

## **PC Setting Software for Electric Actuators S-Tools**

# **INSTRUCTION MANUAL**

SM-A11147-A/5

- 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.

# PREFACE

This Instruction Manual contains basic matters such as installation and usage instructions in order to ensure optimal performance of **“PC Setting Software for Electric Actuators S-Tools**. 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 has no warranty obligation whatsoever with respect to the information provided by this software, including the contents, accuracy, safety, merchantability, and compatibility for a particular use or purpose.
- CKD Corporation shall not be responsible nor liable for any damage caused by 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.

Although various safety measures have been adopted in the product, customer's improper handling may lead to an accident. To avoid this:

**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.”

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

Note that some items indicated with “CAUTION” may lead to serious results depending on the conditions.

All items contain important information and must be observed.

The following icon is used to indicate other general precautions and usage hints.

	Indicates a general precaution or usage hint.
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# 1. PRODUCT OVERVIEW

## 1.1 Operating Environment

This software requires the following operating environment.

Operating system (OS)	Windows® 10
Resolution	Recommended: 1024 × 768 (XGA) or higher Required: 800 × 600 (SVGA) or higher
USB port	USB 2.0 compliant
Others	Microsoft .NET Framework 4.7.1 or later



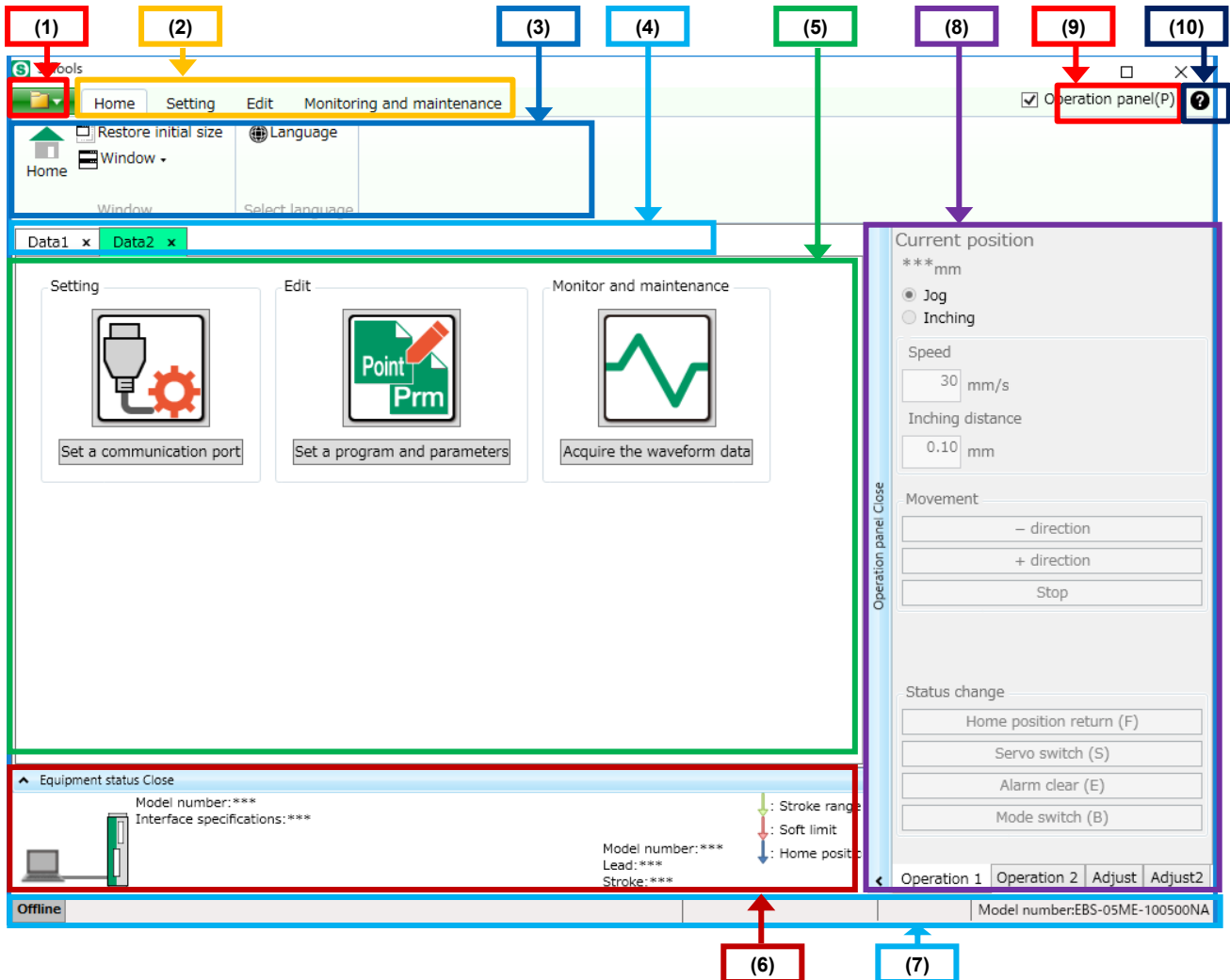
For the above OS, S-Tools can be used for both the 32-bit version and the 64-bit version. S-Tools runs in the desktop environment of Windows 10.

## 1.2 Precautions for Use

- Use a USB communication cable to communicate with the controller. For connecting the cable, refer to the Instruction Manuals for applicable actuator or controller.
- Do not connect/disconnect the USB communication cable or turn ON/OFF the controller while sending/receiving data to/from the controller. This may cause the controller or S-Tools to malfunction. Exit S-Tools before connecting/disconnecting the connector or turning ON/OFF the power supply.
- Do not set Windows to sleep mode (standby) while running S-Tools. This may cause a communication failure when returning from sleep mode.
- If a communication error occurs, check the connection of the USB communication cable (such as whether there are any disconnections).
- S-Tools is a setting software for following products.
  - ECR Series controller (a controller for EBS-M Series and other similar electric actuators)
  - ECG Series controller (a controller for EBS-G Series and other similar electric actuators)
  - FFLD Series electric actuators (the controller is built in)
- This software cannot be used simultaneously with other communication software that uses the USB communication interface. Exit other communication software before using this software.

## 1.3 Screen Layout of S-Tools

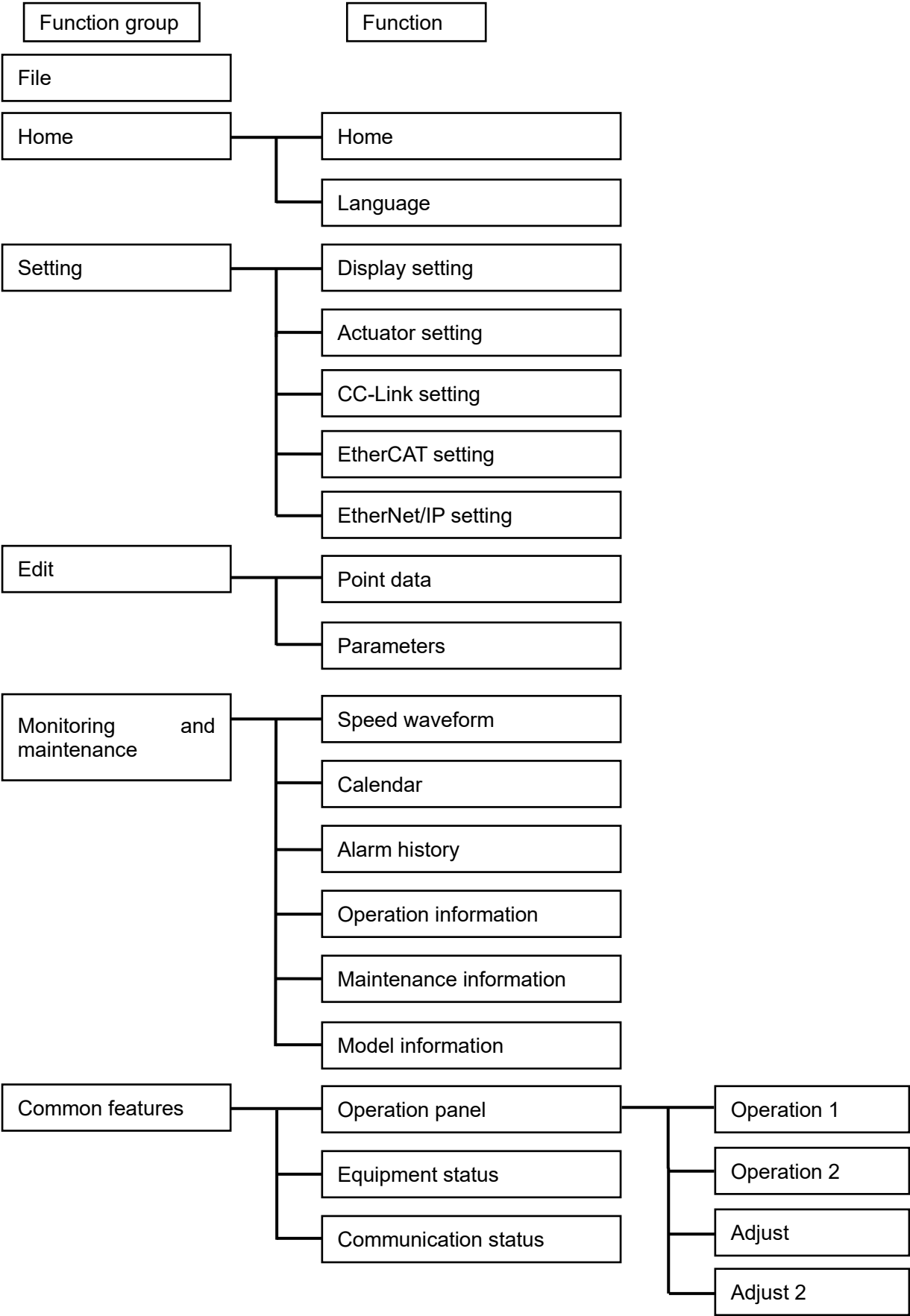
The S-Tools screen consists of following elements:



No.	Name	Description
(1)	File tab	It contains commands for managing files and performing print and print preview.
(2)	Ribbon tabs	They represent the S-Tools function group. Selecting a tab switches the ribbon menu.
(3)	Ribbon menu	It contains commands for selecting the function to be executed.
(4)	Window tabs	They are for selecting the data to be worked on and are shown only when there are multiple windows. No tab is shown if there is only one window.
(5)	View	It displays the area for using the selected function.
(6)	Equipment status panel	It displays the status of each piece of equipment (PC, controller, and actuator).
(7)	Communication status bar	It displays the controller communication status and the actuator model number.
(8)	Operation panel	It contains commands for checking the operation of the electric actuator when online. There are 4 tabs.
(9)	Operation panel check box	It opens/closes the operation panel.
(10)	Help button	It shows the software version of S-Tools and the version information of the installed DLL.

# 1.4 Application Structure

The figure below shows the functions that can be used with S-Tools.





## 1.5 Operation Modes of S-Tools

The following functions and views can be used depending on the operation mode of S-Tools:

Function, View		Operation mode Note 1			Remarks
		Online	Offline	Actuator unconnected	
Home	Home	A	A	A	-
	Language	A	A	A	-
Setting	Disconnect	A	S	A	A message appears when offline.
	Display setting	A	N	A	A warning message appears if communication with the controller cannot be made.
	Actuator setting	A	S	A	Settings cannot be read, written, or initialized offline.
	CC-Link setting	A	S	A	Settings cannot be read or written offline.
	EtherCAT setting	A	S	S	Settings cannot be read or written offline.
	EtherNet/IP setting	A	S	Y	Settings cannot be read or written offline.
Edit	Point data	A	S	N	Point data cannot be read or written offline. Controller cannot be initialized offline. Position cannot be imported with the actuator unconnected.
	Parameters	A	S	A	Parameters cannot be read or written offline. Controller cannot be initialized offline.
Monitoring and maintenance	Speed waveform	A	S	A	Speed waveform cannot be monitored offline.
	Calendar	A	N	A	Calendar information cannot be read from or written to the controller offline.
	Alarm history	A	S	A	Alarm information cannot be read from the controller or initialized offline.
	Operation information	A	S	A	A warning message appears if communication with the controller cannot be made.
	Maintenance information	A	N	S	Maintenance information cannot be read from the controller offline.
	Model information	A	N	A	Model information cannot be read offline. Actuator information cannot be saved offline.
Common features	Operation panel	A	N	A	Panel cannot be operated offline. Alarms can be cleared, modes can be switched, and gains can be adjusted even with the actuator unconnected.
	Equipment status	A	A	A	Connection status is displayed in gray and the controller/actuator information is displayed as "****" when offline.
	Communication status	A	A	A	Only "Offline" is displayed when offline.
	Version information	A	A	A	-

Note 1: A: All functions can be used, S: Some functions can be used, N No function can be used

## 2. INSTALLATION

### 2.1 Obtaining the Installer

The installer for S-Tools is available on CKD's website (<https://www.ckd.co.jp/>).

#### <How to obtain the installer>

- 1** Click "COMPONENT PRODUCTS" from the "PRODUCT INFORMATION" tab or "PRODUCT INFORMATION" page.
- 2** Click "Electric actuators" from the Product Category.
- 3** Click "Stepper motor drive".
- 4** Access the "Controller ECR" details page from the Product List.  
\* Other than the page for "ECR," the installer can also be obtained from the product information page for a controller that uses S-Tools as the setting software.
- 5** Click "Software" and download one of the following files that applies to the PC to use with S-Tools.

OS	File name
32 bit	PC Setting Software for Electric Actuators S-Tools (32 bit Ver*****).zip
64 bit	PC Setting Software for Electric Actuators S-Tools (64 bit Ver*****).zip

\* The version information of S-Tools is shown in \*\*\*\*\*.

## 2.2 Installation Procedure

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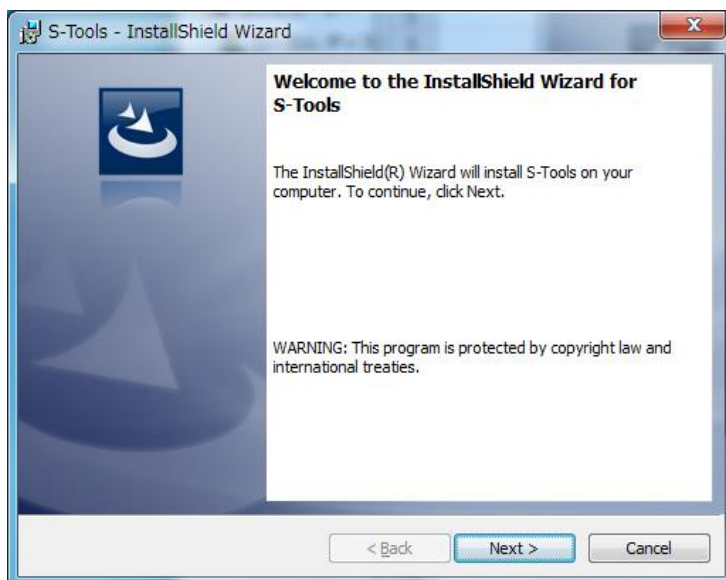
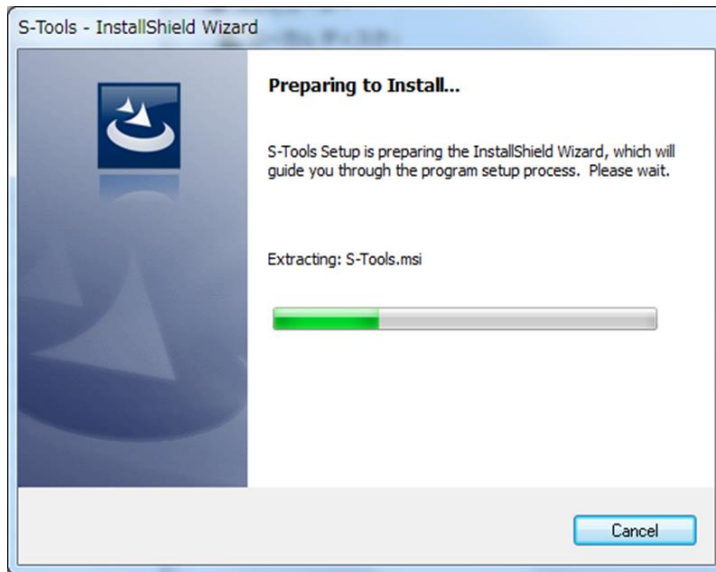


To prevent a malfunction, exit all programs before starting the installation.

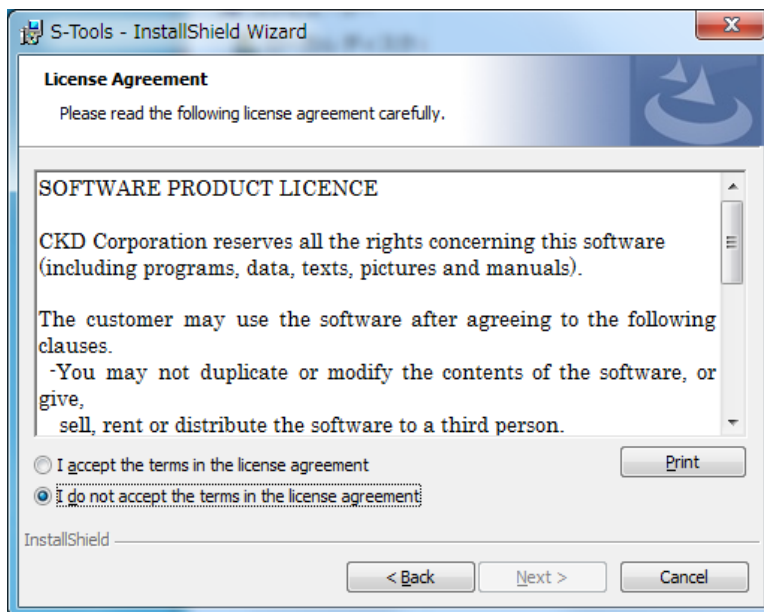
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- 1** Double-click on the “setup.exe” file to launch the installer.
  - \* If a confirmation message that asks whether to install the program from an unknown publisher appears at the beginning of the installation, click [Yes] to continue the installation.
- 2** If “.Net Framework 4.7.1” dialog box appears, click [Install].  
It only appears on a PC that do not have “.Net Framework” version 4.7.1 or later installed. Clicking [Cancel] will abort the installation of S-Tools.

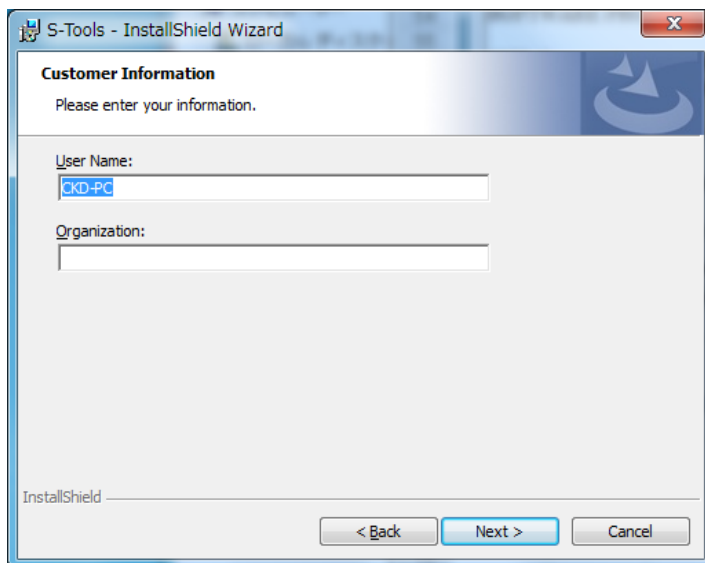
- 3** Once InstallShield Wizard has been prepared, “InstallShield Wizard Welcome” dialog box appears. Click [Next].



