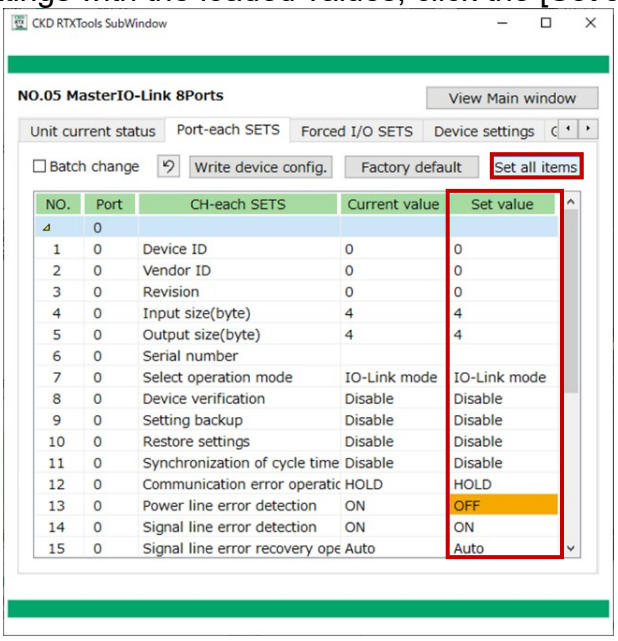
Main window

Sub window

3) Click the setting ([xxxxxSETS]”) tab. **Note 1**
4) Click the [Factory default] button.



5) Factory default values are loaded.
To configure the settings with the loaded values, click the [Set all items] button.



Note 1: [xxxxxSETS] is either of [Unit SETS], [Connector-each SETS], [Block-each SETS], [CH-each SETS], [Point-each SETS], [Port-each SETS] depending on the unit.
Note 2 Refer to 3) in "■ Display."

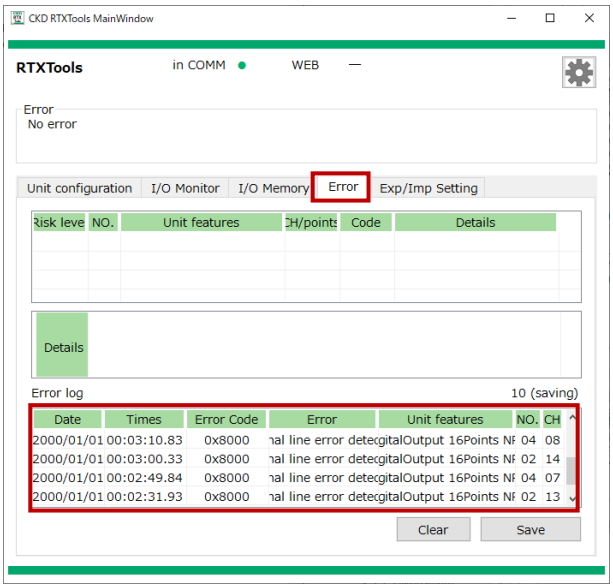
- “Factory default” value is the factory setting value
- [Factory default] is applied to all setting items and cannot be applied to only some of them.
- Refer to the instruction manuals of each unit for details on factory default values and set values.

3.2.4. Displaying, clearing, and saving log data

Displays, clears, and saves error log data.

■ Displaying

1) Opens the [Error] tab in the main window.
2) Check the displays in the “Log data list” field. **Note 1**

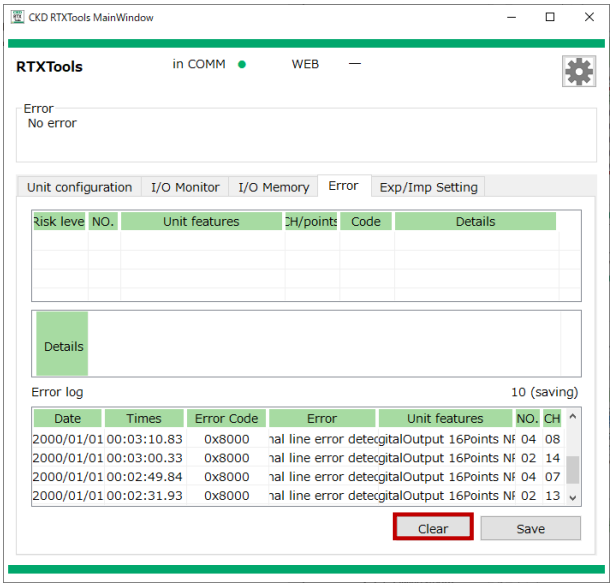


Note 1: If there is no error log, nothing is displayed.

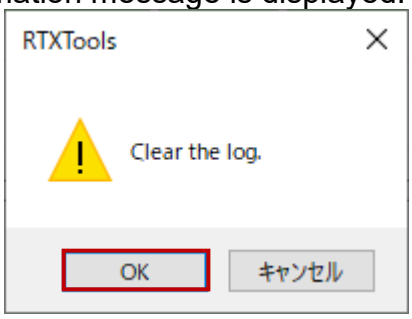
- “Log data list” displays in order from the most recent log.
- .Displays date(year/month/day), hour, error code, error, unit type, No., CH(CH/point/Port number).
- A maximum of 255 log data items can be displayed.

■ Clearing

1) Opens the [Error] tab in the main window.
2) Click the [Clear] button. **Note 1**



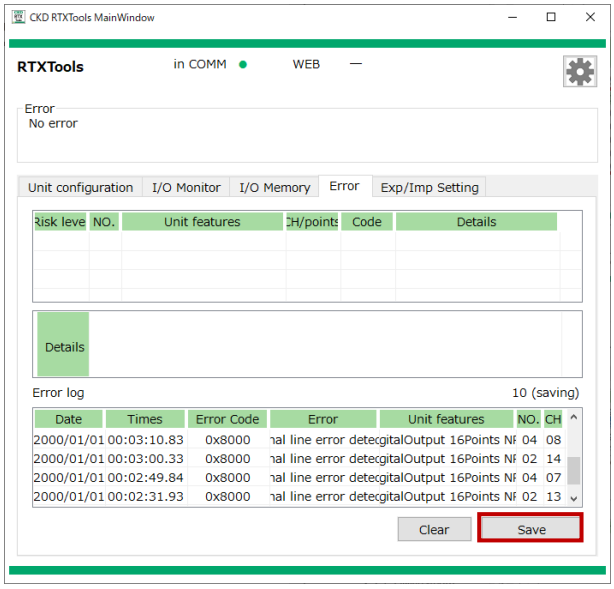
3) Click [OK] when the confirmation message is displayed.



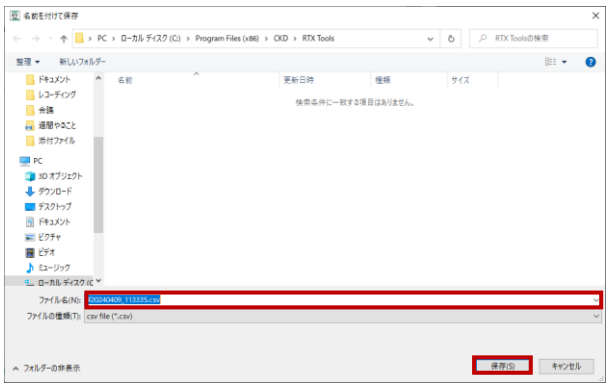
Note 1: If there is no error log or there is no communication with RT, the [Clear] button is grayed out.

■ Saving (to file)

1) Opens the [Error] tab in the main window.
2) Click the [Save] button.



3) Save as a new file. **Note 1**
   The file name and destination can be set manually. It is saved as CSV file.
   Each output item is displayed enclosed in double quotation marks ("") with one line per error. **Note 2**



Note 1: CSV file is a file of comma-separated value and the initial file name is "YYYYYMMDD_hhmmss.csv." "YYYYYMMDD" is the year, month, and day when the file was saved.
Note 2: If there is no error log, the [Save] button is grayed out.

- Log data is saved in the device unit and deleted from the device unit when cleared.
- Clearing the log data does not affect the settings for saving log data of the device unit.
- The time at which it is saved to the unit and to nonvolatile memory is different. For details, refer to "8.3 Error log function" in the Instruction Manual: System Construction.
- Logging of errors can be performed under specified conditions. (Multiple selections allowed)
  For details, refer to the "List of settings" in the Instruction Manual for each device unit.
- A maximum of 255 log data items can be saved.

3.2.5. Forced input display and setting

CAUTION

When changing settings, make sure that the input/output destination is secure.

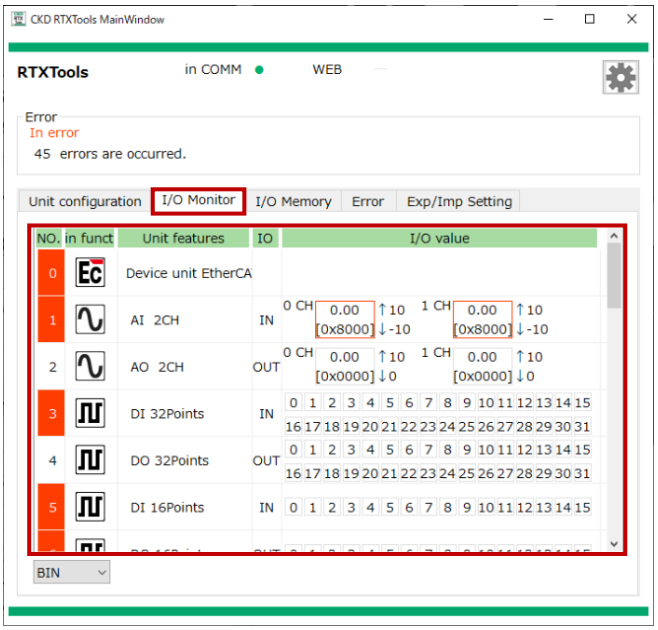
- Use caution as a change in input status due to forced input may lead to unexpected operation of the unit or peripheral devices.

Displays and sets the forced input status of units with inputs.

■ Display

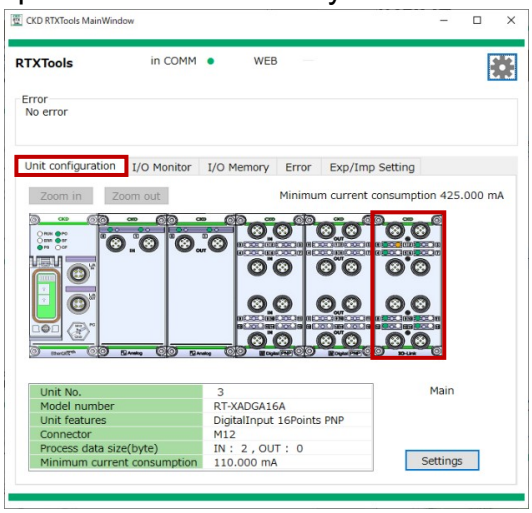
<Forced input status of the entire connected unit>

1) Open the [I/O monitor] tab in the main window.
2) The status of process data and forced I/O setting are displayed in the [Display area].



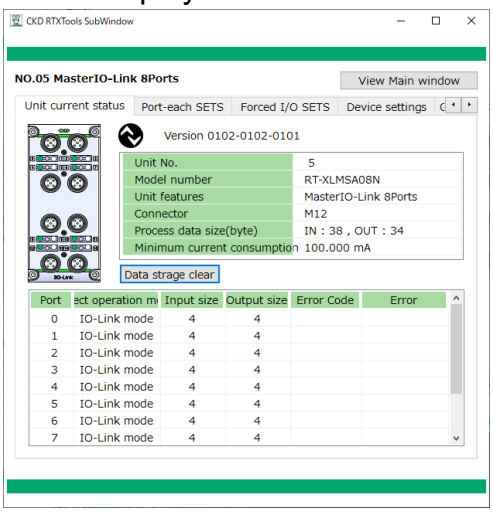
<Forced input status of each unit>

1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the unit to be displayed.



Main window

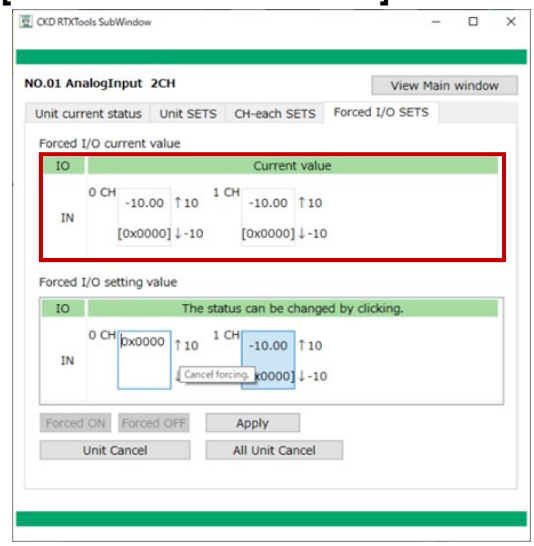
→



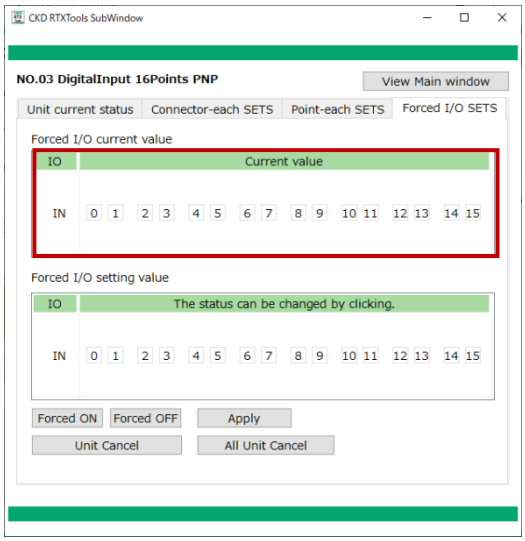
Sub window

3) Open the [Forced I/O SETS] tab.
4) Check [Forced I/O current value] area or [FORCE] and [MASK] area.
   The displayed area varies depending on the unit.

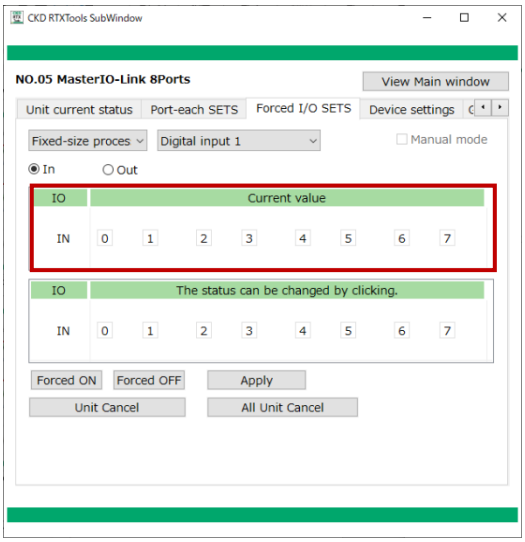
[Forced I/O current value] area



Analog Input

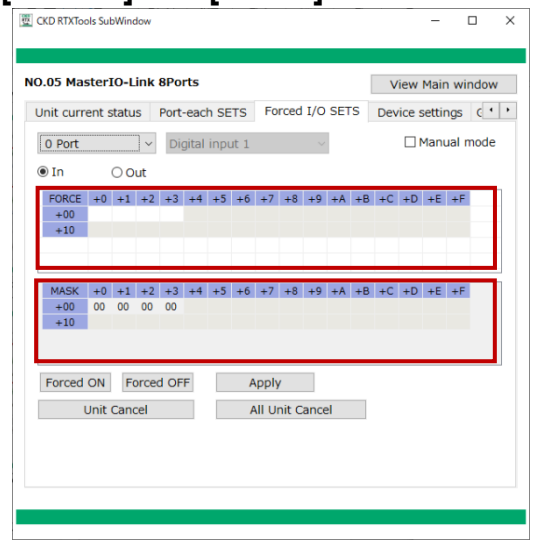


Digital Input



[Fixed-size process data] of IO-Link master unit

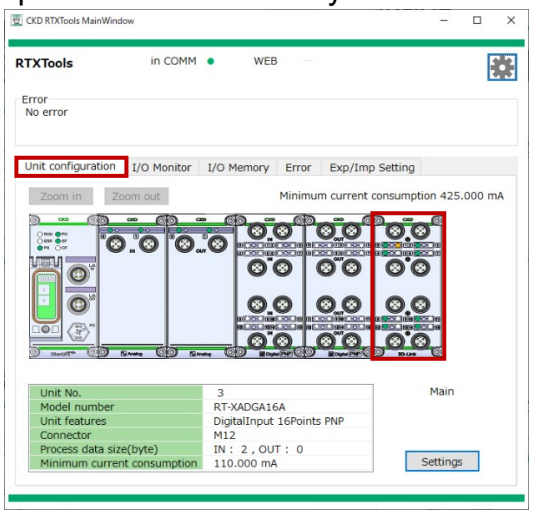
[FORCE] and [MASK] area

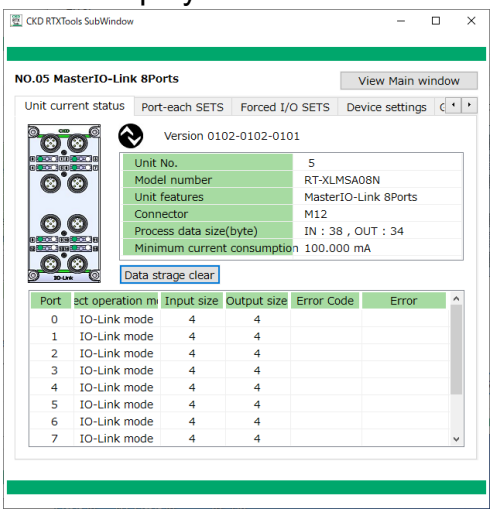


[0 Port] to [7 Port] of IO-Link master unit

■ Settings

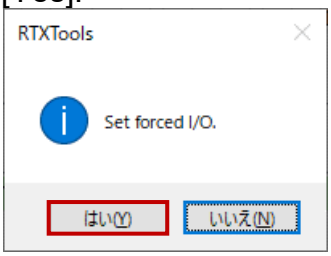
1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the unit to be displayed.





Main window → Sub window

3) Open the [Forced I/O SETS] tab.
4) Enter the setting value. **Note 1**
5) Click [Apply] button.
6) Check the message and click [Yes].



Note 1: Refer to the following settings for each unit for details.

- [All Unit Cancel] button sets all the connected units to the “Forced cancel” status. Clicking the [Apply] button is not necessary.

<Analog unit>

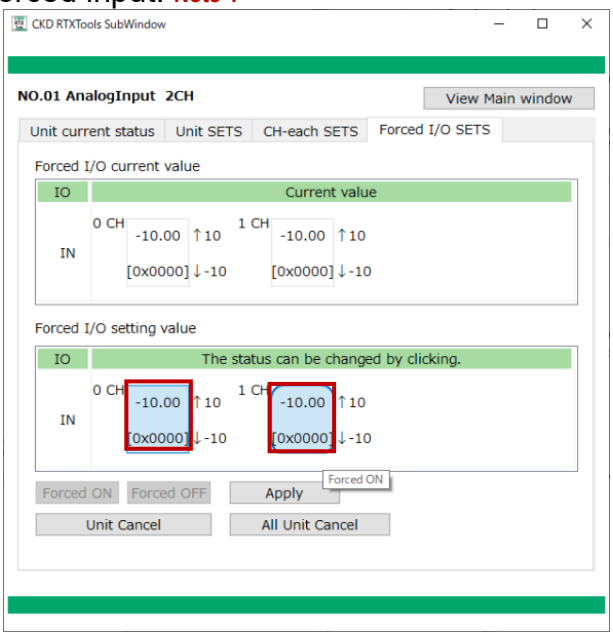
Enter the value using one of the following methods.

(1) Enter directly into the [Forced I/O setting value] area

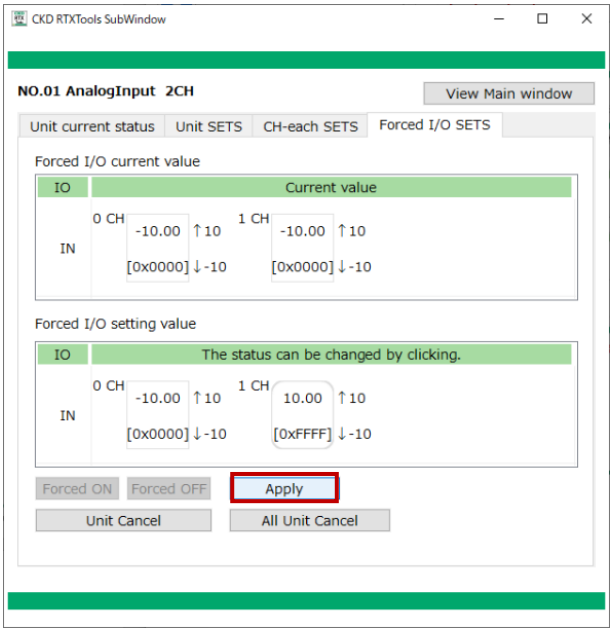
(2) Enter using the "Analog I/O value conversion window"

(1) Direct entering into [Forced I/O setting value] area

1) Click [Forced I/O setting value] area.
2) Enter the value for forced input. Note 1



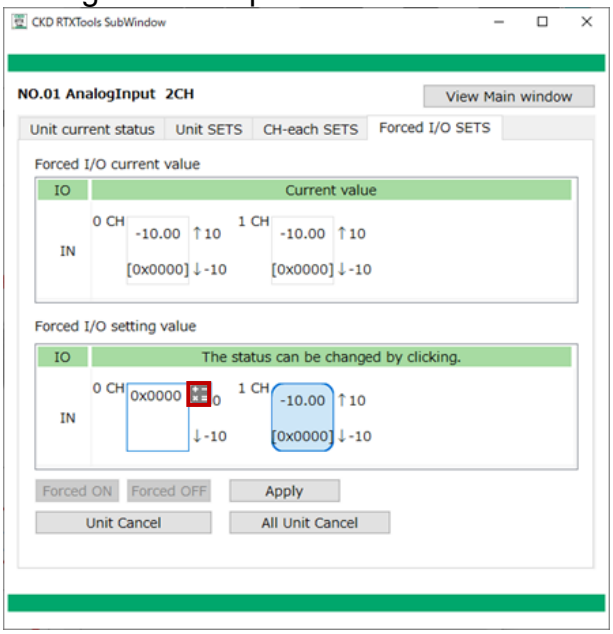
3) Click [Apply] button.



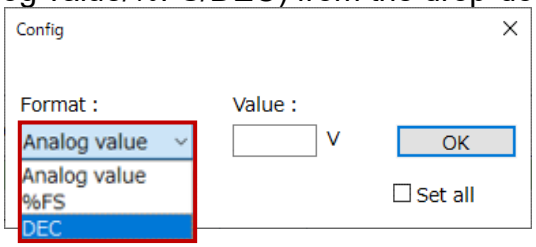
Note 1: When entering, if there is a leading 0x, it is recognized as a hexadecimal number; if not, it is recognized as a decimal number.

(2) Entering using the "Analog I/O value conversion window"

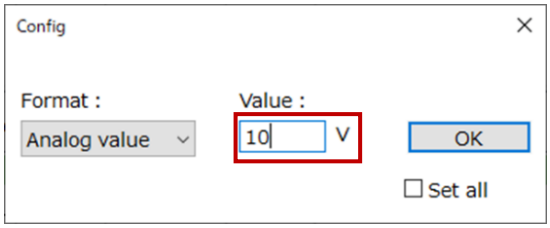
1) Click [Forced I/O setting value] area.
2) Click the icon (⊞) to the right of the input area.



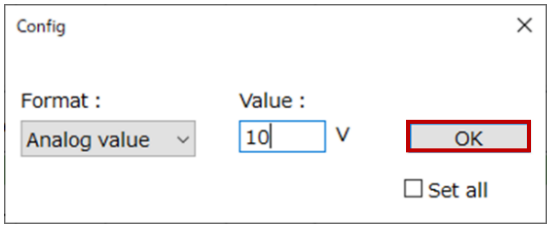
3) Select the format (analog value/%FS/DEC) from the drop-down list.



4) Enter the value.

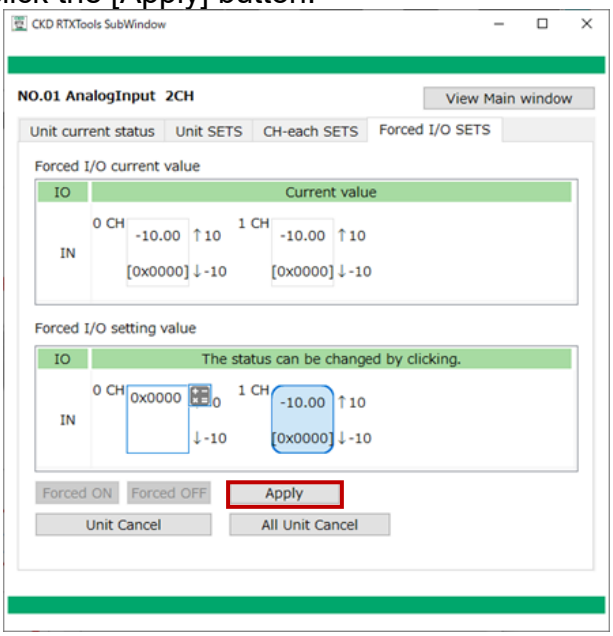


5) Click [OK]. **Note 2**

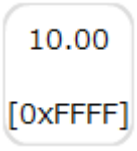


Note 2: When entering, all CHs of the analog input can be set at once by checking the "Set all" checkbox.

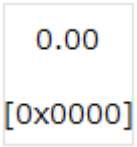
6) Once it is entered, click the [Apply] button.



- The values in the upper part of the rectangle are analog values, the values in the lower part are hexadecimal process data (in [ ]). The ↑ value that is displayed to the right of the rectangle is the maximum value in the range, and the ↓ value is the minimum value in the range.
- Rectangles indicate a forced status. Rectangles with rounded corners are [Forced] and rectangles with sharp corners are [Forced cansel].



Forced

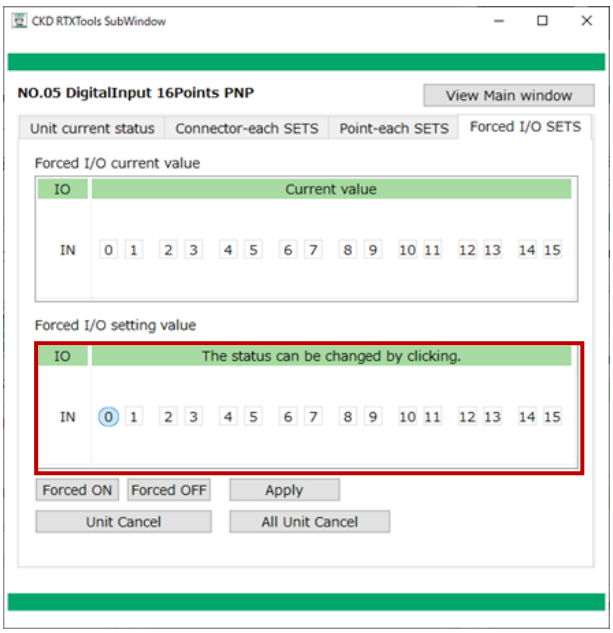


Forced cancel

- [Unit cancel] button makes the forced I/O setting value of the unit to the cancel status. Click [Apply] button to set.

