

5



Creating a Form Using Excel

5.1	Writing Measurement Data in a Form	5-3
5.2	Writing Date/Time in a Form	5-52
5.3	Writing Arrows in a Form.....	5-56
5.4	Writing Trigger Source Node Names in a Form	5-61
5.5	Arranging Sequence of ACTION (New Form).....	5-63
5.6	Creating Trigger Buttons in a Form.....	5-69
5.7	Creating QC Charts in a Form	5-71
5.8	Restrictions	5-76

'Pro-Server EX' supports a new action called "Excel Form" action, a simplified and sophisticated version of the "Creating a Report using Excel" action of 'Pro-Server'.

This allows you to collect data and execute various processing more easily than ever before.

This chapter describes how to use "Data Logging" feature, a typical feature to use in creating a form.

In addition to the "Data Logging" feature, 'Pro-Server EX' is provided with the following features for creating a form.

- Monitoring device data in Excel

☞ "6 Writing Device/PLC Data in Excel File"

- Correcting read device data and restoring the data to the source device

☞ "6 Writing Device/PLC Data in Excel File"

- Writing log data and capture data in the GP to Excel

☞ "9 Arranging GP Log Data in Excel"

- Writing data of Excel in the Device/PLCs

☞ "11 Writing Excel Data in Device/PLC"

5.1 Writing Measurement Data in a Form

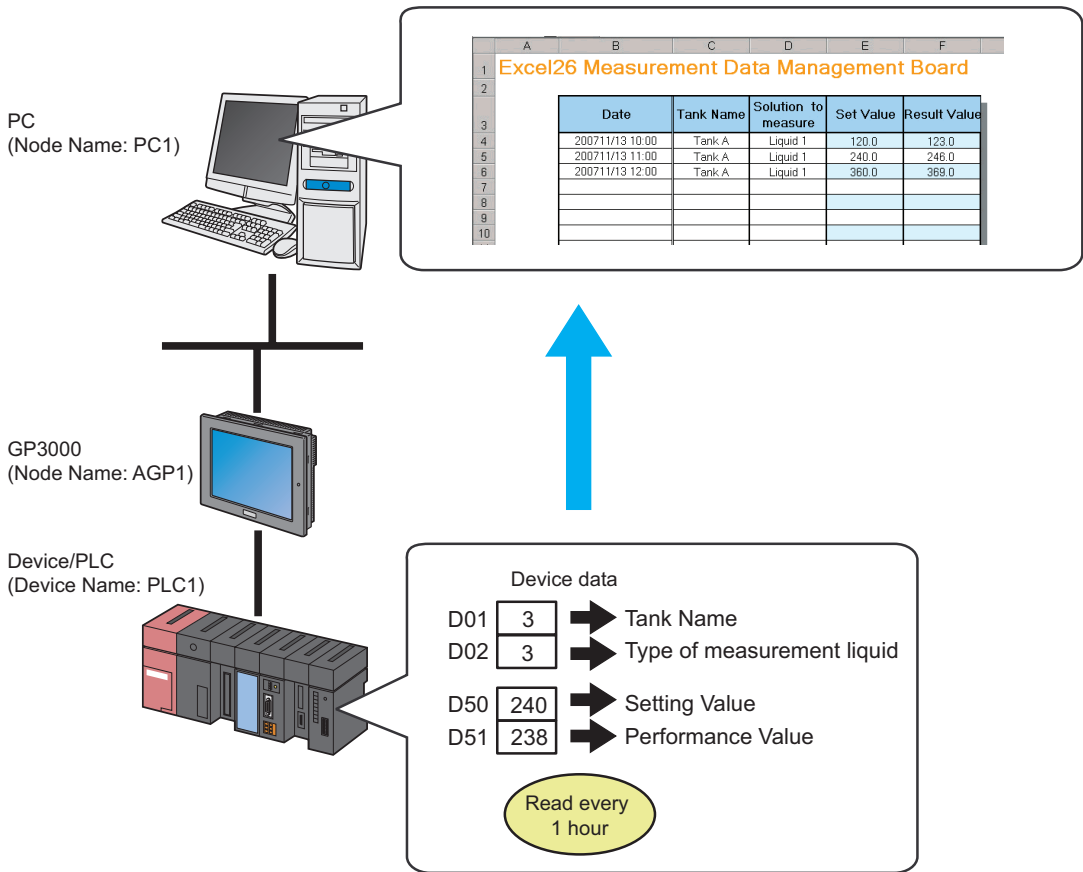
5.1.1 Try to write Measurement Data in a Form

[Action Example]

This example reads four device data (Word device: Address "01", "02", "50", and "51") of the Device/PLC at an interval of one hour, and then write them to a form.

NOTE

- Here, use the template sample attached to 'Pro-Server EX' to write in a form.
- Refer to "■ About Sample Template to Use" in the next page for details about data to be written to the form template to use.



This section describes the setting procedures for executing the above action (ACTION) as an example.

■ About Sample Template to Use

First, you need to create the template based on a form, however, 'Pro-Server EX' includes the template samples according to various purposes.

In this trial, use the sample below as a form template.

	A	B	C	D	E	F	G
1	Excel26 Measurement Data Management Board						
2							
3		Date	Tank Name	Solution to measure	Set Value	Result Value	
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							

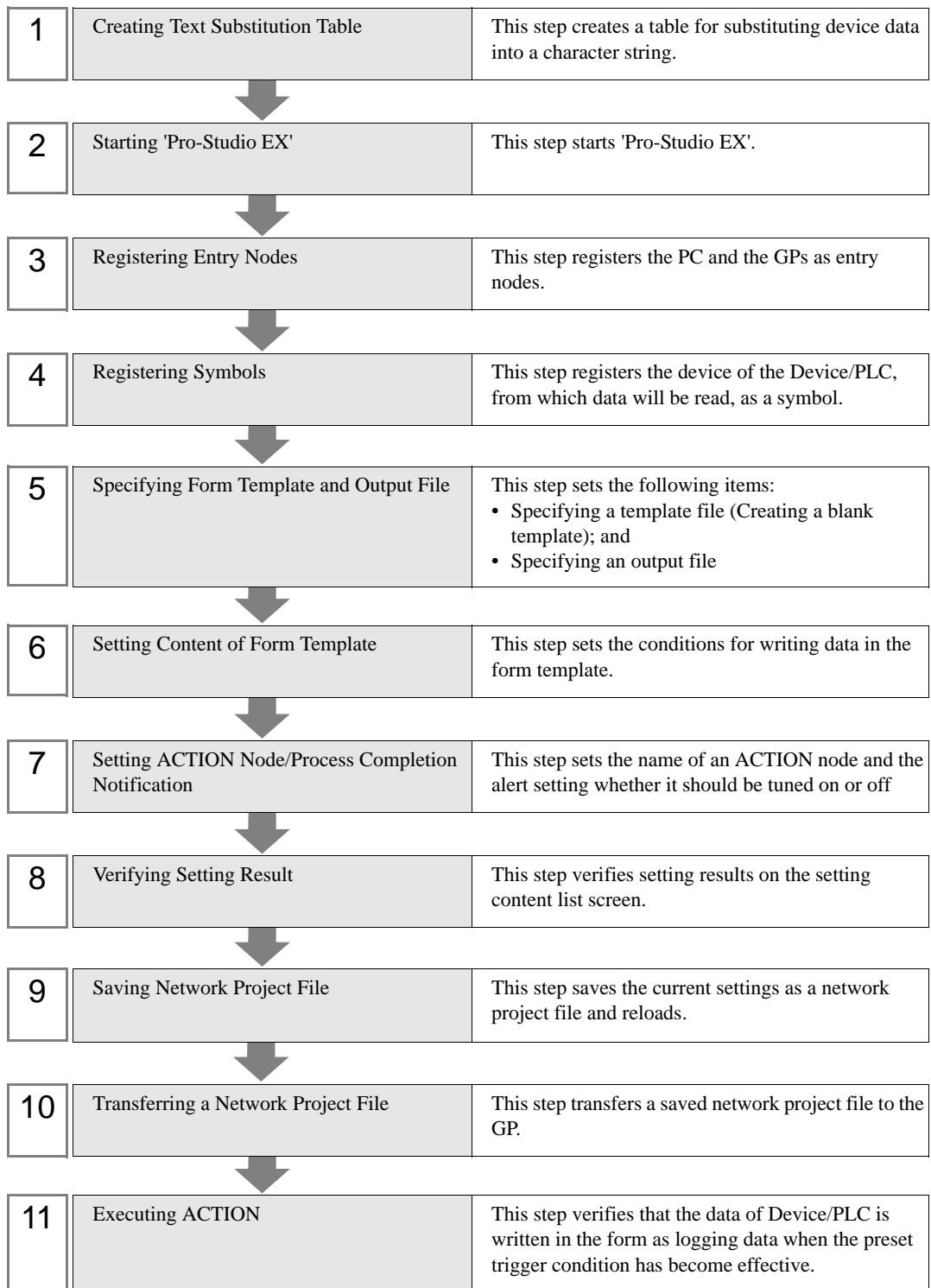
The table below shows the content of data to be written in each row of the template.