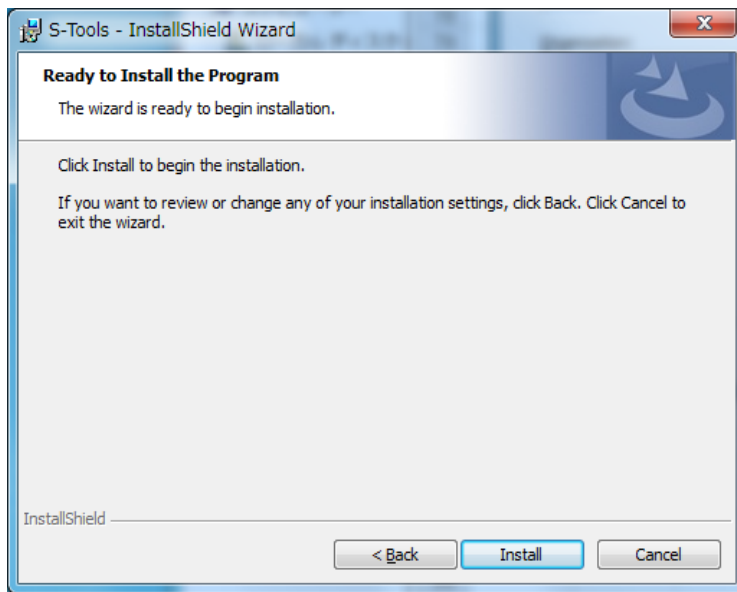
- 4** Confirm the License Agreement. Select “I accept the terms in the license agreement” and click [Next] to accept the license agreement. Failure to accept the License Agreement will abort the installation.



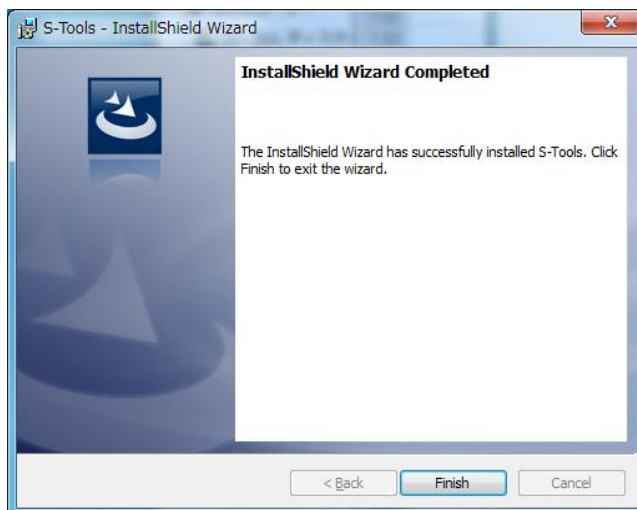
- 5** Input the customer information and click [Next].



- 6** Ready to Install the Program dialog box appears. Click [Install] to begin installation.



- 7** InstallShield Wizard Completed dialog box appears. Click [Finish] to close the dialog box.



## 3. USAGE

Depending on the S-Tools version, some controllers cannot be connected and some functions are not available for use. Use the latest version of S-Tools. The following section lists the S-Tools versions compatible with the controllers to be used.

Controller	S-Tools version
ECR	Version 1.00.02.00 or later
FFLD	Version 1.02.00.00 or later
ECG-A (parallel I/O specifications, CC-Link specifications)	Version 1.03.00.00 or later
ECG-A (parallel I/O specifications, CC-Link specifications)	Version 1.04.00.00 or later
ECG-B	Version 1.04.00.00 or later



- When adjusting the electric actuator using this software, make sure to read the Instruction Manual for the electric actuator and use it correctly.
- At the adjustment stage, the actuator may move in an unexpected way.
- Make sure there is no mechanical interference and stay away from the movable sections.

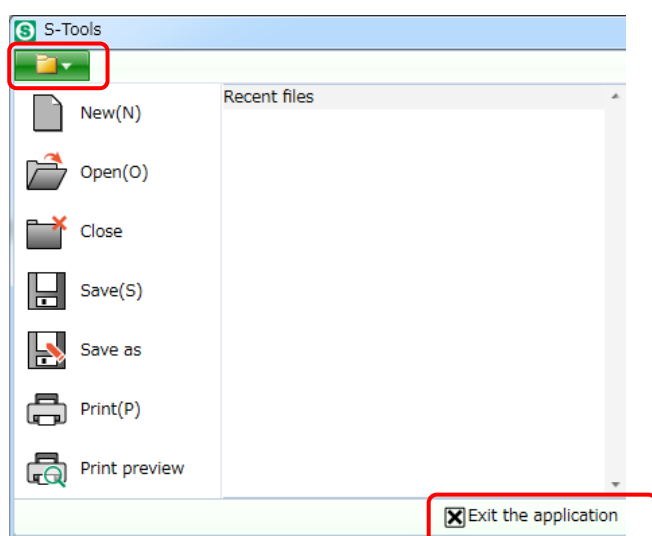
### 3.1 Start and Exit

#### 3.1.1 Start

To start S-Tools, go to the Windows Start Menu, select CKD Corporation, and then select S-Tools. New dialog box appears. For details on the “New” dialog box, refer to “3.2.2 New”.

#### 3.1.2 Exit

To exit S-Tools, click the [X] button in the upper right corner of the window or open the File menu and click the [Exit the application] button.

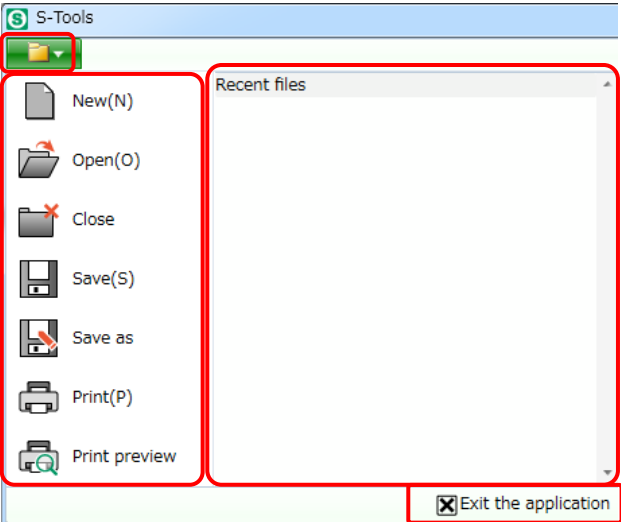


## 3.2 File Tab

### 3.2.1 Overview of the File tab

The File tab contains commands for creating, saving, opening, closing, and printing a file.

Selecting the File tab displays the following menu.



Name	Description	Detail
New	It opens the New dialog box.	3.2.2
Open	It opens an existing file.	3.2.3
Close	It closes the active window tab.	3.2.3
Save	It overwrites and saves the file being edited.	3.2.4
Save as	It saves the file being edited with a name.	3.2.4
Print	It prints the currently displayed view. "Point data," "Parameters," and "Speed waveform" are the objects that can be printed and are printed as they appear in their respective view.	-
Print preview	It shows the object as it will appear in printed form in the preview dialog box. "Point data" and "Parameters" are the objects that can be previewed.	-
Recent files	It lists up to 10 recently used files (*.exal format) with the most recent first. Selecting a file opens it.	-
It exit the application	Exits S-Tools.	3.2.4



## 3.2.2 New

Starting S-Tools or selecting [New] from the File tab opens the “New” dialog box.

The "New" dialog box is shown with the "Offline" option selected. Under "From a new file", the following settings are configured:

Parameter	Value
Controller	ECR
Interface specifications	PIO
Series	EBS
Size	04
Attachment direction	MD
Lead	06
Stroke	0050

Under "By opening a file", there is a text input field and an "Open a file" button. The "Online" section is currently unselected, showing a "Communication port selection" dropdown menu. "OK" and "Cancel" buttons are at the bottom right.

### ■ Offline

#### <From a new file>

Selecting the items and clicking the [OK] button runs S-Tools without connecting to the controller.

Clicking the [Cancel] button cancels “New” and if there are no other window tabs being edited, exits S-Tools. If there are other window tabs being edited, the New dialog box closes.

#### <By opening a file>

Clicking the [Open a file] button opens the file selection dialog box. Opening a file closes the New dialog box. Not selecting a file in the file selection dialog box keeps the New dialog box open. Files in S-Tools format (\*.exal) can be selected.

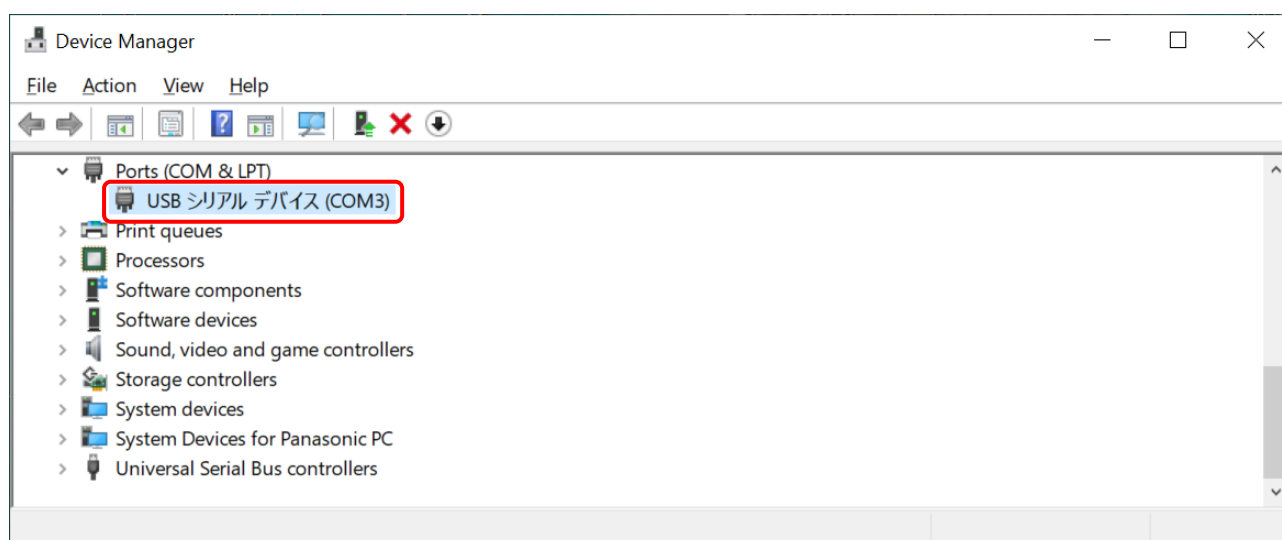
## ■ Online

The COM port that can be connected is displayed in the box labeled “Communication port selection.” If there is no connectable COM port, “-” is displayed.

Selecting a COM port and clicking the [OK] button runs S-Tools after connecting to the controller. Clicking the [Cancel] button cancels “New” and if there are no other window tabs being edited, exits S-Tools. If there are other window tabs being edited, the “New” dialog box closes.

If the actuator is not connected, the confirmation message “Could not verify the actuator model number. Select the model number to continue bringing it online” appears. Clicking the [OK] button opens the model number selection dialog box. Selecting the model number and clicking the [OK] button brings the equipment online with the selected model number. Clicking the [Cancel] button cancels “New” and if there are no other window tabs being edited, exits S-Tools. If there are other window tabs being edited, the New dialog box closes.

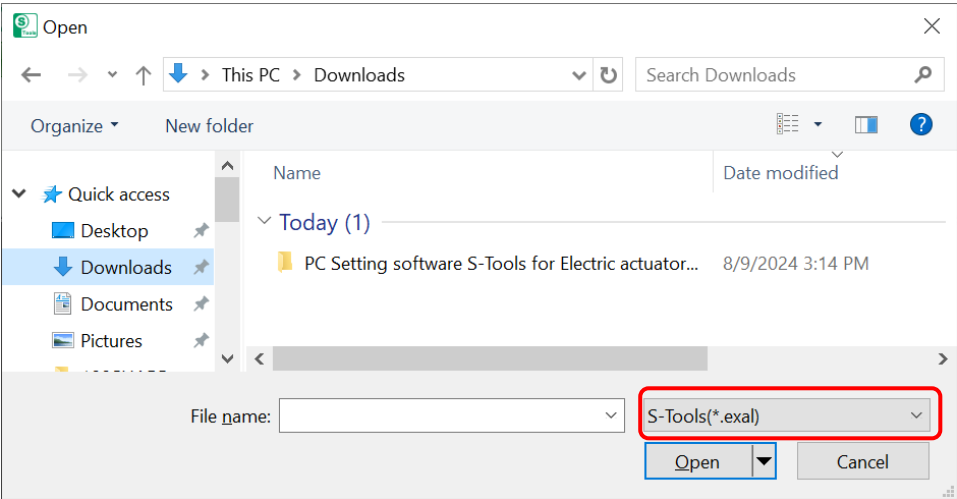
\* The COM port to which the controller (such as ECR Series) is connected can be checked in “Ports (COM & LPT)” under the “Device Manager,” a standard Windows OS feature. Use the COM port indicated with “USB Serial Device” or “CDC USB Driver.”



3.2.3 Open/Close

<Open>

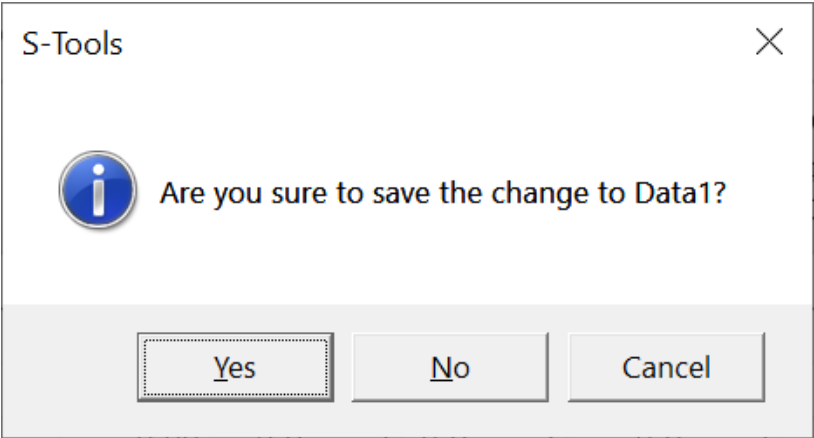
Selecting [Open] opens the file selection dialog box. When a file is opened, it opens with the Home tab selected.  
Files in S-Tools format (\*.exal) can be selected.



<Close>

Selecting [Close] closes the active window tab. If there is only one window tab, closing the window tab exits S-Tools. To exit S-Tools, refer to “3.2.4 Save/Exit.”

If either “Point data,” “Parameters,” or “Speed waveform” is being edited, the confirmation message “Are you sure to save the change to Data1?” appears. The Data1 part will contain the window tab name (file name).



Name	Description
Yes	It closes the window tab after either “overwriting the file” or “saving the file with a name.”
No	It closes the window tab without saving the file.
Cancel	It closes the dialog box.

### 3.2.4 Save/Exit

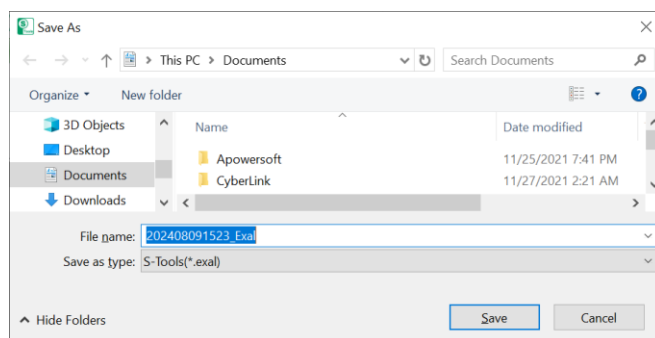
#### <Save>

Selecting [Save] overwrites the file being edited. If the file has never been saved before, the same dialog box as “Save As” appears.

Data saved in the file	
Point data	Parameters
Speed waveform	Alarm history
Maintenance information	Model information
CC-Link	EtherCAT
EtherNet/IP	-

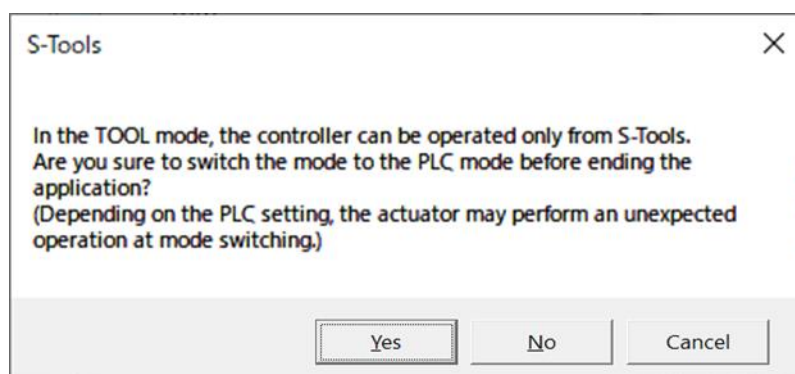
#### <Save as>

Selecting [Save as] saves the file being edited with a name. The default file name is date\_Exal.exal (example: 201803141113\_Exal.exal). If either “Point data,” “Parameters,” or “Speed waveform” is displayed, it can be saved in csv format.



#### <Exit the application>

Clicking the [Exit the application] button closes all window tabs and exits S-Tools. In the TOOL mode, the following dialog box appears. To close a window tab, refer to “3.2.3 Open/Close.”

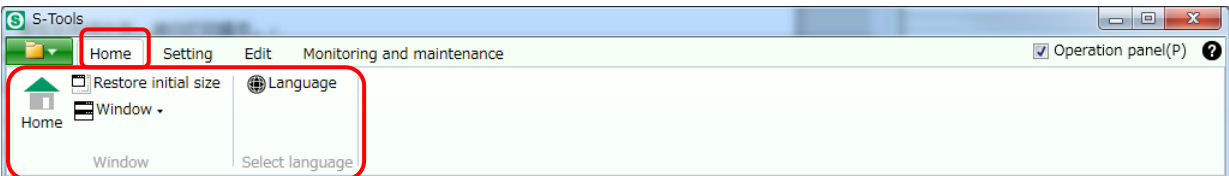


## 3.3 Home Tab

### 3.3.1 Overview of the Home tab

The Home tab contains commands for managing windows, switching between functions, and changing the display language.

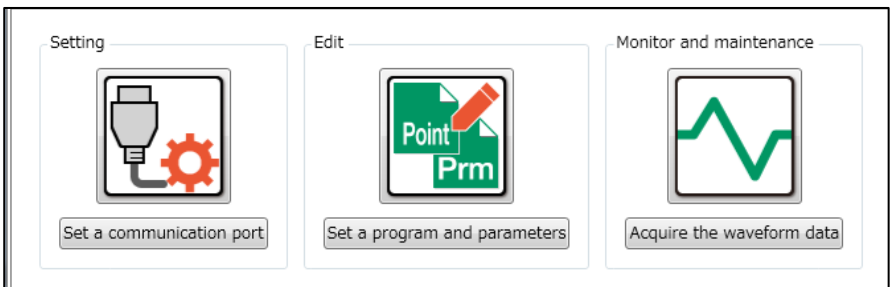
Selecting the Home tab displays the following ribbon menu.