<Digital unit>

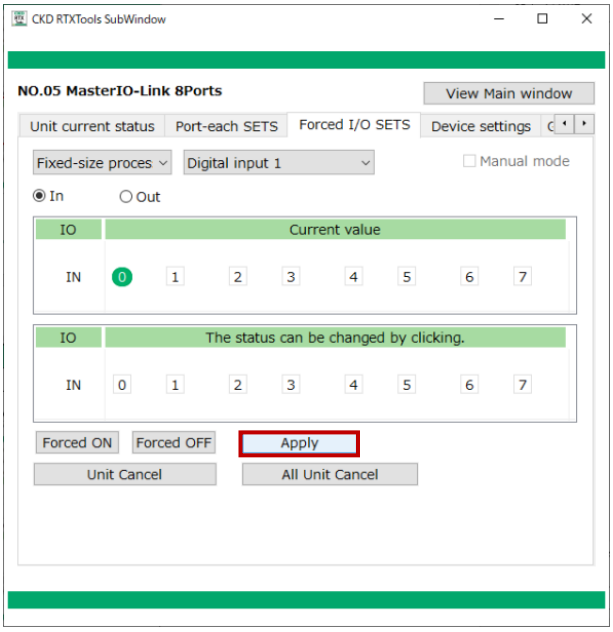
1) Click the Point number to change the force status in the [Forced I/O setting value] area.



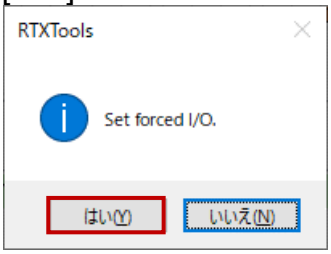
2) Setting status can be switched by clicking.
Click the Point number to change and set it to the desired forced status.

Forced				Not forced (canceled)	
●	ON	○	OFF		OFF

3) Click [Apply] button.



4) Check the message and click [Yes].



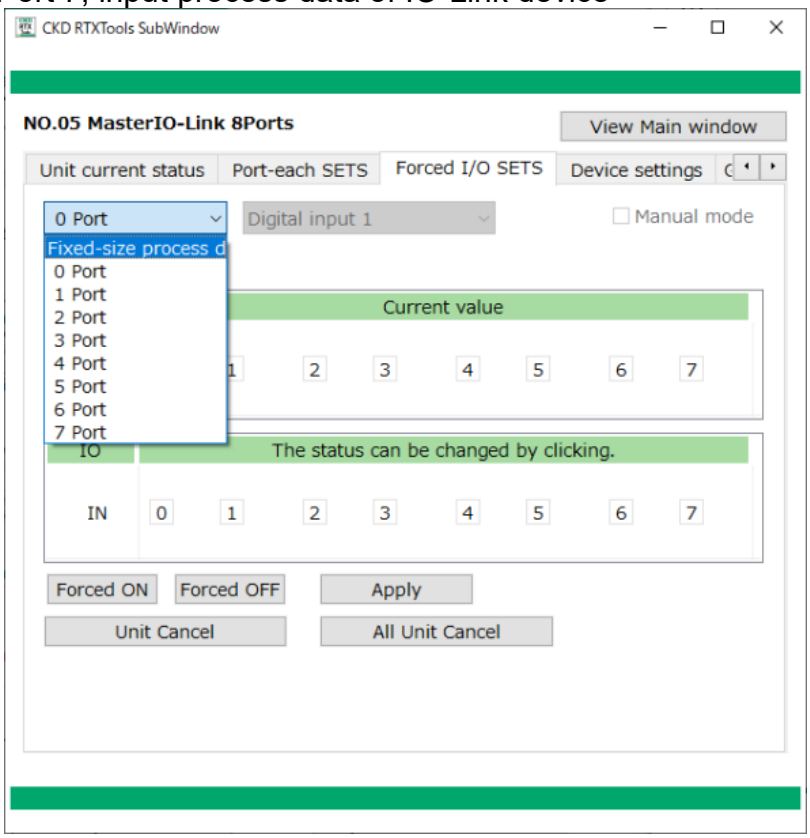
- [Unit cancel] button makes the forced I/O setting value of the unit to the cancel status. Click [Apply] button to set.
- [All Unit Cancel] button sets all the connected units to the “Forced cancel” status. Clicking the [Apply] button is not necessary.

<IO-Link master unit >

Select the data to change.

(1) Fixed-size process data **Note 1**

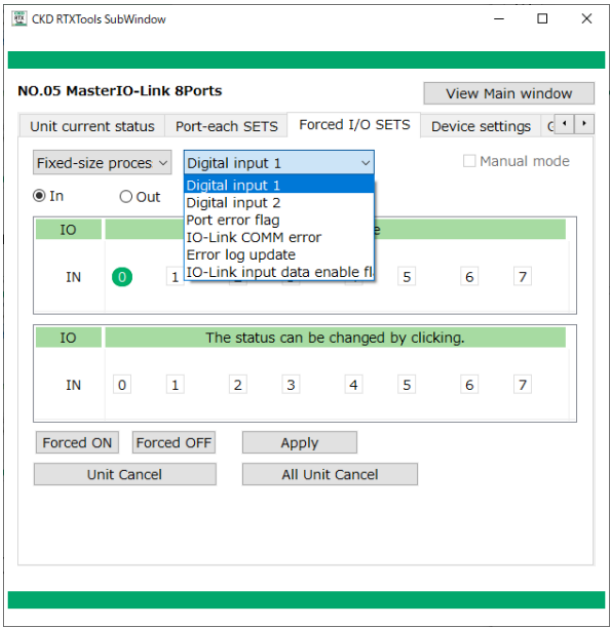
(2) Port 0 to Port 7, input process data of IO-Link device



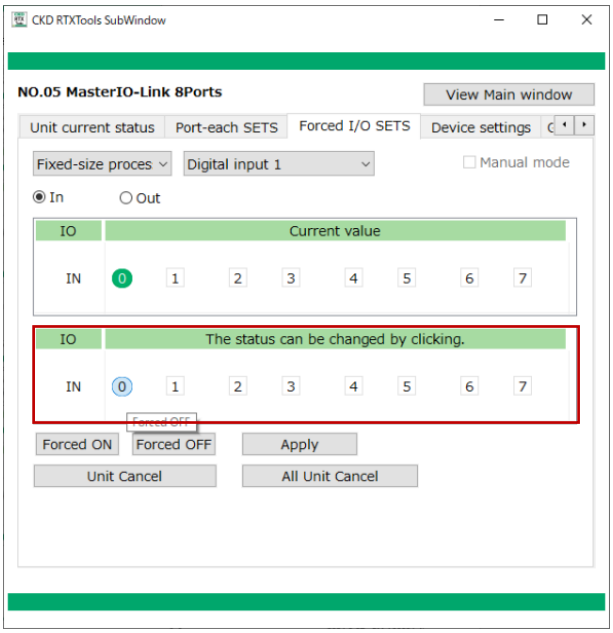
Note 1: There are [Digital input 1], [Digital input 2], [Port error flag], [IO-Link COMM error], [Error log update], and [IO-Link input data enable flag] for fixed-size process data of input.

(1) Fixed-size process data

1) Select Fixed-size process data to change.
2) Click the [Fixed-size process data type list] and select the data to change the forced input status.



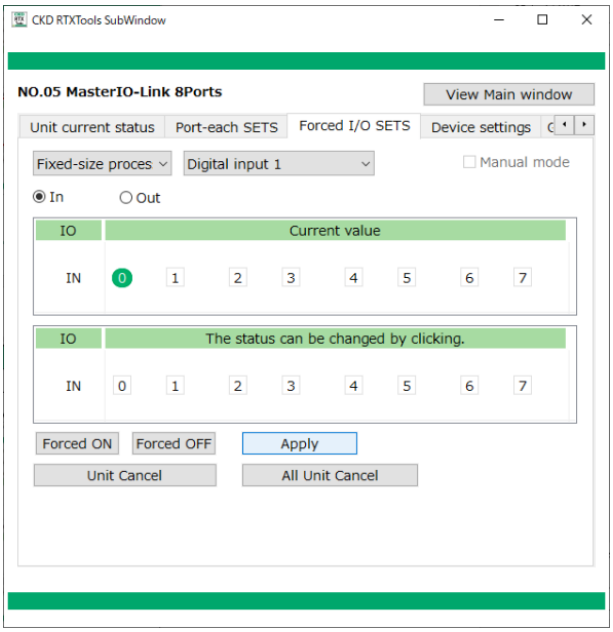
3) Click the Port number to change the force status in the [Forced I/O setting value] area.



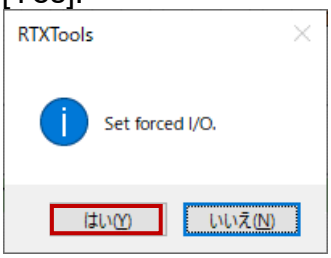
4) Setting status can be switched by clicking.
Click the Point number to change and set it to the desired forced status.

Forced				Not forced (canceled)	
●	ON	○	OFF		OFF

5) Click [Apply] button.



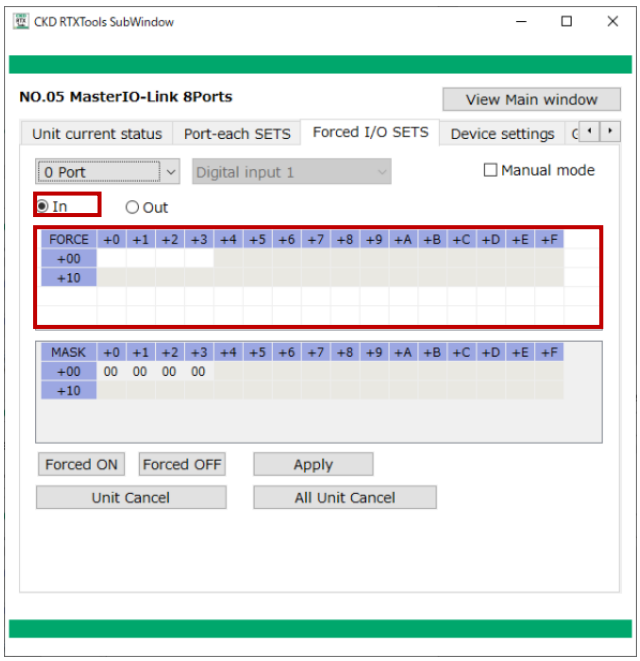
6) Check the message and click [Yes].



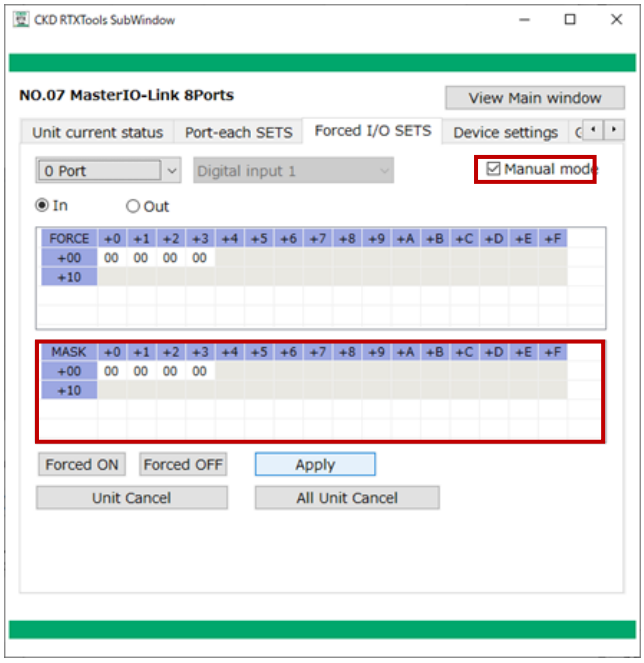
- By using the [Forced ON] and [Forced OFF] buttons, all ports of “Fixed-size process data” can be turned ON or OFF in a batch. Click the button and then click the [Apply] button to configure the settings.
- Unit cancel] button makes the forced I/O setting value of the unit to the cancel status. Click [Apply] button to set.
- [All Unit Cancel] button sets all the connected units to the “Forced cancel” status. Clicking the [Apply] button is not necessary.

(2) Port 0 to Port 7, input process data of IO-Link device

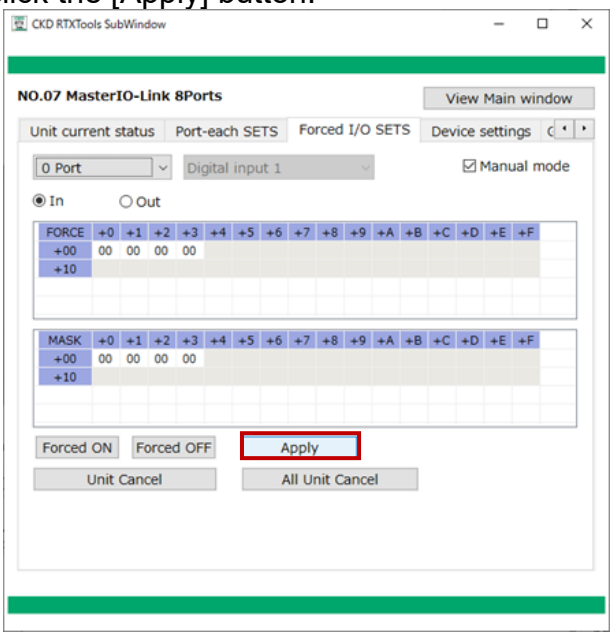
1) Select Port 0 to Port 7, input process data of IO-Link device
2) Click [In].
3) Enter (hexadecimal) in [Forced I/O FORCE] area.



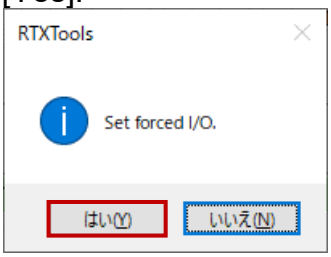
4) Check [Manual mode] checkbox when setting the forced status in a bit.
   In “manual mode”, it also can be entered into "Forced I/O MASK area."
   In the MASK area, set the bit of the data specified in the FORCE area that is to be treated as valid data in the IO-Link master unit to 1.



5) Once it is entered, click the [Apply] button.



6) Check the message and click [Yes].



- By using the [Forced ON] and [Forced OFF] buttons, the target process data can be changed to 0xFF/ 0x00 in a batch. Click the button and then click the [Apply] button to configure the settings.
- Hexadecimal input is case-insensitive.
- Unit cancel] button makes the forced I/O setting value of the unit to the cancel status. Click [Apply] button to set.
- [All Unit Cancel] button sets all the connected units to the “Forced cancel” status. Clicking the [Apply] button is not necessary.

3.2.6. Forced output display and setting

CAUTION

When changing settings, ensure that the input/output destination is secure.

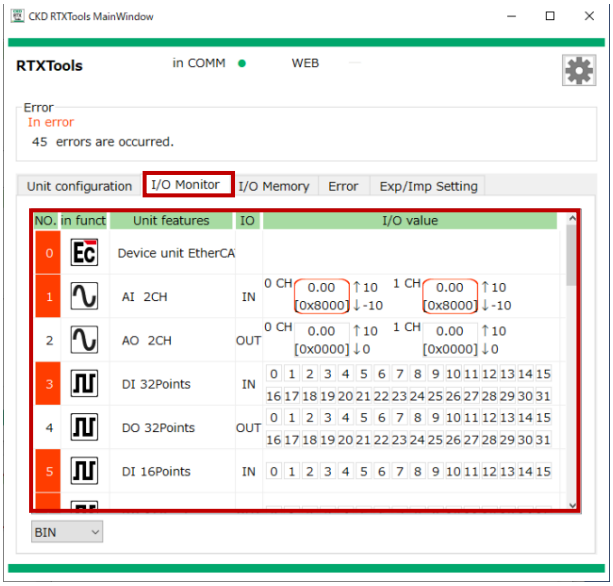
- Use caution as a change in output status due to forced output may lead to unexpected operation of the unit or peripheral devices.

Displays and sets the forced output status of the unit with outputs.

■ Display

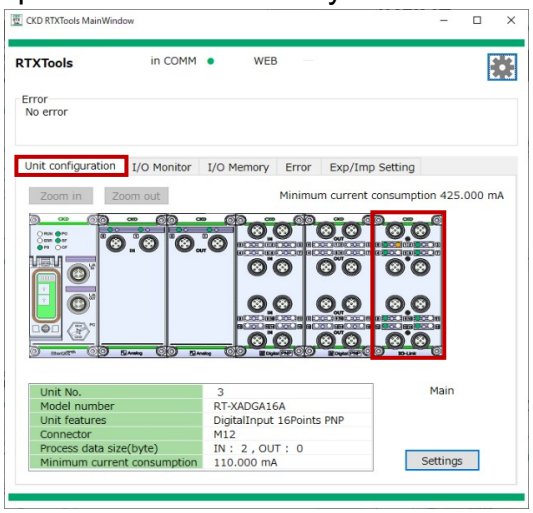
<Forced output status of the entire connected unit>

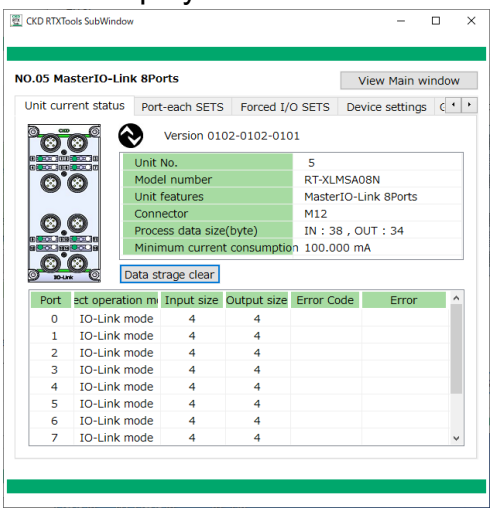
1) Open the [I/O monitor] tab in the main window.
2) The status of process data and forced I/O setting are displayed in the [Display area].



<Forced output status of each unit>

3) Open the [Unit configuration] tab in the main window.
4) Open the sub window by double-clicking the unit to be displayed.

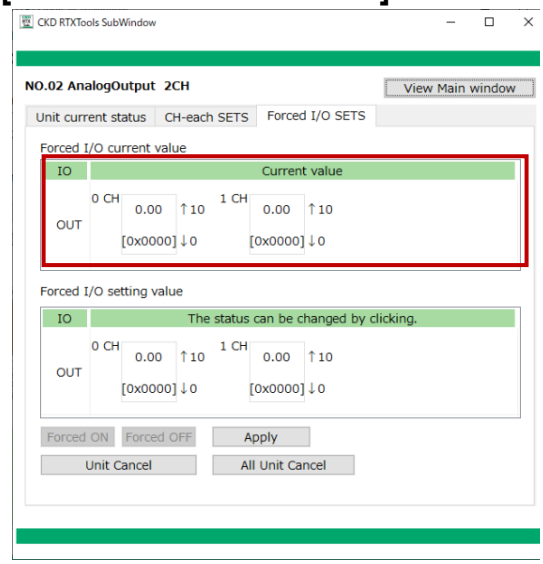




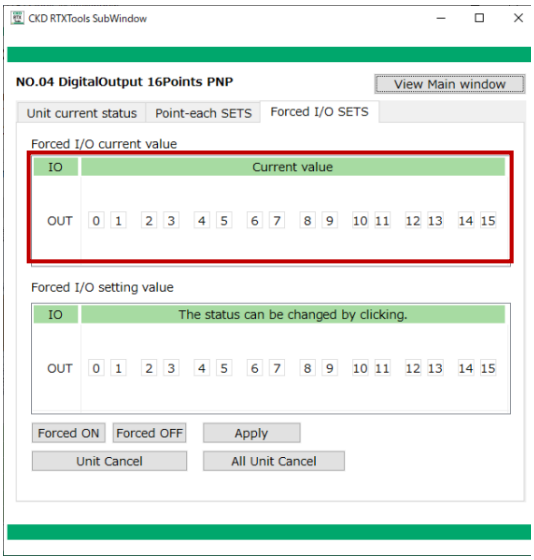
Main window → Sub window

5) Open the [Forced I/O SETS] tab.
6) Check [Forced I/O current value] area or [FORCE] and [MASK] area.
   The displayed area varies depending on the unit.

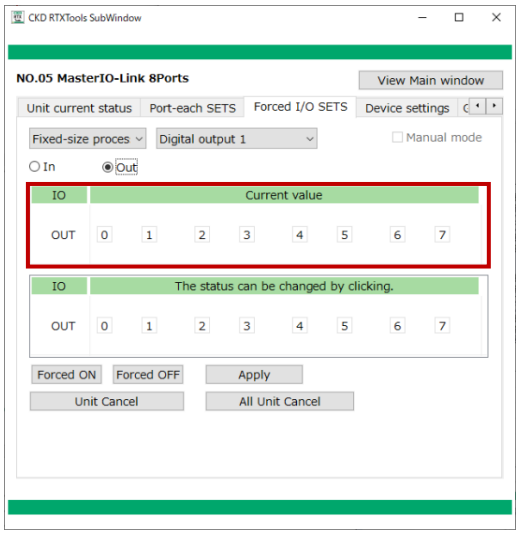
[Forced I/O current value] area



Analog output

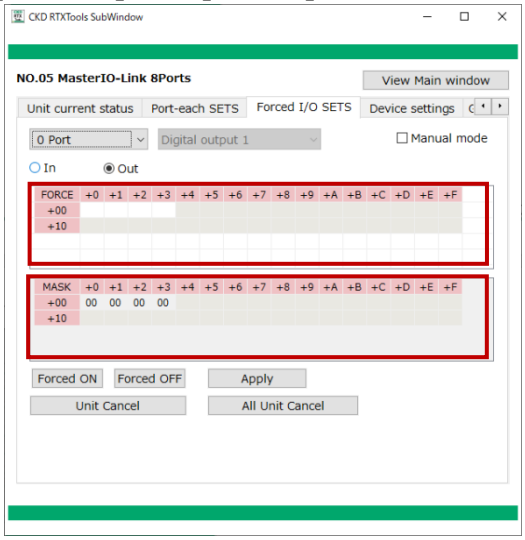


Digital output



[Fixed-size process data] of IO-Link master unit

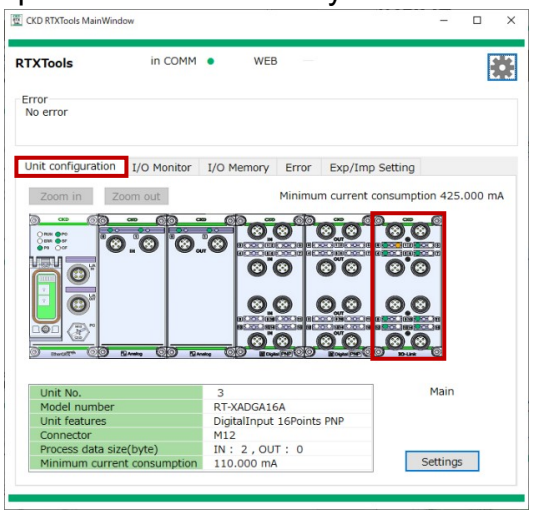
[FORCE] and [MASK] area

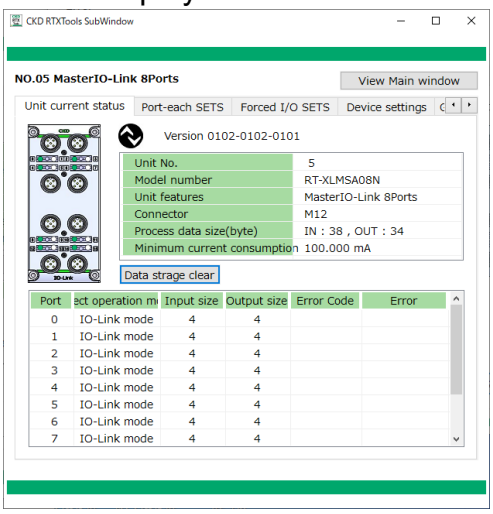


[0 Port] to [7 Port] of IO-Link master unit

■ Settings

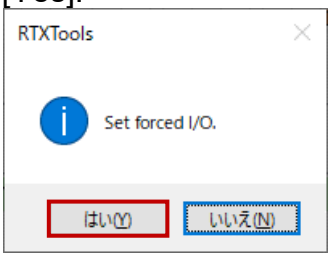
1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the unit to be displayed.





Main window → Sub window

3) Open the [Forced I/O SETS] tab.
4) Enter the setting value. **Note 1**
5) Click [Apply] button.
6) Check the message and click [Yes].



Note 1: Refer to the following settings for each unit for details.

- [All Unit Cancel] button sets all the connected units to the “Forced cancel” status. Clicking the [Apply] button is not necessary.

<Analog unit>

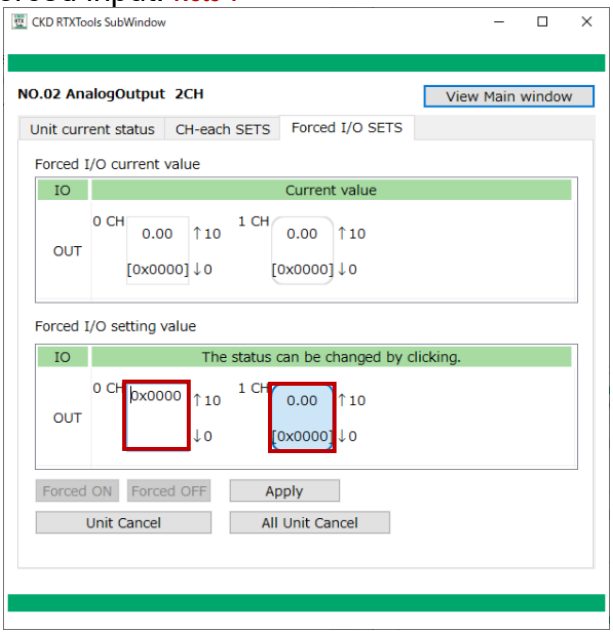
Enter the value using one of the following methods.

(1) Enter directly into the [Forced I/O setting value] area

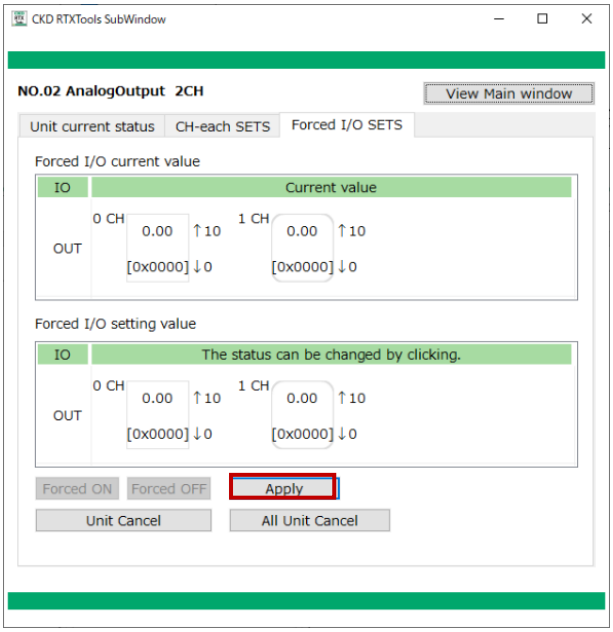
(2) Enter using the "Analog I/O value conversion window"

(1) Direct entering into [Forced I/O setting value] area

1) Click [Forced I/O setting value] area.
2) Enter the value for forced input. Note 1



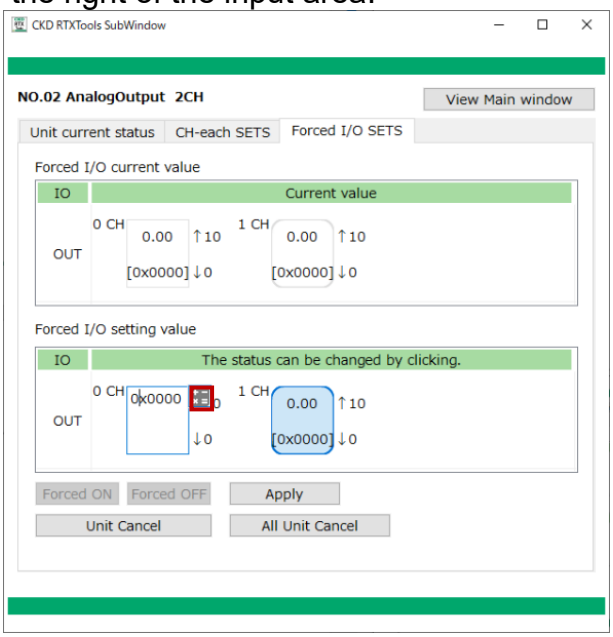
3) Click [Apply] button.