Item	Device	Description
Date	-	Date/Time of the PC (use time stamp)
Tank Name	D01	Character string (Tank name) converted from device data Device data "1": Tank A Device data "2": Tank B Device data "3": Tank C
Solution to measure	D02	Character string (Measurement solution type) converted from device data Device data "1": Solution 1 Device data "2": Solution 2 Device data "3": Solution 3
Set Value	D50	Device data not converted
Result Value	D51	Device data not converted

NOTE

- Pro-Server EX has approximately 30 kinds of built-in templates for creating a report. You can create your own new template, or customize the existing sample templates.
- You can organize data as a QC chart. Refer to "5.7 Creating QC Charts in a Form" for details.

[Setting Procedure]



■ Creating Text Substitution Table

This step creates a table for substituting device values, "01" (Tank Name) and "02" (Solution to measure), into character strings.

Refer to "■ About Text Substitution of Data" for more details about a text substitution table.

1 Start Microsoft Excel and create the text substitution table below.

Text Substitution Table of Device "01"

	A	B	C	D
1	Start Value	End Value	Character String	
2	1		TankA	
3	2		TankB	
4	3		TankC	
5				

Text Substitution Table of Device "02"

	A	B	C	D
1	Start Value	End Value	Character String	
2	1		Liquid1	
3	2		Liquid2	
4	3		Liquid3	
5				

2 Save the created table on the desktop of the PC as "Convert_D01.xls" and "Convert_D02.xls", respectively.

This is the end of creating a text substitution table.

■ Starting 'Pro-Studio EX'

This step starts 'Pro-Studio EX'.

Refer to "3 Trial of Pro-Server EX" for details about starting method.

■ Registering Entry Nodes

This step registers the PC and the GPs, which will serve as trigger conditions (trigger), as entry nodes.
Refer to "30 Node Registration" for details about entry nodes.



Node Name : PC1
IP Address : 192.168.0.1



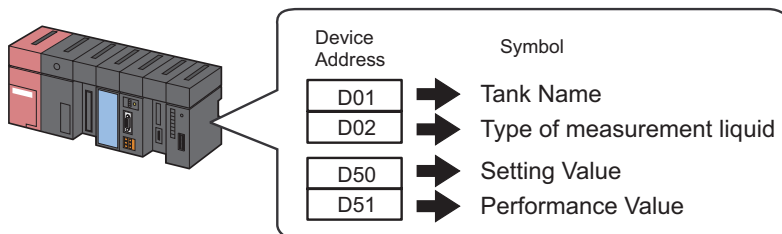
Node Name : AGP1
IP Address : 192.168.0.100
Device/PLC Information

Ex.

Entry node	Setting item	Setting example
PC	Node Name	PC1
	IP Address	192.168.0.1
GP	Type	GP3000 series
	Node Name	AGP1
	IP Address	192.168.0.100

■ Registering Symbols

This step registers the device address of the Device/PLC, from which data will be read, as a symbol. Refer to "31 Symbol Registration" for details about symbols.



Ex.

Setting item	Setting content			
Symbol Name	Tank Name	Type of measurement liquid	Setting Value	Performance Value
Data Type	16Bit (Signed)			
Device address for symbol registration	"D01" of Device/ PLC (PLC1)	"D02" of Device/ PLC (PLC1)	"D50" of Device/ PLC (PLC1)	"D51" of Device/ PLC (PLC1)
No. of Devices	1	1	1	1

■ Specifying Form Template and Output File

This step specifies a template file (Creating a blank template) and an output file.

When the trigger condition is satisfied, the device data in the form template is reflected and output as a file.

In this case, the device data is not reflected to the form template.

Refer to "5.1.2 Setting Guide" for more details.

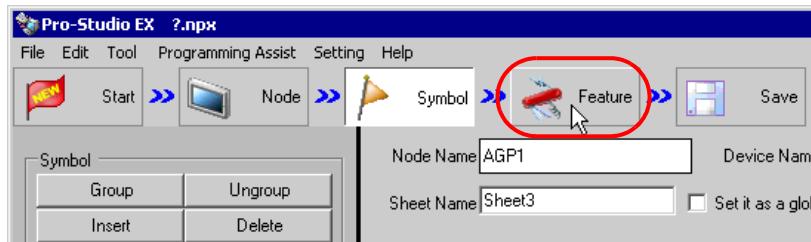
NOTE

- This action example uses a built-in template of 'Pro-Server EX'.
First, prepare a new template. Then import the sample template included in 'Pro-Server EX' in it.

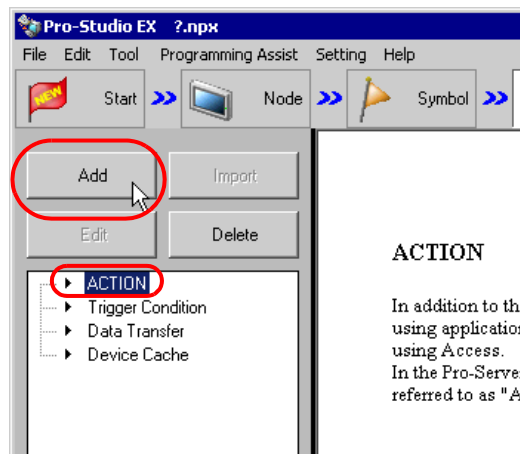
Ex.

Setting item	Setting content	
Specify Template	Template File	C:\Documents and Settings\Administrator\Desktop\template.xls
Output File	Folder Name	C:\Documents and Settings\Administrator\Desktop
	File Name	Measurement data.xls
	Start with the output book displayed	Checked

- 1 Click the [Feature] icon on the status bar.



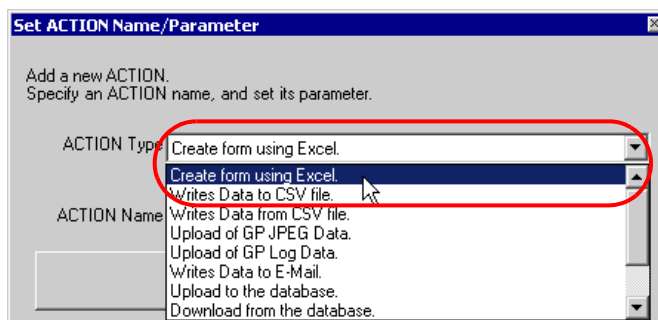
- 2 Select [ACTION] from the tree display on the left of the screen, then click the [Add] button.



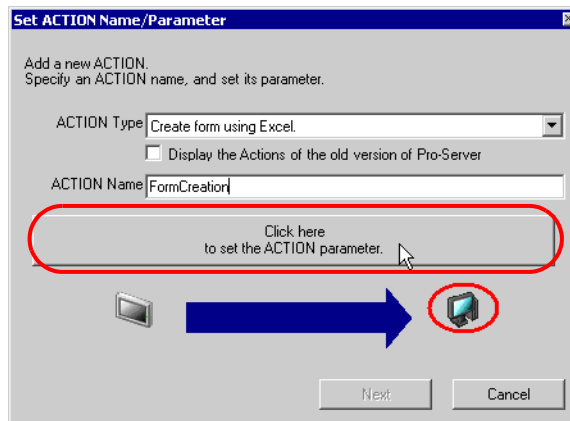
- 3 Click the [ACTION Type] list button, and select "EXCEL form".

Then, enter the name of ACTION to set in the [ACTION name] field. In this example, enter "Create form using Excel".

NOTE • [ACTION Name] can be an arbitrary name.