Name	Description	Detail
Home	Starts the “Home” view.	3.3.2
Restore initial size	It restores the S-Tools window to its default size.	-
Window	It is used to change the arrangement of windows when multiple window tabs are launched.	3.3.3
Language	It is used to change the display language. The change takes effect after restarting the PC.	3.3.4

### 3.3.2 Home

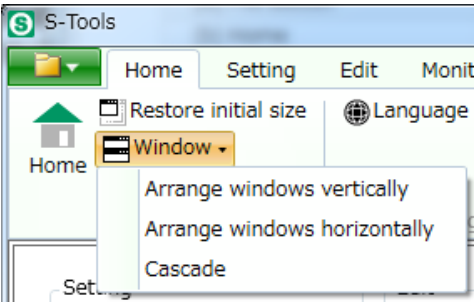
Clicking the [Home] button starts the following view.



Name	Description
Set a communication port	It shows the Setting tab and its ribbon when the icon or the button is clicked.
Set a program and parameters	It shows the Edit tab and its ribbon when the icon or the button is clicked.
Acquire the waveform data	It shows the Monitoring and maintenance tab and its ribbon when the icon or the button is clicked.

### 3.3.3 Window

This function changes the arrangement of opened window tabs if multiple window tabs are being edited.



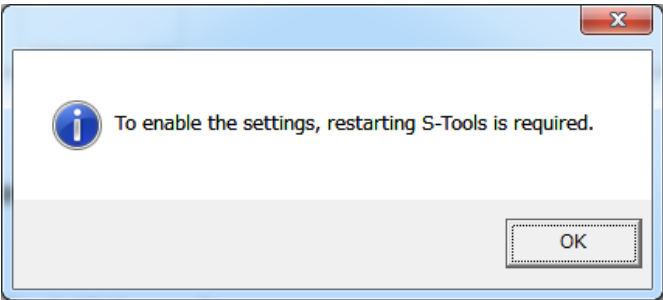
Name	Description
Arrange windows vertically	It displays the selected window tab on the lower side.
Arrange windows horizontally	It displays the selected window tab on the right side.
Cascade	It displays all window tabs together. This is the default arrangement.

### 3.3.4 Language

Clicking the [Language] button starts the “Language” view. It can also be used offline.



The following confirmation dialog box appears after selecting the language to use and clicking the [Setting] button.



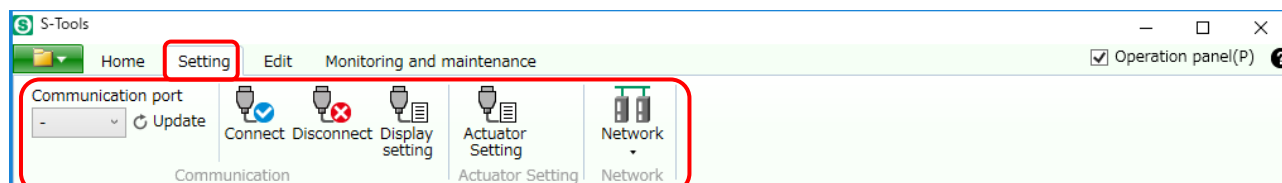
The selected language takes effect after restarting S-Tools.

## 3.4 Setting Tab

### 3.4.1 Overview of the Setting tab

The Setting tab contains commands for configuring and displaying the network settings.

Selecting the Settings tab displays the following ribbon menu.



Name	Description	Detail
Communication port	It is used to select or update the communication port when online.	3.4.2
Connect	It connects the port selected in the communication port drop-down box.	3.4.3
Disconnect	It releases the port selected in the communication port drop-down box.	3.4.4
Display setting	It starts the "Display setting" view.	3.4.5
Network	It is used to configure CC-Link, EtherCAT or EtherNet/IP settings.	3.4.7



Changes to the settings related to the parallel I/O and IO-Link specifications are made in the "Parameters" view started from the Edit tab.

### 3.4.2 Communication port

This function displays the communication port that can be connected. If there is no connectable communication port, "-" is displayed. Clicking the communication port drop-down box shows the connectable communication ports from which the communication port to use for connecting to the controller can be selected.

Clicking the [Update] button updates the information of the connectable communication port.

### 3.4.3 Connect

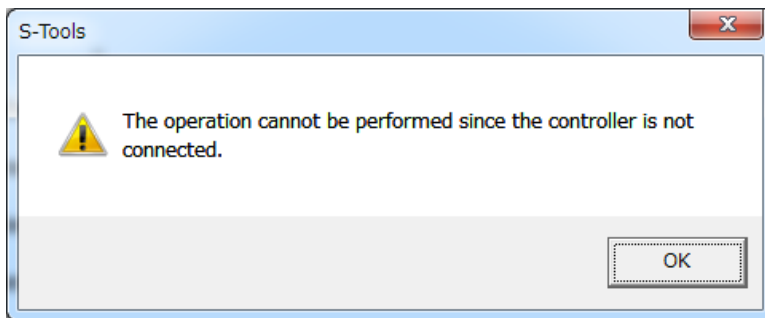
Clicking the [Connect] button connects the selected communication port to the controller. If the connection cannot be made, the message “The communication port could not be opened.” appears. If the port becomes unintentionally disconnected while in connection (other than by clicking the [Disconnect] button), it will reconnect automatically.

If the actuator is not connected, the confirmation message “Could not verify the actuator model number. Do you want to continue and bring it online?” appears. Clicking the [OK] button connects the selected communication port to the controller. Clicking the [Cancel] button closes the dialog box.

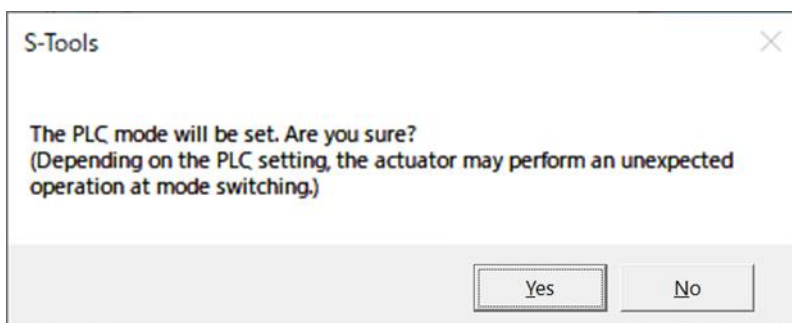
### 3.4.4 Disconnect

Clicking the [Disconnect] button releases the currently connected communication port. It can be performed only when the port is open.

If the [Disconnect] button is clicked when the port is closed, the message “The operation cannot be performed since the controller is not connected.” appears.



If the [Disconnect] button is clicked when the controller is in the TOOL mode, the confirmation message “The PLC mode will be set. Are you sure? (Depending on the PLC setting, the actuator may perform an unexpected operation at mode switching.)” appears.




- When operating the actuator from an upper level equipment, set the controller to the PLC mode. In the TOOL mode, the controller does not accept operations from an upper level equipment (such as PLC).
- Before switching the controller to the PLC mode, check the input state of the signal from the upper level equipment to the controller. When the mode is switched from TOOL to PLC, the actuator may perform an unexpected operation depending on the setting of the upper level equipment.



### 3.4.5 Display setting

Clicking the [Display setting] button starts the “Display setting” view.

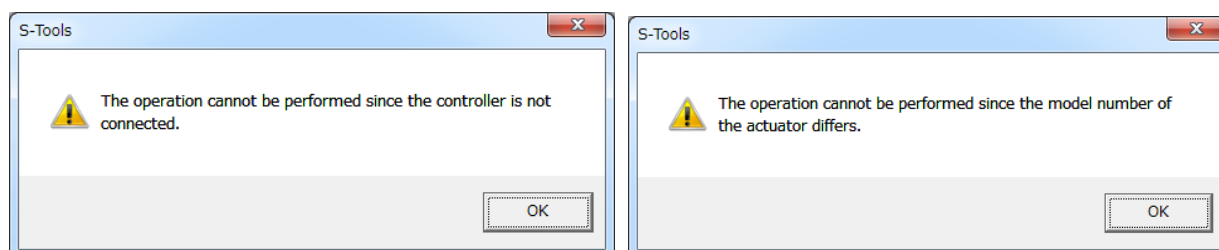
 Update date (PC time) 3/30/2020 1:39:55 PM	
Connection check	OK
COM port	COM3
Controller model number	ECR-MNNN3B-LK
Interface specifications	IO-Link
Controller serial number	0319-001
Actuator model number	FGRC-50360NCN

Clicking the [Update] button updates the set information. The information to be updated is as follows.

Name	Description
Update date (PC time)	It shows the PC date and time the [Update] button was clicked.
Connection check	It shows the status of the connection with the controller. It shows “OK” when there is connection and shows “-” when the connection is not established or there is no connection.
COM port	It shows the currently connected COM port. It shows “-” when the connection is not established or there is no connection.
Controller model number	It shows the model number of the connected controller. It shows “-” when the connection is not established or there is no connection.
Interface specifications	It shows the interface specifications of the connected controller. It shows “N/A” if it is other than “CC-Link,” “EtherCAT,” “EtherNet/IP,” “IO-Link,” or “PIO.” It shows “-” when the connection is not established or there is no connection.
Controller serial number	It shows the serial number of the connected controller. It shows “-” when the connection is not established or there is no connection.
Actuator model number	It shows the model number of the connected actuator. It shows “-” when the connection is not established or there is no connection.

However, if the controller is not connected, the message “The operation cannot be performed since the controller is not connected.” appears.

Also, if the model number of the connected actuator differs from the actuator model number shown in the selected window tab, the message “The operation cannot be performed since the model number of the actuator differs.” appears.



### 3.4.6 Actuator setting

Clicking the [Actuator setting] button starts the “Actuator setting” view. Use this when setting the actuator information to the ECG-B Series controller.

ReadWriteInitialize

Model number information(Read data)

-

Series

FLSH

Size

16

Attachment direction

Lead

H1

Stroke

06

#### ■ Operating button

ReadWriteInitialize

Name	Description
Read	It reads the actuator model number from the controller, and displays the actuator model number to the side of “Actuator model number (read data).” “No data” is displayed if any actuator information has not been written to the controller. Note 1, Note 2
Write	Writes the actuator information for the model number selected from the on-screen drop-down list. Note 1, Note 2 The operation can only be performed in the TOOL mode and also when the actuator is in the servo OFF status. A confirmation message that asks whether to execute “software reset” appears after writing.
Initialize	This function initializes the actuator information that is written to the controller. Note 1, Note 2

Note 1: If the controller is not connected, the message “The operation cannot be performed since the controller is not connected.” appears.

Note 2: If the actuator model number read from the controller differs from the actuator model number shown in the selected window tab, the message “The operation cannot be performed since the model number of the actuator differs.” appears.



- This screen can be used from the S-Tools version 1.04.00.00 or later.
- The write function and initialize function can only be used when the ECG-B Series controller is connected. With other controllers, the actuator information is read from the actuator that is connected to the controller.
- When executing a software reset, check the input state of the signal from the upper level equipment to the controller in advance. If a software reset is executed, the controller is started in the PLC mode. The actuator may perform an unexpected operation depending on the setting of the upper level equipment.

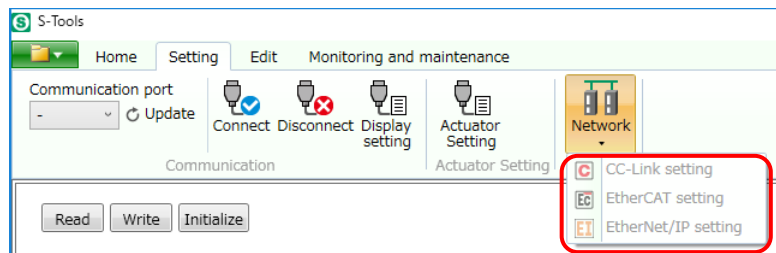
■ Drop-down list

Select the actuator model number to write to the ECG-B Series controller. Do not select other than the model number of the actuator that is to be used with connected to the controller.

Series	FLSH
Size	16
Attachment direction	
Lead	H1
Stroke	06

### 3.4.7 Network

Clicking the [Network] button shows the network submenu.



Name	Description
CC-Link setting	It can be selected when "CC-Link" is selected for the "Interface specifications" in the "Offline" section of the "New" dialog box or when the "Interface specifications" of the controller connected via Online section of the "New" dialog box is "CC-Link."
EtherCAT setting	It can be selected when "EtherCAT" is selected for the "Interface specifications" in the "Offline" section of the "New" dialog box or when the "Interface specifications" of the controller connected via Online section of the "New" dialog box is "EtherCAT."
EtherNet/IP setting	It can be selected when "EtherNet/IP" is selected for the "Interface specifications" in the "Offline" section of the "New" dialog box or when the "Interface specifications" of the controller connected via Online section of the "New" dialog box is "EtherNet/IP."

■ CC-Link setting

This view is for configuring the CC-Link settings. Clicking the [CC-Link setting] option under the network submenu starts the “CC-Link setting” view.

ReadWrite

Operation mode:

PIO

Station number setting:

1


Baud rate setting:

156kbps

Name	Description
[Read] button	It shows the “Operation mode,” “Station number setting,” and “Baud rate setting” acquired from the controller. Note 1, Note 2
[Write] button	It loads the values specified for “Operation mode,” “Station number setting,” and “Baud rate setting” to the controller. Note 1, Note 2 A confirmation message that asks whether to execute “software reset” appears after writing.
Operation mode	It sets the operation mode. The default value is “PIO.”
Station number setting	It sets the station number. The default value is “1.” However, the setting range depends on the operation mode.
Baud rate setting	It sets the baud rate. The default value is “156 kbps.”

Note 1: If the controller is not connected, the message “The operation cannot be performed since the controller is not connected.” appears.

Note 2: If the model number of the connected actuator differs from the actuator model number shown in the selected window tab, the message “The operation cannot be performed since the model number of the actuator differs.” appears.



When executing a software reset, check the input state of the signal from the upper level equipment to the controller in advance. If a software reset is executed, the controller is started in the PLC mode. The actuator may perform an unexpected operation depending on the setting of the upper level equipment.

■ EtherCAT setting

This view is for configuring the EtherCAT settings. Clicking the [EtherCAT setting] option under the network submenu starts the “EtherCAT setting” view.

ReadWrite

Operation mode:

PIO

Device ID:

1

Device ID setting for Station Alias register:


Set

Not set

\* Usually select "Set"

Name	Description
[Read] button	It shows the “Operation mode,” “Device ID,” and “Device ID setting for Station Alias register” acquired from the controller. Note 1, Note 2
[Write] button	It loads the values specified for “Operation mode,” “Device ID,” and “Device ID setting for Station Alias register” to the controller. Note 1, Note 2 A confirmation message that asks whether to execute “software reset” appears after writing.
Operation mode	It sets the operation mode. The default value is “PIO.”
Device ID	It sets the device ID. The default value is “1.”
Device ID setting for Station Alias register	It is selected to either “Set” or “Not set.” The default value is “Set.”

Note 1: If the controller is not connected, the message “The operation cannot be performed since the controller is not connected.” appears.  
Note 2: If the model number of the connected actuator differs from the actuator model number shown in the selected window tab, the message “The operation cannot be performed since the model number of the actuator differs.” appears.



When executing a software reset, check the input state of the signal from the upper level equipment to the controller in advance. If a software reset is executed, the controller is started in the PLC mode. The actuator may perform an unexpected operation depending on the setting of the upper level equipment.

■ EtherNet/IP setting

This view is for configuring the EtherNet/IP settings. Clicking the [EtherNet/IP setting] option under the network submenu starts the “EtherNet/IP setting” view.

ReadWrite

Operation mode:

PIO

☒ DHCP disabled(Use the following IP address)

IP address:

0

0

0

0

Subnet mask:

0

0

0

0

Default gateway:

0

0

0

0

☐ DHCP enabled(Obtain an IP address automatically)

IP address:

0.0.0.0

Subnet mask:


0.0.0.0

Default gateway:

0.0.0.0

Name	Description
[Read] button	It displays the “Operation mode,” “IP address,” “Subnet mask,” “default gateway,” and “DHCP enabled/disabled” status. Note 1, Note 2
[Write] button	It loads the values specified for “Operation mode,” “IP address,” “Subnet mask,” “default gateway,” and “DHCP enabled/disabled” to the controller. Note 1, Note 2 A confirmation message that asks whether to execute software reset appears after writing.
Operation mode	It sets the operation mode. The default value is “PIO.”
IP address	It sets the IP address. Set the address in the range from 0.0.0.0 to 255.255.255.255.
Subnet mask	It sets the subnet mask. Set in the range from 0.0.0.0 to 255.255.255.255.
Default gateway	It sets the default gateway. Set in the range from 0.0.0.0 to 255.255.255.255.
DHCP server	It is for selecting between “Disabled” and “Enabled.” When “Enabled” is selected, the IP address, subnet mask, and default gateway are assigned automatically from the DHCP server.

Note 1: If the controller is not connected, the message “The operation cannot be performed since the controller is not connected.” appears.  
Note 2: If the actuator model number read from the controller differs from the actuator model number shown in the selected window tab, the message “The operation cannot be performed since the model number of the actuator differs.” appears.



- This screen can be used from the S-Tools version 1.04.00.00 or later.
- When executing a software reset, check the input state of the signal from the upper level equipment to the controller in advance. If a software reset is executed, the controller is started in the PLC mode. The actuator may perform an unexpected operation depending on the setting of the upper level equipment.

26

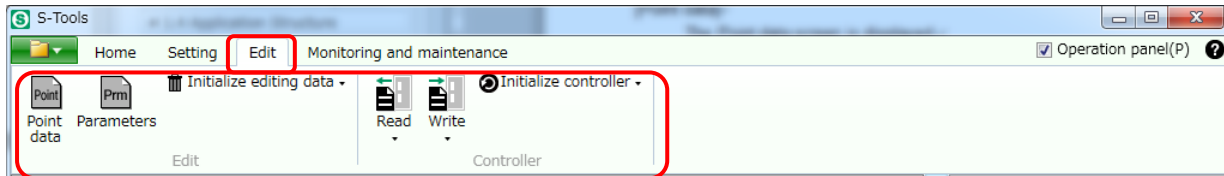
2024-08-19

## 3.5 Edit Tab

### 3.5.1 Overview of the Edit tab

The Edit tab contains commands for reading, writing, and editing the point data and parameters.

Selecting the Edit tab displays the following ribbon menu.