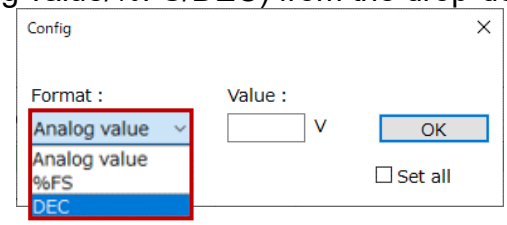
Note 1: When entering, if there is a leading 0x, it is recognized as a hexadecimal number; if not, it is recognized as a decimal number.

(2) Entering using the "Analog I/O value conversion window"

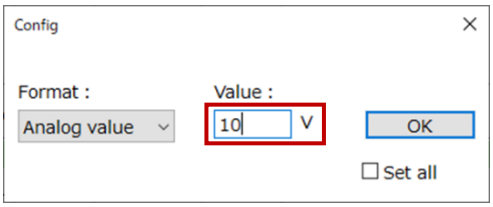
1) Click [Forced I/O setting value] area.
2) Click the icon (▦) to the right of the input area.



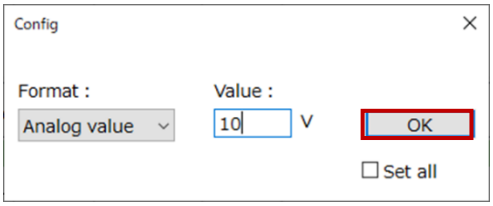
3) Select the format (analog value/%FS/DEC) from the drop-down list.



4) Enter the value.

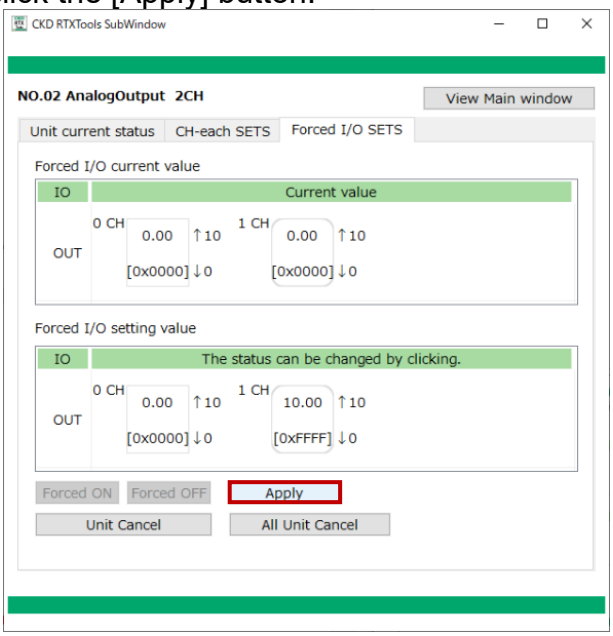


5) Click [OK]. **Note 2**

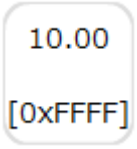


Note 2: When entering, all CHs of the analog output can be set at once by checking the "Set all" checkbox.

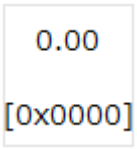
6) Once it is entered, click the [Apply] button.



- The values in the upper part of the rectangle are analog values, the values in the lower part are hexadecimal process data (in [ ]). The ↑ value that is displayed to the right of the rectangle is the maximum value in the range, and the ↓ value is the minimum value in the range.
- Rectangles indicate a forced status. Rectangles with rounded corners are [Forced] and rectangles with sharp corners are [Forced cansel].



Forced

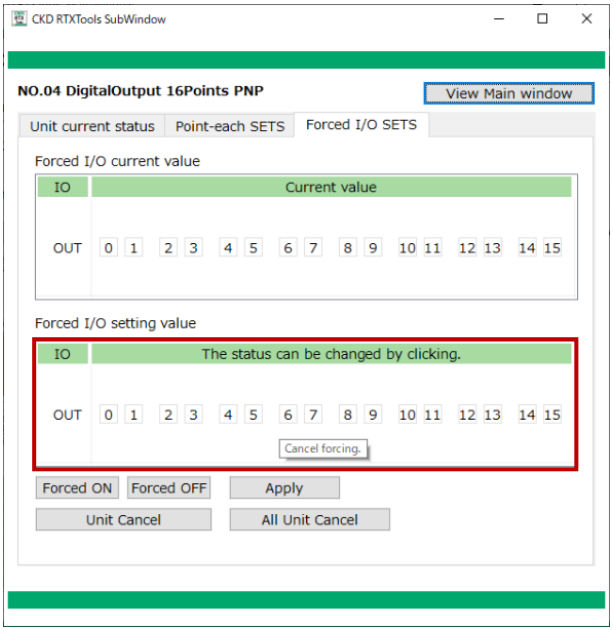


Forced cancel

- [Unit cancel] button makes the forced I/O setting value of the unit to the cancel status. Click [Apply] button to set.

<Digital unit>

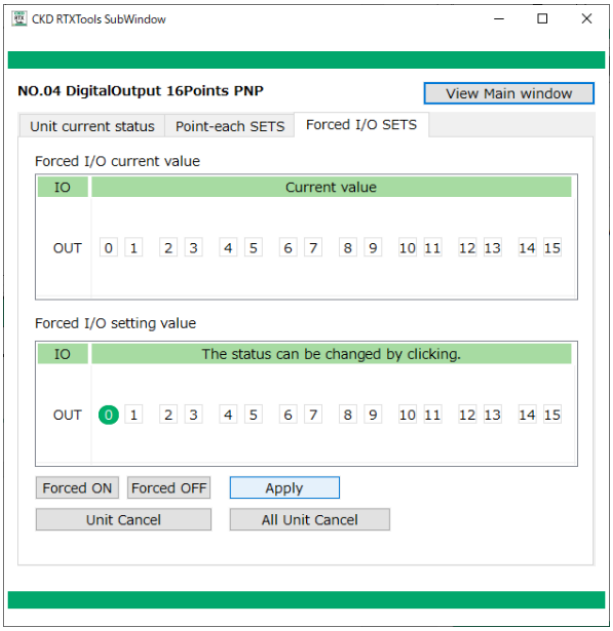
1) Click the Point number to change the force status in the [Forced I/O setting value] area.



2) Setting status can be switched by clicking.
Click the Point number to change and set it to the desired forced status.

Forced				Not forced (canceled)	
●	ON	○	OFF	□	OFF

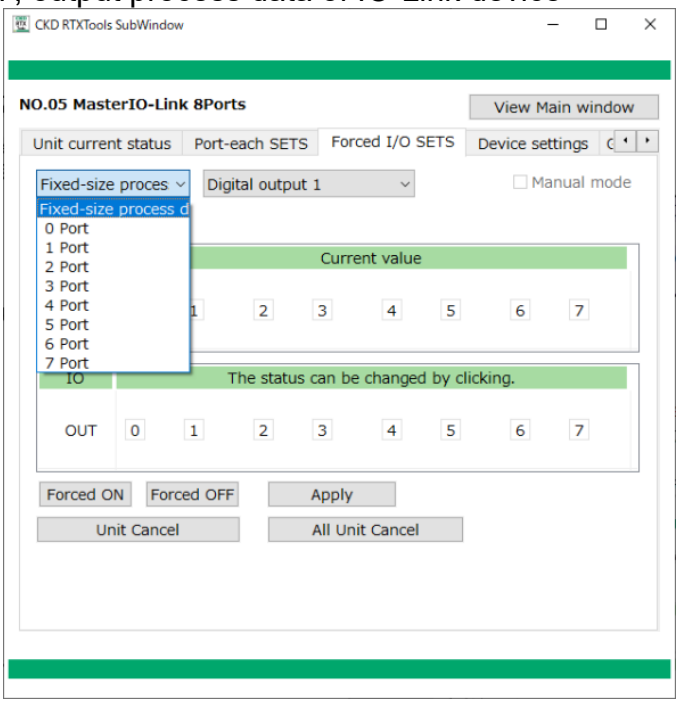
3) Click [Apply] button.



- [Unit cancel] button makes the forced I/O setting value of the unit to the cancel status. Click [Apply] button to set.
- [All Unit Cancel] button sets all the connected units to the “Forced cancel” status. Clicking the [Apply] button is not necessary.

<IO-Link master unit >

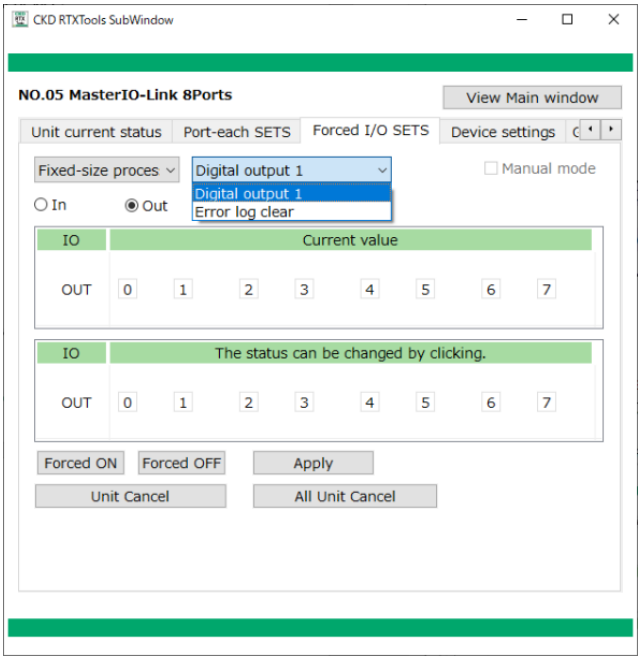
1) Select the data to change.
   (1) Fixed-size process data **Note 1**
   (2) Port 0 to Port 7, output process data of IO-Link device



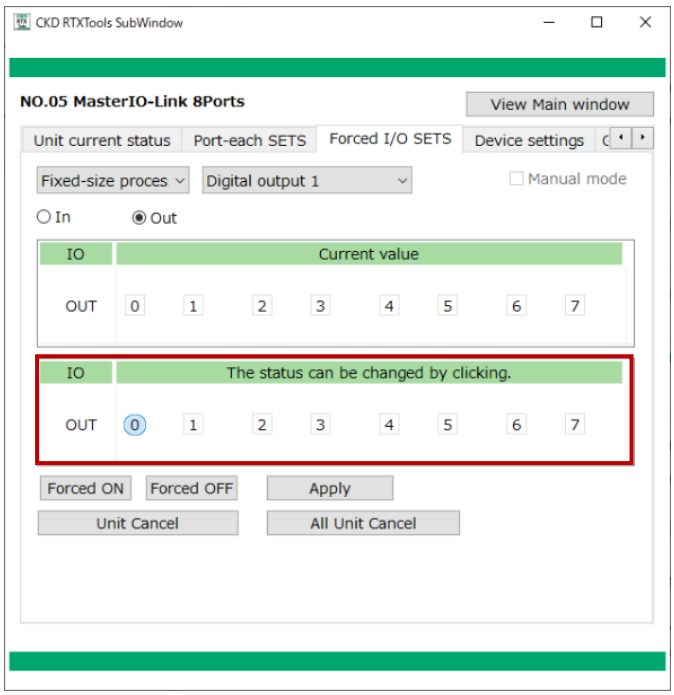
Note 1: There are [Digital output 1], [Error log clear] for fixed-size process data of output.

(1) Fixed-size process data

1) Select Fixed-size process data.
2) Click the [Fixed-size process data type list] and select the data to change the forced output status.



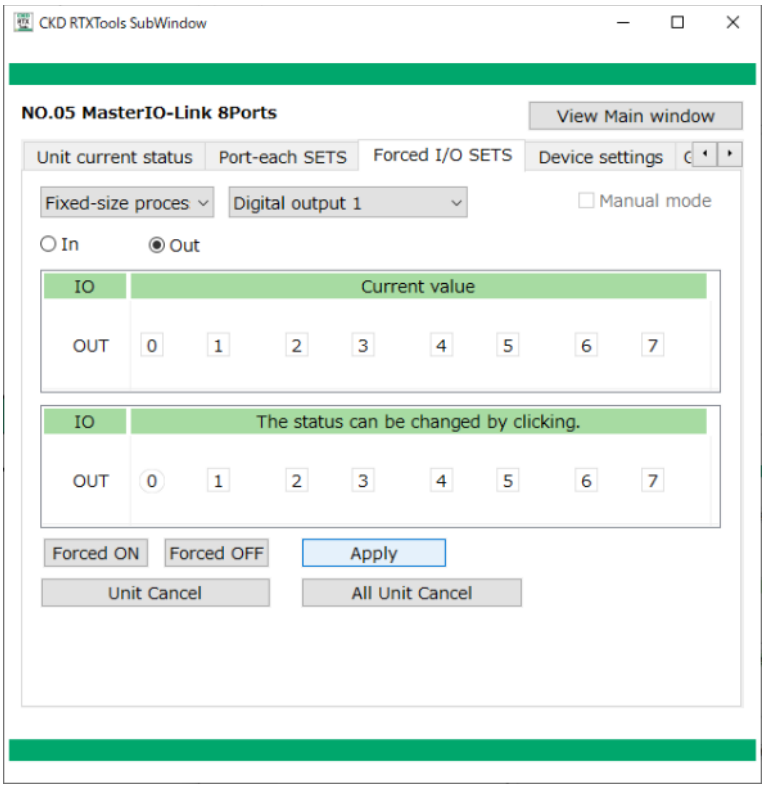
3) Click the Port number to change the force status in the [Forced I/O setting value] area.



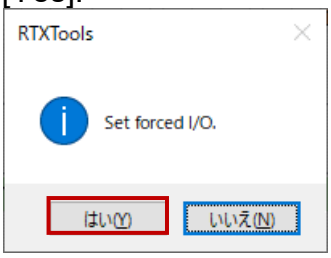
4) Setting status can be switched by clicking.
Click the Point number to change and set it to the desired forced status.

Forced				Not forced (canceled)	
●	ON	○	OFF	□	OFF

5) Click [Apply] button.



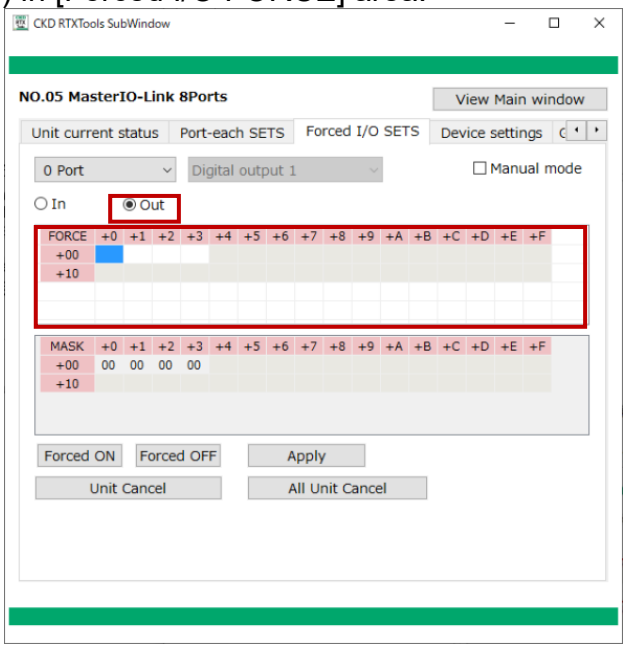
6) Check the message and click [Yes].



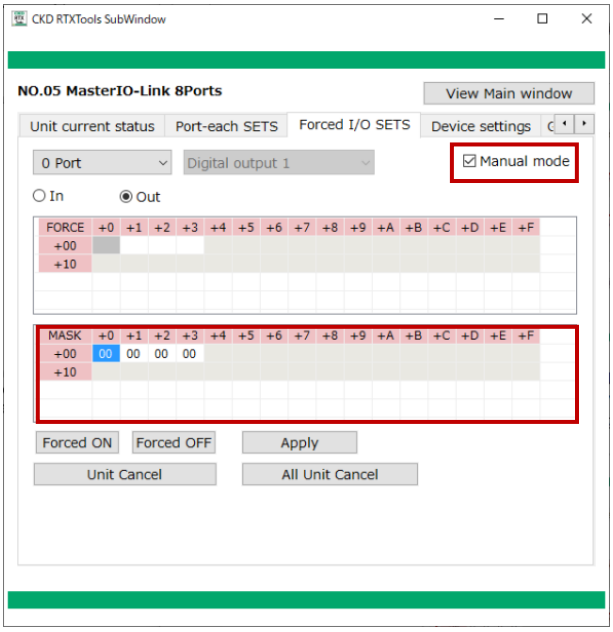
- By using the [Forced ON] and [Forced OFF] buttons, all ports of “Fixed-size process data” can be turned ON or OFF in a batch. Click the button and then click the [Apply] button to configure the settings.
- Unit cancel] button makes the forced I/O setting value of the unit to the cancel status. Click [Apply] button to set.
- [All Unit Cancel] button sets all the connected units to the “Forced cancel” status. Clicking the [Apply] button is not necessary.

(2) Port 0 to Port 7, input process data of IO-Link device

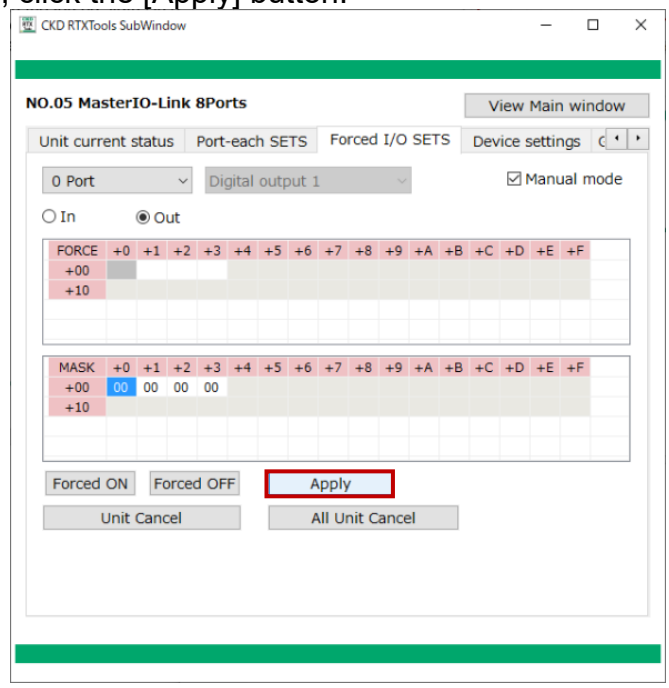
1) Select Port 0 to Port 7.
2) Click [Out].
3) Enter (hexadecimal) in [Forced I/O FORCE] area.



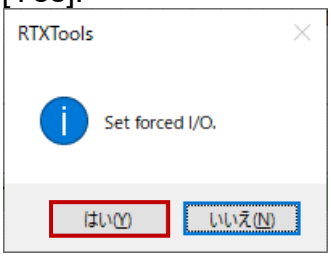
4) Check [Manual mode] checkbox when setting the forced status in a bit.
In “manual mode,” it also can be entered into "Forced I/O MASK area."
In the MASK area, set the bit of the data specified in the FORCE area that is to be treated as valid data in the IO-Link master unit to 1.



5) Once it is entered, click the [Apply] button.



6) Check the message and click [Yes].

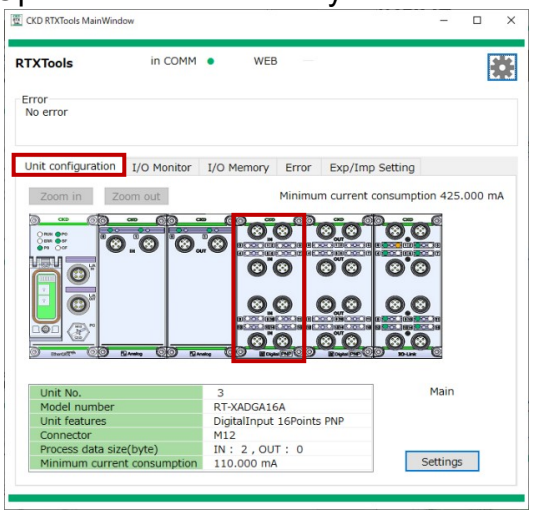


- By using the [Forced ON] and [Forced OFF] buttons, the target process data can be changed to 0xFF/ 0x00 in a batch. Click the button and then click the [Apply] button to configure the settings.
- Hexadecimal input is case-insensitive.
- Unit cancel] button makes the forced I/O setting value of the unit to the cancel status. Click [Apply] button to set.
- [All Unit Cancel] button sets all the connected units to the “Forced cancel” status. Clicking the [Apply] button is not necessary.

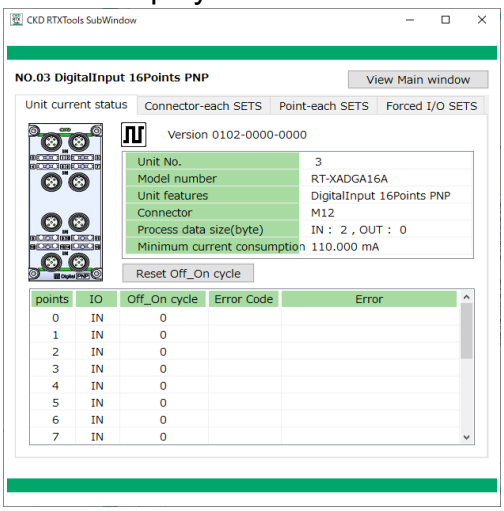
3.2.7. Resetting Off_On cycle

Resets the Off_On cycle.

1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the unit to be displayed.

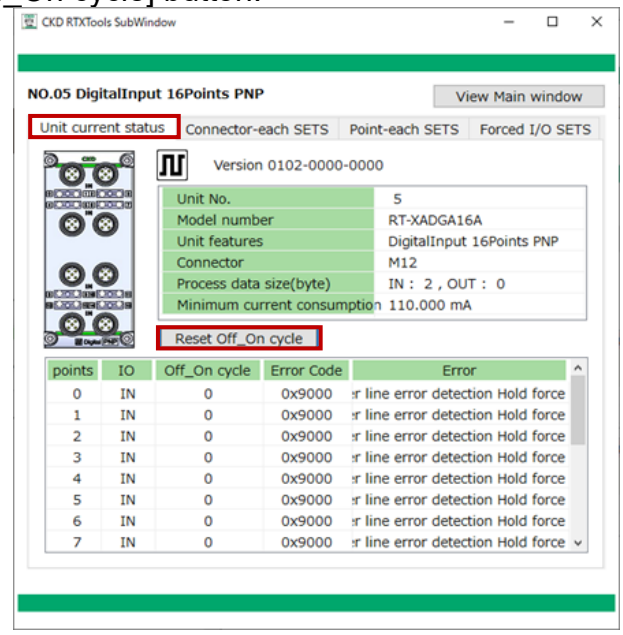


→

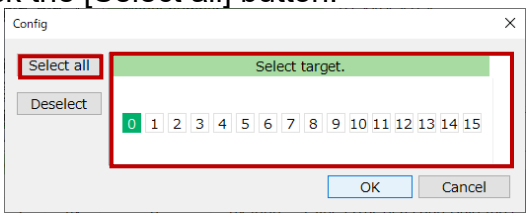


Main window　　Sub window

3) Open the [Unit current status] tab.
4) Click the [Reset Off_On cycle] button.



5) When the [Config] window opens, click the point number to be reset.
   To select all points, click the [Select all] button.

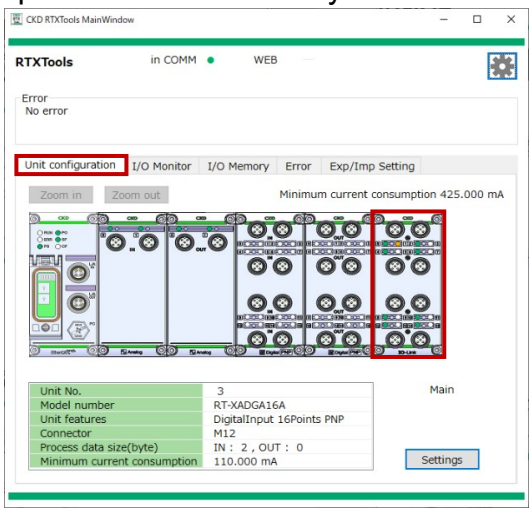


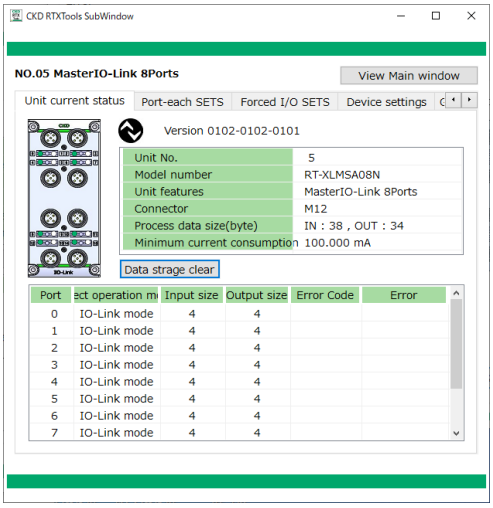
6) Once selected, click [OK].

3.2.8. Configuration write instruction

Writes the actual configuration of the device. Reads the configuration information of devices connected to the unit and overwrites the IO-Link master unit settings. Operates only in IO-Link mode.

1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the IO-Link master unit.