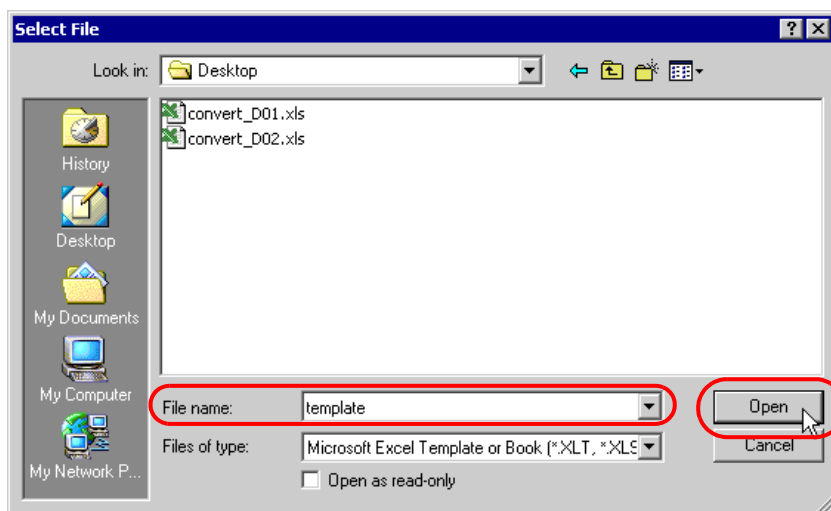
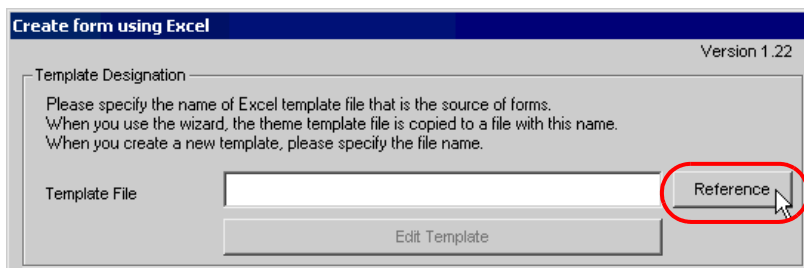


- 4 Click the [Click here to set the ACTION parameter] button.



- 5 Set regarding an Excel template and an output file.

- 1) Click the [Reference] button of [Template File]. On the "Select File" screen, type "template" in the [File name] field, and then click the [Open] button.



- 2) Click the [Reference] button of [Folder Name], specify "Desktop" as a folder to save the output file, and then enter "Measurement data.xls" in the [File Name] field.

Output File
The template file stores setting info. The actual output result will be displayed in the following file.

Folder Name: E:\Program Files\Pro-face\Pro-Server EX\NpxDatabase [Reference]

File Name: MeasurementData.xls [Return to Default Settings]

☒ Start from Displayed State
☐ Do not save the output file when ACTION runs.
 (Please use the Save or Save by Macro of Excel.)

[OK] [Cancel]

- 3) Check the [Start from Displayed State] check box.

Output File
The template file stores setting info. The actual output result will be displayed in the following file.

Folder Name: E:\Program Files\Pro-face\Pro-Server EX\NpxDatabase [Reference]

File Name: MeasurementData.xls [Return to Default Settings]

☒ Start from Displayed State
☐ Do not save the output file when ACTION runs.
 (Please use the Save or Save by Macro of Excel.)

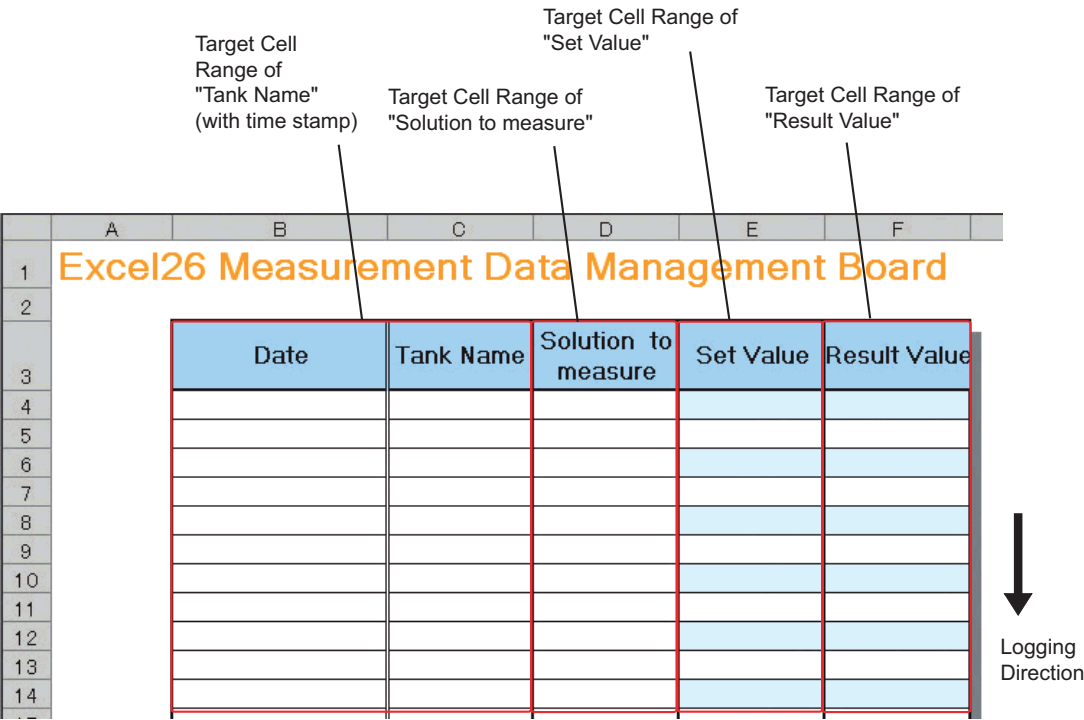
[OK] [Cancel]

NOTE

- If you check [Start from Displayed State], you can read/write data with an output file displayed. This is useful if you need to confirm data immediately.

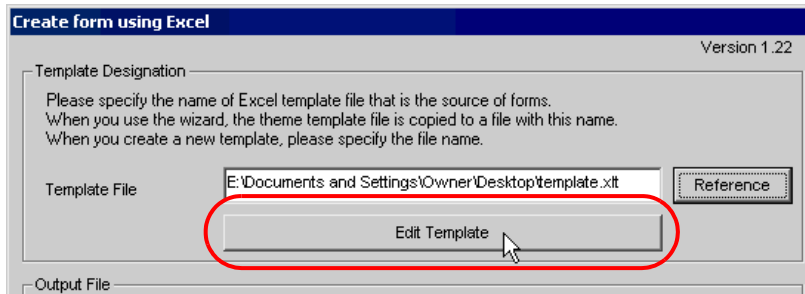
■ Setting Content of Form Template

This step sets the content of the template for writing data in a form.
Refer to "5.1.2 Setting Guide" for more details.

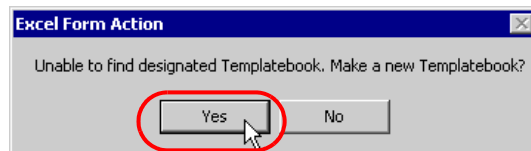


NOTE	<ul style="list-style-type: none">• There are some restrictions when using this feature with 'Microsoft Excel 2002' or later. Refer to "5.8 Restrictions"
-------------	---

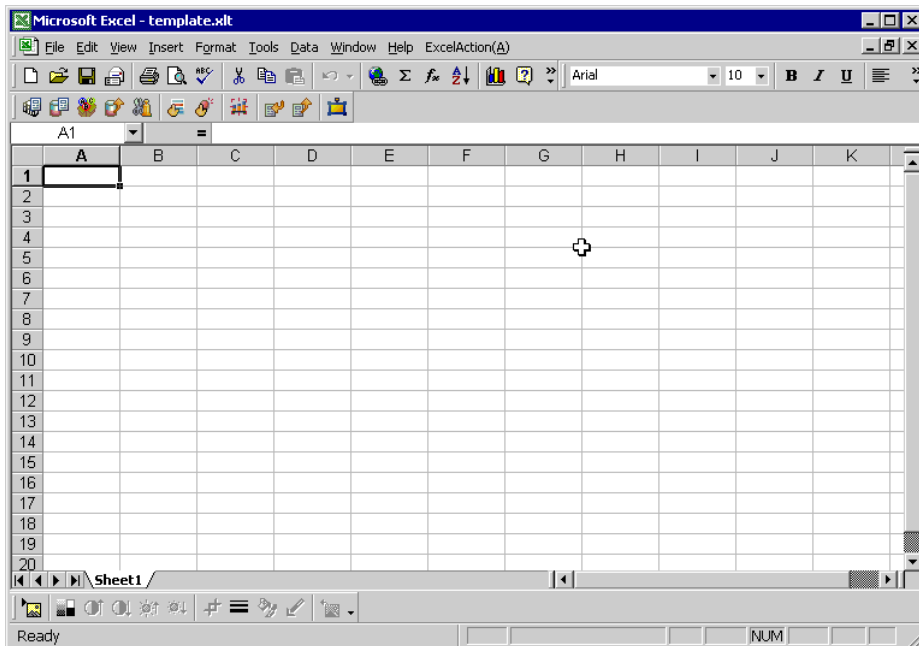
- 1 Click the [Edit Template] button.