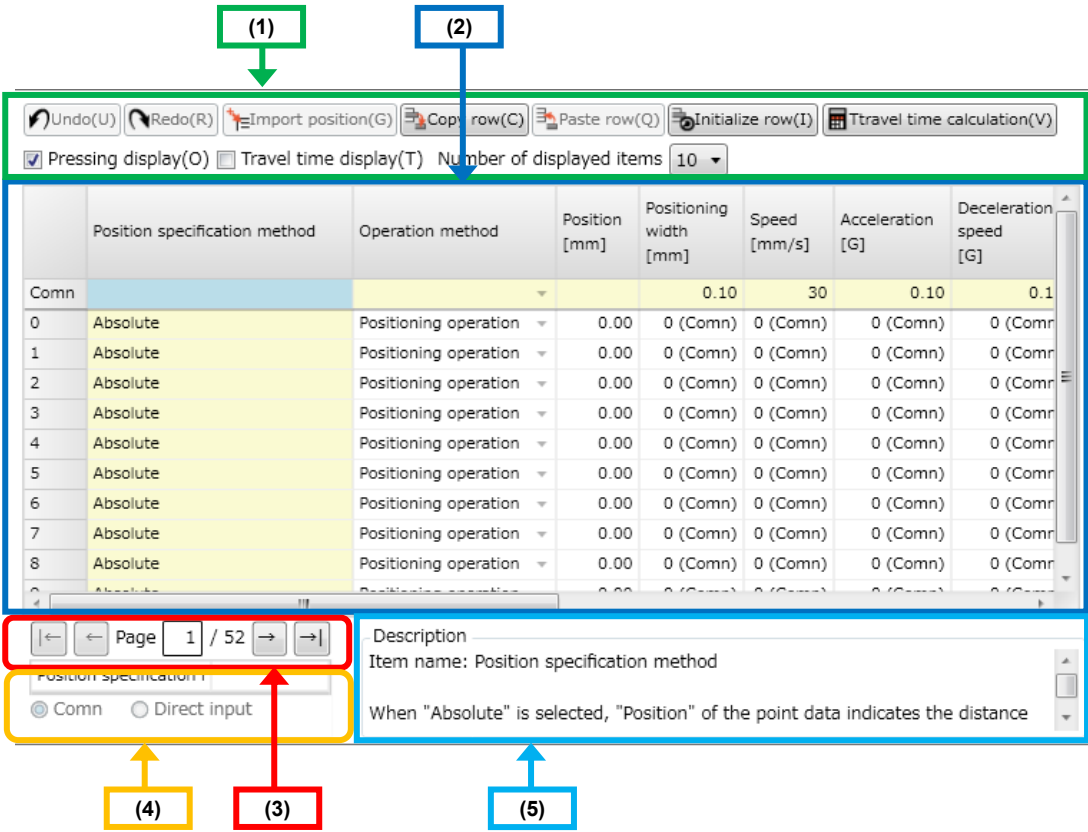


Name	Description	Detail
Point data	It starts the "Point data" view.	3.5.2
Parameters	It starts the "Parameters" view.	3.5.3
Initialize editing data	It initializes the editing data of Point data, Parameters, or both.	3.5.4
Read	It reads the data in Point data, Parameters, or both from the controller.	3.5.5
Write	It writes the editing data of Point data, Parameters, or both to the controller.	3.5.6
Initialize controller	It initializes the data in Point data, Parameters, or both stored in the controller.	3.5.7



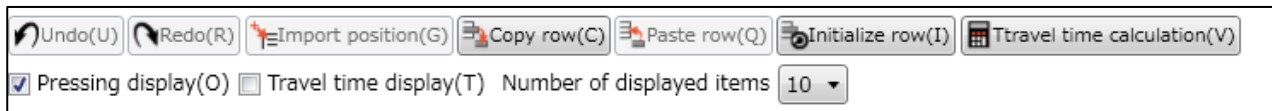
3.5.2 Point data

Clicking the [Point data] button starts the “Point data” view. For the setting range of the point data, refer to the Instruction Manual for the applicable controller.

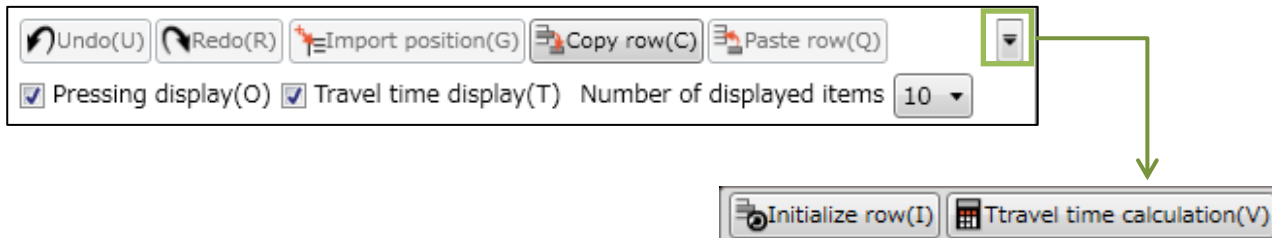


No.	Name	Description
(1)	Operating buttons	They are buttons used for editing the Point data list.
(2)	Point data list	It is a list of data on the points.
(3)	Page navigation	It contains tools for flipping through the pages in the Point data list to be displayed on the screen.
(4)	Selected item input area	It can be used to edit the setting of the item selected in the Point data list.
(5)	Description	It is an area for displaying the description of the item selected in the Point data list.

## ■ Operating buttons



Depending on the window width, the buttons may be hidden. Click the down arrow button to display items that do not fit within the display width.



Name	Description
Undo	It restores a value in a cell in the Point data list to its unedited value. Only the most recent unedited value can be restored. Editing a cell in the Point data list enables the [Undo] button. Restoring the unedited value disables the [Undo] button.
Redo	It restores a value in a cell in the Point data list to its edited value. Restoring the unedited value with the [Undo] button enables the [Redo] button. Restoring the edited value disables the [Redo] button.
Import position	It enters in the point data item selected the current position displayed on the operation panel. "Import position" can be performed when the controller is connected. "Position," "Point zone (+)," and "Point zone (-)" are the items that can import position. "Import position" cannot be used when the actuator is unconnected.
Copy row	It copies the setting of the selected point data row. The copied data are retained until the window tab is closed, and multiple rows can be copied. The Comn row cannot be copied.
Paste row	It pastes information for the number of rows copied starting from the selected point data row. If the number of rows to paste to is less than the number of rows copied, paste will be performed for the number of rows in the pasting destination. Information in the copied rows that is outside the range of the pasting destination will not be pasted. Pasting cannot be performed to the Comn row.
Initialize row	It resets the setting of the row currently selected in the Point data list to its default value. Multiple rows can be selected and initialized. The general rows (No. 0 to No. 511) and the Comn row (at the top) can be initialized but a general row and the "Comn" row cannot be initialized at the same time. The general rows and the "Comn" row must be initialized separately when necessary.
Travel time calculation	It reflects the result of the calculation performed in the rows where calculation is possible to the [Travel time] column in the Point data list. Clicking the [Travel time calculation] button calculates the travel time of the point of the selected cell. Calculation is not possible if multiple rows are selected. If the Position specification method is set to "Absolute" and the start point is not set, the message "Please set the start point." appears. The travel time is calculated assuming operation under specific conditions. The calculation result is for use as reference only.
Pressing display	It shows or hides the "Pressing rate," "Pressing speed," and "Pressing distance" columns in the Point data list. Putting a check in the box next to [Pressing display] shows those columns and unchecking the box hides them. The box is checked by default.
Travel time display	It shows or hides the "Travel time" and "Start point" columns in the Point data list. Putting a check in the box next to [Travel time display] shows those columns and unchecking the box hides them. The box is unchecked by default.
Number of displayed items	It changes the number of rows displayed in the Point data list. The default value is "10." If the Number of displayed items is changed while displaying the second or a later page, the first page will be displayed.

## ■ Point data list

It always displays the common row (labeled Comn) in the first row. The row and column of the selected cell is highlighted.

Initially, the points “No. 0” to “No. 9” are displayed. The points to be displayed can be switched with the page navigation buttons.

	Position specification method	Operation method	Position [mm]	Positioning width [mm]	Speed [mm/s]	Acceleration [G]	Deceleration speed [G]	Acceleration/deceleration method	Stop method	Gain magnification [%]	Point zone (+) [mm]	Point zone (-) [mm]	Pressing rate [%]	Pressing speed [mm/s]	Pressing distance [mm]	Start point	Travel time [sec]
Comn				0.10	30	0.10	0.10	Trapezoid	Control				50	20	3.00		
0	Absolute	Positioning operation ▾	0.00	0 (Comn)	0 (Comn)	0 (Comn)	0 (Comn)	Comn	Comn	0	0.00	0.00	0 (Comn)	0 (Comn)	0 (Comn)		
1	Absolute	Positioning operation ▾	0.00	0 (Comn)	0 (Comn)	0 (Comn)	0 (Comn)	Comn	Comn	0	0.00	0.00	0 (Comn)	0 (Comn)	0 (Comn)		
2	Absolute	Positioning operation ▾	0.00	0 (Comn)	0 (Comn)	0 (Comn)	0 (Comn)	Comn	Comn	0	0.00	0.00	0 (Comn)	0 (Comn)	0 (Comn)		
3	Absolute	Positioning operation ▾	0.00	0 (Comn)	0 (Comn)	0 (Comn)	0 (Comn)	Comn	Comn	0	0.00	0.00	0 (Comn)	0 (Comn)	0 (Comn)		
4	Absolute	Positioning operation ▾	0.00	0 (Comn)	0 (Comn)	0 (Comn)	0 (Comn)	Comn	Comn	0	0.00	0.00	0 (Comn)	0 (Comn)	0 (Comn)		
5	Absolute	Positioning operation ▾	0.00	0 (Comn)	0 (Comn)	0 (Comn)	0 (Comn)	Comn	Comn	0	0.00	0.00	0 (Comn)	0 (Comn)	0 (Comn)		
6	Absolute	Positioning operation ▾	0.00	0 (Comn)	0 (Comn)	0 (Comn)	0 (Comn)	Comn	Comn	0	0.00	0.00	0 (Comn)	0 (Comn)	0 (Comn)		
7	Absolute	Positioning operation ▾	0.00	0 (Comn)	0 (Comn)	0 (Comn)	0 (Comn)	Comn	Comn	0	0.00	0.00	0 (Comn)	0 (Comn)	0 (Comn)		
8	Absolute	Positioning operation ▾	0.00	0 (Comn)	0 (Comn)	0 (Comn)	0 (Comn)	Comn	Comn	0	0.00	0.00	0 (Comn)	0 (Comn)	0 (Comn)		
9	Absolute	Positioning operation ▾	0.00	0 (Comn)	0 (Comn)	0 (Comn)	0 (Comn)	Comn	Comn	0	0.00	0.00	0 (Comn)	0 (Comn)	0 (Comn)		

The following items are displayed in the columns from the left.

Position specification method	Operation method	Position [mm] ([deg])	Positioning width [mm] ([deg])	Speed [mm/s] ([deg/s])	Acceleration [G]
Deceleration [G]	Acceleration/deceleration method	Stop method	Rotation direction	Gain magnification [%]	Point zone (+) [mm] ([deg])
Point zone (-) [mm] ([deg])	Pressing rate [%]	Pressing speed [mm/s] ([deg/s])	Pressing distance [mm] ([deg])	Start point	Travel time [sec]



- When converting [G] to [mm/s<sup>2</sup>] or [deg/s<sup>2</sup>] for acceleration and deceleration, assume 1G = 9800 mm/s<sup>2</sup> (deg/s<sup>2</sup>) for calculation.
- Depending on the actuator, some items are not set and are therefore not displayed.

### Position specification method

This is the “Position” reference.

Name	Description
Absolute	It sets the “Position” of the point data to indicate the distance from the home position.
Incremental	It sets the “Position” of the point data to indicate the distance from the operation start position.

Common value: None

### Operation method

This is the operation performed when the motor stops.

Name	Description
Positioning operation	It outputs a point travel complete signal when the actuator reaches the positioning width with respect to the positioning completion point. When the positioning completion point is reached, the actuator stops.
Pressing operation 1	It outputs a point travel complete signal when the operation is performed at the force set by pressing rate for the set time in the pressing zone. When the pressing completion point is reached, the pressing operation ends and the actuator stops.
Pressing operation 2	It outputs a point travel complete signal when the actuator reaches the positioning width with respect to the pressing completion point and when the operation is performed with the force set by pressing rate as the maximum in the pressing zone. When the pressing completion point is reached, the pressing operation ends and the actuator stops.

Common value: None

### Position [mm] ([deg])

The content of the setting depends on the setting of the “Operation method” as follows.

Operation method	Position [mm] ([deg])
Positioning operation	This item is set to the final target position.
Pressing operation 1	This item is set to the operation start position.
Pressing operation 2	This item is set to the operation start position.

Common value: None

### Positioning width [mm] ([deg])

The content of the setting depends on the setting of the “Operation method” as follows.

Operation method	Positioning width [mm] ([deg])
Positioning operation	This item sets the output of the complete signal using the width (one side) relative to the final position.
Pressing operation 1	This item is not reflected in pressing operation 1.
Pressing operation 2	This item sets the output of the complete signal using the width (one side) with respect to “Pressing start position + Pressing distance.”

Common row: Value in the “Common positioning width” of the user parameter

**Speed [mm/s] ([deg/s])**

This is the travel speed for the constant speed zone during positioning operation.

Common row: Value in the “Common speed” of the user parameter

**Acceleration [G]**

This is the acceleration speed for the acceleration zone during positioning operation.

Common row: Value in the “Common acceleration speed” of the user parameter

**Deceleration [G]**

This is the deceleration speed for the deceleration zone during positioning operation.

Common row: Value in the “Common deceleration speed” of the user parameter

**Acceleration/deceleration method**

This is how acceleration/deceleration is performed during positioning operation.

Name	Description
Common	It performs acceleration/deceleration according to the “Common acceleration/deceleration method” setting of the user parameter.
Trapezoid	It performs constant acceleration/deceleration at the set acceleration speed (deceleration speed).

**Stop method**

This is how a stop is performed during positioning operation.

Name	Description
Common	It performs stop operation according to the “Common stop method” setting of the user parameter.
Control	It performs position control to prevent the actuator from moving from the operation completion point after completing the operation.
Fixed excitation	It continuously applies holding current (its maximum being the set current) after completing the operation.
Automatic servo OFF 1	It applies holding current (its maximum being the set current) after completing the operation, and the servo turns OFF after the set waiting time has elapsed.
Automatic servo OFF 2	It applies holding current (its maximum being the set current) after completing the operation, and the servo turns OFF after the set waiting time has elapsed.
Automatic servo OFF 3	It applies holding current (its maximum being the set current) after completing the operation, and the servo turns OFF after the set waiting time has elapsed.

**Rotation direction**

This is the rotation direction. It is displayed only when a rotary type electric actuator is selected.

Name	Description
Common	It performs rotation according to the “Rotation direction” setting of the user parameter.
Close rotation	It rotates the actuator in the direction in which the distance of travel from the current position is short if the “Position” is set with “Absolute.” It rotates the actuator clockwise if the “Position” is set with “Incremental.”
CW	It rotates the actuator clockwise.
CCW	It rotates the actuator counterclockwise.

**Gain magnification [%]**

This is used only when gain adjustment is required on a point-by-point basis.

Common value: None

Default value: 0

**Point zone (+) [mm] ([deg])**

This is the limit for switching the point zone output signal from ON to OFF, indicated by the distance from the home position.

Common value: None

Default value: 0.00 mm (deg)

**Point zone (–) [mm] ([deg])**

This is the limit for switching the point zone output signal from OFF to ON, indicated by the distance from the home position.

Common value: None

Default value: 0.00 mm (deg)

**Pressing rate [%]**

The content of the setting depends on the setting of the “Operation method” as follows.

Operation method	Pressing rate [%]
Positioning operation	This item is not reflected in the positioning operation.
Pressing operation 1	This item indicates the percentage based on maximum pressing force for judging the completion of pressing.
Pressing operation 2	This item indicates the maximum value of the percentage based on maximum pressing force for performing the pressing operation after the actuator reaches the pressing operation start position.

Common row: “Common pressing rate” of the user parameter

**Pressing speed [mm/s] ([deg/s])**

The content of the setting depends on the setting of the “Operation method” as follows.

Operation method	Pressing speed [mm/s] ([deg/s])
Positioning operation	This item is not reflected in the positioning operation.
Pressing operation 1	This item indicates the speed for performing the pressing operation after the actuator reaches the pressing operation start position.
Pressing operation 2	This item indicates the speed for performing the pressing operation after the actuator reaches the pressing operation start position.

Common row: “Common pressing speed” of the user parameter

**Pressing distance [mm] ([deg])**

The content of the setting depends on the setting of the “Operation method” as follows.

Operation method	Pressing distance [mm] ([deg])
Positioning operation	This item is not reflected in the positioning operation.
Pressing operation 1	This item indicates the pressing completion point and the distance for performing the pressing operation with “Position” + “Pressing distance.”
Pressing operation 2	This item indicates the pressing completion point and the distance for performing the pressing operation with “Position” + “Pressing distance.”

Common row: “Common pressing distance” of the user parameter

Start point

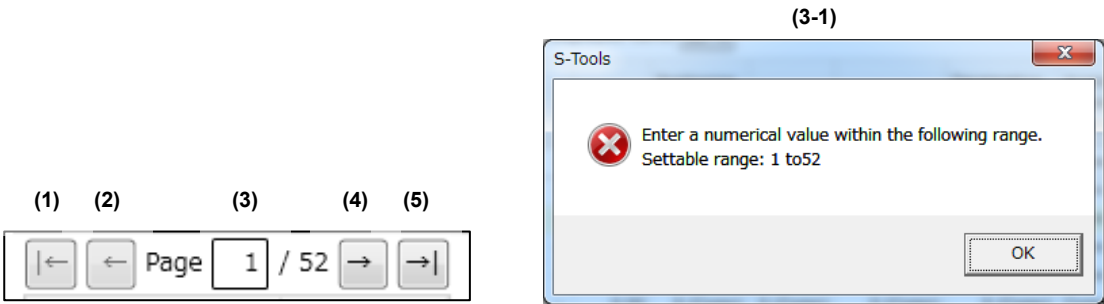
This is the point used as the start point when the travel time is calculated. The default value is blank.  
Setting range: 0 to 511 or 0 to 63  
Common value: None

Travel time [sec]

This is the result of the travel time calculation between the edit point and start point. The value cannot be input directly into the cell.  
Common value: None

■ Page navigation

It contains tools for flipping through the pages in the Point data list.



No.	Description
(1)	It moves the list to the first page. It cannot be selected if the first page is displayed.
(2)	It moves the list to the previous page. It cannot be selected if the first page is displayed.
(3)	It shows the number of the currently displayed page in the list and the total number of pages. Entering a page number will move the list to that page.
(3-1)	It is the dialog box that appears if a page number outside the settable range is entered in the box next to Page.
(4)	It moves the list to the next page. It cannot be selected if the last page is displayed.
(5)	It moves the list to the last page. It cannot be selected if the last page is displayed.

■ Selected item input area

It shows the input area selected in the Point data list. Selecting the [Comn] radio button sets “0 (Comn)” in the cell selected in the Point data list. Entering “0” performs the same operation. The radio button cannot be selected for items with nothing in the “Comn” row (such as the Position specification method).

Positioning width

☒ Comn ☐ Direct input

0 (Comn)

	Position specification method	Operation method	Position [mm]	Positioning width [mm]
Comn				0.10
0	Absolute	Positioning operation	0.00	0 (Comn)
1	Absolute	Positioning operation	0.00	0 (Comn)

The value that is input after selecting the [Direct input] radio button is reflected in the cell selected in the Point data list. Selecting the [Direct input] radio button changes the value in the cell from “0 (Comn)” to the default value. The value can be input directly without selecting the [Direct input] radio button. Values other than “0” are reflected in the selected cell. Entering “0” switches the value to “0 (Comn).”

Positioning width

☐ Comn ☒ Direct input

5.00

	Position specification method	Operation method	Position [mm]	Positioning width [mm]
Comn				0.10
0	Absolute	Positioning operation	0.00	5.00
1	Absolute	Positioning operation	0.00	0 (Comn)

■ Description

It is an area for displaying the description of the item selected in the Point data list.

Description

Item name: Positioning width [mm]([deg])

Depending on the setting of "Operation method", the content indicated by the set value differs



3.5.3 Parameters

Clicking the [Parameters] button starts the “Parameters” view. For the default values of the parameters, refer to the Instruction Manual for the applicable controller.