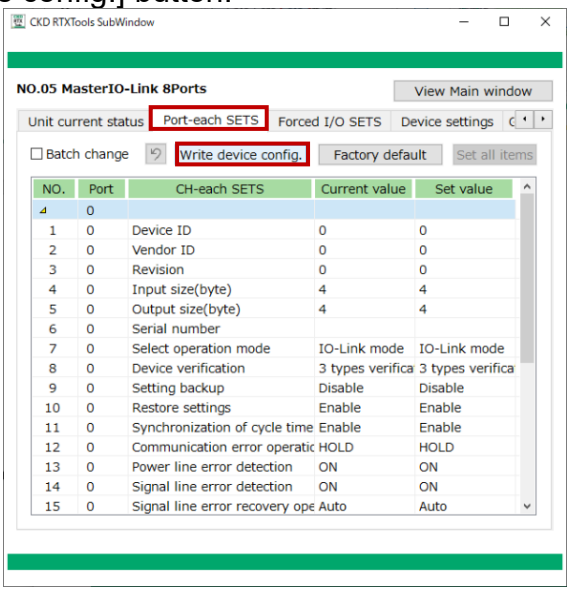




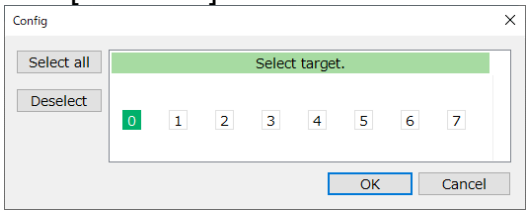
Main window

Sub window

3) Open the [Port-each SETS] tab.
4) Click the [Write device config.] button.



5) When the [Config] window opens, click the port number to be written.
   To select all ports, click the [Select all] button.



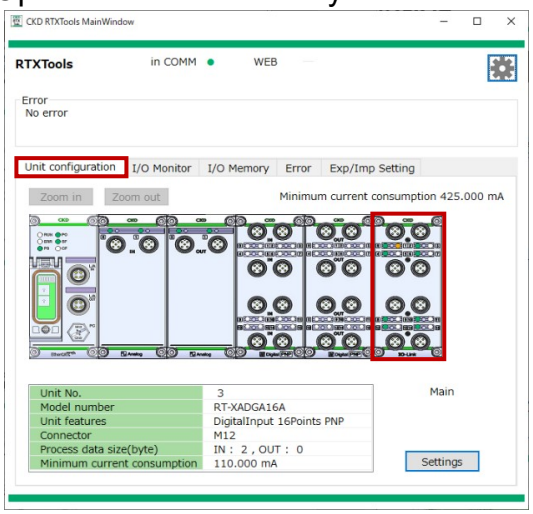
6) Once selected, click [OK].

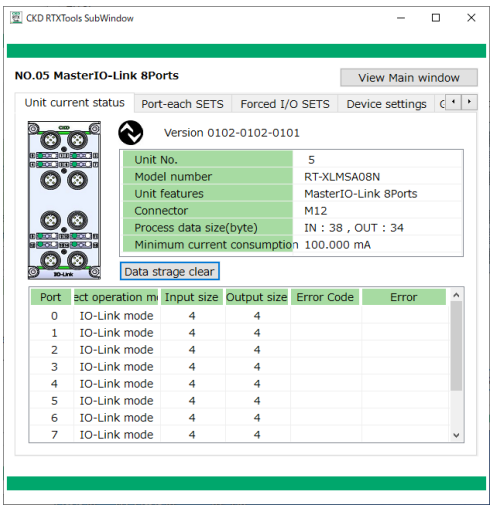
- Configuration information includes device ID, vendor ID, revision, input size, output size, and serial number. For details, refer to the Instruction Manual for the IO-Link master unit.

3.2.9. ISDU communication

Performs ISDU communication. By specifying an index / sub index, the service data of the device connected to the unit is read/written. Operates only in IO-Link mode.

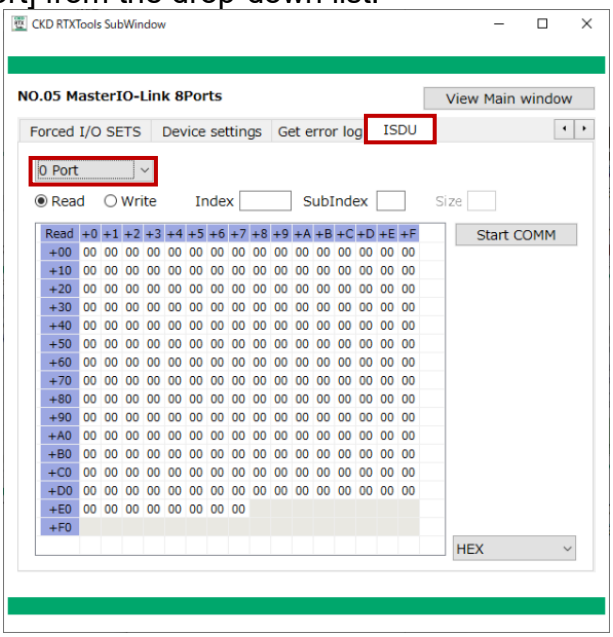
1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the IO-Link master unit.





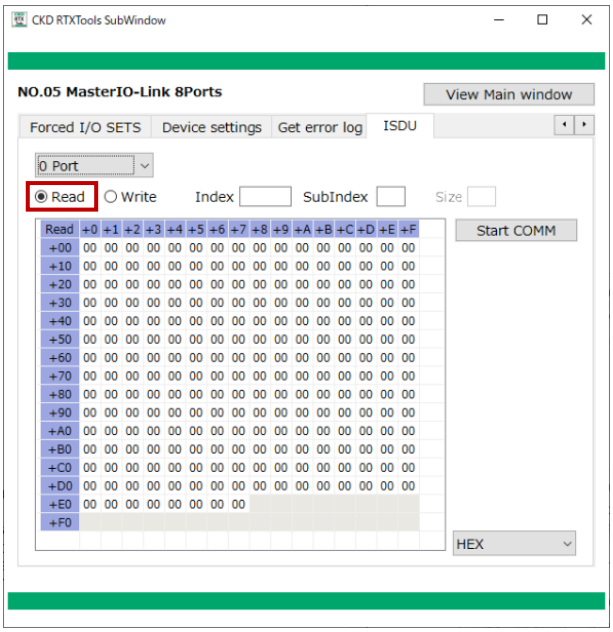
Main window → Sub window

3) Open the [ISDU] tab.
4) Select the target [Port] from the drop-down list.

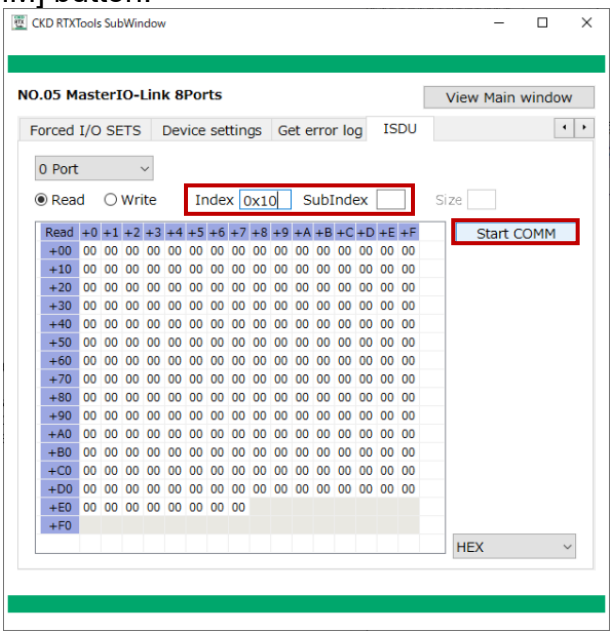


■ Read

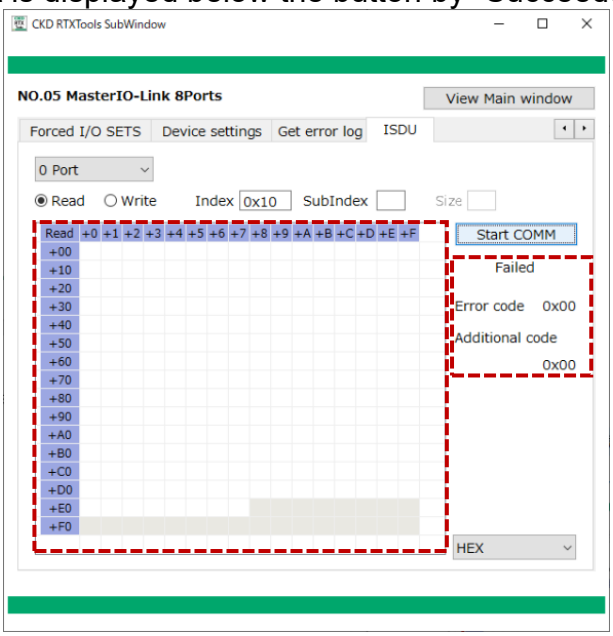
1) Check [Read].



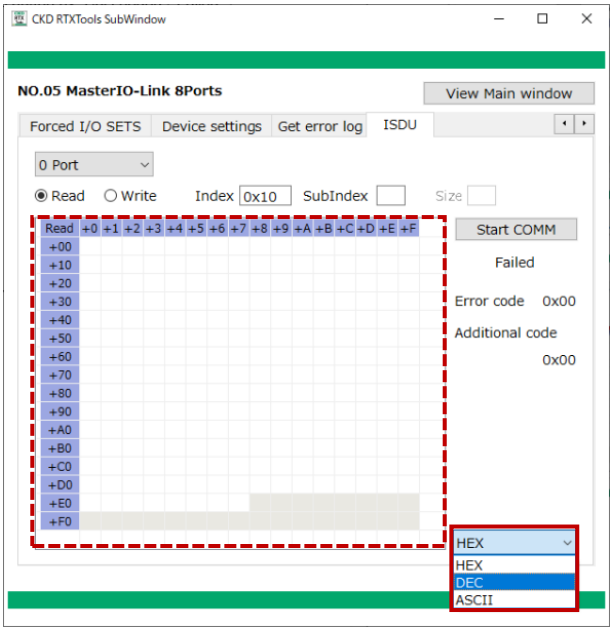
2) Input in [Index] the index of the service data of the IO-Link device.
3) Input the sub index in [SubIndex].
   If there is no input for sub index, it is processed as 0.
4) Click the [Start COMM] button.



5) Check the read data.
The data is displayed in bytes.
Also, the read result is displayed below the button by “Succeeded”/”Failed.”

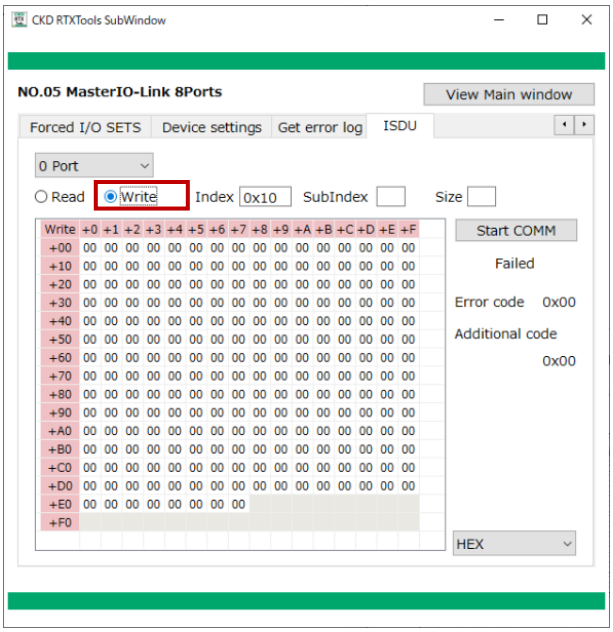


6) Select the format of the display area from the drop-down list (HEX/DEC/ASCII) as needed.

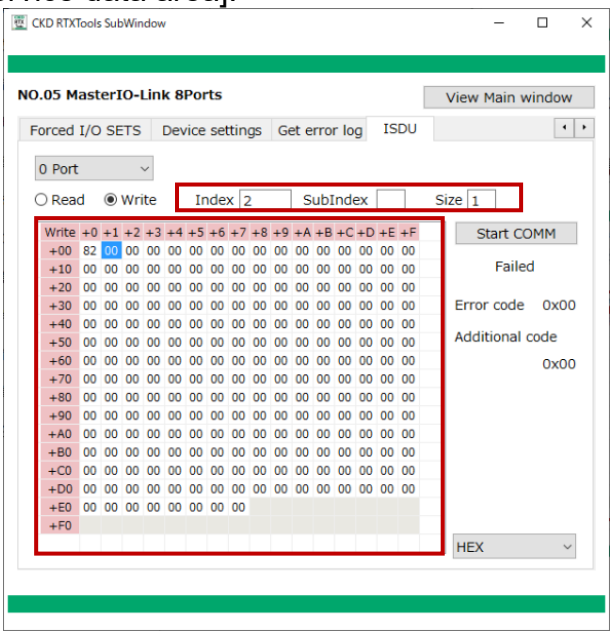


■ Write

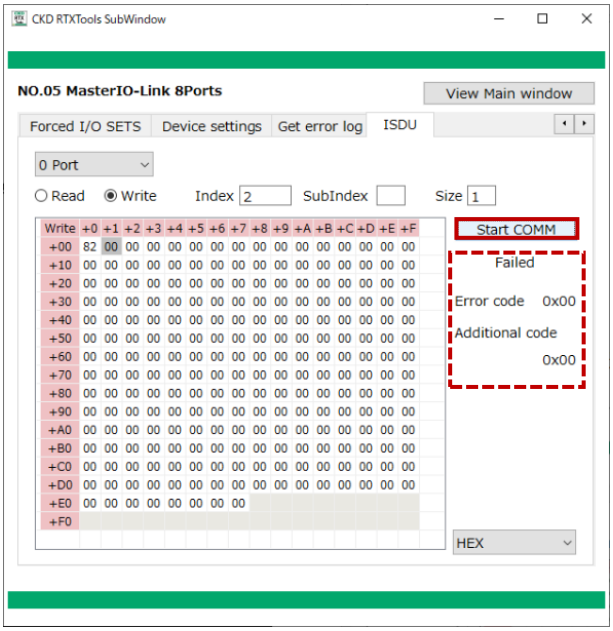
1) Check [Write].



2) Input in [Index] the index of the service data of the IO-Link device.
3) Input the sub index in [SubIndex] and the size in [Size].
4) Write the data in [Service data area].



5) Click the [Start COMM] button, and the writing result is displayed below the button as “Succeeded”/”Failed.”

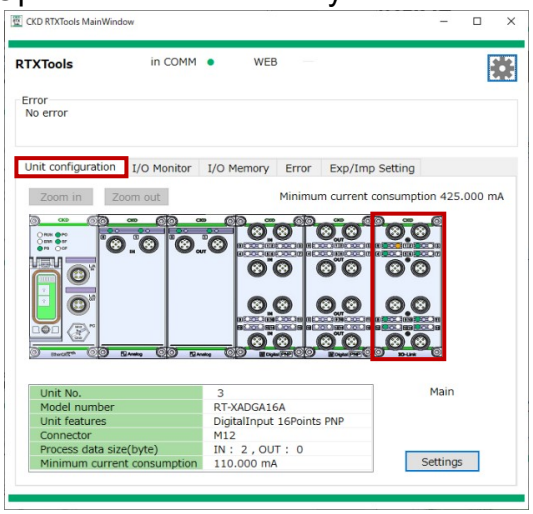


- To input a hexadecimal number in the index / sub index, add 0x to the beginning. If there is no 0x, it is processed as a decimal number.

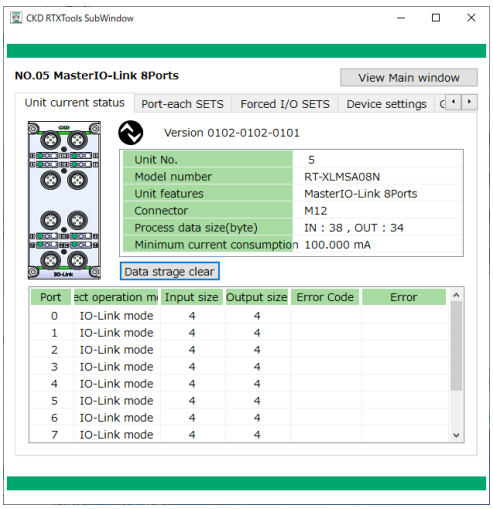
3.2.10. Data storage clear

Performs data storage clear. Deletes the setting data of the connected devices backed up to the IO-Link master unit. Operates only in IO-Link mode.

1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the IO-Link master unit.

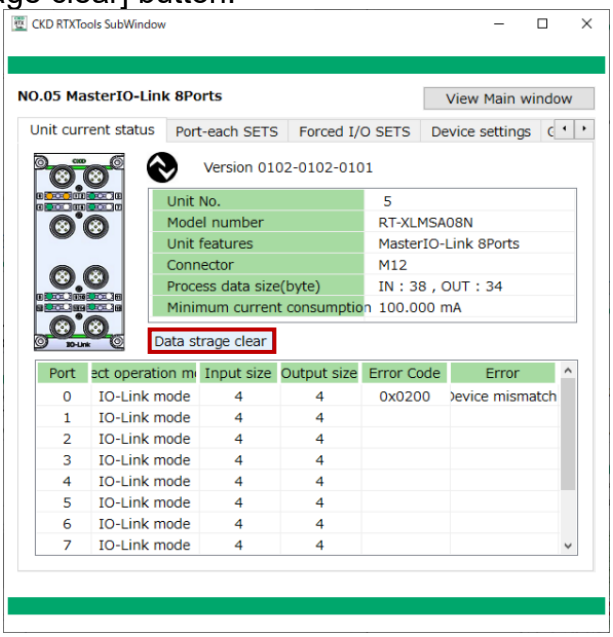


→

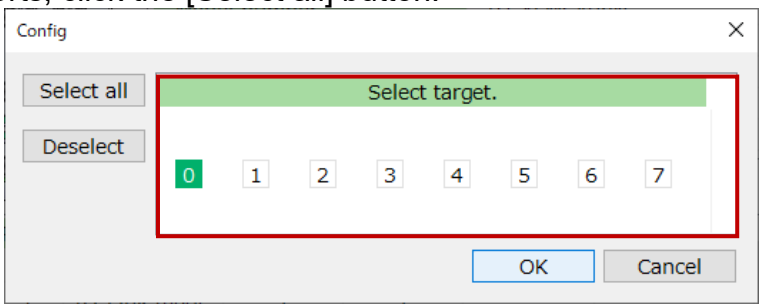


Main window　　Sub window

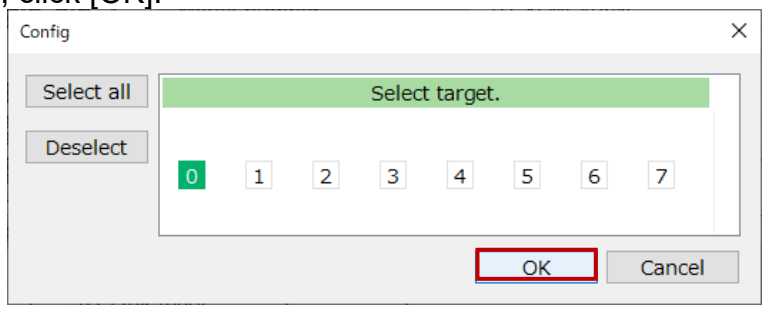
3) Open the [Unit current status] tab.
4) Click the [Data storage clear] button.



5) When the [Config] window opens, click the port number to be cleared.
To select all ports, click the [Select all] button.



6) Once selected, click [OK].

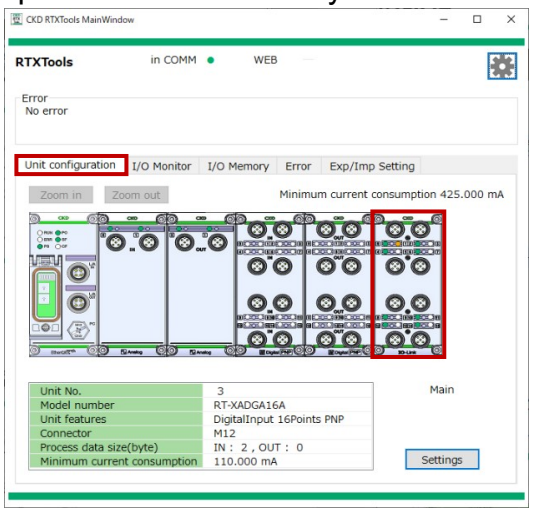


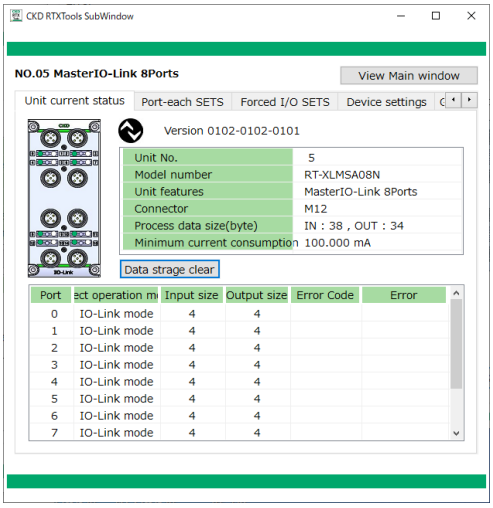
3.2.11. Loading IO-Link error log

Loads the following error logs (device errors) of the IO-Link master unit.

- Event codes in event communications
- Error responses in ISDU communications

1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the IO-Link master unit.

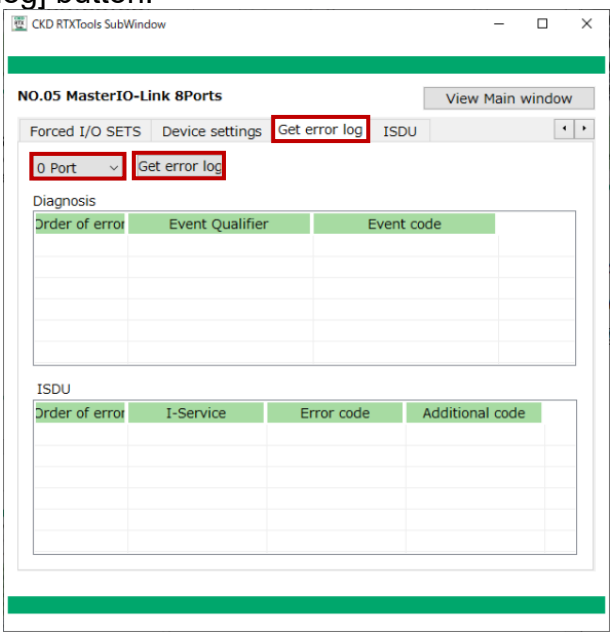




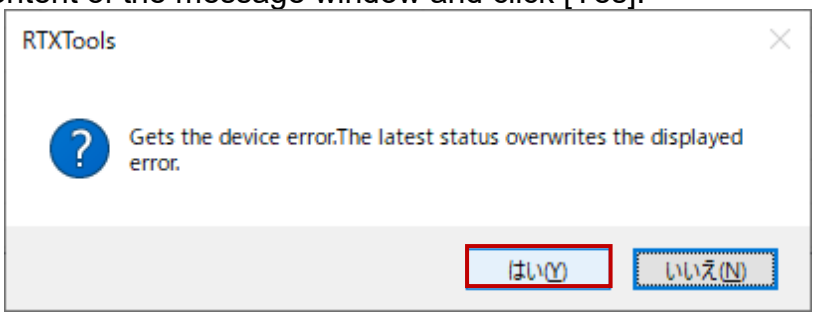
Main window

Sub window

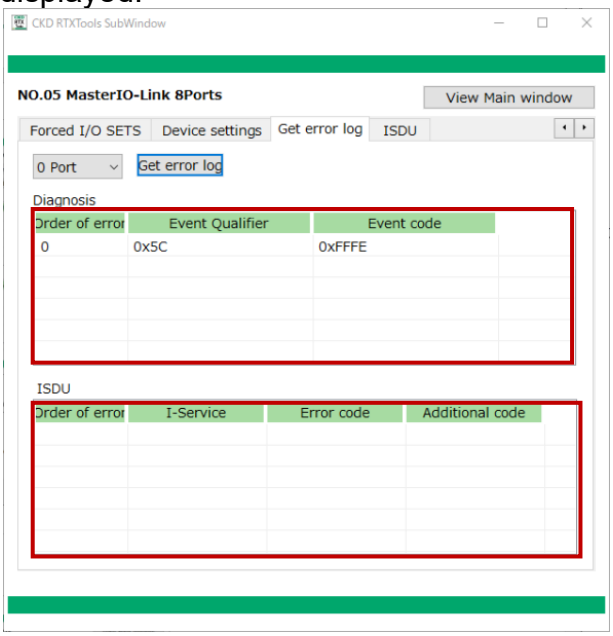
3) Open the [Get error log] tab.
4) Select the port to be retrieved from the drop-down list.
5) Click the [Get error log] button.



6) Check the content of the message window and click [Yes].



7) Check the error log displayed.



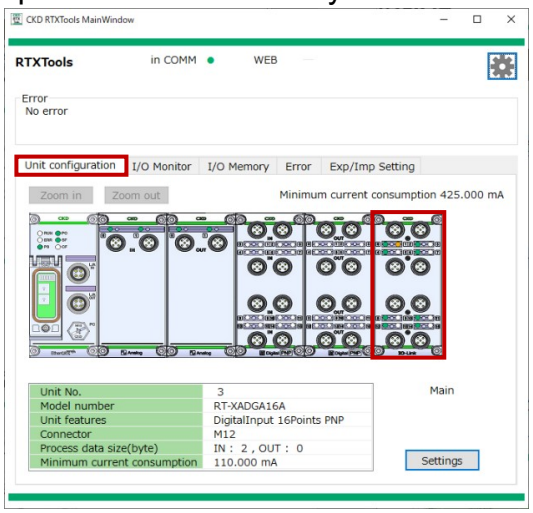
- If it fails to obtain, a message is displayed.
- If there was no error, [No error] is displayed.
- When the error log has been obtained, both [Diagnosis] and [ISDU] area will be cleared.
- When RT is not communicated, the button becomes disabled.

3.2.12. Device information display and setting (IODD file)

Loads the IODD file of the IO-Link device connected to the IO-Link master unit to configure settings and display information for that device.

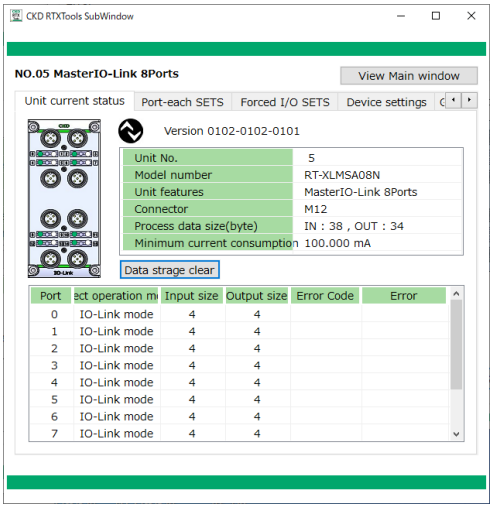
■ Display

1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the IO-Link master unit.