- 2 Select the [Yes] button.

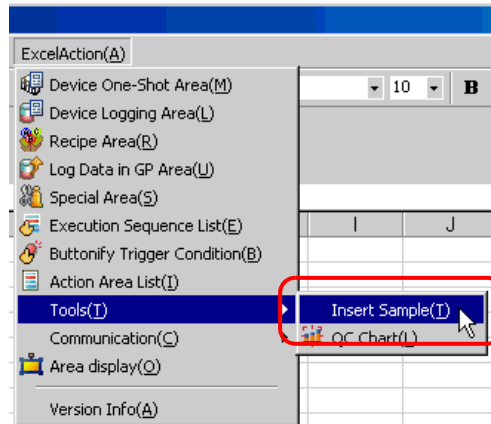


A blank form template will appear.

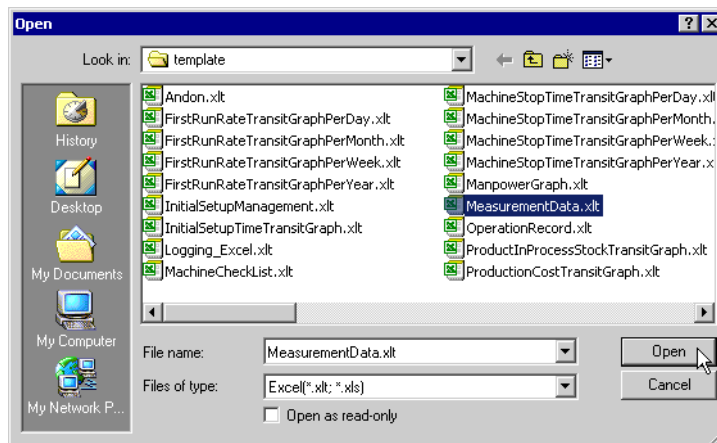


3 Open a built-in form template.

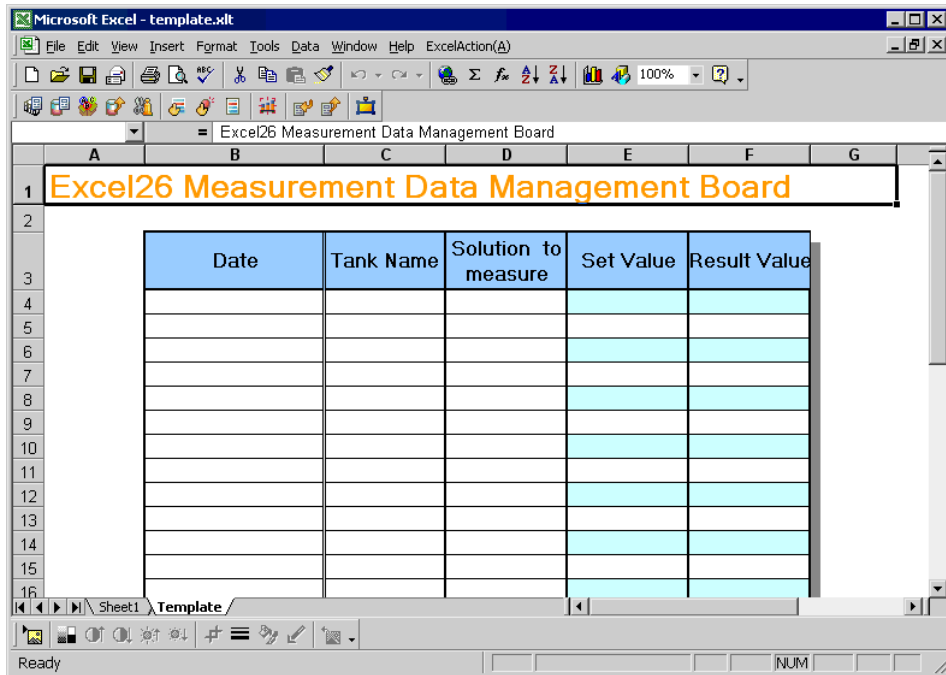
- 1) Click [Excel Action] on the menu bar. Select [Tools] - [Insert Sample].



- 2) Select "MeasurementData.xlt", and click the [Open] button.



A form template will appear.



4 Specify an area to enter "Tank Name".

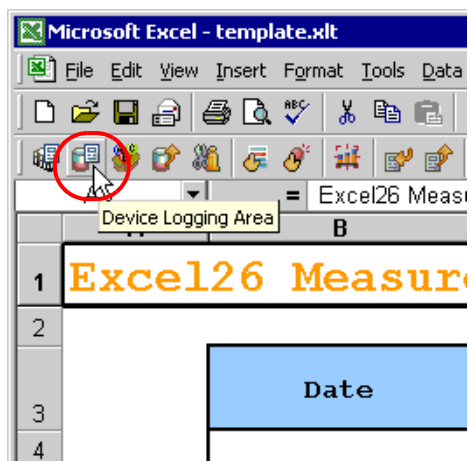
NOTE

- You do not need to specify an area to enter "Time". The time stamp feature specifies this area.

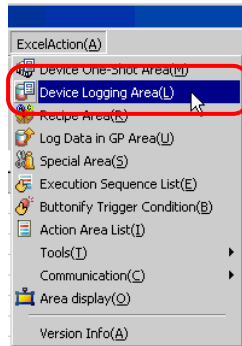
Ex.

Setting item		Setting content
Entry Node		AGP1
Device Name		PLC1
Device Address/Symbol Group		Tank Name
Target Cell Range		B4 to C23
Logging Direction		Vertical
Time Stamp		Forward ("Use PC time")
Convert device value to certain text at Read	EXCEL book storing the table	C:\Documents and Settings\Administrator\Desktop\convert_D01.xls
	Cell storing the table	Sheet A2
Action when cell gets full		Scroll
Trigger Condition		Constant interval
Interval		3600000ms (One hour)

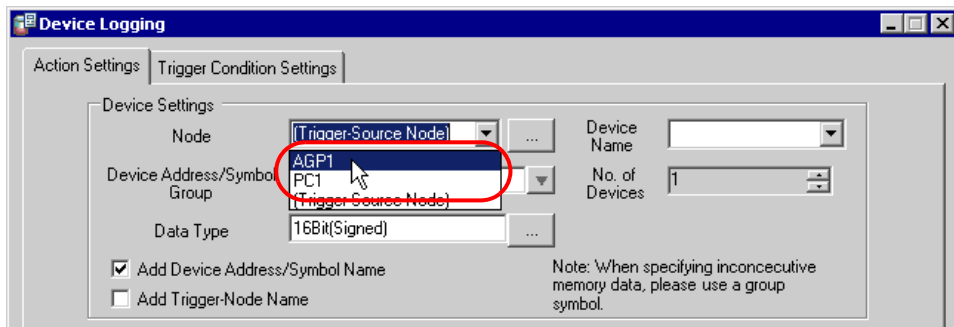
- Click the [Device Logging Area] icon on the Excel template.