No.	Name	Description
(1)	Operating button	They are buttons used for editing the Parameters list.
(2)	Display group navigation	They are buttons for switching between the item groups in the Parameters list to be displayed on the screen.
(3)	Parameters list	It is a list of Parameters.
(4)	Description	It is an area for displaying the description of the item selected in the Parameters list.

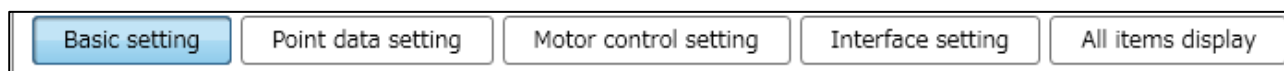
## ■ Operating buttons



Name	Description
Undo	It restores a value in a cell in the Parameters list to its unedited value. Only the most recent unedited value can be restored. Editing a cell in the Parameters list enables the [Undo] button. Restoring the unedited value disables the [Undo] button.
Redo	It restores a value in a cell in the Parameters list to its edited value. Restoring the unedited value with the [Undo] button enables the [Redo] button. Restoring the edited value disables the [Redo] button.
Import position	It enters in the parameter selected the current position displayed on the operation panel. "Import position" can be performed when the controller is connected. "Soft Limit (+)/(-)," "Zone 1 (+)/(-)," and "Zone 2 (+)/(-)" are the items that can import position. "Import position" cannot be used when the actuator is unconnected.
Initialize (item)	It resets the setting of the row currently selected in the Parameters list to its default value. Multiple rows can be selected and initialized. Clicking the [Initialize (item)] button starts initialization.

## ■ Display group navigation

They are buttons for switching between the parameter groups to be displayed on the screen. The parameters of the selected group are displayed in the Parameters list. Since the parameters cannot be edited for some groups, those parameters must be edited in the setting screen specified in the description of the item.



Name	Description
Basic setting	It displays the parameters related to the basic items of actuator operation.
Point data setting	It displays the parameters related to the values in the Comn row of the point data.
Motor control setting	It displays the parameters related to motor control.
Interface setting	It displays the parameters related to the network used with the controller.
All items display	It displays all the items in the Parameters list.

■ Parameters list

It displays a list of parameters corresponding to the controller.

No.	Item name	Setting value	Unit
-----	-----------	---------------	------

Name	Description
No.	It shows the number given to the parameter.
Item name	It shows the item name of the parameter.
Setting value	It sets the value entered in the cell to the item.
Unit	It shows the unit of the item.

■ Description

It is an area for displaying the Item name, Setting range, and Note for the item selected in the Parameters list.

Description

Item name:Soft limit (+)  
With the soft limit (–) being the lower limit and the soft limit (+) being the upper limit, set an operable range.

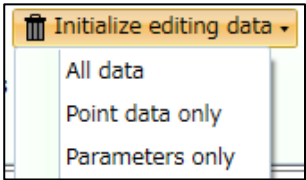
Setting range: Soft limit (–) mm (deg) to 203.00 mm (deg)

Note  
After the data is written to the controller, cycling the power is required.  
When both set values of soft limits (+) and (–) are 0 [mm],

### 3.5.4 Initialize editing data

This function initializes the data being edited.

If there are data being edited, the confirmation message “The data being edited will be lost. Are you sure?” appears.

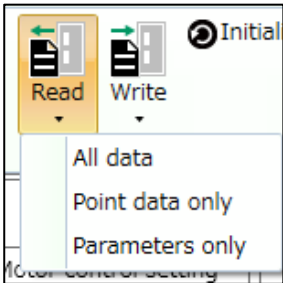


Name	Description
All data	It resets the data in Point data and Parameters being edited to their default values.
Point data only	It resets the data in Point data being edited to their default values.
Parameters only	It resets the data in Parameters being edited to their default values.

### 3.5.5 Read

This function reads the data in Point data and Parameters from the controller for editing. The operation can only be performed in the TOOL mode.

If there are data being edited, the confirmation message “The data being edited will be lost. Are you sure?” appears.



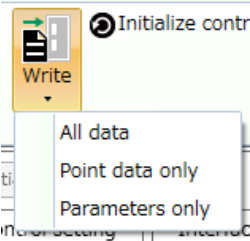
Name	Description
All data	It reads the Point data and Parameters from the connected controller for use as editing data.
Point data only	It reads the Point data from the connected controller for use as editing data.
Parameters only	It reads the Parameters from the connected controller for use as editing data.

### 3.5.6 Write

This function writes the data in Point data and Parameters being edited to the controller. The operation can only be performed in the TOOL mode.

Before writing the data to the controller, the confirmation message “The data in the controller will be overwritten. Are you sure?” appears.

If the IO-Link master is connected, the confirmation message “Are you sure to transfer the data to the IO-Link master?” appears after writing the data to the controller.



Name	Description
All data	It writes the data in Point data and Parameters being edited to the controller. A confirmation message that asks whether to execute software reset appears after writing.
Point data only	It writes the data in Point data being edited to the controller.
Parameters only	It writes the data in Parameters being edited to the controller. A confirmation message that asks whether to execute software reset appears after writing.

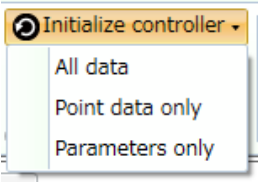
When executing a software reset, check the input state of the signal from the upper level equipment to the controller in advance. If a software reset is executed, the controller is started in the PLC mode. The actuator may perform an unexpected operation depending on the setting of the upper level equipment.

### 3.5.7 Initialize controller


This function initializes the data in Point data and Parameters stored in the controller. The operation can only be performed in the TOOL mode.

Before initializing the data, the confirmation message “The data in the controller will be initialized. Are you sure?” appears.

If the IO-Link master is connected, the confirmation message “Are you sure to transfer the data to the IO-Link master?” appears after initializing the data in the controller.



Name	Description
All data	It initializes the Point data and Parameters stored in the connected controller. A confirmation message that asks whether to execute software reset appears after initializing.
Point data only	It initializes the Point data stored in the connected controller.
Parameters only	It initializes the Parameters stored in the connected controller. A confirmation message that asks whether to execute software reset appears after initializing.



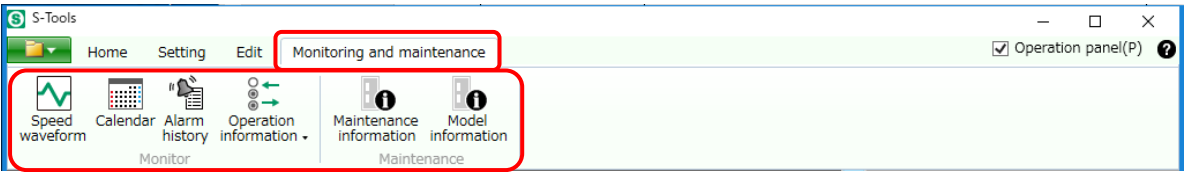
When executing a software reset, check the input state of the signal from the upper level equipment to the controller in advance. If a software reset is executed, the controller is started in the PLC mode. The actuator may perform an unexpected operation depending on the setting of the upper level equipment.

## 3.6 Monitoring and Maintenance Tab

### 3.6.1 Overview of the Monitoring and maintenance tab

The Monitoring and maintenance tab contains commands for displaying the speed waveform, calendar, alarm history, operation information, and maintenance information.

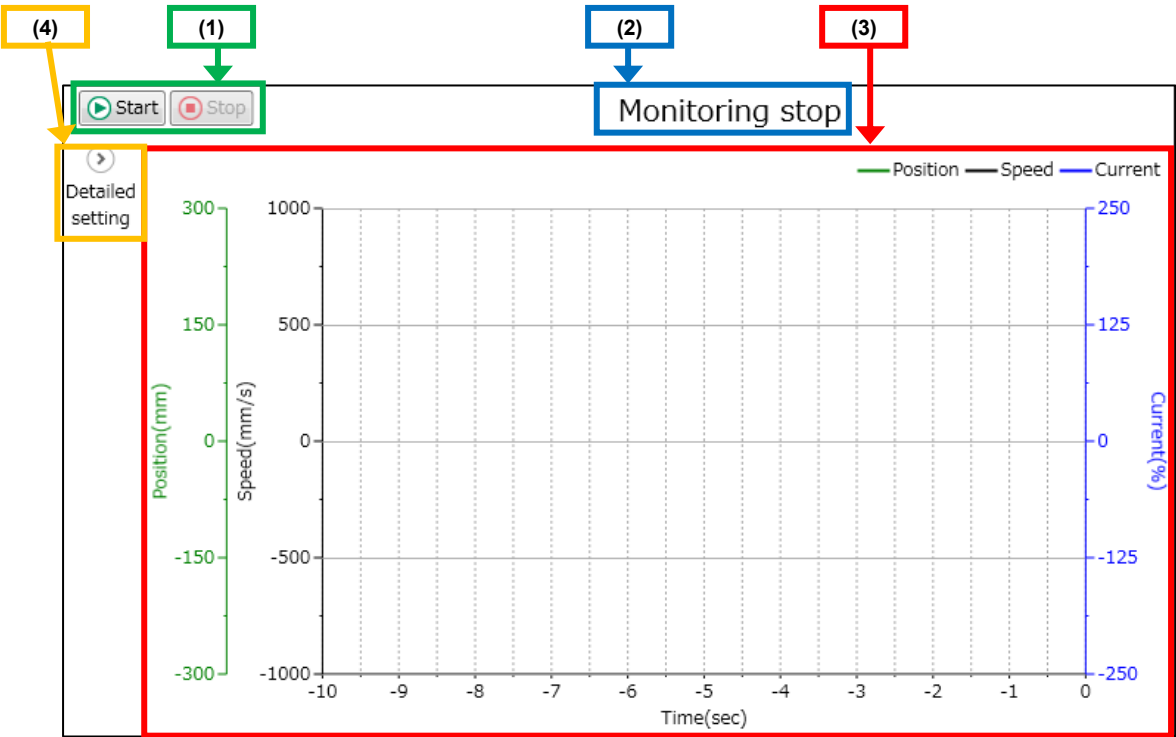
Selecting the Monitoring and maintenance tab displays the following ribbon menu.



Name	Description	Detail
Speed waveform	It starts the “Speed waveform” view.	3.6.2
Calendar	It starts the “Calendar” view.	3.6.3
Alarm history	It starts the “Alarm history” view.	3.6.4
Operation information	It starts the “Operation information” view.	3.6.5
Maintenance information	It starts the “Maintenance information” view.	3.6.6
Model information	It starts the “Model information” view.	3.6.7

3.6.2 Speed waveform

Clicking the [Speed waveform] button starts the “Speed waveform” view.



No.	Name	Description
(1)	Operating buttons	They are for starting/stopping the acquisition of the speed waveform. Start cannot be executed if the actuator is unconnected.
(2)	Monitor status	It displays the current monitor status.
(3)	Speed waveform display area	It displays the acquired speed waveform.
(4)	Detailed setting button	It allows the settings for acquiring and displaying the speed waveform to be made in detail.



■ Operating buttons



Name	Description
Start	It starts acquiring the speed waveform. The [Start] button is selectable by default. If a waveform is displayed on the screen before acquiring the waveform, that waveform is cleared before starting acquisition. Clicking the [Start] button disables the [Start] button and editing of Detailed setting and enables the [Stop] button. Note 1, Note 2
Stop	It stops acquiring the speed waveform. The [Stop] button is not selectable by default but is enabled if monitoring is in progress. Clicking the [Stop] button disables it and enables editing of Detailed setting and the [Start] button.

Note 1: If the controller is not connected, the message “The operation cannot be performed since the controller is not connected.” appears.  
Note 2: If the model number of the connected actuator differs from the actuator model number shown in the selected window tab, the message “The operation cannot be performed since the model number of the actuator differs.” appears.

■ Monitor status

“Monitoring” is displayed when the speed waveform is being acquired. “Monitoring stop” is displayed when the speed waveform is not being acquired.

■ Speed waveform display area

A speed waveform for 3 channels (Speed, Current, Position) is displayed. Opening a file in which a graph data (waveform data) is saved displays at once the waveforms that were displayed at the time the file was saved. Starting another view while the speed waveform is being acquired stops the acquisition of the speed waveform. If a communication error or alarm occurs while a speed waveform is being acquired, an error message appears and the monitoring process stops. When the process stops, the X-axis will be displayed at full scale.

■ Detailed setting button

Clicking the [Detailed setting] button opens the detailed setting panel as shown below.

←

Detailed setting

Enable selection

Scale

Display maximum value

Line color

☒ Speed

100 %

1000

Black

☒ Position

100 %

300

Green

☒ Current

100 %

250

Blue

Measurement time

Not restricted

sec

Time display maximum value

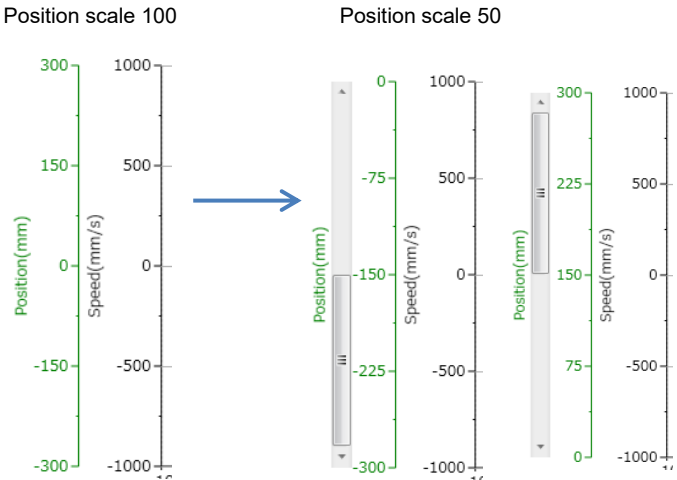
10

sec

Sampling time

100

msec



Name	Description
Enable selection	It shows or hides each channel. Putting a check in the box shows the checked channel on the screen. Unchecking the box hides the unchecked channel. Each box is checked by default.
Scale	It is used to select the range, between the upper and lower limits of the Y-axis of each channel, to be displayed on the screen. The choices are "100," "50," "25," "10," "5," and "1." The waveform shown enlarges as the number decreases. The default value is "100."
Display maximum value	It sets the limit of the Y-axis. The default value is "1000" for Speed, "300" for Position, and "250" for Current.
Line color	It sets the color used in the Y-axis. The default value is "black" for Speed, "green" for Position, and "blue" for Current. The choices are "black," "green," "blue," "red," "magenta," "orange," and "purple."
Measurement time	It is used to select the measurement time of the speed waveform. The choices are "Not restricted," "100," "50," "20," "10," "5," "2," and "1." The default value is "Not restricted." Measurement is stopped when the set measurement time has elapsed since the acquisition of the speed waveform started. If "Not restricted" is selected, the waveform measured for a maximum of 300 [sec] is stored.
Time display maximum value	It is used to select the limit of the X-axis. The choices are "20," "10," "5," "2," and "1." The default value is "10."
Sampling Time	It sets the sampling time. The default value is "100."
Display range of X-axis/Scale operation area	It allows the display area to be enlarged and the display range to be changed relative to the X-axis of the speed waveform.



The waveform data are recorded only for 300 seconds. If a waveform is acquired for longer than 300 seconds, data that are older than the last 300 seconds will be deleted.  
<Example>  
If a waveform is acquired for 500 seconds, the data for 200th to 500th seconds are recorded.

### 3.6.3 Calendar

This function reads and writes the calendar information and displays the PC time. Clicking the [Calendar] button starts the “Calendar” view. The [Read] and [Write] buttons are grayed out and cannot be used except when the ECR Series is connected.

Calendar function: ☐ Enabled ☒ Disabled

Calendar function's Read/Write can be used only when ECR Series is selected.

#### Operating buttons

Name	Description
Read	It reads and shows the calendar function setting, date, and time if the calendar function setting read from the controller is “Enabled.” If the calendar function is set to “Disabled,” the date and time are not updated. Note 1, Note 2
Write	It writes the date and time shown to the controller if the calendar function is set to “Enabled.” If it is set to “Disabled,” the date and time are not written. Note 1, Note 2 The operation can only be performed in the TOOL mode. A confirmation message that asks whether to execute software reset appears after writing.
Import PC time	It imports the current PC date and time and shows them in the date and time area.

Note 1: If the controller is not connected, the message “The operation cannot be performed since the controller is not connected.” appears.

Note 2: If the model number of the connected actuator differs from the actuator model number shown in the selected window tab, the message “The operation cannot be performed since the model number of the actuator differs.” appears.



- When the calendar function is disabled, the time since the controller power was turned ON is recorded at the time of an alarm occurrence (with both the ECG Series and FFLD Series, the calendar function is always set to Disabled).
- By disabling the calendar function, the warning “Calendar initialize” and “Calendar write error” will no longer occur.
- When executing a software reset, check the input state of the signal from the upper level equipment to the controller in advance. If a software reset is executed, the controller is started in the PLC mode. The actuator may perform an unexpected operation depending on the setting of the upper level equipment.

■ **Calendar function**

It is for setting the calendar function to “Enabled” or “Disabled.” “Disabled” is selected by default.

Calendar function: ☐ Enabled ☒ Disabled

■ **Date and time settings**


It displays the date on the left side and the time on the right side. The PC date and time the “Calendar” view was started are displayed by default.

If the calendar function is set to “Disabled,” the calendar cannot be edited.

May 24, 2019

3:38:37 PM

Name	Description
Date	It shows the date acquired from the controller or the date to be set in the controller. The date to be set can be selected from the pull-down menu or entered directly.
Time	It shows the time acquired from the controller or the time to be set in the controller. The time to be set can be changed by clicking the spin button on the right side or entered directly.



If only the date and time settings are edited and written, the software reset does not have to be executed.

The software reset must be executed only when the setting of the calendar function is changed.

3.6.4 Alarm history

This function displays and initializes the alarm history recorded in the controller. Clicking the [Alarm history] button starts the “Alarm history” view. It can display up to 64 alarms and is not updated periodically.

(1)

Read

Initialize

Number of displayed items10

(2)

	Code	Item	Phenomenon	Cause/countermeasure	Occurrence time
0	3A03	Actuator model number error	Indicates that the model numbers of the actuator connected last time and actuator being connected are different when the power is turned ON.	Reconnect the actuator connected last time to the controller. Or overwrite the information of the actuator being connected to the information of the actuator connected last time and cycle the power.	00/01/08 01:35:57
1	0010	Control power ON	-	-	00/01/08 01:35:57
2	3203	Encoder not connected	Indicates an abnormality in the connection state between the controller and actuator.	Check the connection state of the cable and connector. If this reoccurs even after turning the power ON again, contact CKD.	00/01/08 01:35:12
3	0010	Control power ON	-	-	00/01/08 01:35:12
			Indicates an	Check the connection state of the cable and	

(3)

←

←

Page

1

/

7

→

→

No.	Name	Description
(1)	Operating buttons	They are for reading the alarm history, initializing the alarm history, and changing the number of rows shown per page.
(2)	Alarm history list	It is a list of information on 64 alarms in order from the latest alarm occurrence.
(3)	Page navigation	It contains tools for flipping through the pages in the Alarm history list to be displayed on the screen.

## ■ Operating buttons

Read	Initialize	Number of displayed items	10 ▾
------	------------	---------------------------	------

Name	Description
Read	It acquires the Alarm history from the controller. Note 1, Note 2
Initialize	It initializes the Alarm history stored in the controller. Note 1, Note 2
Number of displayed items	It changes the number of rows of Alarm history shown per page. The choices are "10" to "60," in increments of 10, and "All rows" (maximum of 64). The default value is "10."

Note 1: If the controller is not connected, the message "The operation cannot be performed since the controller is not connected." appears.