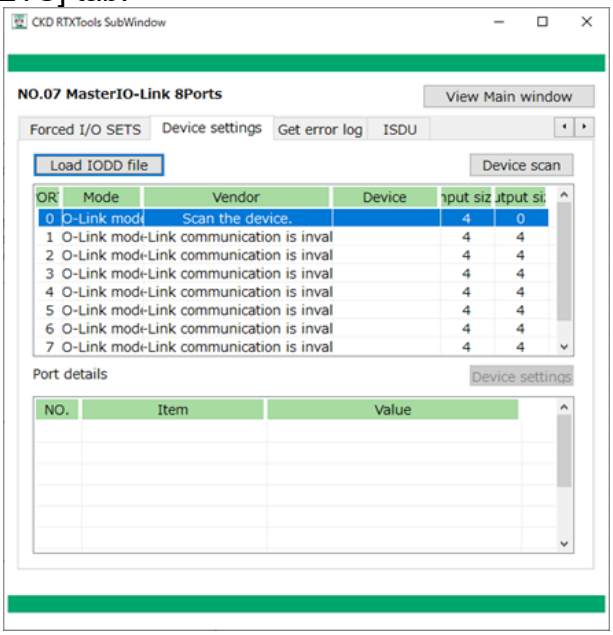
Main window

→



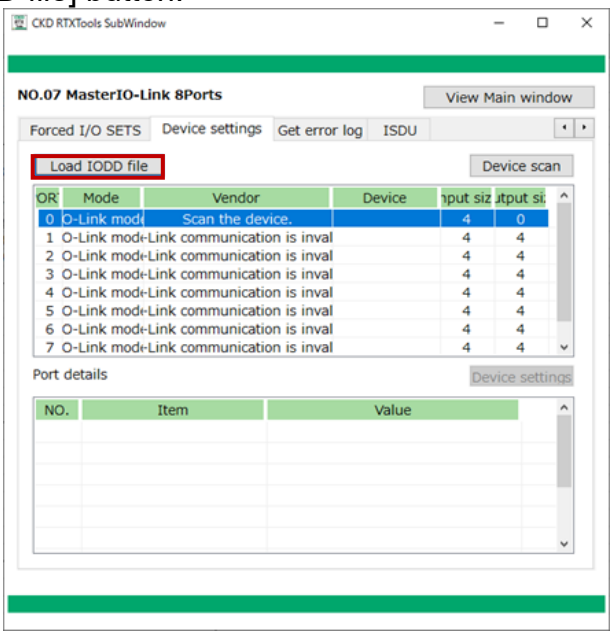
Sub window

3) Open the [Device SETS] tab.

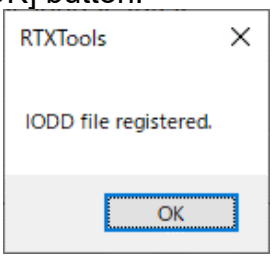


<Loading IODD file>

1) Click the [Load IODD file] button.



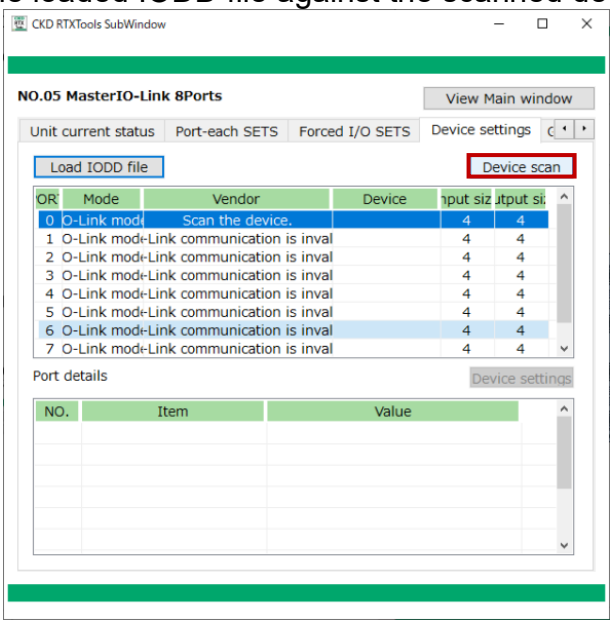
2) Select the folder containing the IODD file for the connected device that has been saved beforehand, and click "Open." **Note 1**
3) A message is displayed when the IODD file has been registered.
   Check the message and click [OK] button.



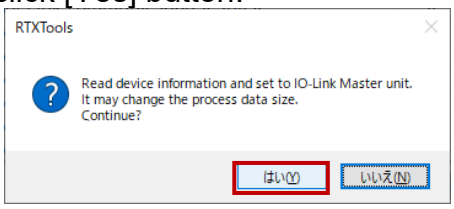
Note 1: Download the IODD file by following to the Instruction Manual of each device . There is no specification for the folder location to save the file.

<Scanning a device> (Operation required each time: When RTXTools connect to RT.)

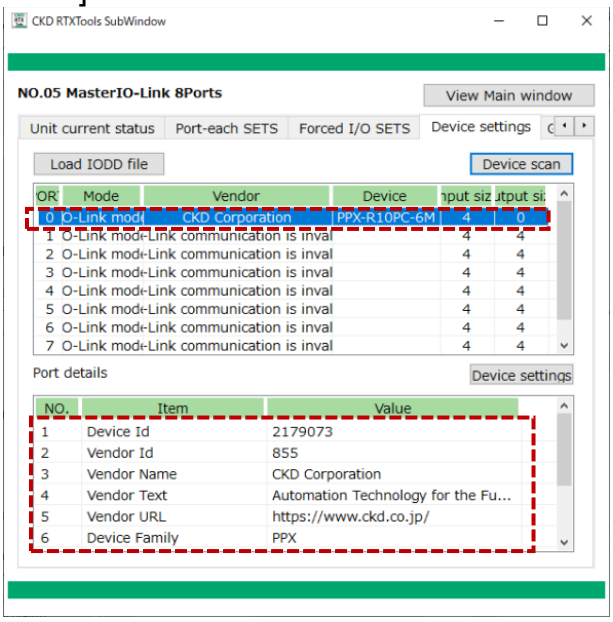
1) Click the [Device scan] button.
RTXTools verifies the loaded IODD file against the scanned device.



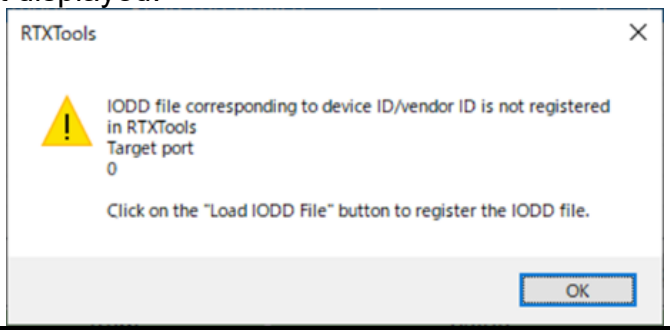
2) Check the message and click [Yes] button.



3) If the data in the IODD file matches, device information is displayed in the [PORT list] and [Port details area].

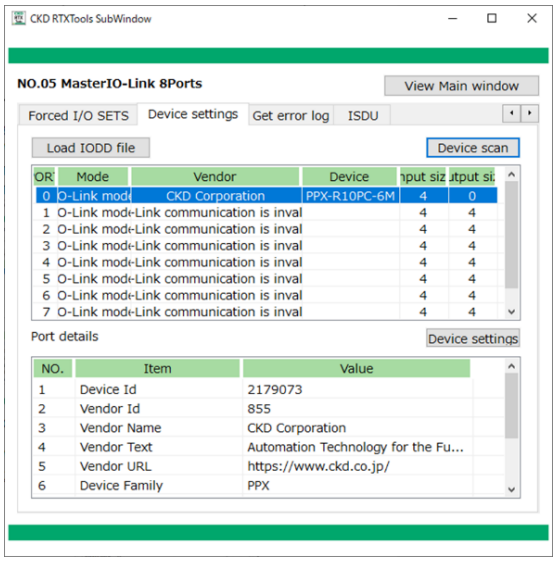


A message is displayed if the IODD file has not been registered in which the vendor ID and device ID matching those of the connected device. Device information is not displayed.

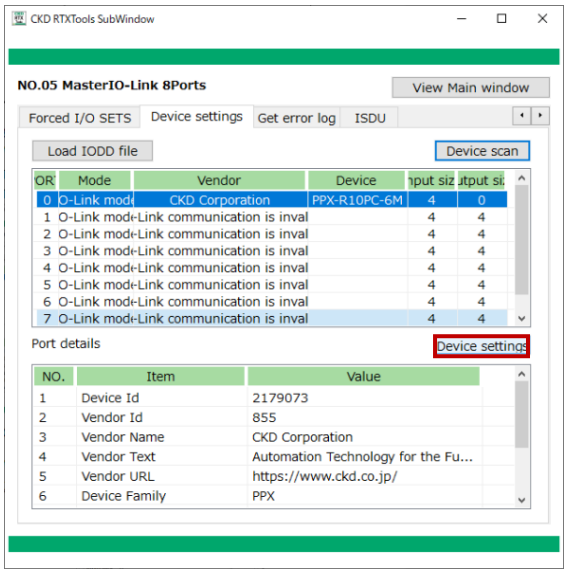


<Loading Device settings>

1) Display the [Device sub window]. There are two methods as following.
   (1) Double click the target device in the [PORT list]
   (2) Select the target device in the [PORT list] and click [Device setting] button

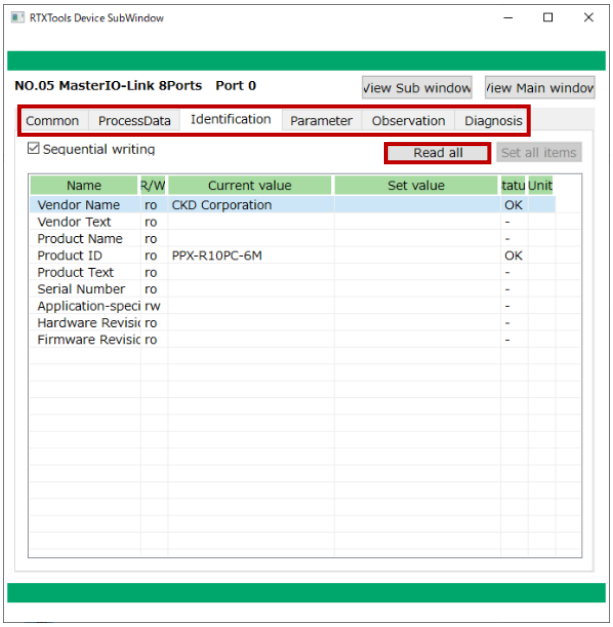


Double click [PORT list]

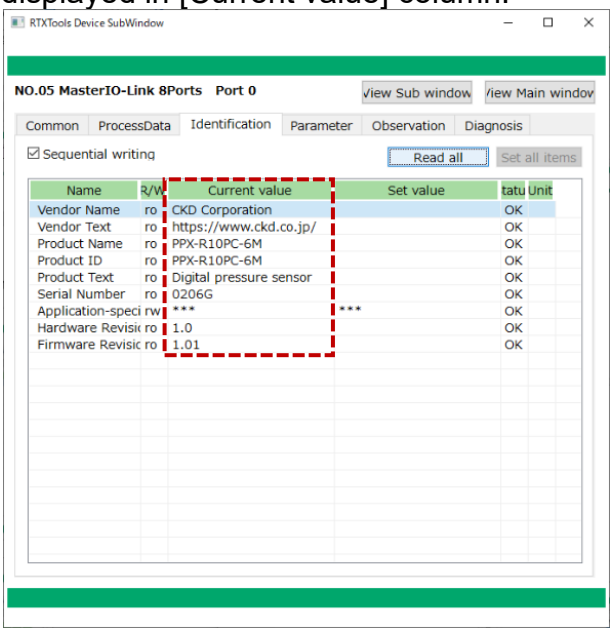


Click [Device setting] button

2) [Device SubWindow] is opened. Click the needed tab.
3) Click [Read all] button.



4) Check the contents displayed in [Current value] column.

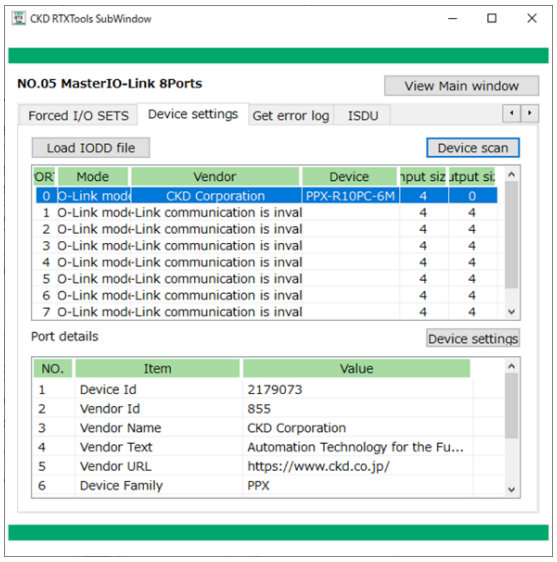


- Connected device information retrieved through <Load IODD file> is displayed on each tab, under the following conditions.
  * Item name and parameters included in the tab follow the definitions in the loaded IODD file
  * Display language is English

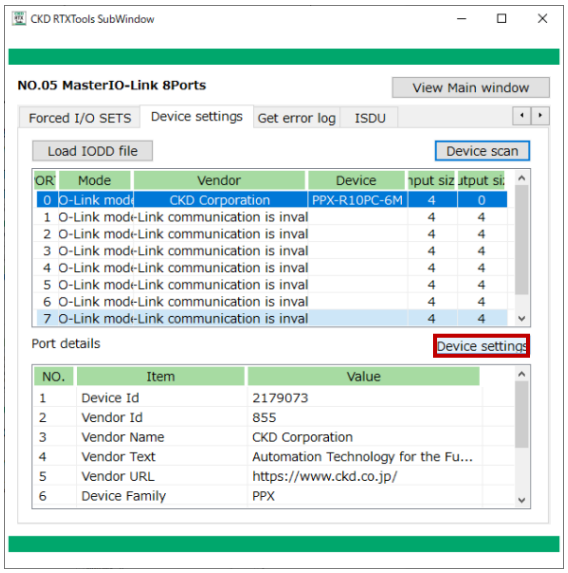
■ Settings change (Rewriting parameters defined by IODD file)

Changes the writable values of the settings loaded in the IODD file (r/w items with a w).

1) Display the [Device sub window]. There are two methods as following.
   (1) Double click the target device in the [PORT list]
   (2) Select the target device in the [PORT list] and click [Device setting] button

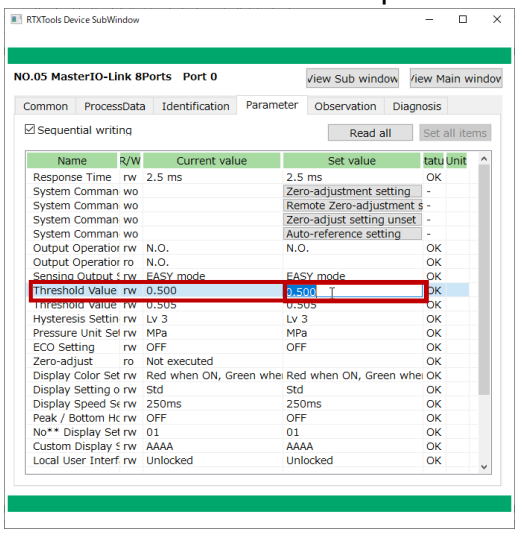


Double click [PORT list]

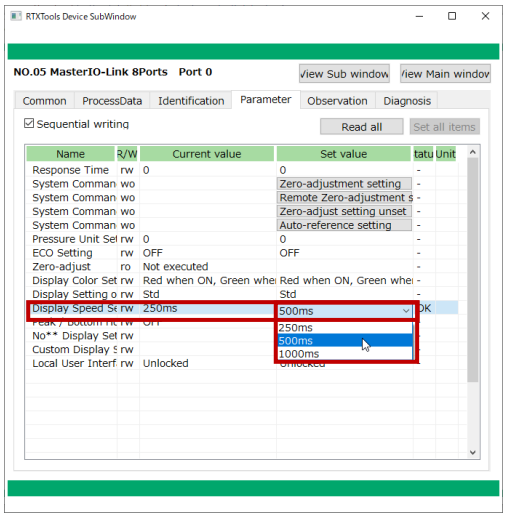


Click [Device setting] button

2) [Device SubWindow] is opened. Click the relevant tab.
3) Click the relevant setting item.
4) Input field or drop-down list is displayed depending on the setting item.
   Enter or select from the drop-down list for setting value. **Note 1**



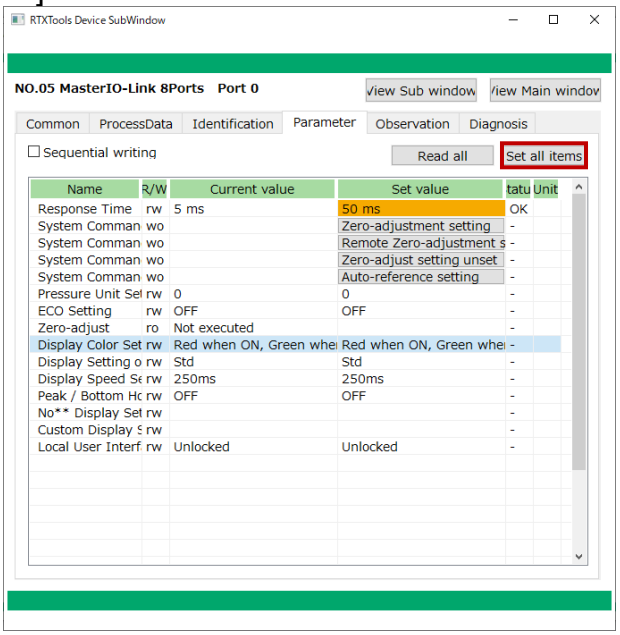
Input field



Drop-down list

Note 1: By check the [Sequential writing] check box in the upper left corner of the screen, and the setting is made at the same time the change is made.

5) Click the [Set all items] button.



- This software reads and writes via ISDU communication based on the parameters read.
- Each time a setting for an item is changed, the information is rewritten through ISDU communication.
- RT cannot read or write direct parameters.
- Current values or set values are not displayed for direct parameters.

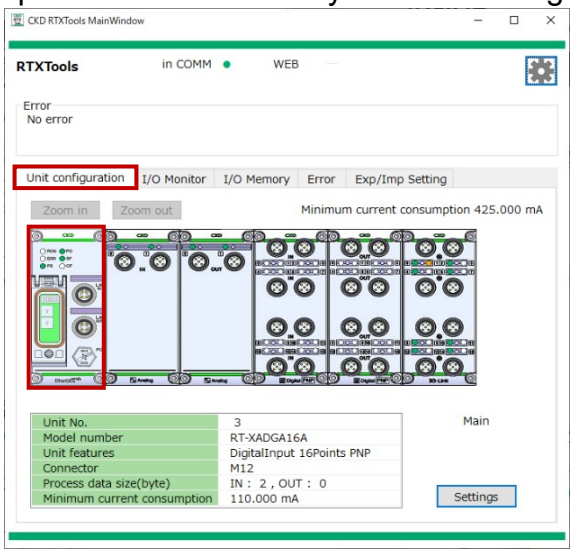
3.2.13. Device unit settings (IP address, etc.)

When setting this item, use USB connection for connecting RT and PC for RTXTools.
Configure the setting relates to the network for device unit. Setting item varies depending on the network that the device unit corresponds to. The items can be set are as following.

Unit	Item to be set
EtherNet/IP device **WebAPI device**	[IP address] [Subnet mask] [Default gateway] [Authentication function (Web access)] [Login ID (WEB access)] [Password (WEB access)]
PROFINET device	[Authentication function (Web access)] [Login ID (WEB access)] [Password (WEB access)] **Note 1**
EtherCAT device	None

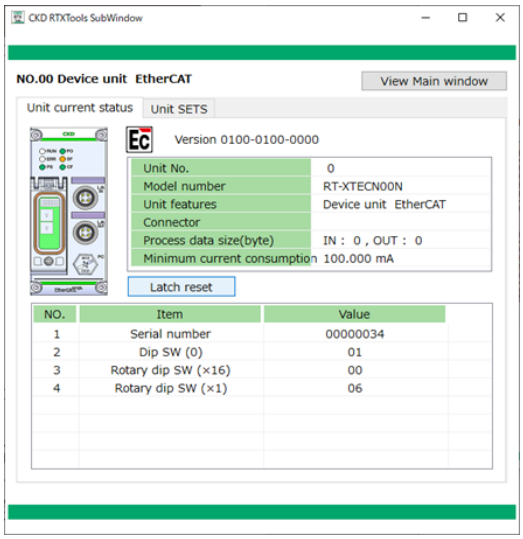
Note 1: Since IP address cannot be set on PROFINET device unit, set the address on the upper master unit.

1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the device unit.



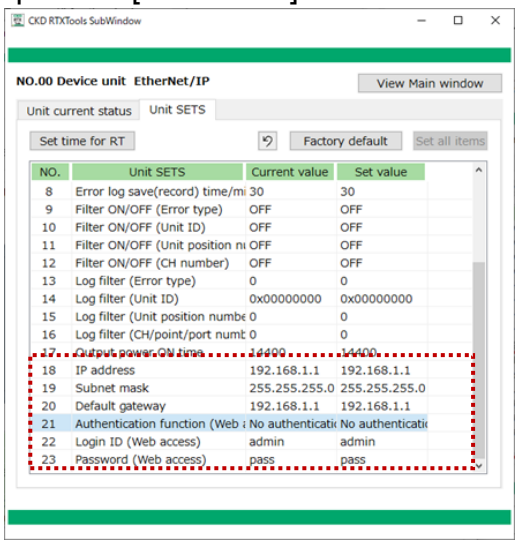
Main window

→

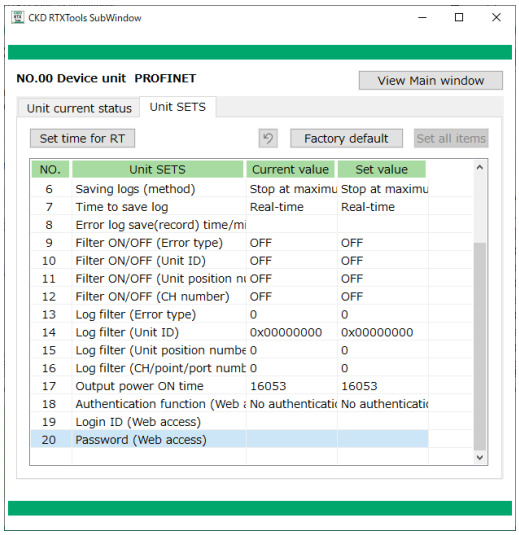


Sub window

3) Open the [Unit SETS] tab.



EtherNet/IP device unit



PROFINET device unit

4) Select and enter in the "Set value" of the relevant setting item.
5) Once the set values are entered, click the [Set all items] button.
6) (When using the set IP address)
   Carry out the followings. If not, the change will not be reflected.
   (1) Set the rotary switch to 0x00
   (2) Restart RT

- This setting is not available for WebAPI connections. Change to a USB connection before setting.

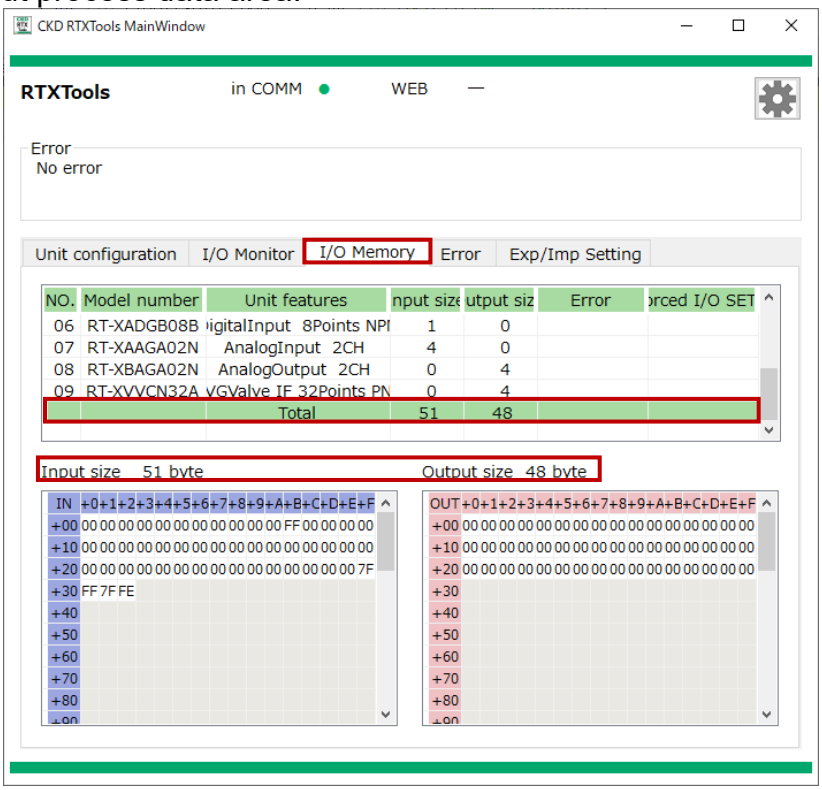
3.3. Retrieving and checking RT information

3.3.1. Checking the process data size

Checks the process data size. The total and individual value of the connected units for the process data size can be displayed.

<Overall display (total value)>

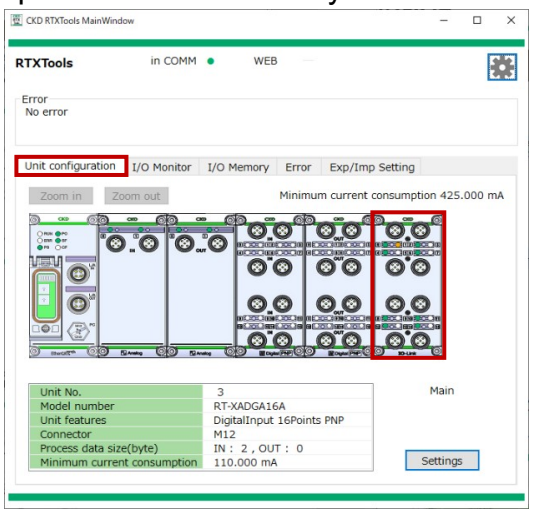
1) Open the [I/O memory] tab in the main window.
2) At the bottom of the process data size list, the total value (byte) of the size of each input and output is displayed.
   The respective totals are also displayed at the top of the input process data area and the output process data area.



- The maximum process data size is 512 bytes.

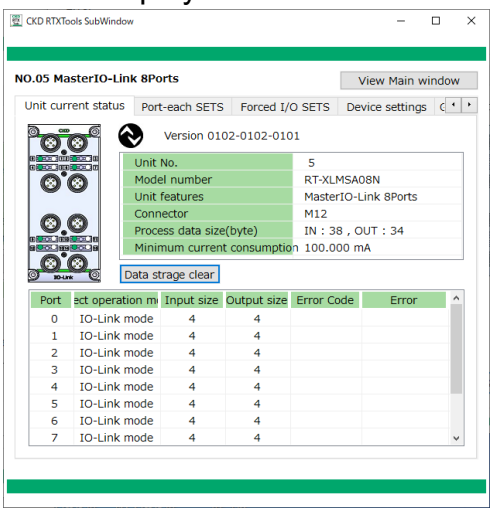
<Individual display (by unit)>

1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the unit to be displayed.



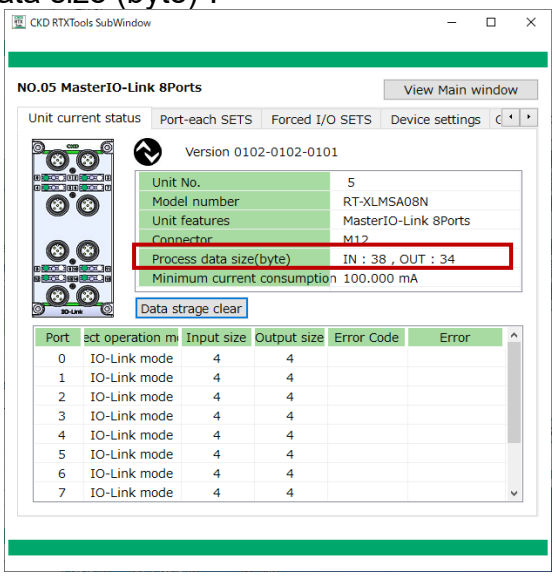
Main window

→



Sub window

3) Open the [Unit current status] tab.
4) Check the "Process data size (byte)".