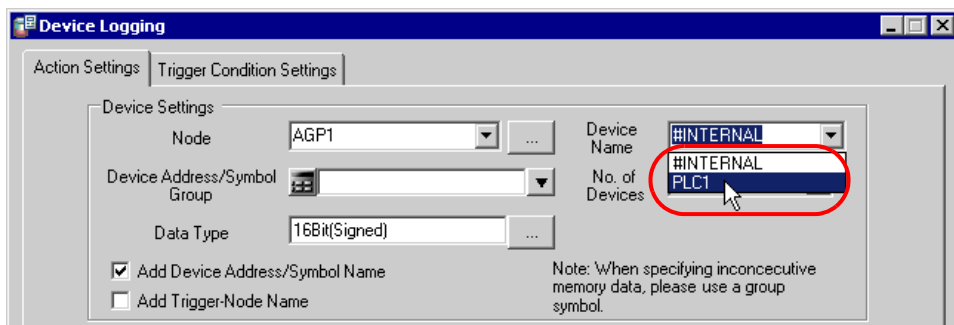
- NOTE** • Selecting [Device Logging Area] from [Excel Action] of the menu displays the same screen.



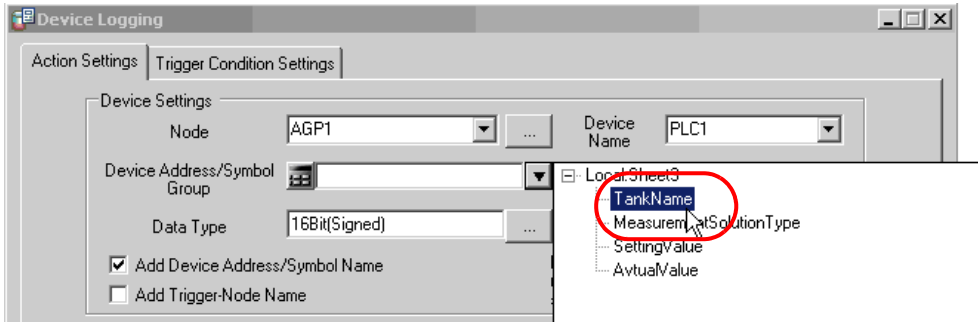
- 2) Click the list button of [Node] and select "AGP1" as a data transfer source node.



- 3) Click the list button of [Node] and select "PLC1" as a data transfer source device.

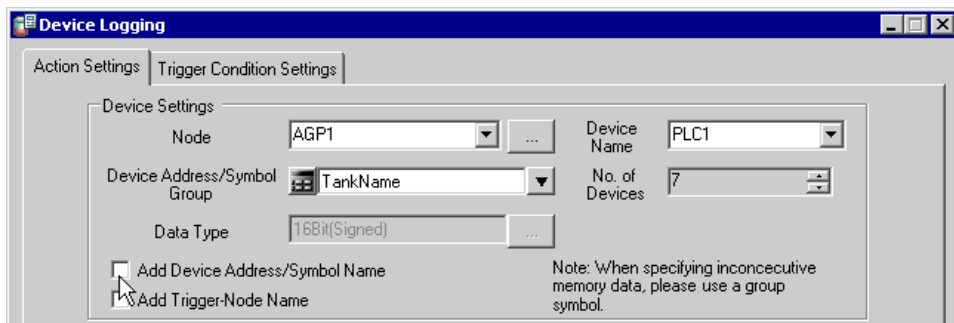


- 4) Click the list button of [Device Address/Symbol Group] and select "Tank Name" as a symbol of the data to log.

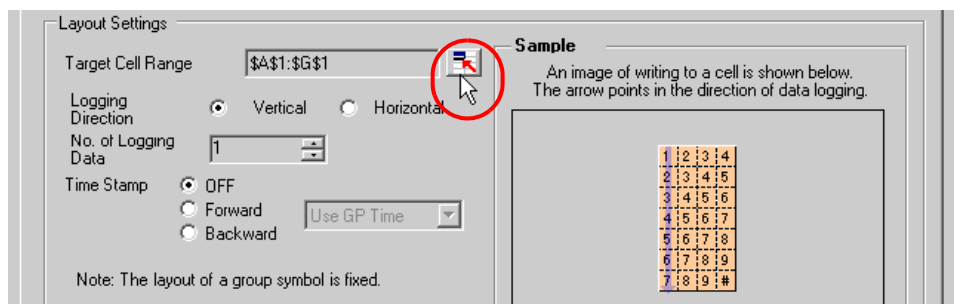


The device number "1" will be automatically entered in [No. of Devices], and "16Bit(Signed)" in [Data Type].

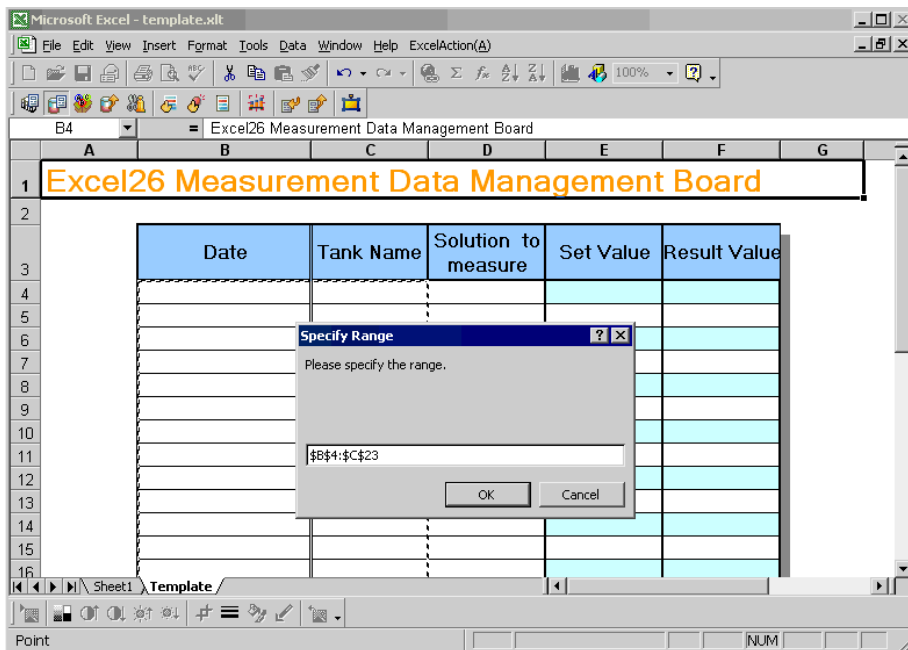
- 5) Turn off the [Add Device Address/Symbol Name] check box, if checked.



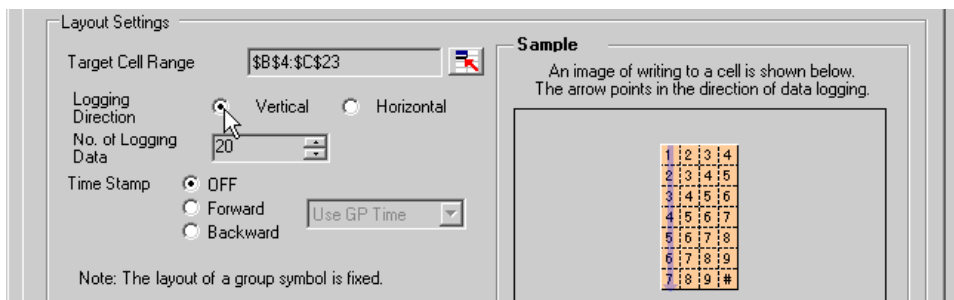
- 6) Click the cell range specify button of [Target Cell Range].



- 7) Drag the mouse to specify the area to use for data logging (cells B4 to C23). Then click the [OK] button.

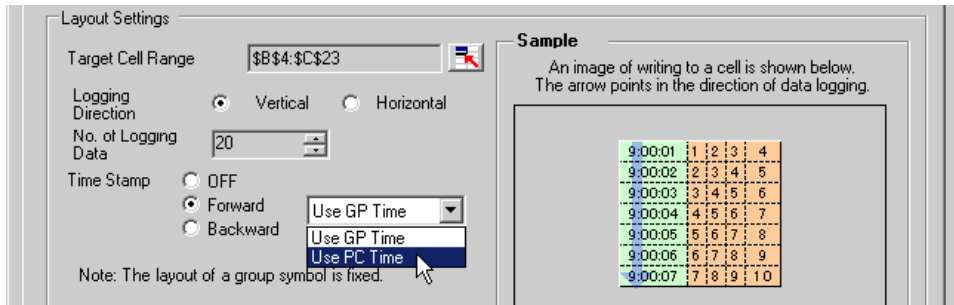


- 8) Select "Vertical" of [Logging Direction].