Note 2: If the model number of the connected actuator differs from the actuator model number shown in the selected window tab, the message "The operation cannot be performed since the model number of the actuator differs." appears.

## ■ Alarm history list

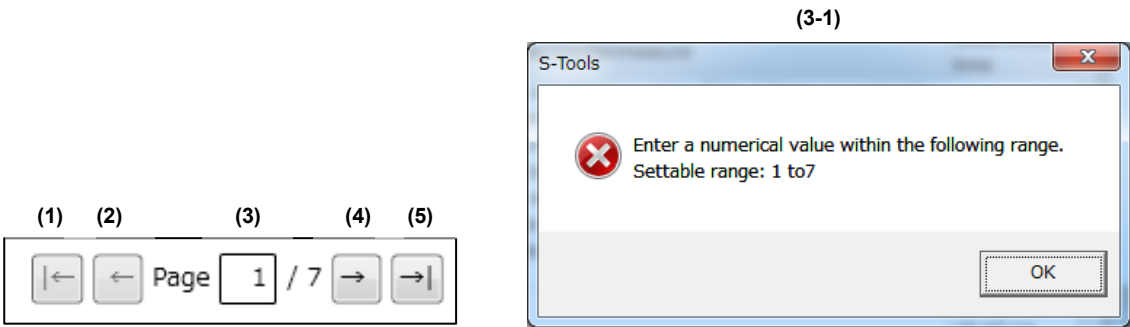
It displays a list of alarms that have occurred.

	Code	Item	Phenomenon	Cause/countermeasure	Occurrence time	⬆
0	3A03	Actuator model number error	Indicates that the model numbers of the actuator connected last time and actuator being connected are different when the power is turned ON.	Reconnect the actuator connected last time to the controller. Or overwrite the information of the actuator being connected to the information of the actuator connected last time and cycle the power.	00/01/08 01:35:57	
1	0010	Control power ON	-	-	00/01/08 01:35:57	
2	3203	Encoder not connected	Indicates an abnormality in the connection state between the controller and actuator.	Check the connection state of the cable and connector. If this reoccurs even after turning the power ON again, contact CKD.	00/01/08 01:35:12	
3	0010	Control power ON	-	-	00/01/08 01:35:12	
			Indicates an	Check the connection state of the cable and		⬇

Name	Description
Code	It shows the alarm code number.
Item	It shows the type of alarm.
Phenomenon	It shows the status of alarm occurrence.
Cause/countermeasure	It shows the cause of the alarm and the countermeasure.
Occurrence time	It shows the date and time the alarm occurred or the time elapsed since the controller was turned ON.

■ Page navigation

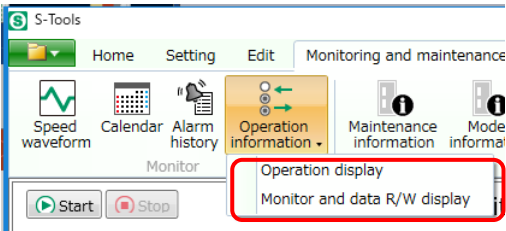
It contains tools for flipping through the pages in the Alarm history list.



No.	Description
(1)	It moves the list to the first page. It cannot be selected if the first page is displayed.
(2)	It moves the list to the previous page. It cannot be selected if the first page is displayed.
(3)	It shows the number of the currently displayed page in the alarm history list and the total number of pages. Entering a page number will move the list to that page.
(3-1)	It is the dialog box that appears if a page number outside the settable range is entered in the box next to Page.
(4)	It moves the list to the next page. It cannot be selected if the last page is displayed.
(5)	It moves the list to the last page. It cannot be selected if the last page is displayed.

3.6.5 Operation information

Clicking the [Operation information] button shows the operation information submenu.

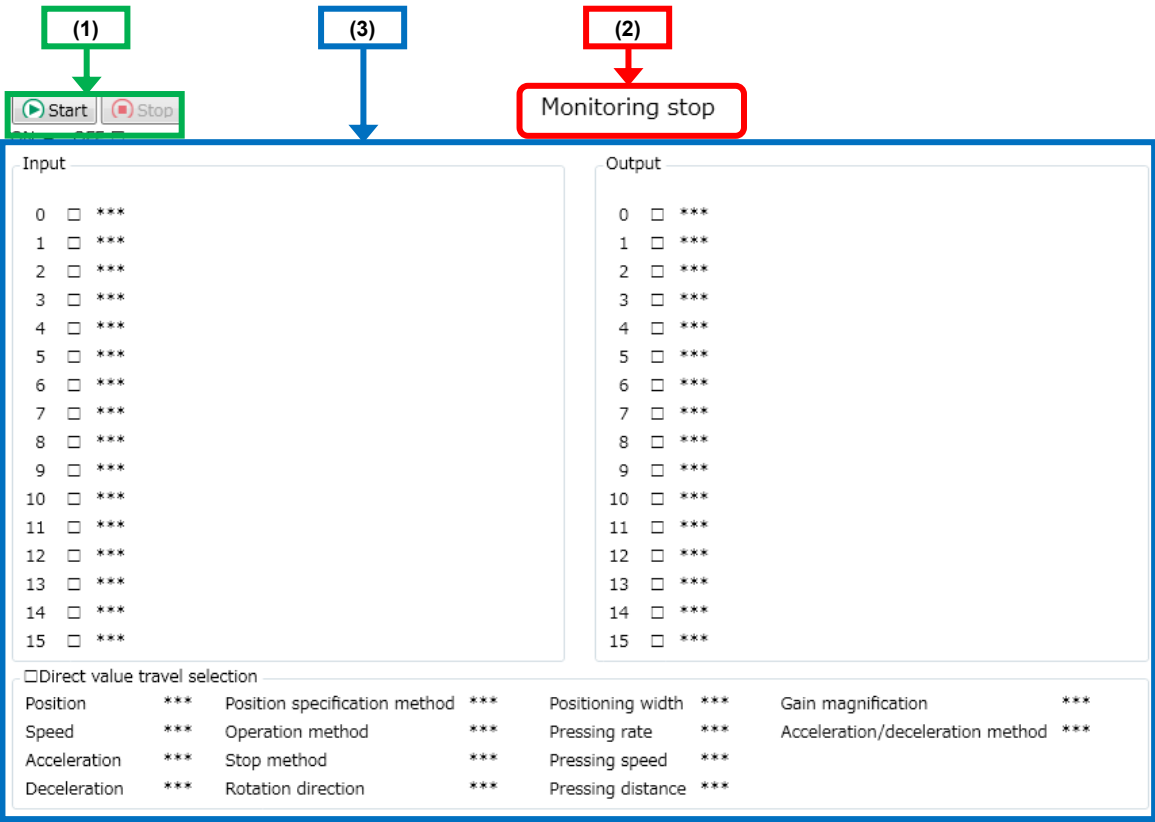


Name	Description
Operation display	It displays the input/output information between the PLC and controller which are related to the actuator operations.
Monitor and data R/W display	It displays the monitor value (position, speed, current, alarm) as well as the data reading/writing information between the PLC and controller.



■ Operation display

It displays the input/output information between the PLC and controller which are related to the actuator operations. Clicking the [Operation display] button under the operation information submenu starts the “Operation display” view.



No.	Name	Description
(1)	Operating buttons	It starts/stops the acquisition of the PLC input/output information.
(2)	Monitor status	It displays the current monitor status.
(3)	Operation information list	It displays the input/output signal information of the PLC acquired from the controller, which is related to the actuator operations.

<Operating button>



Name	Description
Start	It starts acquiring input/output information. Note 1, Note 2
Stop	It stops acquiring input/output information. Clicking the [Start] button enables the [Stop] button.

Note 1: If the controller is not connected, the message “The operation cannot be performed since the controller is not connected.” appears.

Note 2: If the actuator model number read from the controller differs from the actuator model number shown in the selected window tab, the message “The operation cannot be performed since the model number of the actuator differs.” appears.

Clicking either the [Start] button or the [Stop] button on the “Operation information” view in the TOOL mode turns OFF all the forced output signals.  
Make sure that it does not cause the upper level equipment to malfunction.

**<Monitor status>**

“Monitoring” is displayed when the operation information is being acquired. “Monitoring stop” is displayed when the operation information is not being acquired.

**<Operation information list>**

(1) ON ☒ OFF ☐
(2) TOOL mode Forced output is enabled
(3)

Input

(4)

0	<input type="checkbox"/>	-
1	<input type="checkbox"/>	-
2	<input type="checkbox"/>	-
3	<input type="checkbox"/>	-
4	<input type="checkbox"/>	-
5	<input type="checkbox"/>	-
6	<input type="checkbox"/>	-
7	<input type="checkbox"/>	-
8	<input type="checkbox"/>	-
9	<input type="checkbox"/>	-
10	<input type="checkbox"/>	-
11	<input type="checkbox"/>	-
12	<input type="checkbox"/>	-
13	<input type="checkbox"/>	-
14	<input type="checkbox"/>	-
15	<input type="checkbox"/>	-

Output

(5)

0	<input type="checkbox"/>	PIO output 0
1	<input type="checkbox"/>	PIO output 1
2	<input type="checkbox"/>	PIO output 2
3	<input type="checkbox"/>	PIO output 3
4	<input type="checkbox"/>	PIO output 4
5	<input type="checkbox"/>	PIO output 5
6	<input type="checkbox"/>	PIO output 6
7	<input type="checkbox"/>	PIO output 7
8	<input type="checkbox"/>	PIO output 8
9	<input type="checkbox"/>	PIO output 9
10	<input type="checkbox"/>	PIO output 10
11	<input type="checkbox"/>	PIO output 11
12	<input type="checkbox"/>	PIO output 12
13	<input type="checkbox"/>	-
14	<input type="checkbox"/>	-
15	<input type="checkbox"/>	-

(6)

Forced output

Switch
Switch
Switch
Switch
Switch
Switch
Switch
Switch
Switch
Switch
Switch
Switch
Switch
Switch
Switch

☐ Direct value travel selection (7)

Position	-	Position specification method	-	Positioning width	-	Gain magnification	-
Speed	-	Operation method	-	Pressing rate	-	Acceleration/deceleration method	-
Acceleration	-	Stop method	-	Pressing speed	-		
Deceleration	-	Rotation direction	-	Pressing distance	-		

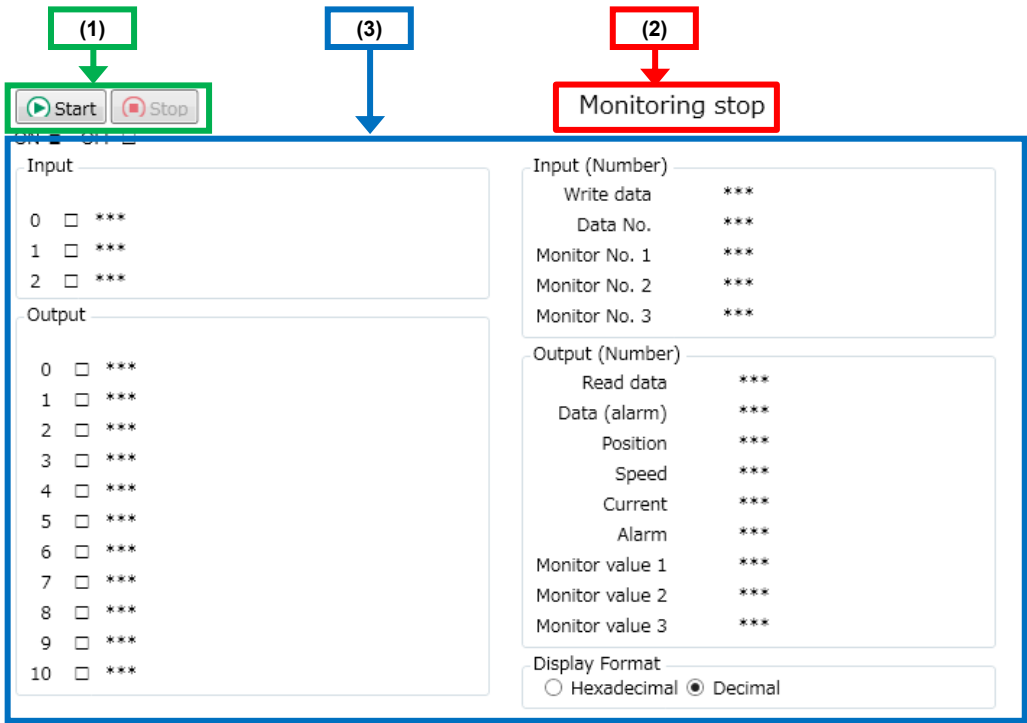
No.	Name	Description
(1)	Legend	It shows the legend for ON/OFF.
(2)	TOOL/PLC mode	It shows the current mode.
(3)	Operation mode	It shows the current operation mode.
(4)	Input	It shows the ON/OFF status of the current input signal.
(5)	Output	It shows the ON/OFF status of the current output signal.
(6)	Forced output	It is shown when the parallel I/O specifications controller is being used, and in the TOOL mode and in the Forced output mode. It is not shown in other cases. Clicking the [Switch] button switches the output ON/OFF.
(7)	Direct value input	It shows the operation setting status when the controller other than with the parallel I/O specifications operates in the direct value travel.



- The direct value input monitor can be used from the S-Tools version 1.04.00.00 or later.
- The setting of direct value input can only be monitored when the ECG Series controller is used.

■ Monitor and data R/W display

It displays the monitor value (position, speed, current, alarm) as well as the data reading/writing information between the PLC and controller. Clicking the [Monitor and data R/W display] button under the operation information submenu starts the “Monitor and data R/W display” view.



No.	Name	Description
(1)	Operating buttons	It starts/stops the acquisition of the PLC input/output information.
(2)	Monitor status	It displays the current monitor status.
(3)	Operation information list	It displays the information on communication with PLC (monitor value and data read/write information) acquired from the controller.

<Operating button>



Name	Description
Start	It starts acquiring input/output information. Note 1, Note 2
Stop	It stops acquiring input/output information. Clicking the [Start] button enables the [Stop] button.

Note 1: If the controller is not connected, the message “The operation cannot be performed since the controller is not connected.” appears.  
Note 2: If the actuator model number read from the controller differs from the actuator model number shown in the selected window tab, the message “The operation cannot be performed since the model number of the actuator differs.” appears.



- This screen can be used from the S-Tools version 1.04.00.00 or later.
- This screen can only be used when the ECG Series is used.

<Monitor status>

“Monitoring” is displayed when the operation information is being acquired. “Monitoring stop” is displayed when the operation information is not being acquired.

<Operation information list>

(1)

ON ☒ OFF ☐

Input

(4)

0 ☐ Data request

1 ☐ Data R/W selection

2 ☐ Monitor request

Output

(5)

0 ☐ Data response 0

1 ☐ Data response 1

2 ☐ Data response 2

3 ☐ Data response 3

4 ☐ Data complete

5 ☐ Data write status

6 ☐ Monitor response 0

7 ☐ Monitor response 1

8 ☐ Monitor response 2

9 ☐ Monitor response 3

10 ☐ Monitor complete

(2)

PLC mode FDP

Input (Number)

Write data0(6)

Data No.0

Monitor No. 10

Monitor No. 20

Monitor No. 3-

Output (Number)

Read data0(7)

Data (alarm)0

Position0

Speed0

Current0

Alarm0

Monitor value 10

Monitor value 20


Monitor value 3-

Display Format

☐ Hexadecimal

☒ Decimal(8)

No.	Name	Description
(1)	Legend	It shows the legend for ON/OFF.
(2)	TOOL/PLC mode	It shows the current mode.
(3)	Operation mode	It shows the current operation mode.
(4)	Input	It shows the ON/OFF status of the current input signal.
(5)	Output	It shows the ON/OFF status of the current output signal.
(6)	Input (numeric value)	It shows the input status of present numeric value data.
(7)	Output (numeric value)	It shows the output status of the present numeric value data.
(8)	Display format	Selects whether to display in hexadecimal or decimal number.



When monitoring is started in the TOOL mode, the data cannot be read from the controller. Make sure to use in the PLC mode.

### 3.6.6 Maintenance information

This function displays the maintenance information. Clicking the [Maintenance information] button starts the “Maintenance information” view. The maintenance data are updated only when the [Read] button is clicked and are not updated periodically.

(1)

(2)

Read

Maintenance information

Current value

Integrated running distance

10<sup>6</sup> deg

Initialize

Integrated number of travel times

Time(s)

Initialize

Integrated operating time

Second

Initialize

Warning

Threshold value

10<sup>6</sup> deg

Changed value

10<sup>6</sup> deg

Write

Time(s)

Write

Second

Write

Data in "Integrated running distance" is invalid when FFLD Series is selected.

No.	Name	Description
(1)	Operating button	It acquires maintenance information from the controller.
(2)	Maintenance information	It shows information related to maintenance and allows changes to the threshold value.

#### ■ Operating button

Read

Name	Description
[Read] button	It acquires information other than the Changed value from the controller and displays them on the screen. Note 1, Note 2

- Note 1: If the controller is not connected, the message “The operation cannot be performed since the controller is not connected.” appears.
- Note 2: If the model number of the connected actuator differs from the actuator model number shown in the selected window tab, the message “The operation cannot be performed since the model number of the actuator differs.” appears.



The maintenance data in the controller are updated every 10 minutes. If the controller is turned off before the data are updated, the data before the update are not saved.

<Example>

If the controller is turned off 125 minutes after it was turned on, first 120 minutes of changes in the maintenance data will be recorded but the last 5 minutes of changes in the maintenance data will not be saved.

■ Maintenance information

It contains information for performing “Initialize” and “Write” for “Integrated running distance,” “Integrated number of travel times,” and “Integrated operating time.” When the FFLD Series is selected, the [Initialize] and [Write] buttons for “Integrated running distance” are grayed out and cannot be used.

Maintenance information

Current value

Integrated running distance

10<sup>6</sup> deg

Initialize

Integrated number of travel times

Time(s)

Initialize

Integrated operating time

Second

Initialize

Warning

Threshold value

10<sup>6</sup> deg

Changed value

10<sup>6</sup> deg

Write

Time(s)

Time(s)

Write

Second

Second

Write

Data in "Integrated running distance" is invalid when FFLD Series is selected.

Name	Description
Current value	It shows the current value of each item.
[Initialize] button	It initializes the current value of each item. Note 1, Note 2 Selecting [Yes] in the confirmation message “[Integrated running distance] in the controller will be initialized. Are you sure?” starts initialization. Initialization changes the value shown to “0.” The part [Integrated running distance] in the message is replaced by “Integrated running distance,” “Integrated number of travel times,” or “Integrated operating time” depending on the item initialized.
Threshold value	It shows the threshold value of each item.
Changed value	It is the box in which the value to change to is entered for the threshold value of each item.
[Write] button	It writes the Changed value of the Threshold value of each item to the controller. Note 1, Note 2

Note 1: If the controller is not connected, the message “The operation cannot be performed since the controller is not connected.” appears.

Note 2: If the model number of the connected actuator differs from the actuator model number shown in the selected window tab, the message “The operation cannot be performed since the model number of the actuator differs.” appears.

### 3.6.7 Model Information

This function displays the actuator information and controller information. Clicking the [Model information] button starts the “Model information” view. The data are updated only when the [Read] button is clicked and are not updated periodically.

(1)

Read

(2)

Actuator information

Information of actuator connected last time

Model number

Serial number

<<

Information of actuator being connected

Model number

Serial number

Software ver.

When actuator information does not match

Reconnect it to the actuator connected last time or overwrite the actuator information and cycle the power.

After performing overwriting, reset the point data and parameter.