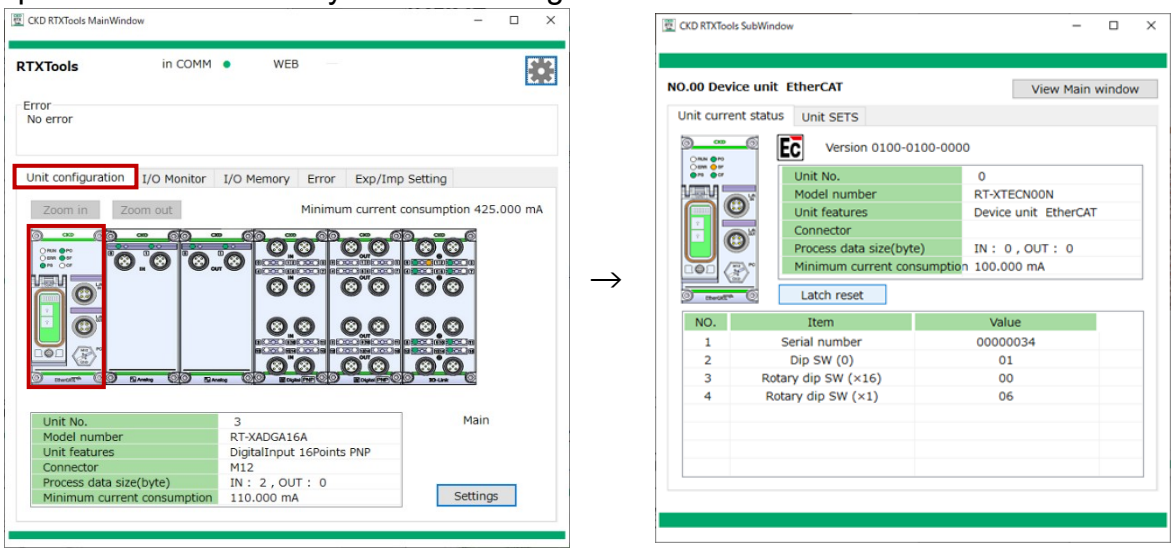
- If the settings of the IO-Link master have been changed, turn the power of RT ON and OFF before checking.

3.3.2. Checking identification information

Displays identification information. Identification information represents the data of a device unit that cannot be changed.

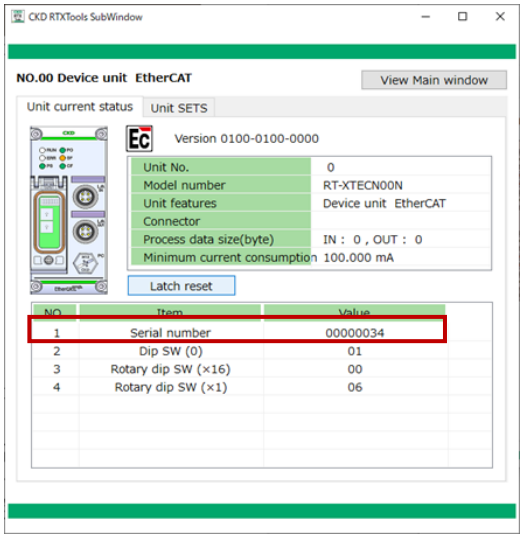
It consists mainly of hardware and software version information, serial numbers, MAC addresses, and information for each industrial network (IP addresses and IDs).

1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the device unit.



Main window → Sub window

3) Open the [Unit current status] tab.
4) Check each item in the No. list. **Note 1**

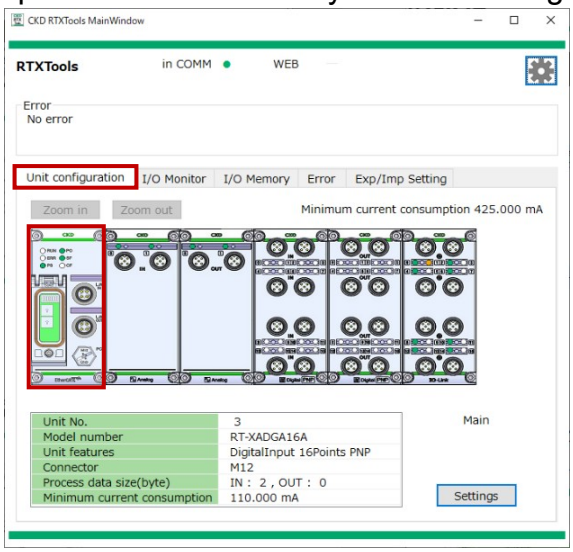


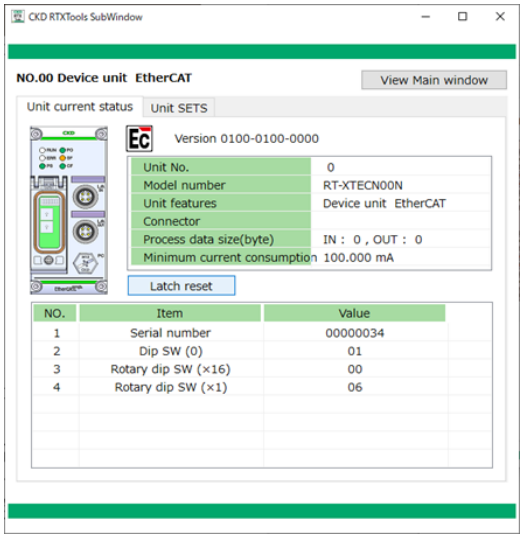
Note 1: The display varies depending on the network that the device unit corresponds to. For details, refer to the Instruction Manual for each device unit.

3.3.3. Checking device unit switch status

Retrieves the dip switch status of the device unit and displays it in hexadecimal.

1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the device unit.

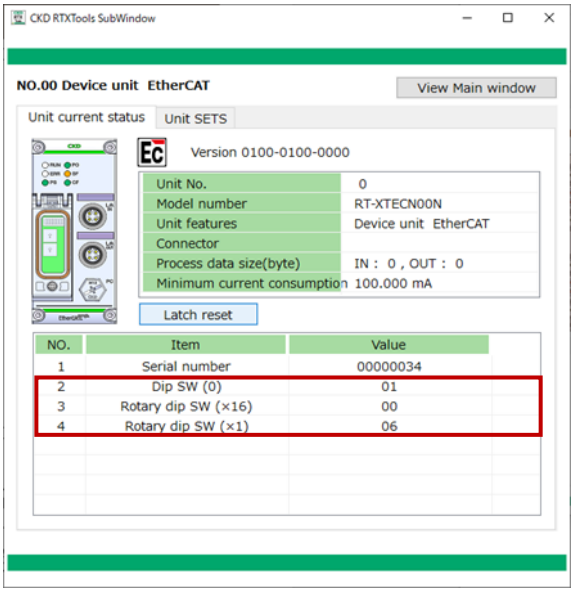




Main window

Sub window

3) Open the [Unit current status] tab.
4) Check each item in the No. list.
   The status of each dip switch (Dip SW, Rotary dip SW) is displayed in a hexadecimal number. **Note 1**



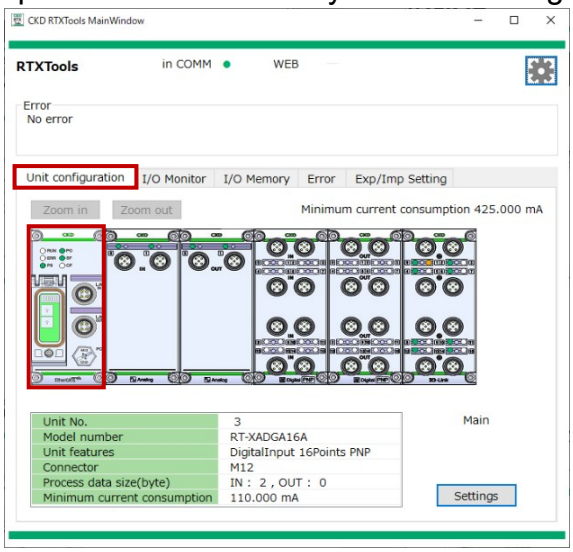
Note 1: The settings by switch status varies depending on the network that the device unit corresponds to. For details, refer to the Instruction Manual for each device unit.

- For EtherNet/IP device units, the current IP address is displayed.

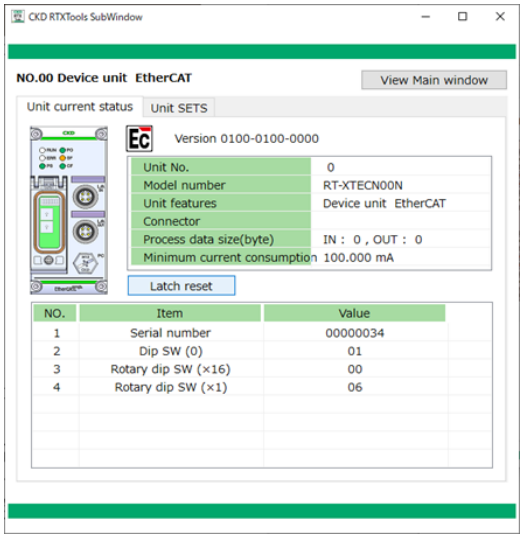
3.3.4. Checking unit version

Displays the version of the unit.

1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the unit to be displayed.

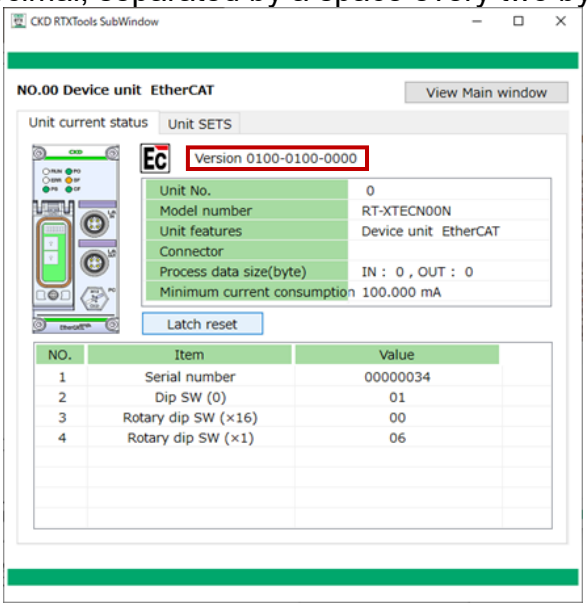


→



Main window　　Sub window

3) Open the [Unit current status] tab.
4) Check the version information.
   It is displayed above the unit details and to the right of the unit's icon.
   The format is hexadecimal, separated by a space every two bytes.



3.3.5. Unit diagnostic information display

Displays diagnosis information of the unit.
There are three main windows and one sub window.

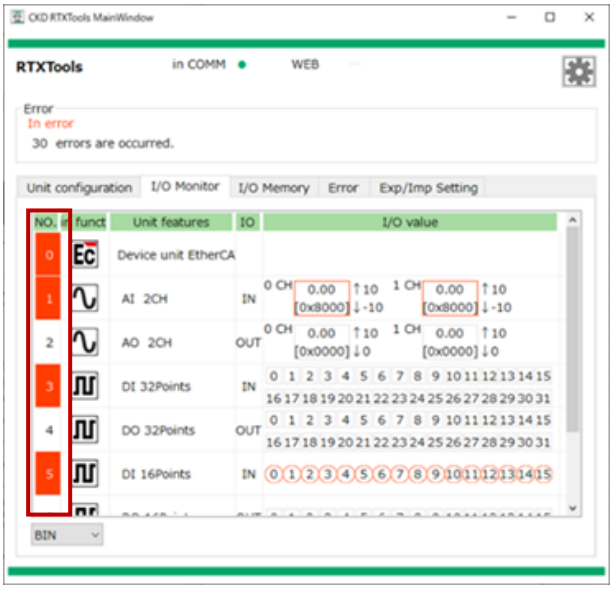
■ Main window

<Common to all the tabs>

1) Display the main window.
2) Check the error status in the [Error display area]

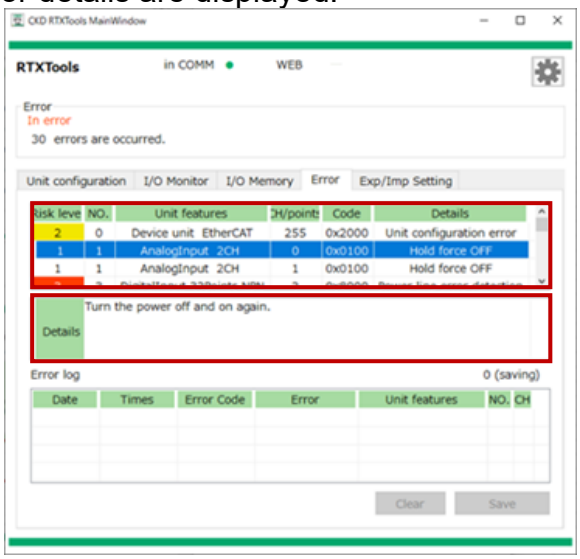
■ [I/O monitor] tab

1) Click the [I/O memory] tab in the main window.
2) Check the error status in the [Error display area]
   In the [Error display area], the CH/port/point where an error has occurred is displayed. The background of the unit number where an error has occurred turns red.



■ [Error] tab

1) Click the [Error] tab in the main window.
2) Check the error status in the [Error] tab.
   In the [Error tab], one line is displayed for each error. Select the CH/port/point displayed and the error details are displayed.

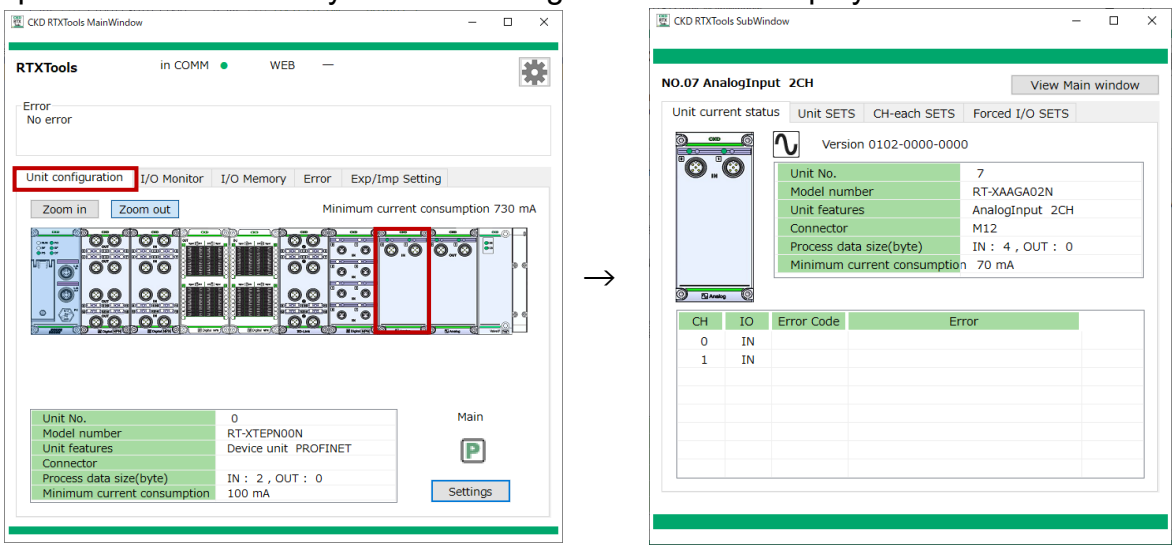


Note 1: Importance is categorized by the error type. Details are as follows.

No.	Type	Example
1.	**Temporary error**	Concurrent access notification, parameter setting errors, etc.
2.	**Software error**	Min range error, etc.
3.	**Electrical/physical error**	Power line error, signal line error, hardware error, etc.

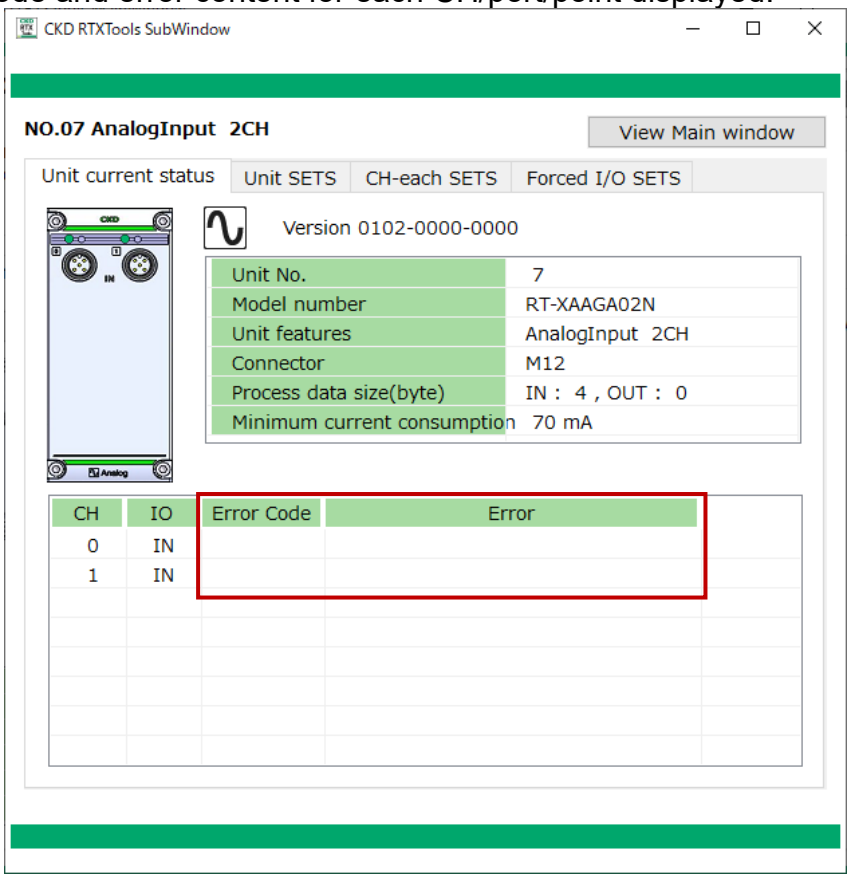
■ Sub window

1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the unit to be displayed.



Main window　　Sub window

3) Open the [Unit current status] tab.
4) Check the error status.
The error code and error content for each CH/port/point displayed.



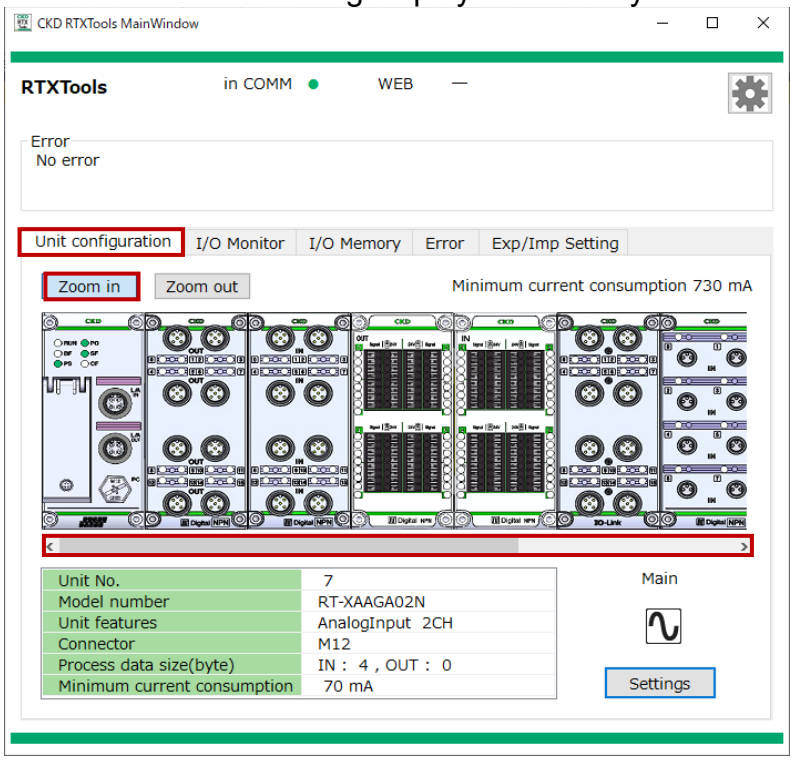
- For diagnostic information and error codes, refer to the Instruction Manual for each unit.

3.3.6. Unit configuration display

Displays the unit configuration.

<Zoom in>

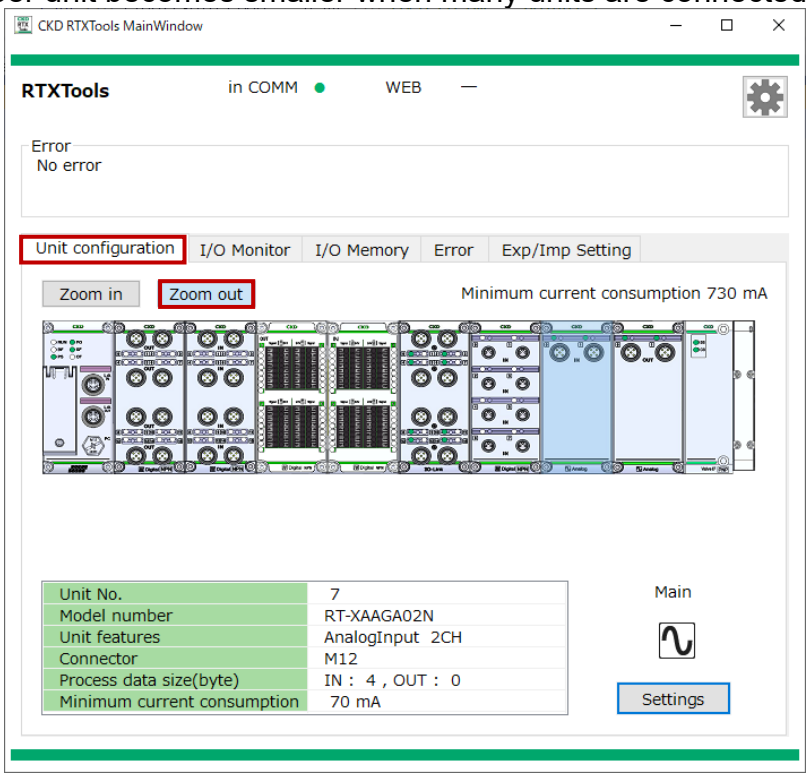
1) Open the [Unit configuration] tab in the main window.
2) Click the [Zoom in] button.
   The display format becomes a scrolling display when many units are connected.



<Zoom out>

Zooms out. The display per unit becomes smaller when many units are connected.

1) Open the [Unit configuration] tab in the main window.
2) Click the [Zoom out] button.
   The display per unit becomes smaller when many units are connected.

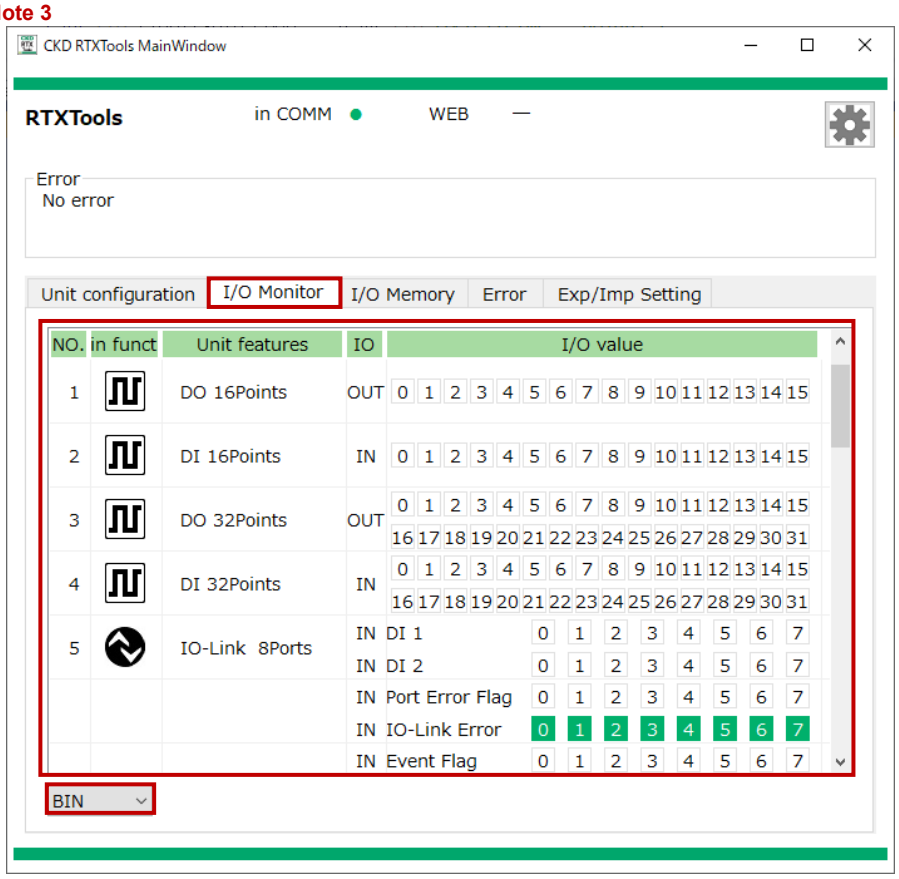


- Displays in the order of actual connection. However, end units and power supply units are not displayed.
- Unit configuration information is retrieved when RTXTools is connected to RT. If units are replaced, increased, or decreased while connected, turn the RT off and on again to retrieve the configuration information again. An error is displayed until it is retrieved again.

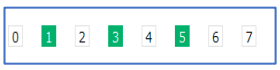
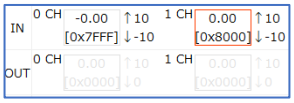
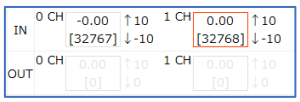
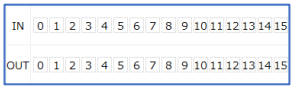
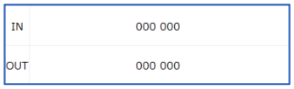
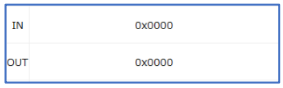
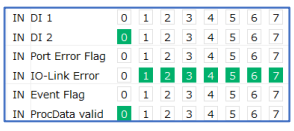
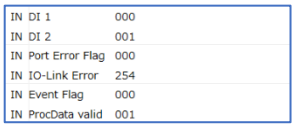
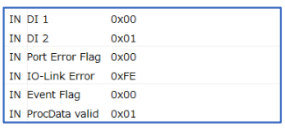
3.3.7. Process data display

Displays process data (input/output) of connected units.