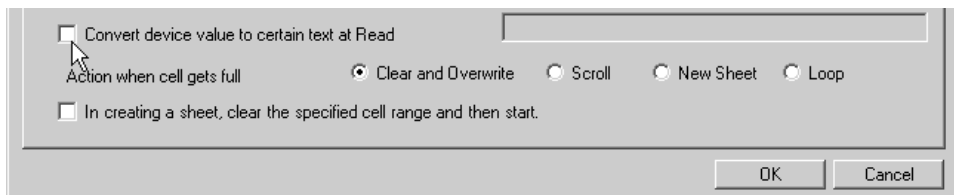


The logging number "20" will be automatically entered in [No. of Logging Data].

- 9) Select [Forward] of [Time Stamp]. Then click the list button of [Time Stamp], and select "Use PC Time".

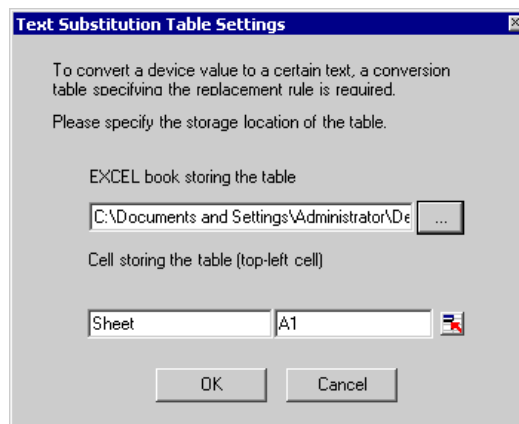


- 10) Check the [Convert device value to certain text at Read] check box.

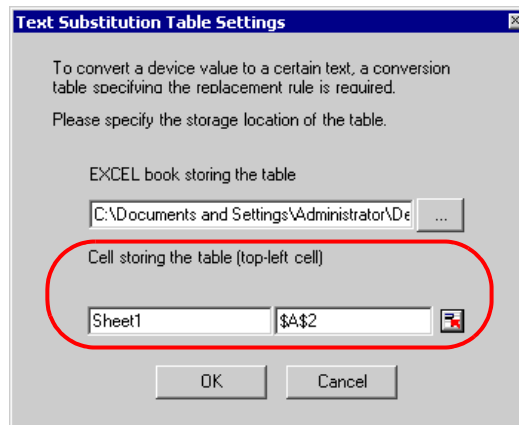


The "Text Substitution Table Settings" screen will appear.

- 11) Click the [...] button of [EXCEL book storing the table] and specify "convert_D01", which you created as a text substitution table.



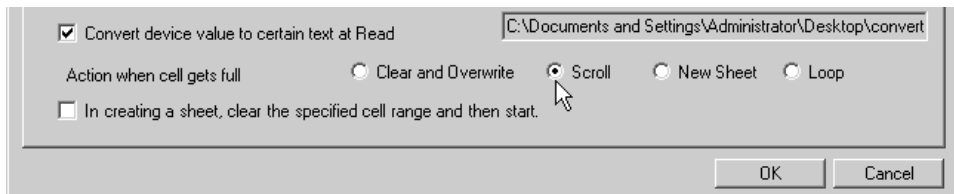
- 12) Enter the sheet name in [Cell storing the table]. Click the cell range specification button, and then enter the sheet name of the text substitution table and the cell number "A2" of the top-left cell.



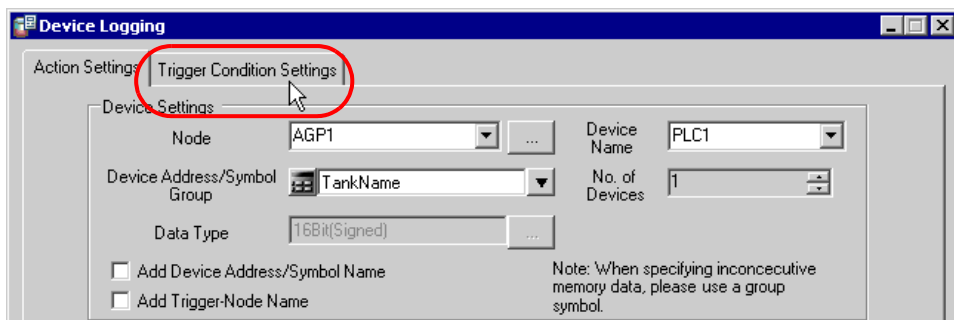
- NOTE** • Specify the cell on the top-left of data area in the text substitution table. Do not specify the title lines such as "Start Value" or "End Value".

- 13) Click the [OK] button.

- 14) Select "Scroll" in [Action when cell gets full].



- 15) Click the [Trigger Condition Settings] tab.

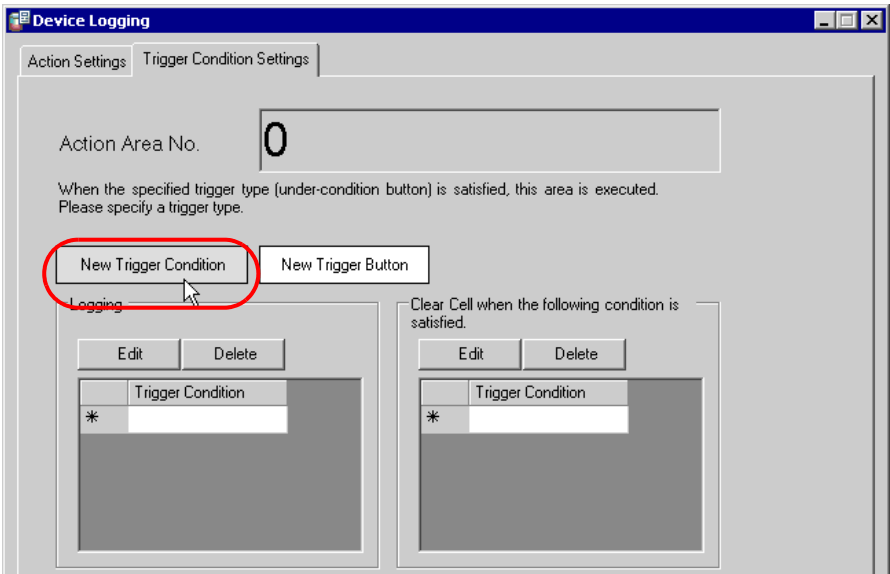


The "Trigger Condition Settings" screen will appear.

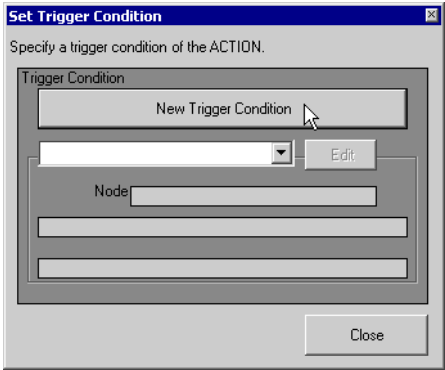
- NOTE**
- You can create a button on the Excel sheet, and use this as a trigger condition to execute ACTION. For more details, refer to "5.6 Creating Trigger Buttons in a Form".

	Write Data	

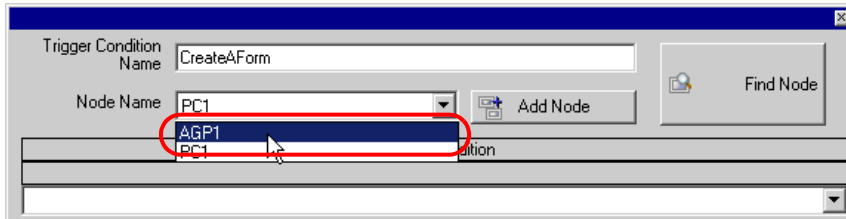
16) Click the [New Trigger Condition] button.