Overwriting

(3)

Controller information

Model number

Serial number

Software ver.

Interface information

Interface specifications

Software ver.

No.	Name	Description
(1)	Operating button	It acquires model information from the controller.
(2)	Actuator information	It shows the actuator information.
(3)	Controller information	It shows the controller information.

#### ■ Operating button

Read

Name	Description
[Read] button	It acquires “Actuator information” and “Controller information” from the controller and displays them on the screen. Note 1

Note 1: If the controller is not connected, the message “The operation cannot be performed since the controller is not connected.” appears.

■ Actuator information

The actuator information is for display only and cannot be input.

Actuator information

Information of actuator connected last time

Model number FGRC-10360NCN

<<

Information of actuator being connected

Model number FGRC-50360NCN

Software ver. 1.00.00

When actuator information does not match


Reconnect it to the actuator connected last time or overwrite the actuator information and cycle the power.

After performing overwriting, reset the point data and parameter.

Overwriting

Name	Description
Information of actuator connected last time	It shows the model number of the previously connected actuator.
Information of actuator being connected	It shows the “model number” and the “software version” of the currently connected actuator. Note 1
[Overwriting] button	It saves the Information of actuator being connected over the Information of actuator connected last time. Note 2, Note 3 The operation can only be performed in the TOOL mode. Note 4 A confirmation message that asks whether to execute software reset appears after saving.

- Note 1: EBS and EBR Series actuators do not have software versions. When an actuator without a software version is connected, Software ver. is blank.
- Note 2: If the controller is not connected, the message “The operation cannot be performed since the controller is not connected.” appears.
- Note 3: If the alarm code “0x1B03” or “0x3A03” has not occurred, the message “Since no corresponding alarm (0x1B03, 0x3A03) has occurred, the overwriting of actuator information cannot be performed.” appears.
- Note 4: In the PLC mode, a message “The PLC mode is set. Set the TOOL mode.” appears.



When executing a software reset, check the input state of the signal from the upper level equipment to the controller in advance. If a software reset is executed, the controller is started in the PLC mode. The actuator may perform an unexpected operation depending on the setting of the upper level equipment.



■ Controller information

The controller information is for display only and cannot be input.

Controller information

Model number

ECR-MNNN3B-NP

Serial number

Software ver.

1.00.06


Interface information

Interface specifications

PIO

Software ver.

Name	Description
Model number	It shows the model number of the controller.
Serial number	It shows the serial number of the controller.
Software ver.	It shows the main software ver. of the controller.
Interface specifications	It shows the internet specifications of the controller. It shows "N/A" if it is other than "CC-Link," "EtherCAT," "EtherNet/IP," "IO-Link," or "PIO."
Software ver. (Interface information)	It shows the interface software ver. of the controller.

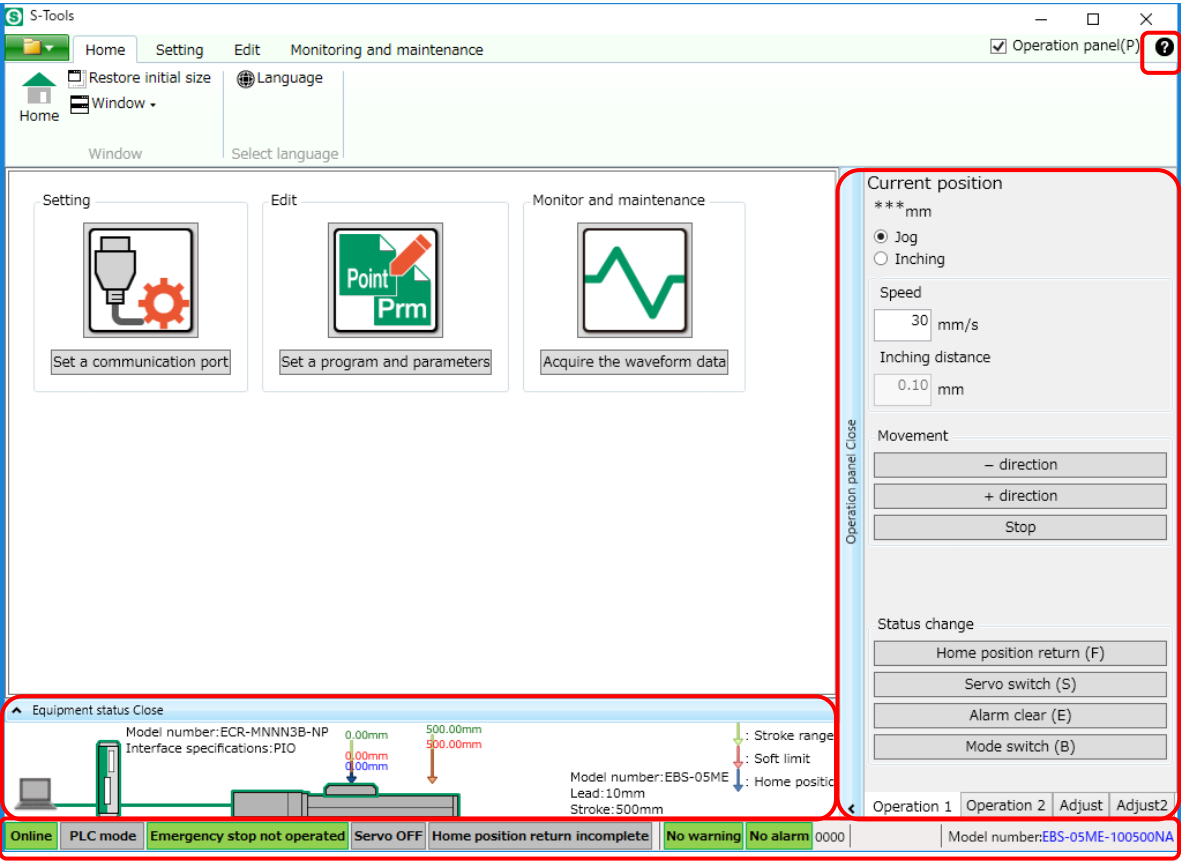


There is no "Software ver." for controllers of parallel I/O specifications. If a controller without "Software ver." is connected, the display field for "Software ver." is blank.

# 3.7 Common Features

## 3.7.1 Overview of the common features

Common features are those displayed separately from the view that is started by selecting a ribbon tab. Common features include the “Operation panel,” “Equipment status,” “Communication status,” and “Version information.”



Name	Description	Detail
Operation panel	It contains commands for checking the operation of the electric actuator when online. There are 4 tabs.	3.7.2
Equipment status panel	It displays the status of each piece of equipment (PC, controller, and actuator).	3.7.3
Communication status bar	It displays the controller communication status and the actuator model number.	3.7.4
Help button	It shows the software version of S-Tools and the version information of the installed DLL.	3.7.5

### 3.7.2 Operation panel

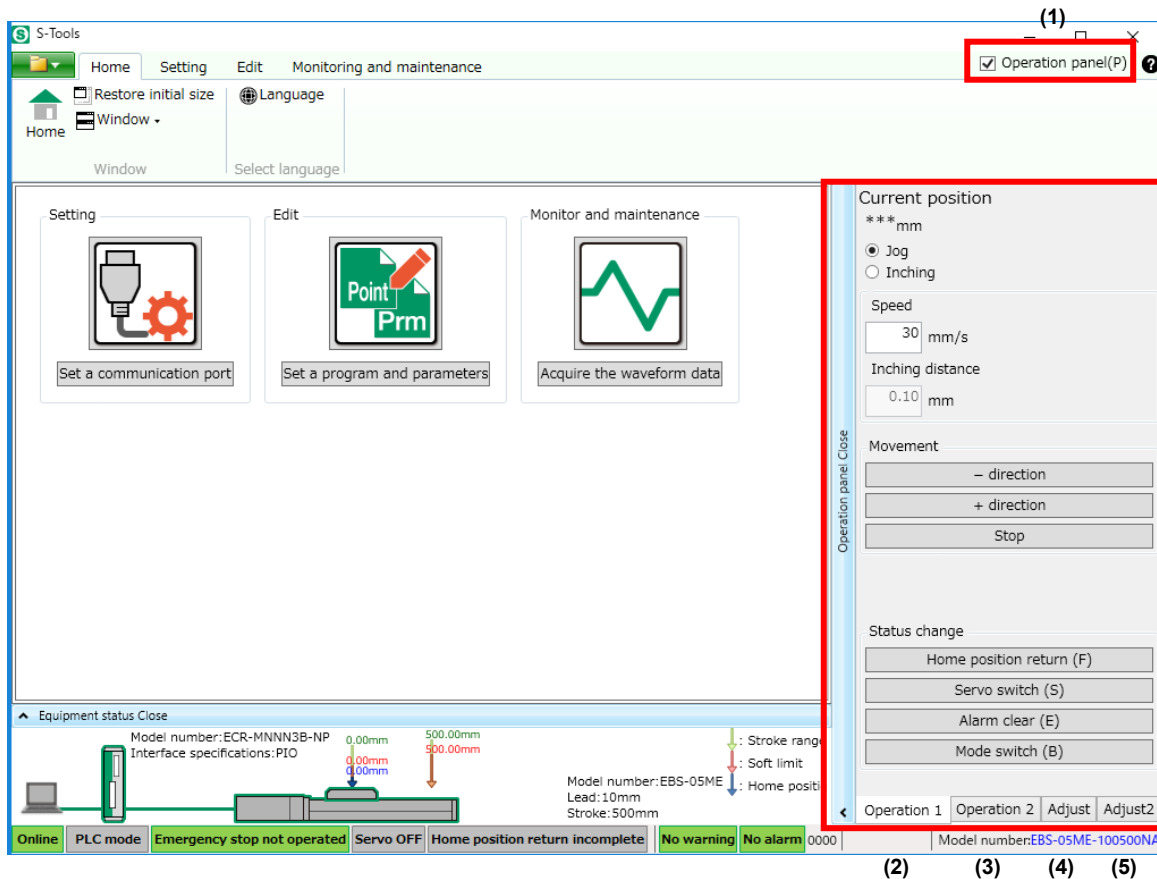
S-Tools starts with the operation panel open. S-Tools communicates with the controller and checks the operation of the electric actuator by jogging, inching, or operating a simple program.

Clicking the part that is labeled [Operation panel Close] closes the operation panel and the label changes to [Operation panel Open]. Clicking the [Operation panel Open] label opens the operation panel. The same operation can be performed using the [Operation panel] check box in the upper right corner of the window.

There are 3 tabs on the operation panel: “Operation 1” tab, “Operation 2” tab, “Adjust” tab, and “Adjust 2” tab. The operation from these tabs is enabled when online.

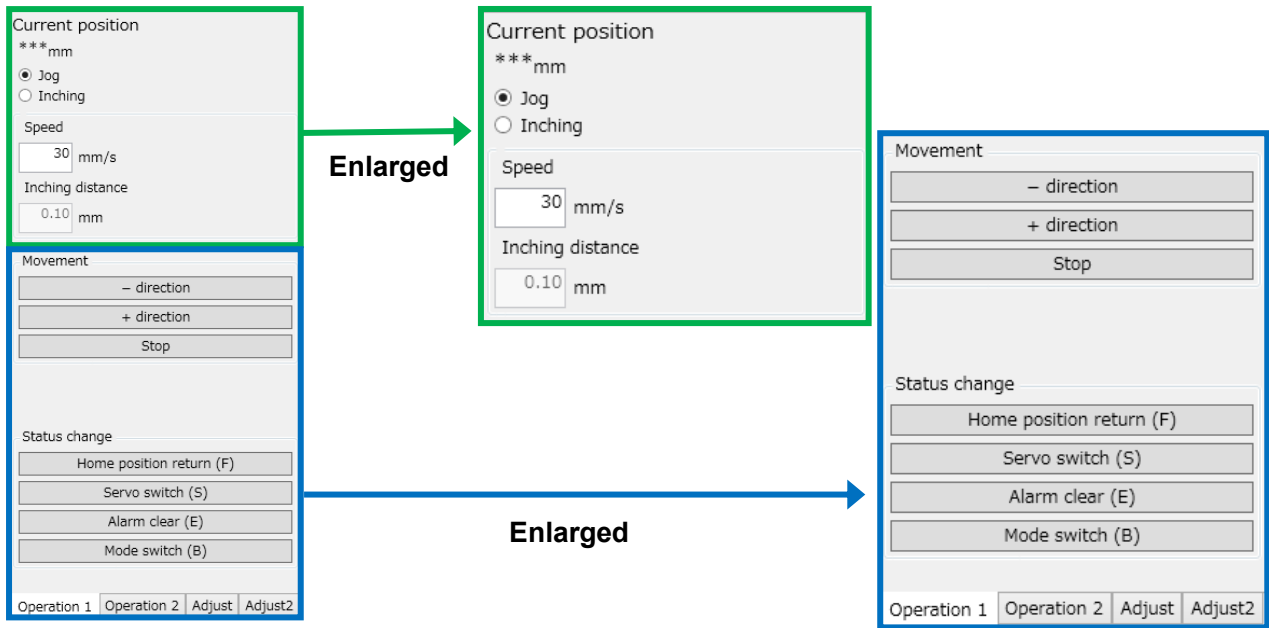
If the connection changes to offline while the actuator is being operated (such as jogging or inching), the process is interrupted and the message “A communication error has occurred.” appears.

When the actuator is unconnected, only the [Alarm clear], [Mode switch], and [Gain adjustment] buttons on each tab can be used.



No.	Name	Description
(1)	Operation panel check box	It opens/closes the operation panel.
(2)	“Operation 1” tab	It operates the actuator by selecting Jog or Inching.
(3)	“Operation 2” tab	It operates the actuator by specifying the Point No.
(4)	“Adjust” tab	It adjusts the actuator gain.
(5)	“Adjust 2” tab	It adjusts the home position when the home position of the actuator is displaced.

## ■ Operation 1



Name	Description
Current position	It shows the current position of the movable section of the actuator as a numerical value. It is for display only and cannot be input. It shows "****" initially and when offline. It also shows "****" if home position return has not been executed for an actuator that requires home position return.
Jog/Inching	It is used to select the travel method for the movable section of the actuator.
Speed	It sets the travel speed for the movable section of the actuator. The setting range and the default value depend on the connected actuator. A warning message appears if a value outside the setting range is input.
Inching distance	It sets the inching distance for the movable section of the actuator. It cannot be input if "Jog" is selected as the travel method. The setting range is 0.10 to 10.00 [mm]. The default value is "0.10." A warning message appears if a value outside the setting range is input.
[- direction] button	It moves the movable section of the actuator towards the motor.
[+ direction] button	It moves the movable section of the actuator in the direction opposite from the motor.
[Stop] button	It stops the movable section of the actuator that is moving.
[Home position return] button	It performs home position return. Upon completion of the home position return, a message that indicates completion appears.
[Servo switch] button	It switches the state of the servo from ON to OFF or OFF to ON. When switching from the servo OFF state, the confirmation message "The servo will be turned on. Are you sure?" appears. When switching from the servo ON state, the confirmation message "The servo will be turned off. Are you sure?" appears. Upon completion of the servo switch, a message that indicates completion appears.
[Alarm clear] button	It clears the alarm.
[Mode switch] button	It switches the mode to PLC or TOOL. When switching from the PLC mode, the confirmation message "The TOOL mode will be set. Are you sure?" appears. When switching from the TOOL mode, the confirmation message "The PLC mode will be set. Are you sure?" appears. Upon completion of the mode switch, a message that indicates completion appears.

**<Actuator operation direction>**

When “Jog” is selected as the travel method, the movable section of the actuator moves while the [- direction] button or the [+ direction] button is held down. When “Inching” is selected as the travel method, clicking the [- direction] button or the [+ direction] button moves the movable section of the actuator by the distance set in “Inching distance.” Even if the [- direction] button or the [+ direction] button is clicked again when the inching operation has not been completed, the operation will not be accepted.

For each button, the actuator moves in the direction as specified below.

Series \ Button	[- direction]	[+ direction]
EBS, EBR	Direction of the motor	Direction opposite from the motor
FLSH, FFLD	Finger opening direction	Finger closing direction
FLCR	Direction opposite from the head	Direction of the head
FGRC	CCW (counterclockwise)	CW (clockwise)

**<Required states>**

For the buttons to function, the following states are required:

Button \ State	TOOL mode Note 1	No alarm Note 2	Servo ON Note 3	Home position Note 4
[- direction]	Required	Required	Required	Required
[+ direction]	Required	Required	Required	Required
[Home position return]	Required	Required	Required	-
[Servo switch]	Required	Required	-	-
[Alarm clear]	Required	-	-	-

Note 1: In the PLC mode, a message “The PLC mode is set. Set the TOOL mode.” appears.

Note 2: If there is an alarm, the message “An alarm has occurred. Clear the alarm.” appears.

Note 3: In the servo OFF state, the message “The servo is OFF. Turn ON the servo.” appears.

Note 4: If the actuator is not in the home position, the message “The home position has not been detected. Perform home position return.” appears.



Switching to the TOOL mode turns OFF all the output signals of parallel I/O.  
Make sure that it does not cause the upper level equipment to malfunction.

**<If alarm code “1B03” or “3A03” has occurred>**

The message “The alarm for a model number mismatch (1B03, 3A03) has occurred. Reconnect the actuator connected last time to the controller or overwrite the information of the actuator being connected with the information of the actuator connected last time on the model information screen.” appears.

Depending on the alarm code, the confirmation message “It is an alarm that requests the power to be switched on again after the alarm occurrence cause is eliminated. Are you sure to perform a software reset?” appears.

## ■ Operation 2

This operation moves the movable section of the actuator by running a program that combines specified points.

Current position  
\*\*\*mm

Point No.	Waiting time [sec]
1	0
2	0
3	0
7	0
8	0

☐ Repeat

Status change

Operation 1 Operation 2 Adjust Adjust2

Point No.	Waiting time [sec]
1	2
2	3
3	0
4	0

While the program is running, the background of the Point No. currently being executed is displayed in light blue.

Name	Description
[Home position return] button	It is the same as the [Home position return] button of "Operation 1". For details, refer to "Operation 1".
[Servo switch] button	It is the same as the [Servo switch] button of "Operation 1". For details, refer to "Operation 1".
[Alarm clear] button	It is the same as the [Alarm clear] button of "Operation 1". For details, refer to "Operation 1".
[Mode switch] button	It is the same as the [Mode switch] button of "Operation 1". For details, refer to "Operation 1".

Name	Description
Current position	It is the same as the Current position of Operation 1. For details, refer to "Operation 1."
Point No.	It is a box for entering the Point No. for which the operation is checked. The Point No. that can be entered is "0" to "511" or "0" to "63." The default is blank. If the box is blank, the next point travel is started.
Waiting time	It is a box for setting the time to wait for point travel to start. The setting range is "0" to "999" [sec]. The default value is "0." Clicking the spin button increases or decreases the value in the box by $\pm 1$ .
Repeat	It is a check box for specifying repetition of the point travel set in "Point No." The box is unchecked by default. Pressing the [Execute] button after putting a check repeats the set point travel. The check box is disabled while the actuator is in operation. Pressing the [Stop] button interrupts the repeat process.
[Next] button	It starts the next point travel and is only enabled while the actuator is in operation.
[Execute] button	It starts point travel from the current position in the order the points are set in "Point No." If an alarm occurs while the program is running, the message "An alarm has occurred." appears. Required states: Servo ON and home position Note 1, Note 2
[Stop] button	It stops the movable section of the actuator that is performing point travel.

Note 1: In the servo OFF state, the message "The servo is OFF. Turn ON the servo." appears.