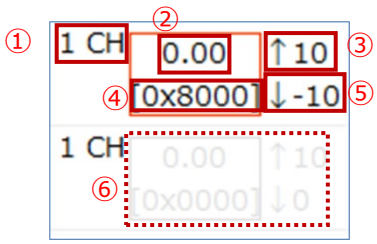
1) Open the [I/O monitor] tab in the main window.
   The process data is displayed by unit. Note 1
2) Change the display format (Note 2) with the pull-down list at the bottom left of the window. Note 3



Note 1 The "No." of a unit with an error is displayed in red.
Note 2: Display format is [BIN] (binary), [DEC] (decimal), [HEX] (hexadecimal).
Note 3: The process data display method varies depending on the display format. For details, refer to the table below.

Unit name	Display format: BIN	Display format: DEC	Display format: HEX
Device unit			
Analog Note 4			
Digital and alve I/F unit Note 5			
IO-Link master			
			

Note 4: The figure below describes the display for analog unit.



Analog	①	Target CH
	②	Analog value
	③	Max range
	④	Process data (hexadecimal)
	⑤	Min range
	⑥	[CH disabled] setting (grayed out)

Note 5: The display changes as shown in the table below depending on the forced ON/OFF status.

Forced				Not forced (canceled)			
●	ON	○	OFF	■	ON	□	OFF

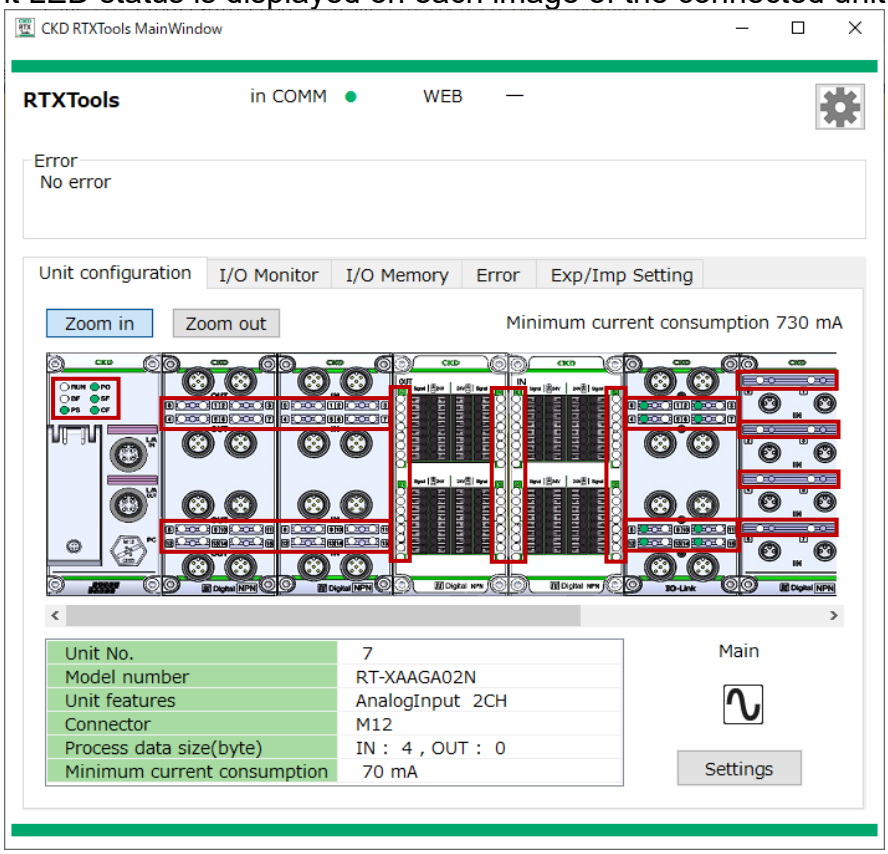
For details, refer to "3.2.5 Forced input display and setting" and "3.2.6 Forced output display and setting."

3.3.8. LED status display

Displays the current status of the LED installed in each of the connected units.

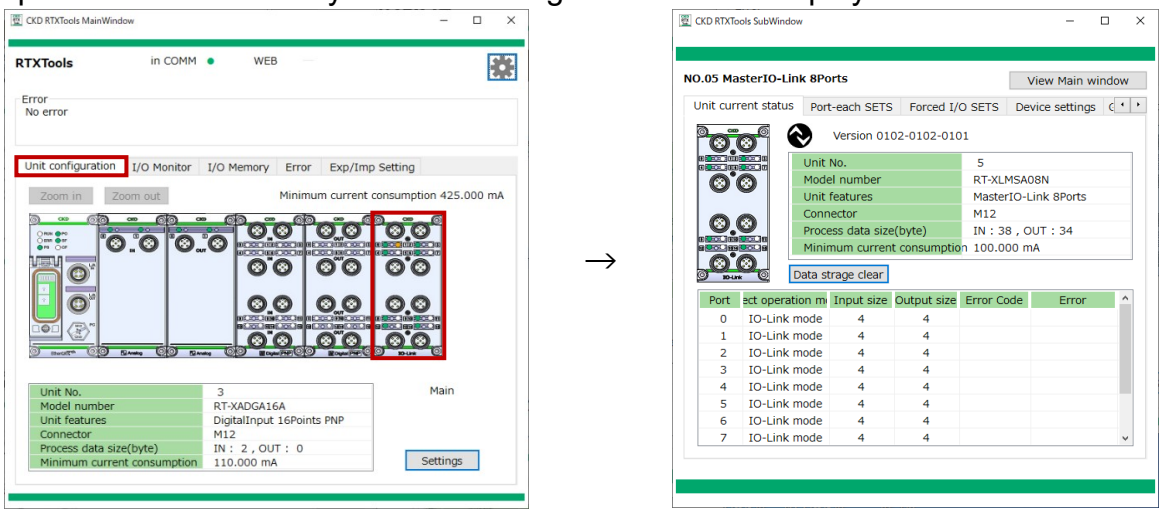
<Overall display>

1) Open the [Unit configuration] tab in the main window.
2) The current LED status is displayed on each image of the connected unit.



<Individual display (by unit)>

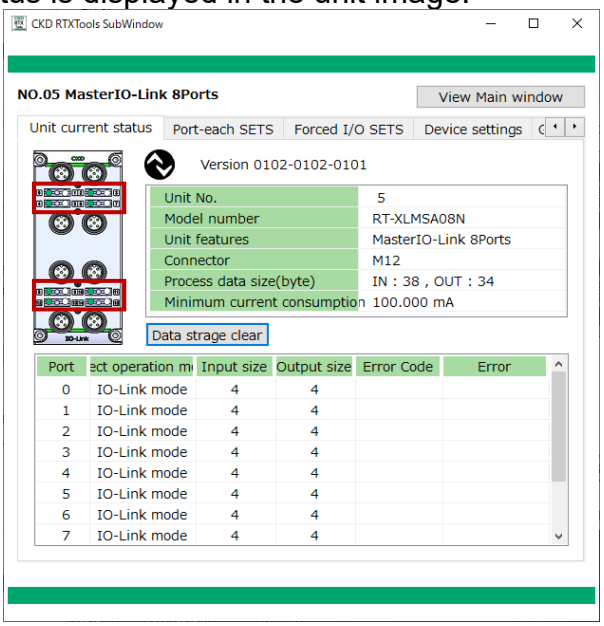
1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the unit to be displayed.



Main window　　Sub window

3) Open the [Unit current status] tab.

4) The current LED status is displayed in the unit image.



For LED display formats, such as colors and blinking patterns, refer to the Instruction Manual for each device unit or the Troubleshooting of the Instruction Manual: System Construction.

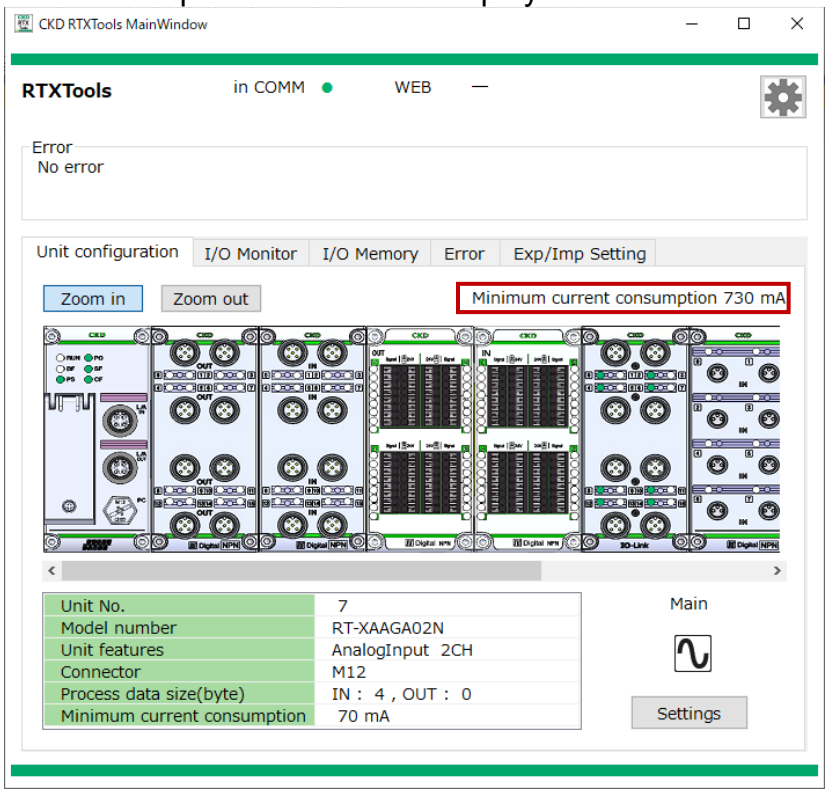
- Displays content that can be detected by the RTXTools.
- LED statuses relating to the connection with the upper network cannot be displayed. For LED statuses that cannot be displayed, check the actual LED status.
- For troubleshooting corresponding to the LEDs, refer to the Instruction Manual for each unit.

3.3.9. Current consumption display

Displays the current consumption of the unit. Refer to the current consumption when increasing the number of units.

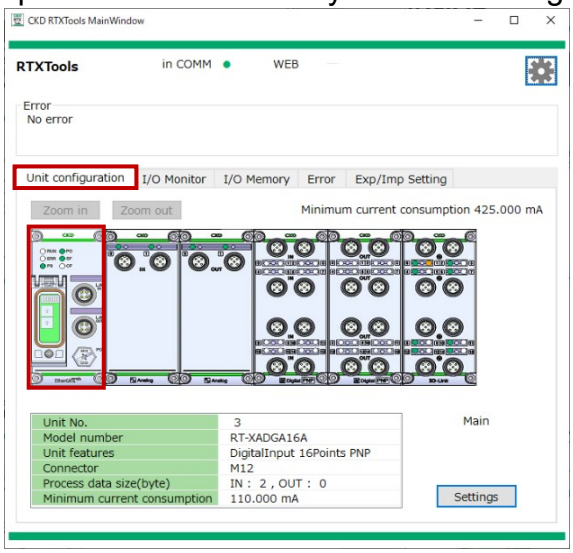
<Total value display>

1) Open the [Unit configuration] tab in the main window.
2) The total current consumption of the unit is displayed.



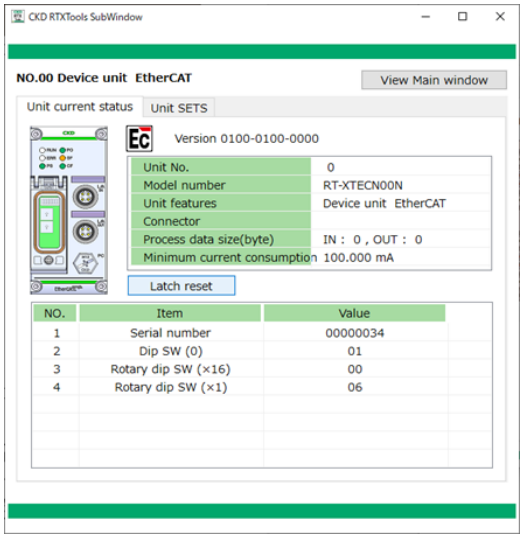
<Individual display (by unit)>

1) Open the [Unit configuration] tab in the main window.
2) Open the sub window by double-clicking the unit to be displayed.



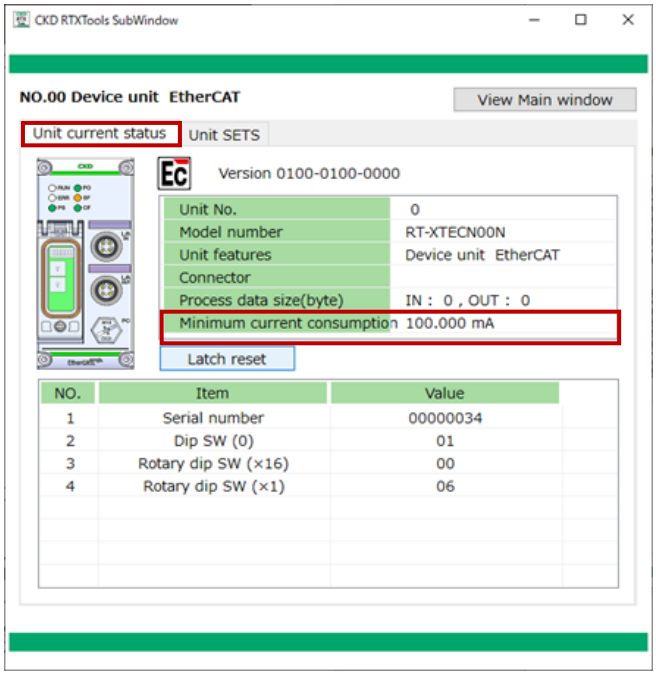
Main window

→



Sub window

3) Open the [Unit current status] tab.
4) The current consumption of the selected unit is displayed at the bottom of the "Unit details display."



- The unit used is [mA].
- Values are theoretical based on design. It does not include the current consumption of devices connected to the unit.

3.3.10. Web concurrent access notification

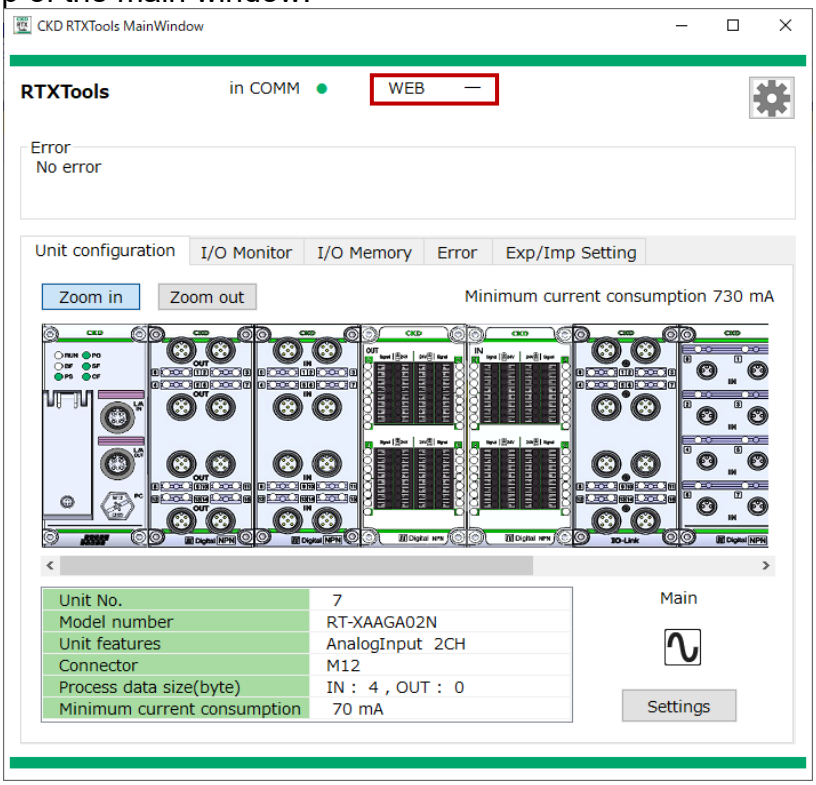
CAUTION

Do not change settings at the WEB concurrent access.

- Since settings and instructions will be overwritten, units and valves may operate unexpectedly.

The WEB concurrent access notification indicates when more than two PCs are accessing concurrently. It operates in device units with WEB interface functions.

1) Check the top of the main window.



"WEB" indicates the web access status. It is depicted by icons on the right.

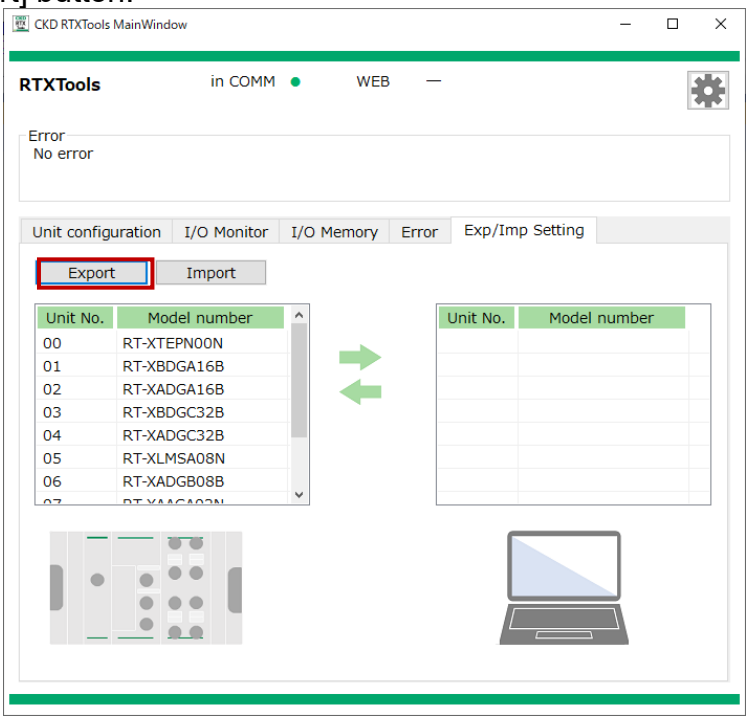
Display	Type	Content
●	**Communication in progress**	Communicating with RT
●	**WEB**	WEB concurrent access in progress
–	**WEB**	No concurrent access
	(Grayed out)	Device unit that cannot access the WEB (EtherCAT)

3.4. Other useful functions

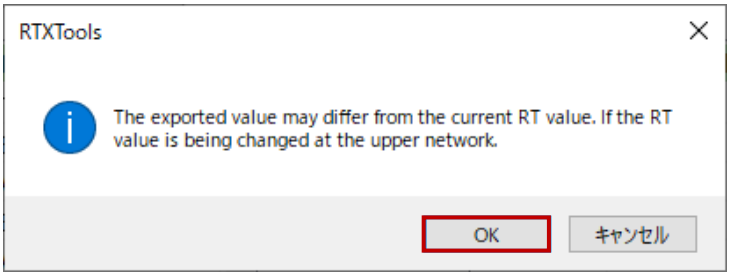
3.4.1. Setting data export

Exports the setting data. Saves the settings of all connected RT configuration units to a file.

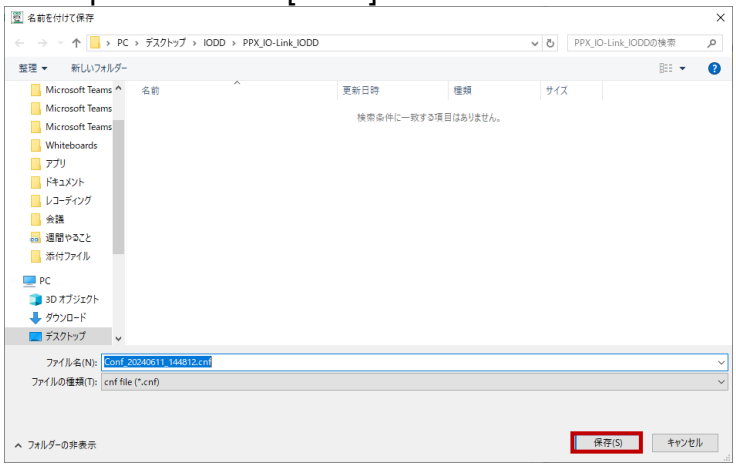
1) Open the [Exp/Imp Setting] tab in the main window.
2) Click the [Export] button.



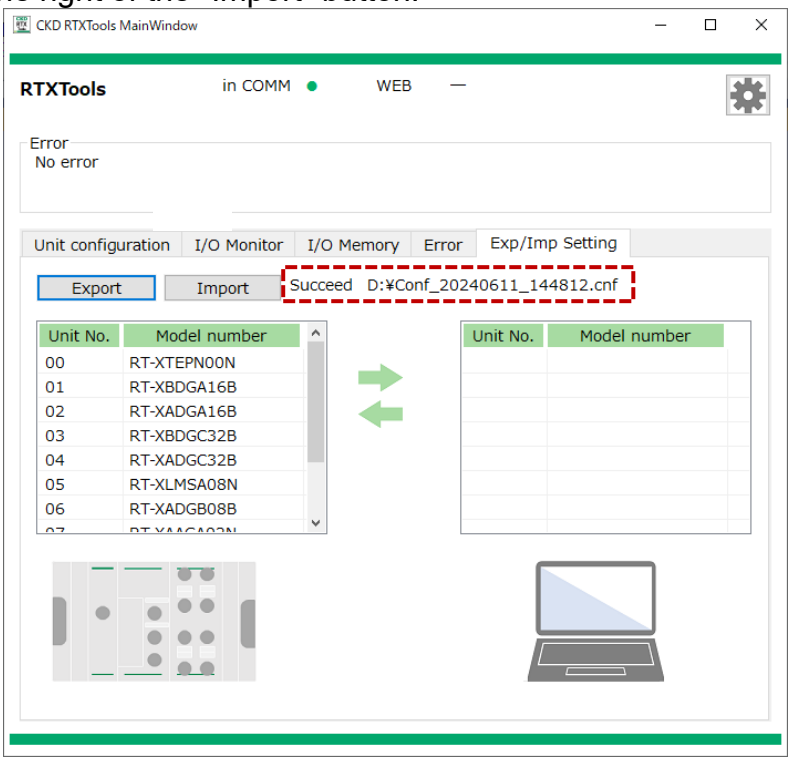
3) Check the content when the message window is displayed.
   Click [OK] if it is O.K.



4) Select the folder to export and click [Save].



5) When the export is complete, "Succeeded" and the name of the exported file are displayed to the right of the "Import" button.

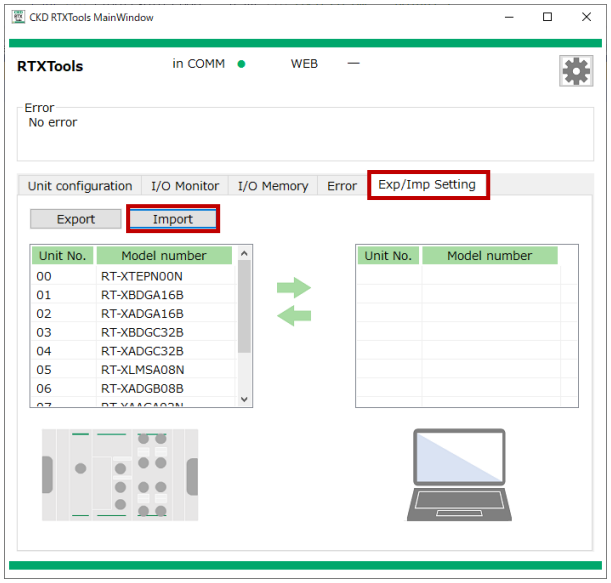


- The default file name is "Conf_YYYYYMMDD_hhmmss.cnf".
- Exports in a batch.

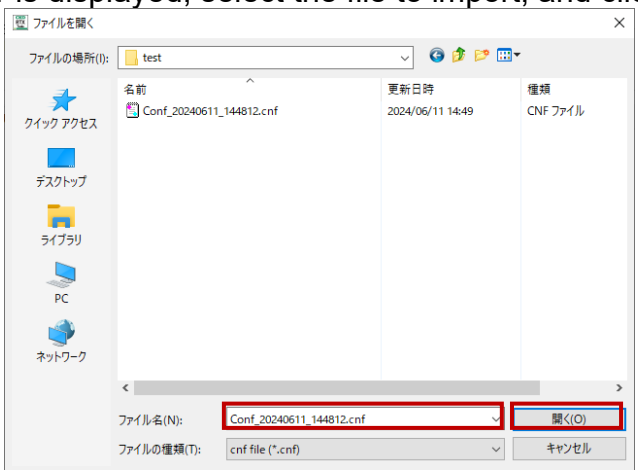
3.4.2. Setting data import

Imports setting data.

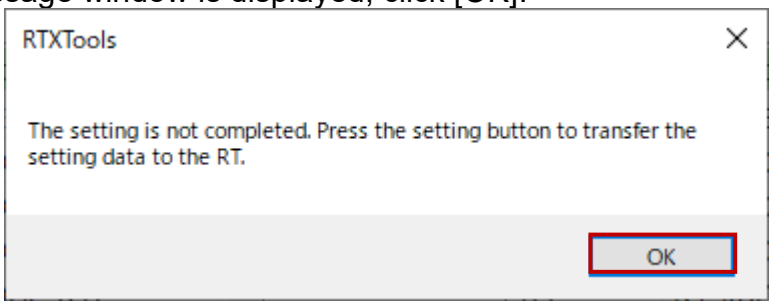
1) Open the [Exp/Imp Setting] tab in the main window.
2) Click the [Import] button.



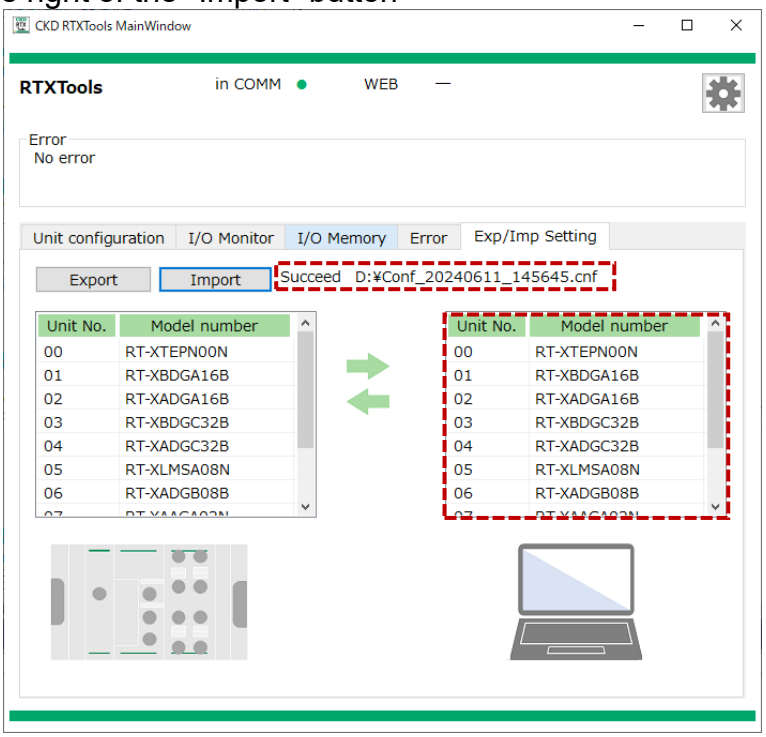
3) When the file folder is displayed, select the file to import, and click [Open].



4) When the message window is displayed, click [OK].