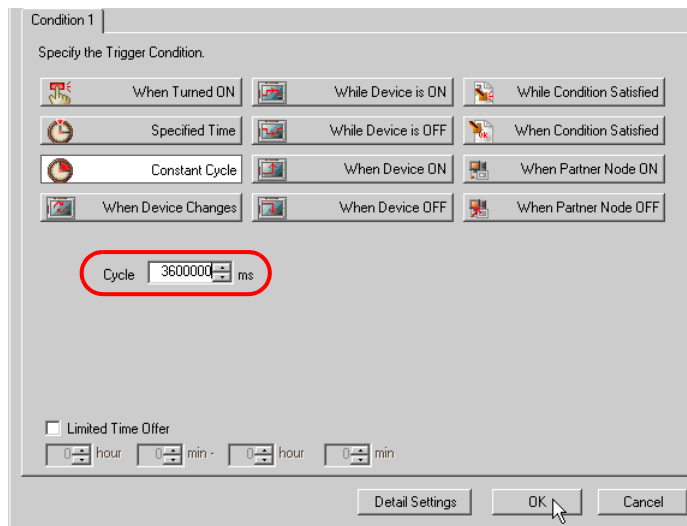
17) Click the [New Trigger Condition] button.



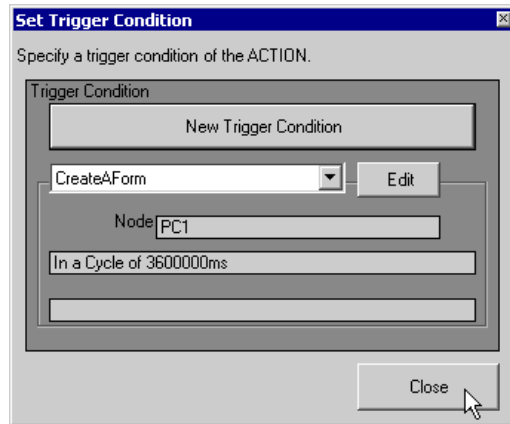
- 18) Enter the trigger condition name "Create a form" in [Trigger Condition Name], and select "AGP1" in [Node Name] as a name of the data transfer source.



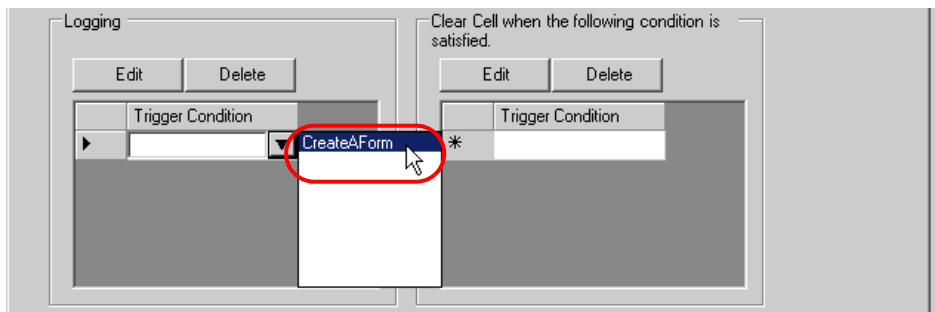
- 19) Click the [Constant Cycle] button in the [Condition 1] tab, and enter "3600000ms" (one hour). Then, click the [OK] button.



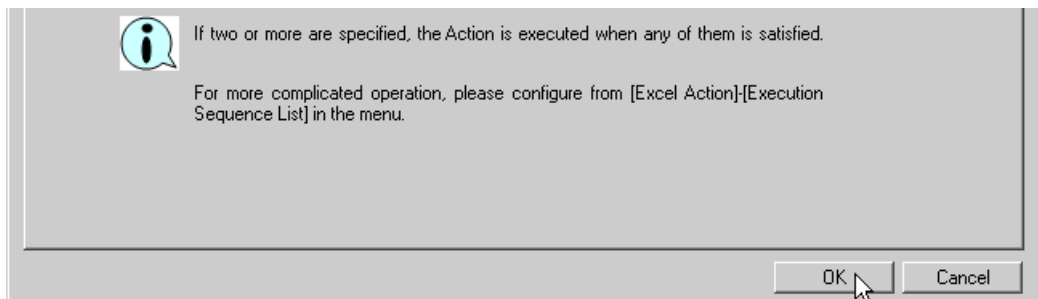
20) Click the [Close] button.



21) In [Logging], click the blank line of [Trigger Condition] and select "CreateAForm" as a trigger condition.



22) Click the [OK] button.



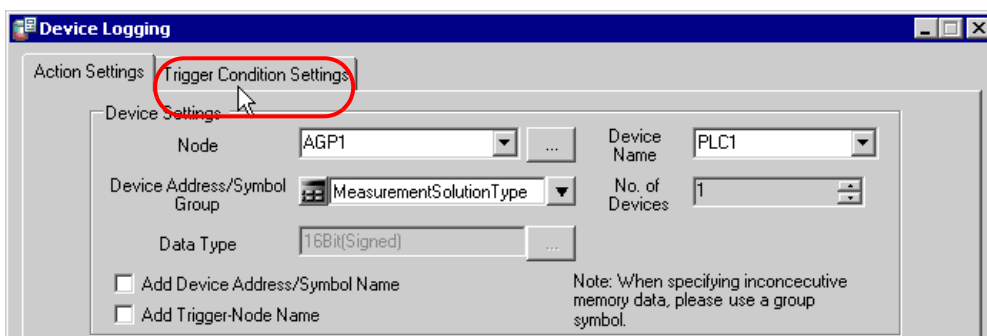
This is the end of the settings of the "Tank Name" area.

5 Specify an area to enter "Measurement Solution Type".

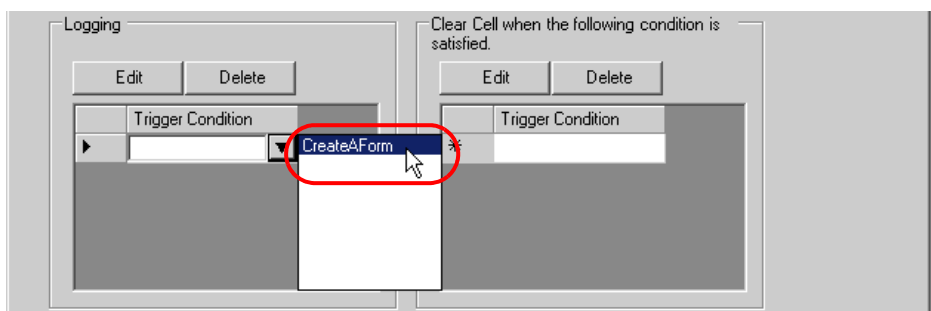
Ex.

Setting item		Setting content
Entry Node		AGP1
Device Name		PLC1
Device Address/Symbol Group		Measurement Solution Type
Target Cell Range		D4 to D23
Logging Direction		Vertical
Time Stamp		OFF
Convert device value to certain text at Read	EXCEL book storing the table	C:\Documents and Settings\Administrator\Desktop\convert_D02.xls
	Cell storing the table	Sheet A2
Action when cell gets full		Scroll

- 1) Repeat the procedures 1) to 14) in 4 to set the above items.
- 2) Click the [Trigger Condition Settings] tab.



- 3) In [Logging], click the blank line of [Trigger Condition] and select "CreateAForm", which is the preset trigger condition.



- 5) Click the [OK] button.

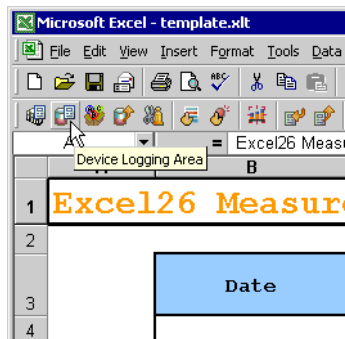
This is the end of the settings of the "Measurement Solution Type" area.

- 6 Specify an area to enter "Setting Value".

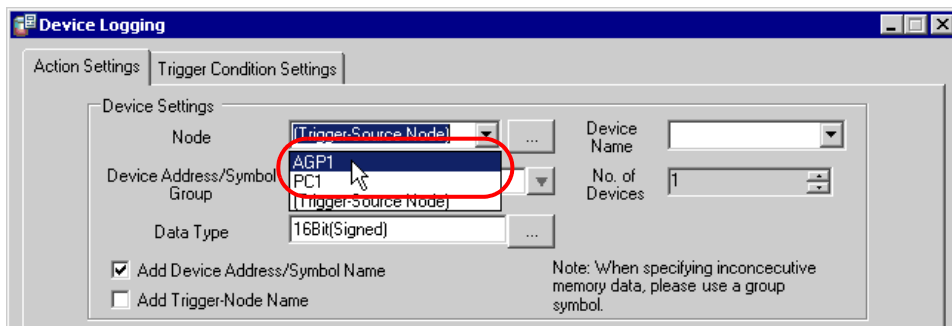
Ex.