Note 2: If the actuator is not in the home position, the message "The home position has not been detected. Perform home position return." appears.



Switching to the TOOL mode turns OFF all the output signals of parallel I/O.  
Make sure that it does not cause the upper level equipment to malfunction.

■ Adjust

This operation reads and writes the “Responsiveness” and “Load magnification” from and to the controller.

Gain

responsiveness

Read value: \*\*\*

Write value:

load magnification

Read value: \*\*\*

Write value:

Read

Write

Shipment value incorporation

Status change

Mode switch (B)

Operation 1

Operation 2

Adjust

Adjust2

Name	Description
Responsiveness - Read value	It shows the value set for responsiveness. It shows “***” initially and when offline.
Responsiveness - Write value	It sets the value entered in the box to responsiveness. The default value is “0.”
Load magnification - Read value	It shows the value set for load magnification. It shows “***” initially and when offline.
Load magnification - Write value	It sets the value entered in the box to load magnification. The default value is “0.”
[Read] button	It reads the responsiveness and load magnification values from the controller. The operation can only be performed in the TOOL mode. Note 1
[Write] button	It writes the values in Write value boxes of responsiveness and load magnification to the controller. The operation can only be performed in the TOOL mode. Note 1
[Shipment value incorporation] button	It reads the responsiveness and load magnification values at shipment from the controller and shows them in the Write value boxes. The operation can only be performed in the TOOL mode. Note 1
[Mode switch] button	It is the same as the [Mode switch] button of Operation 1. For details, refer to “Operation 1.”

Note 1: In the PLC mode, a message “The PLC mode is set. Set the TOOL mode.” appears.

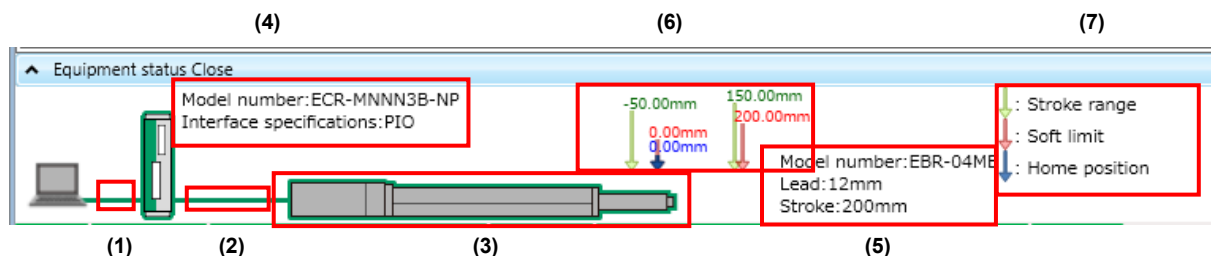


Switching to the TOOL mode turns OFF all the output signals of parallel I/O.  
Make sure that it does not cause the upper level equipment to malfunction.

### 3.7.3 Equipment status

This function displays the connection status of the PC, controller, and actuator as an image.

When the equipment status panel is open, the header for opening/closing the panel shows “Equipment status Close.” When the equipment status panel is closed, the header for opening/closing the panel shows “Equipment status Open.”



No.	Name	Description
(1)	Connection status between PC and controller	It is shown in green when they are connected. It is shown in gray when they are not connected.
(2)	Connection status between controller and actuator	It is shown in green when they are connected. It is shown in gray when they are not connected.
(3)	Actuator travel status	It shows the current position of the actuator as an image. The image size of the actuator remains the same even if the actual size of the actuator changes.
(4)	Controller information	It shows the “Model number” and “Interface specifications” from the controller information.
(5)	Actuator information	It shows the “Model No.,” “Lead,” and “Stroke” from the actuator information.
(6)	Movable range display	It shows the movable range of the actuator with numerical values and arrows. The range shown changes according to the changes in the setting of the parameters.
(7)	Legend	It shows the legend used for the movable range.



### 3.7.4 Communication status

The communication status information is updated periodically. However, when the “Read,” “Write,” and “Initialize controller” buttons on the Edit tab are being processed, all items except “Port connection condition” are blank and will not be updated periodically.



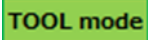
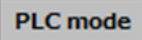


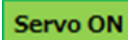
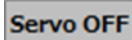

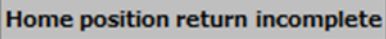
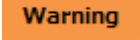
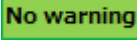

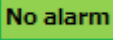
The details of the communication status are as follows.

#### When connected to the controller

Online	PLC mode	Emergency stop not operated	Servo OFF	Home position return incomplete	No warning	No alarm	0000	Model number:FLCR-25G02200NCN
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

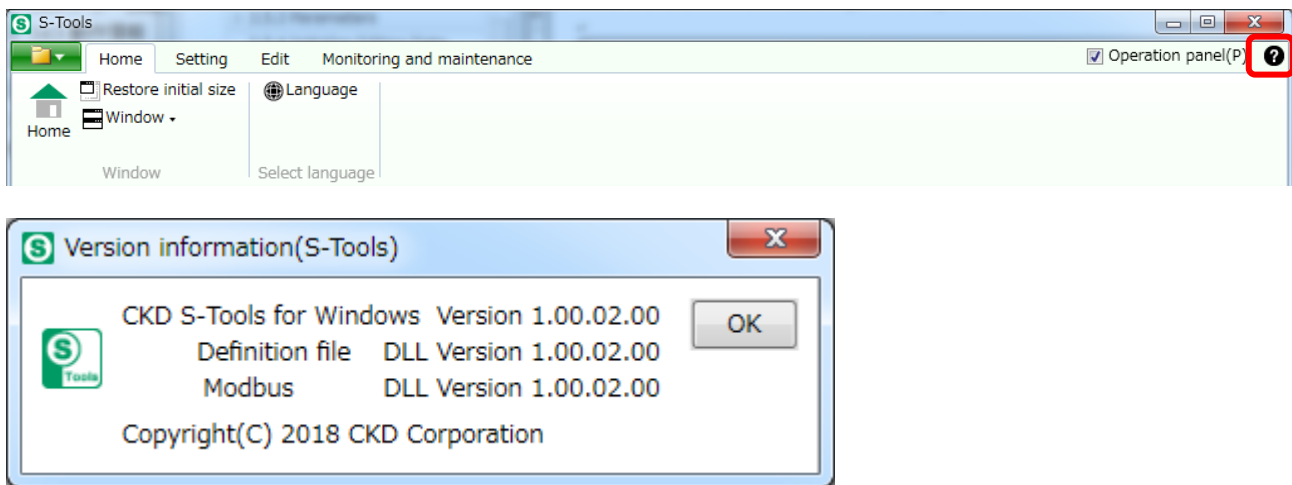
#### When not connected to the controller

Offline								Model number:FLCR-25G02200NCN
(1)								

No.	Name	Description
(1)	Port connection status	It shows “Online” to indicate equipment is online when the port is opened and connected to the controller. It shows “Offline” to indicate equipment is offline when the port is closed.  
(2)	TOOL/PLC status	Online, it shows “TOOL mode” when the controller is in the TOOL mode. It shows “PLC mode” when the controller is in the PLC mode. Offline, it shows nothing.  
(3)	Emergency stop status	Online, it shows “Emergency stop operated” when the emergency stop is activated. It shows “Emergency stop not operated” when the emergency stop is not activated. Offline, it shows nothing.  
(4)	Servo ON/OFF status	Online, it shows “Servo ON” when the servo is turned on. It shows “Servo OFF” when the servo is turned off. Offline, it shows nothing.  
(5)	Home position return status	Online, it shows “Home position return complete” when the actuator has completed home position return. It shows “Home position return incomplete” when the actuator has not completed home position return. Offline, it shows nothing.  
(6)	Warning status	Online, it shows “Warning” when there is a warning. It shows “No warning” when there is no warning. Offline, it shows nothing.  
(7)	Alarm status	Online, it shows “Alarm” when there is an alarm. It shows “No alarm” when there is no alarm. Offline, it shows nothing.  
(8)	Alarm number	Online, it shows an alarm number when there is an alarm or a warning. It shows “0000” when there is no alarm or warning. Offline, it shows nothing.
(9)	Actuator model number	Online, it shows the actuator model number in blue when the model number of the connected actuator is the same as the actuator model number on the window tab. It shows the actuator model number in red when they differ. Offline, it shows the actuator model number selected in the New dialog box in black.

### 3.7.5 Version information

Clicking the [Help] button at the far right end of the ribbon opens the Version information dialog box. It shows the S-Tools version information and the version of the DLL used.



## 4. TROUBLESHOOTING

### 4.1 Problems, Causes, and Solutions

If a communication error occurs between S-Tools and the connected controller, check the table below for a possible solution.

Message	Cause	Solution
A communication error has occurred.	Controller does not respond correctly to a command from S-Tools.	Check that there is no problem in the connection of the USB cable.
		Check that the controller power is ON.
A timeout error has occurred.	Controller does not provide operation results correctly in response to a command from S-Tools even after certain period of time has elapsed.	Check that there is no alarm.
		Check that the command sent from S-Tools just before the message appeared has been executed by the controller.

## 5. REFERENCE MATERIALS

### 5.1 List of Shortcut Keys

Function	Item		Description	Shortcut	Key tip
File			Leaves the File menu selected.	-	Alt + F
	New		Opens the New dialog box.	Ctrl + N	Alt + F + N
	Open		Opens an existing file.	Ctrl + O	Alt + F + O
	Close		Closes the active window tab.	-	Alt + F + C
	Save		Overwrites and saves the file being edited.	Ctrl + S	Alt + F + S
	Save as		Saves the file being edited with a name.	-	Alt + F + A
	Print		Prints the file being edited.	Ctrl + P	Alt + F + P
	Print preview		Shows an image of the printed output of the file being edited.	-	Alt + F + V
	Recent files		Lists recently used files.	-	-
	Exit the application		Exits S-Tools.	-	Alt + F + X
Home	Home		Starts the "Home" view.	-	Alt + H + H
	Restore initial size		Restores the window to its default size.	-	Alt + H + R
	Window	Arrange windows vertically	Displays multiple window tabs stacked vertically.	-	Alt + H + WA + O
		Arrange windows horizontally	Displays multiple window tabs side by side.	-	Alt + H + WA + V
		Cascade	Displays multiple window tabs overlapping one another.	-	Alt + H + WA + C
	Language		Starts the "Language" view.	-	Alt + H + L
Setting	Update		Updates connectable communication ports.	-	Alt + S + U
	Connect		Connects a connectable communication port to the controller.	-	Alt + S + C
	Disconnect		Releases the connected communication port.	-	Alt + S + D
	Display setting		Starts the "Display setting" view.	-	Alt + S + V
	Actuator setting		Starts the "Actuator setting" view.	-	Alt + S + A
	Network	CC-Link setting	Starts the "CC-Link setting" view.	-	Alt + S + F + FC
		EtherCAT setting	Starts the "EtherCAT setting" view.	-	Alt + S + F + FE
		EtherNet/IP setting	Starts the "EtherNet/IP setting" view.	-	Alt + S + F + FN

Function	Item		Description	Shortcut	Key tip
Edit	Point data	-	Starts the "Point data" view.	-	Alt + E + PO
		Undo	Restores unedited value.	Alt + U	-
		Redo	Restores edited value.	Alt + R	-
		Import position	Imports data on the current position from the controller.	Alt + G	-
		Copy row	Copies row by row (multiple rows can be copied).	Alt + C	-
		Paste row	Pastes information for the number of rows copied.	Alt + Q	-
		Initialize row	Initializes row by row (multiple rows can be selected).	Alt + I	-
		Travel time calculation	Calculates the travel time based on the value in the cells.	Alt + V	-
		Pressing display	Shows or hides the Pressing rate, Pressing speed, and Pressing distance columns.	Alt + O	-
		Travel time display	Shows or hides the Travel time and Start point columns.	Alt + T	-
	Parameters	-	Starts the "Parameters" view.	-	Alt + E + PA
		Undo	Restores unedited value.	Alt + U	-
		Redo	Restores edited value.	Alt + R	-
		Import position	Imports data on the current position from the controller.	Alt + G	-
	Initialize editing data	All data	Initializes both the Point data and the Parameters.	-	Alt + E + C + A
		Point data only	Initializes only the Point data.	-	Alt + E + C + P
		Parameters only	Initializes only the Parameters.	-	Alt + E + C + R
	Read	All data	Reads both the Point data and the Parameters from the controller.	-	Alt + E + G + A
		Point data only	Reads only the Point data from the controller.	-	Alt + E + G + P
		Parameters only	Reads only the Parameters from the controller.	-	Alt + E + G + R
	Write	All data	Writes both the Point data and the Parameters to the controller.	-	Alt + E + S + A
		Point data only	Writes only the Point data to the controller.	-	Alt + E + S + P
		Parameters only	Writes only the Parameters to the controller.	-	Alt + E + S + R
	Initialize controller	All data	Initializes both the Point data and the Parameters stored in the controller.	-	Alt + E + L + A
		Point data only	Initializes only the Point data stored in the controller.	-	Alt + E + L + P
		Parameters only	Initializes only the Parameters stored in the controller.	-	Alt + E + L + R

Function	Item		Description	Shortcut	Key tip
Monitoring and maintenance	Speed waveform		Starts the "Speed waveform" view.	-	Alt + M + S
	Calendar		Starts the "Calendar" view.	-	Alt + M + C
	Alarm history		Starts the "Alarm history" view.	-	Alt + M + H
	Operation information	Operation display	Starts the "Operation display" view.	-	Alt + M + F+FC
		Monitor & data R/W display	Starts the "Monitor & data R/W display" view.	-	Alt + M + F+FE
	Maintenance information		Starts the "Maintenance information" view.	-	Alt + M + M
	Model information		Starts the "Model information" view.	-	Alt + M + I
Common	Operation panel		Opens/closes the operation panel.	-	Alt + P
	Operation 1	Home position return	Performs home position return of the servo.	Alt + F	-
		Servo switch	Switches the servo.	Alt + S	-
		Alarm clear	Clears an alarm.	Alt + E	-
		Mode switch	Switches the mode.	Alt + B	-
	Operation 2	Home position return	Performs home position return of the servo.	Alt + F	-
		Servo switch	Switches the servo.	Alt + S	-
		Alarm clear	Clears an alarm.	Alt + E	-
		Mode switch	Switches the mode.	Alt + B	-
	Adjust	Mode switch	Switches the mode.	Alt + B	

## 5.2 Using the CSV File (Speed Waveform)

On the speed waveform screen, selecting to save the data in csv format with “Save as” saves the data as shown in the figure below. “No.” in column A indicates the data number; and to determine the time axis, it is necessary to calculate the product of the values in the “No.” and “Sampling time” cells.


	A	B	C	D	E	F	G	H	I
1	No.	Speed	Position	Current	IO				
2	1	0	-1.11	64	D000F800				
3	2	0	-1.11	65	D000F800		Date	2019/9/26	
4	3	0	-1.11	64	D000F800		Start time	20:04:50	
5	4	0	-1.11	65	D000F800		End time	20:04:59	
6	5	0	-1.11	65	D000F800		Sampling ti	100 ms	
7	6	0	-1.11	65	D000F800				
8	7	0	-1.11	65	D000F800				
9	8	0	-1.11	65	D000F800				
10	9	0	-1.11	65	D000F800				
11	10	0	-1.11	64	D000F800				
12	11	0	-1.11	65	D000F800				
13	12	0	-1.11	64	D000F800				
14	13	0	-1.11	64	D000F800				
15	14	0	-1.11	64	D000F800				
16	15	0	-1.11	65	D000F800				
17	16	0	-1.11	64	D000F800				

D000

F800

Input signals    Output signals

“IO” in column E indicates the operation information for each time and indicates whether the input signals and the output signals are ON or OFF with an 8-digit number. The method for checking the ON/OFF for each signal is as follows.



Signals are stored in “IO” only when the interface specifications is parallel I/O. For other interface specifications, 0 is output in “IO.”

### ■ Check method for input signals

Signal	Check method
Input 15	ON when the integer part of the value obtained by dividing the 8th digit (hex) by 8 is 1, and OFF when it is 0.
Input 14	ON when the integer part of the value obtained by dividing the 8th digit (hex) by 4 is odd, and OFF when it is even.
Input 13	ON when the integer part of the value obtained by dividing the 8th digit (hex) by 2 is odd, and OFF when it is even.
Input 12	ON when the 8th digit (hex) is odd, and OFF when it is even.
Input 11	ON when the integer part of the value obtained by dividing the 7th digit (hex) by 8 is 1, and OFF when it is 0.
Input 10	ON when the integer part of the value obtained by dividing the 7th digit (hex) by 4 is odd, and OFF when it is even.
Input 9	ON when the integer part of the value obtained by dividing the 7th digit (hex) by 2 is odd, and OFF when it is even.
Input 8	ON when the 7th digit (hex) is odd, and OFF when it is even.
Input 7	ON when the integer part of the value obtained by dividing the 6th digit (hex) by 8 is 1, and OFF when it is 0.
Input 6	ON when the integer part of the value obtained by dividing the 6th digit (hex) by 4 is odd, and OFF when it is even.
Input 5	ON when the integer part of the value obtained by dividing the 6th digit (hex) by 2 is odd, and OFF when it is even.
Input 4	ON when the 6th digit (hex) is odd, and OFF when it is even.
Input 3	ON when the integer part of the value obtained by dividing the 5th digit (hex) by 8 is 1, and OFF when it is 0.
Input 2	ON when the integer part of the value obtained by dividing the 5th digit (hex) by 4 is odd, and OFF when it is even.
Input 1	ON when the integer part of the value obtained by dividing the 5th digit (hex) by 2 is odd, and OFF when it is even.
Input 0	ON when the 5th digit (hex) is odd, and OFF when it is even.

### ■ Check method for output signals

Signal	Check method
Output 15	ON when the integer part of the value obtained by dividing the 4th digit (hex) by 8 is 1, and OFF when it is 0.
Output 14	ON when the integer part of the value obtained by dividing the 4th digit (hex) by 4 is odd, and OFF when it is even.
Output 13	ON when the integer part of the value obtained by dividing the 4th digit (hex) by 2 is odd, and OFF when it is even.
Output 12	ON when the 4th digit (hex) is odd, and OFF when it is even.
Output 11	ON when the integer part of the value obtained by dividing the 3rd digit (hex) by 8 is 1, and OFF when it is 0.
Output 10	ON when the integer part of the value obtained by dividing the 3rd digit (hex) by 4 is odd, and OFF when it is even.
Output 9	ON when the integer part of the value obtained by dividing the 3rd digit (hex) by 2 is odd, and OFF when it is even.
Output 8	ON when the 3rd digit (hex) is odd, and OFF when it is even.
Output 7	ON when the integer part of the value obtained by dividing the 2nd digit (hex) by 8 is 1, and OFF when it is 0.
Output 6	ON when the integer part of the value obtained by dividing the 2nd digit (hex) by 4 is odd, and OFF when it is even.
Output 5	ON when the integer part of the value obtained by dividing the 2nd digit (hex) by 2 is odd, and OFF when it is even.
Output 4	ON when the 2nd digit (hex) is odd, and OFF when it is even.
Output 3	ON when the integer part of the value obtained by dividing the 1st digit (hex) by 8 is 1, and OFF when it is 0.
Output 2	ON when the integer part of the value obtained by dividing the 1st digit (hex) by 4 is odd, and OFF when it is even.
Output 1	ON when the integer part of the value obtained by dividing the 1st digit (hex) by 2 is odd, and OFF when it is even.
Output 0	ON when the 1st digit (hex) is odd, and OFF when it is even.