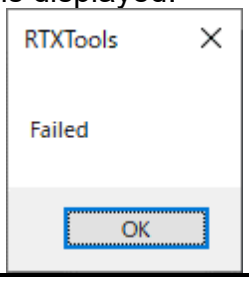
5) When the import is complete, "Succeeded" and the name of the imported file are displayed to the right of the "Import" button



6) Since the settings need to be reflected to each unit, click the [Set all items] button in each setting ([xxxxxSETS]tab). **Note 1**

Note 1: [xxxxxSETS] is either of [Unit SETS], [Connector-each SETS], [Block-each SETS], [CH-each SETS], [Point-each SETS], [Port-each SETS] depending on the unit.

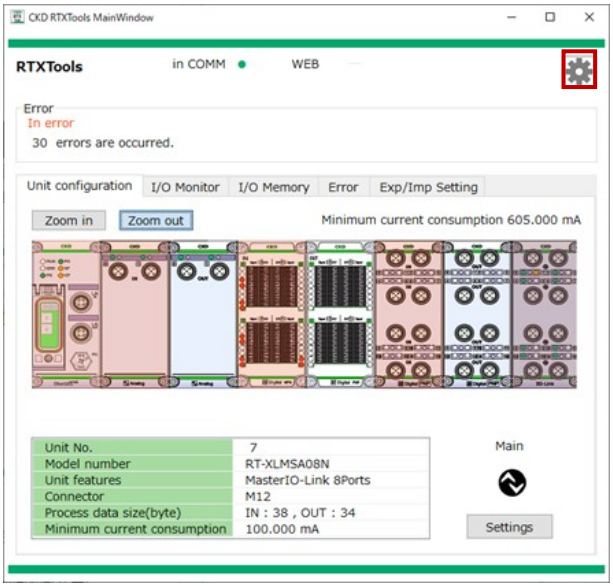
- The extension of the import file is .cnf.
- A file can be imported if its contents match the manifold configuration. The import is canceled in the following cases.
  * When the file does not match the manifold configuration
  * When there is a set value outside the range
- If the import fails, a message is displayed.



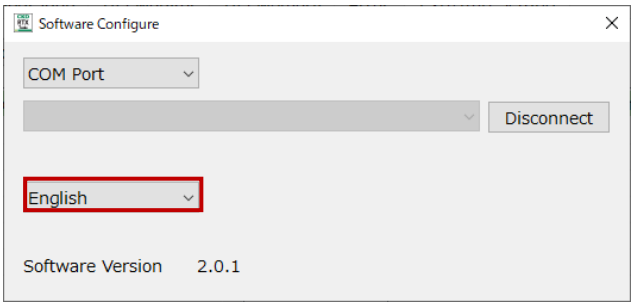
3.4.3. Switching display language

Switches the display language.

1) Click the icon in the upper right corner of the main window to open the [Software Configure] window.



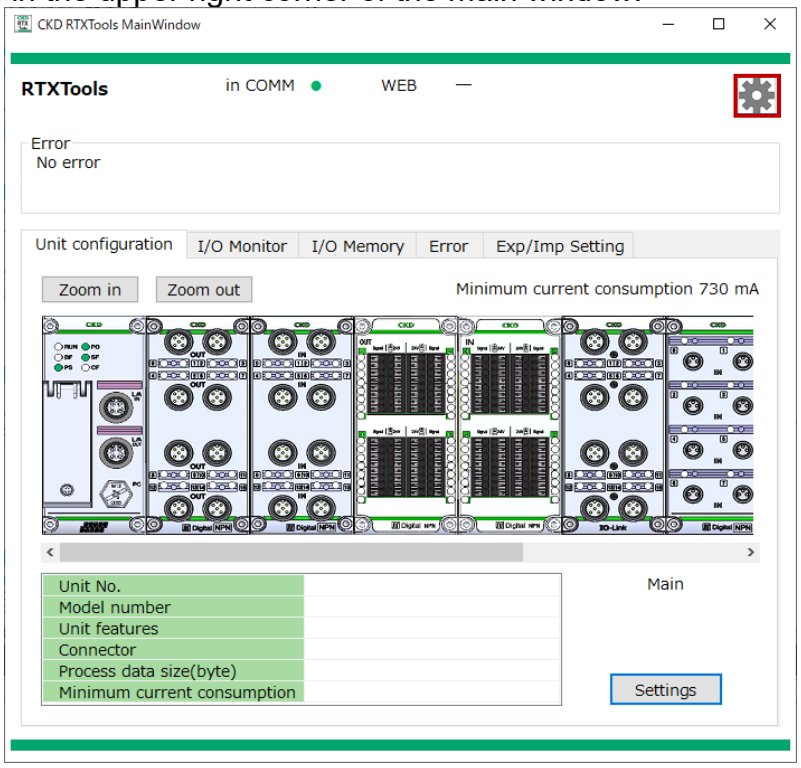
2) Select a language from the pull-down list.
"Japanese," "English," and "Chinese (Simplified)" can be selected.



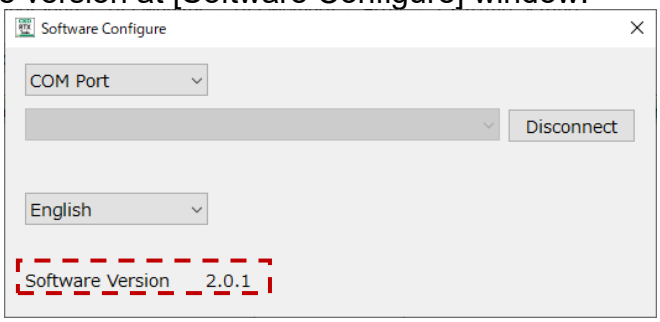
3.4.4. Checking the software information

Checks the version information of this software.

1) Click the icon in the upper right corner of the main window.



2) Check the software version at [Software Configure] window.

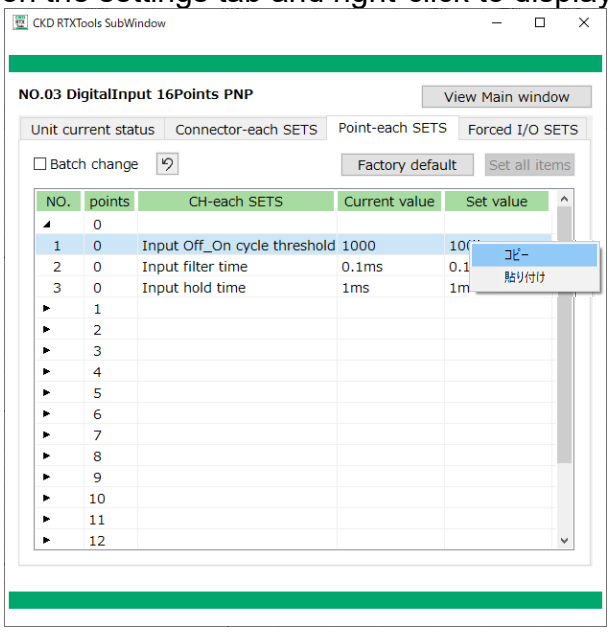


3.4.5. “Copy/paste” function

The “copy/paste” function can be used to enter set values for each unit.

■ Copy

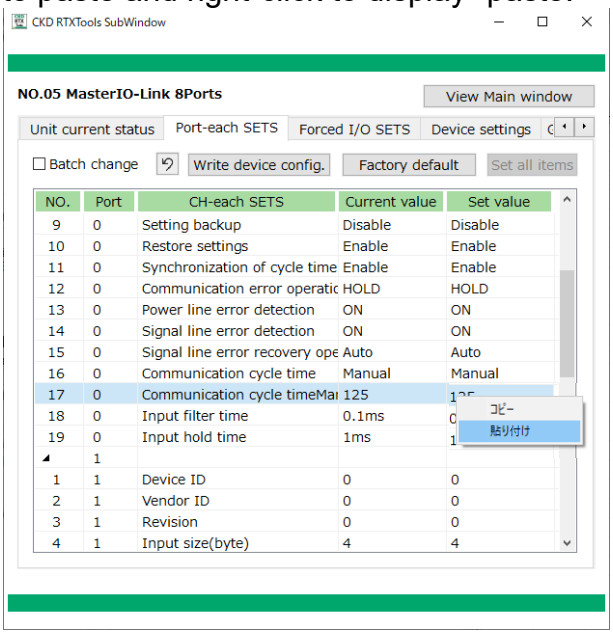
1) Open each settings tab in the sub window ([xxxxxSETS]tab). **Note 1**
2) Select a "set value" on the settings tab and right-click to display "copy."



Note 1: [xxxxxSETS] is either of [Unit SETS], [Connector-each SETS], [Block-each SETS], [CH-each SETS], [Point-each SETS], [Port-each SETS] depending on the unit.

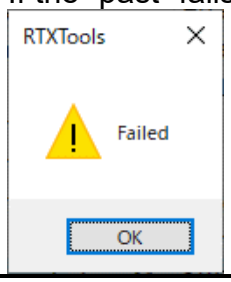
■ Paste

1) Open each settings tab in the sub window ([xxxxxSETS]tab). **Note 1**
2) Select a "set value" to paste and right-click to display "paste."



Note 1: [xxxxxSETS] is either of [Unit SETS], [Connector-each SETS], [Block-each SETS], [CH-each SETS], [Point-each SETS], [Port-each SETS] depending on the unit.

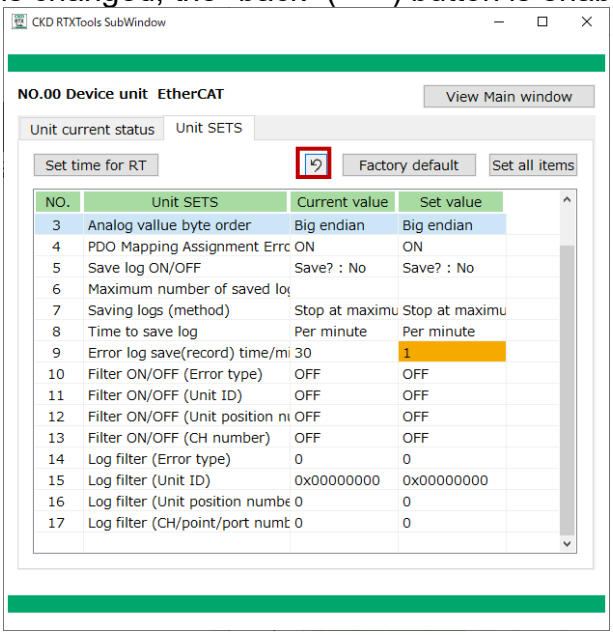
- If the “past” fails, a message is displayed.



3.4.6. "Back" function

The "back" function can restore to original state if the entered value was incorrect when changing the setting value for each unit.

1) Select a "set value" on the settings tab in the sub window ([xxxxxSETS]tab) and enter. **Note 1**.
2) When the set value is changed, the "back" ("←") button is enabled.



3) Click to return to the previous value.

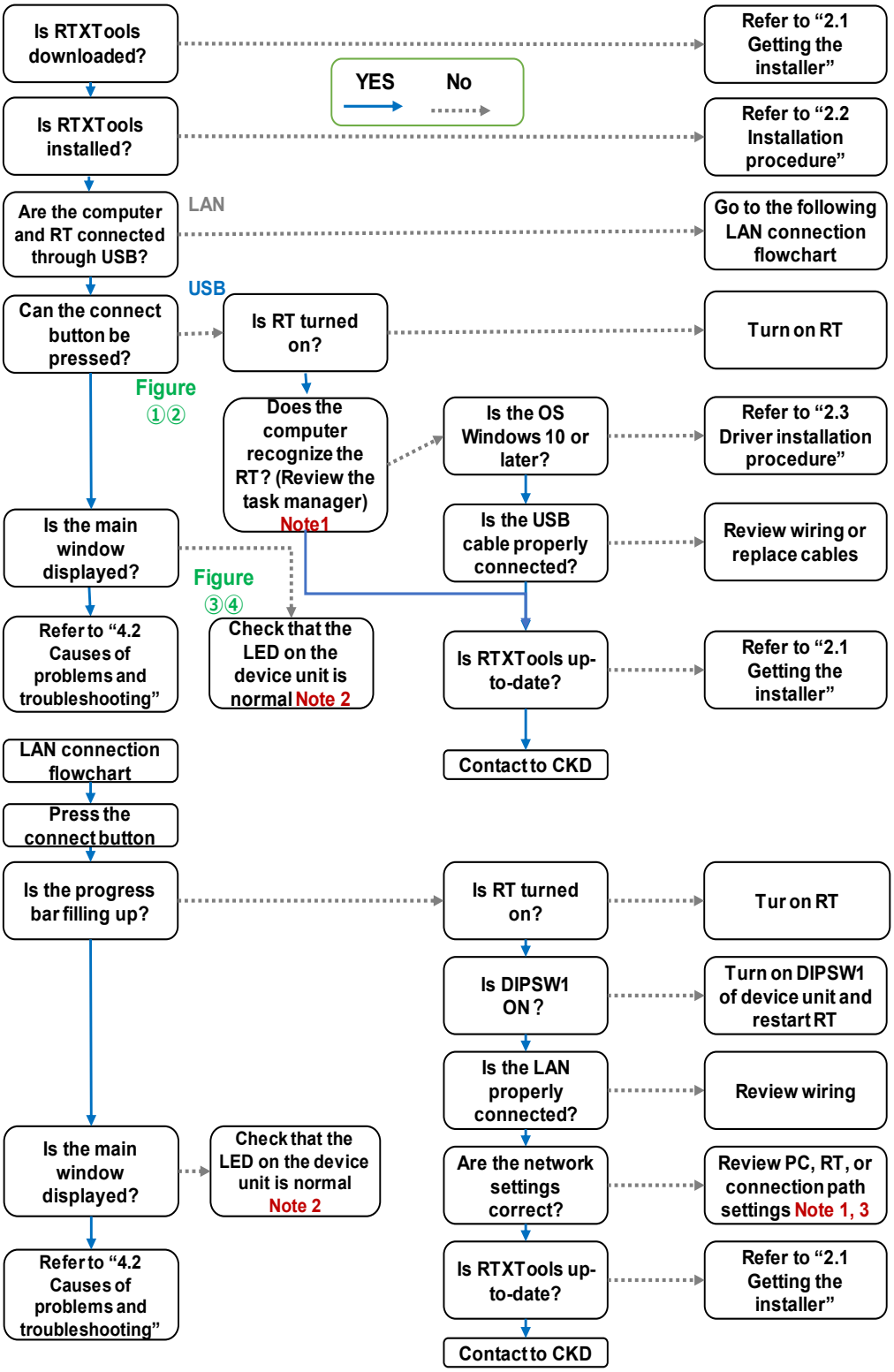
Note 1: [xxxxxSETS] is either of [Unit SETS], [Connector-each SETS], [Block-each SETS], [CH-each SETS], [Point-each SETS], [Port-each SETS] depending on the unit.

- It cannot be used if there are no changes to the settings (it will be grayed out).

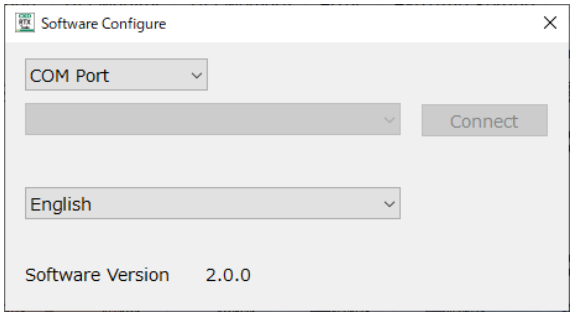
4. TROUBLESHOOTING

4.1. Steps to check at the time of trouble occurrence

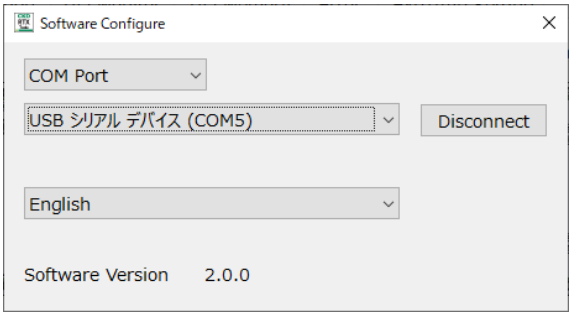
If there is an error in RTXTools starting or connecting, refer to the flowchart below.



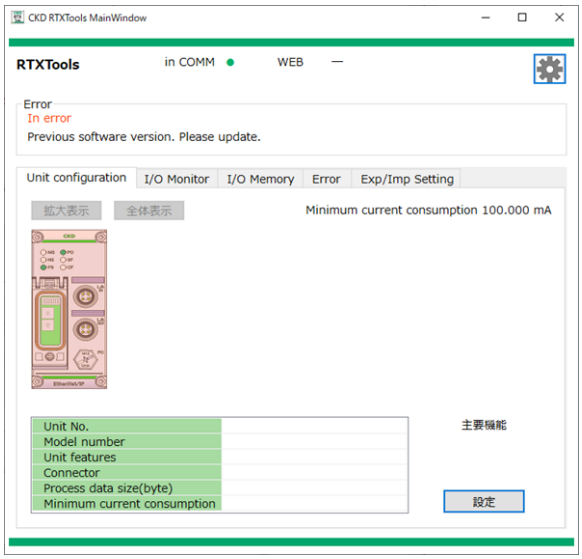
Note: For figures ① through ④ and Note 1 to 3 in the chart, refer to the followings.



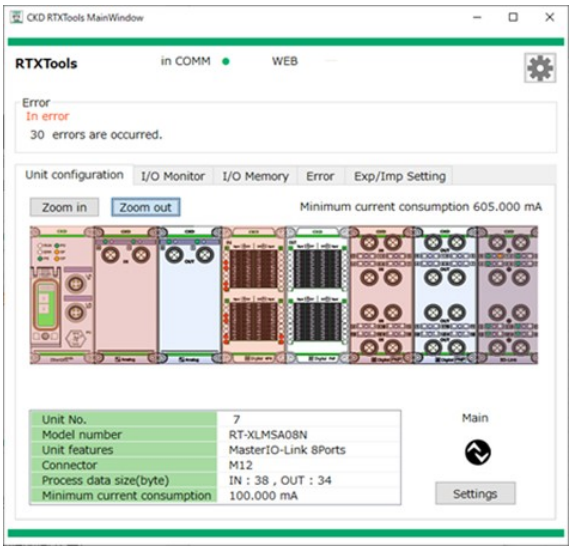
Figure①: When the [Connect] button is disabled



Figure②: When the [Connect] button is enabled



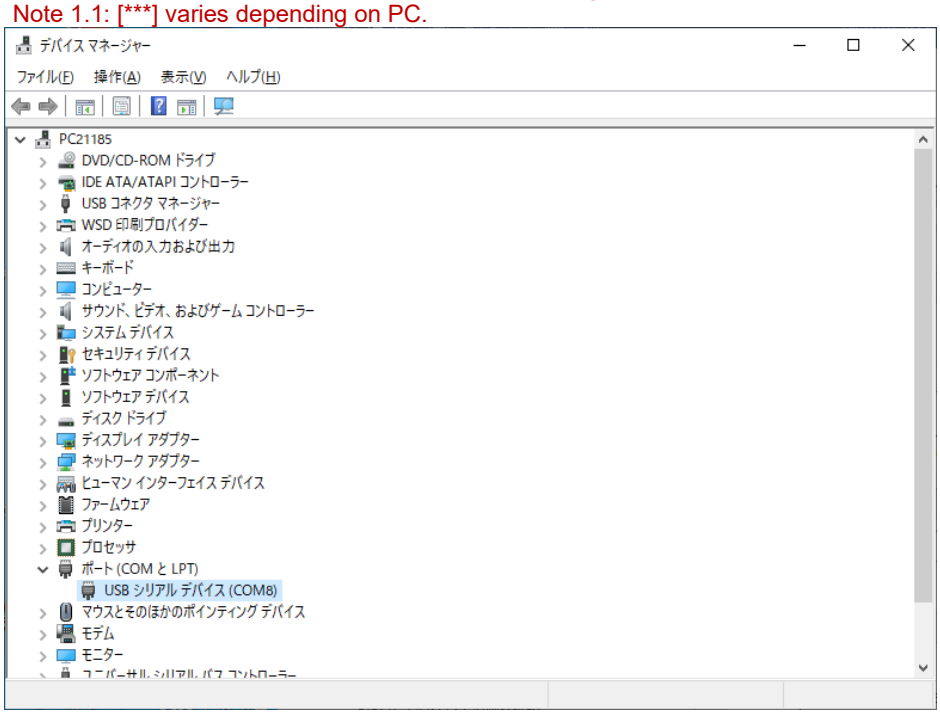
Figure③: Main window not displayed correctly



Figure④: Main window displayed correctly

Note 1:Refer to the [USB serial device(COM***)] displayed under [Device manager]-[Port(COM and LPT)].Note 1.1
If there are multiple devices displayed, relevant device can be identified by detaching and reattaching the USB cable connected to RT. An example is as following.

Note 1.1: [***] varies depending on PC.



Note 2: Refer to the Instruction Manual of device units.

Note 3: Refer to the Instruction Manual of device units for checking the network settings of RT.

4.2. Causes of problems and troubleshooting

If there are communication errors between RTXTools and connected Remote I/O system, check the table below.

No.	Condition	Cause	How to troubleshoot
1.	**Not connected via WebAPI (does not move to main window)**	Dip switch SW1 is OFF.	Check that the dip switch SW1 of the device unit is ON. (Refer to the Instruction Manual of device unit)
		Unable to communicate due to a mistake in the specified IP address.	Check if the IP addresses of the PC and the RT device unit are correct. Note 1
2.	**Error code of CH/point/port diagnostic information of I/O unit has occurred**	An error has occurred in the unit-specific CH/point/port diagnostic information.	• On the [Error] main tab, identify the error from the "error code" for each unit and refer to the Instruction Manual of each unit. • Identify the error location from the unit position number and CH/point/port number on the [Error] main tab. • Identify the error from the “error code” of log data and refer to the Instruction Manual of each unit.
3.	**A communication error has occurred**	There is no normal response from RT to commands from RTXTools.	Check that the USB cable connection has no problems.
			Check that the connection method (USB or WEBAPI) is the intended one.
4.	**There is no response from RT, communication is disconnected**	It has been timed out since there is no normal operation result from RT to commands from RTXTools even after a certain amount of time has elapsed.	Check the followings. unit has executed the command issued by RTXTools immediately before the message is displayed. • If the power is OFF • Power OFF then ON again • Check that the Remote I/O system is properly assembled (if there is any connection failure)
5.	IP address, **access authentication**, etc. (Note 2) cannot be set	WebAPI connection is used for connecting PC and RT	Change to a USB connection, as it is not possible to configure settings through a WebAPI connection.
6.	**Unable to check/find process data size for entire RT**	-	Check the [I/O memory] tab in the main window. Refer to "3.3.1. Checking the process data size."
		The set process data size has not been reflected on the RTXTools..	Turn RT OFF and ON before checking.
7.	**RTXTools does not start**	Multiple RTXTools have started.	Open Windows task manager and end them.
8.	**The connected unit is not displayed in the main window** Note 3	The version of RTXTools is too old to recognize the connected unit.	Update RTXTools to the latest version.

9.	**Do not know how to set an IP address**	-	For USB connection: Refer to “3.3.3 Checking device unit switch status” For LAN connection: Refer to the Instruction manual of a master used, since it cannot be set on RTXTools.
10.	**The process data size of IO-Link master unit is unknown**	-	(IO-Link master unit) Check the total data size displayed in the lower part of the "Status display area" on the [Current status] tab.

Note 1: After making changes, turn the power ON/OFF.
Note 2: Includes IP address, subnet mask, default gateway, WEB access authentication, and access login ID and password.
Note 3: Refer to Figure③ as an example.

5. APPENDIX

INDEX

Industrial network
A standard for exchanging signals between on-site devices (measuring and operating devices) and controllers operating in factories, etc., using digital communications.

IO-Link
IO-Link is an industrial interface standard (IEC 61131-9) that connects sensors and actuators to an upper network via digital signals.

I/O unit
A unit that performs input and output of digital and analog signals. It can control ON/OFF and loaded data by connecting switches, sensors, actuators, etc.

Remote I/O
Abbreviation for Remote input/output. A mechanism that allows input and output of measuring equipment, input devices, control devices, etc. using a network. Input/output is performed through a network, which allows reduced wiring.

Device unit
A unit that is an interface between the upper industrial network and each connected I/O unit in a Remote I/O system. RT Series operation requires one device unit.

Manifold
In this manual, it refers to the condition of multiple units combined, i.e., the entire Remote I/O system.

RT Series
A series of Remote I/O products. Includes device units, I/O units, etc.

TVG Series
A series of solenoid valves compatible with Remote I/O.

Driver
A software component that allows interaction between the operating system and the device.
Installing it on a computer in advance allows the PC to recognize the connected device.

COM port
A serial port on a computer.

LAN
Abbreviation for Local Area Network. A network built within a limited area, such as an office.

WebAPI
A mechanism that provides an interface to operate an application via HTTP communication.

Access authentication
A function that controls whether or not a user is allowed to log in.

Decimal number
To express numbers using the numbers zero through nine.
The digit goes up when it reaches "10."

Hexadecimal number
To express numbers using the numbers zero through nine and the letters of the alphabet from A to F.
The digit goes up when it reaches "16 (0x10)."
It is expressed by adding "0x" at the beginning.

DEC
Decimal number.

BIN
Binary number.

HEX
Hexadecimal number.

Bit
A basic unit of information in digital communications. It is also a symbol for binary units.

Range
Indicates a range.

%FS
Percentage of the measurable range (Full Scale).

Analog value
Input and output values of the analog unit.

Process data
Data that can be read or written by process input/output communication. A generic term for process input data and process output data.

Forced I/O
Forced input is a function that forces the input signal of an input unit (regardless of the actual input values) to be set to a manually entered value.
Forced output is a function that forces the output signal of an output unit (regardless of the instruction from the upper master) to be set to a manually entered value.

Export
To output data on the software to a file.

Import
To load a file and convert it into data on the software.

Logging
To record data.

Latch
A circuit used to hold data. RT Series has a unit with a function to hold the LED status in the event of an error (latch function).

Power line error
Indicates a short circuit, disconnection, or overheating of the input/output unit's power lines.

Signal line
Indicates a short circuit, disconnection, or overheating of the input/output unit's signal lines.

Diagnostic information
Errors that have occurred and information.

Dip switch
In RT series, it is used to set a Device unit. There are rotary type and slide type. In this Instruction Manual, it refers slide type switch.

IODD file
Abbreviation for IO Device Description file. A file that contains a description of the IO-Link device and its parameter information, such as manufacturer, part number, functions, etc.

Connector
Hardware connector part. Indicates the shape and size of M12, etc.

Block
Digital I/O unit push-in terminal block connection unit. When the unit is viewed from the top, the terminal block poles are considered to be one block with four poles each, counted from the top.

CH
Connection unit for external devices that input/output numerical values of analog I/O units, etc.

Point
A bit information connection unit for digital I/O units, valve I/F units, etc.

Port
A connection unit for communication functions such as IO-Link communication.

Diagnosis
IO-Link communication diagnostic information.

ISDU
Indicates non-cyclic communication in IO-Link communication, in which a request is made from the IO-Link master to the service data of the IO-Link device for reading, writing, etc.

Device configuration
Indicates the configuration of the IO-Link device actually connected to the IO-Link master unit.

Data storage
A memory in the IO-Link master unit that saves (backs up) the setting data of the connected IO-Link devices.

Event
Indicates errors, warnings, and notifications related to IO-Link communication.