Setting item	Setting content
Entry Node	AGP1
Device Name	PLC1
Device Address/Symbol Group	Setting Value
Target Cell Range	E4 to E23
Logging Direction	Vertical
Time Stamp	OFF
Action when cell gets full	Scroll

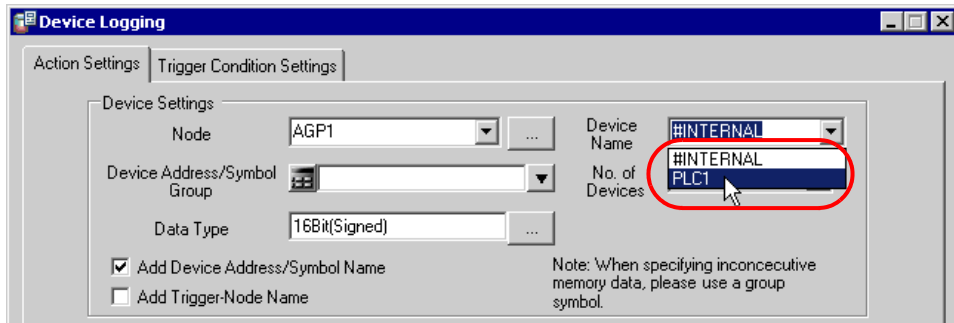
- 1) Click the [Device Logging Area] icon on Excel.



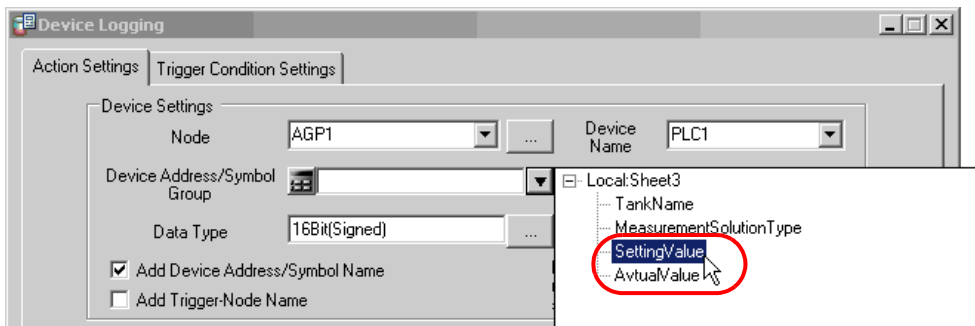
- 2) Click the list button of [Node] and select "AGP1" as a data transfer source node.



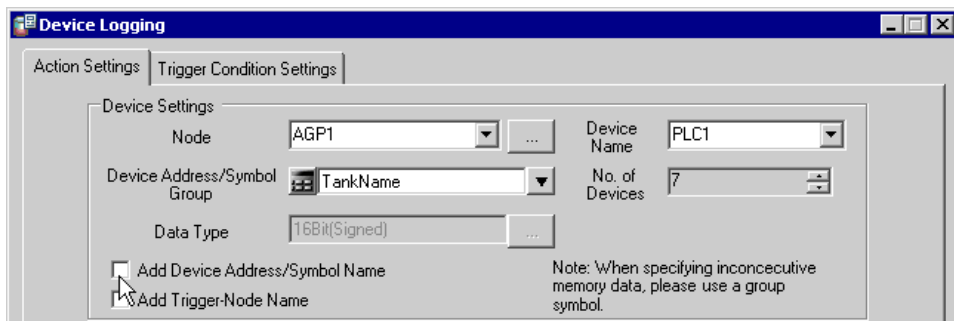
- 3) Click the list button of [Device Name] and select "PLC1" as a data transfer source device.



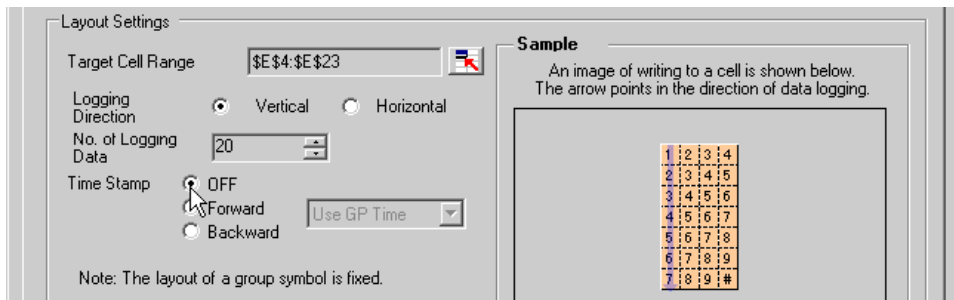
- 4) Click the list button of [Device Address/Symbol Group] and select "Setting Value" as a symbol of the data to log.



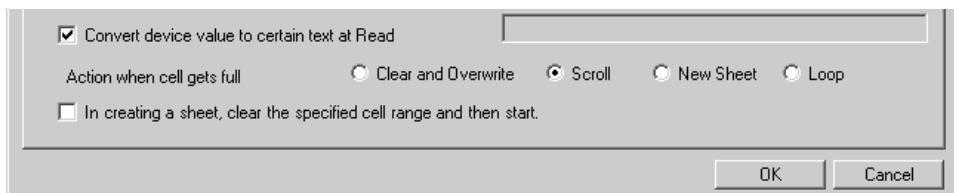
- 5) Turn off the [Add Device Address/Symbol Name] check box, if checked.



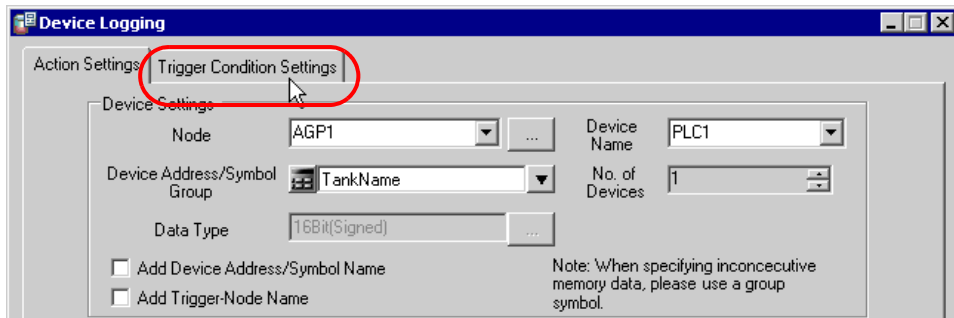
- 8) Select "OFF" of [Time Stamp].



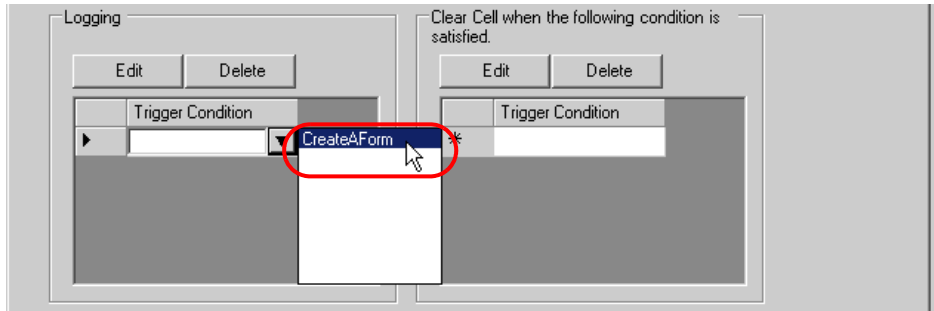
- 9) Select "Scroll" in [Action when cell gets full].



- 10) Click the [Trigger Condition Settings] tab.



- 11) In [Logging], click the blank line of [Trigger Condition] and select "CreateAForm", which is the preset trigger condition.



- 12) Click the [OK] button.

This is the end of the settings of the "Setting Value" area.

- 7 Specify an area to enter "Actual Value".

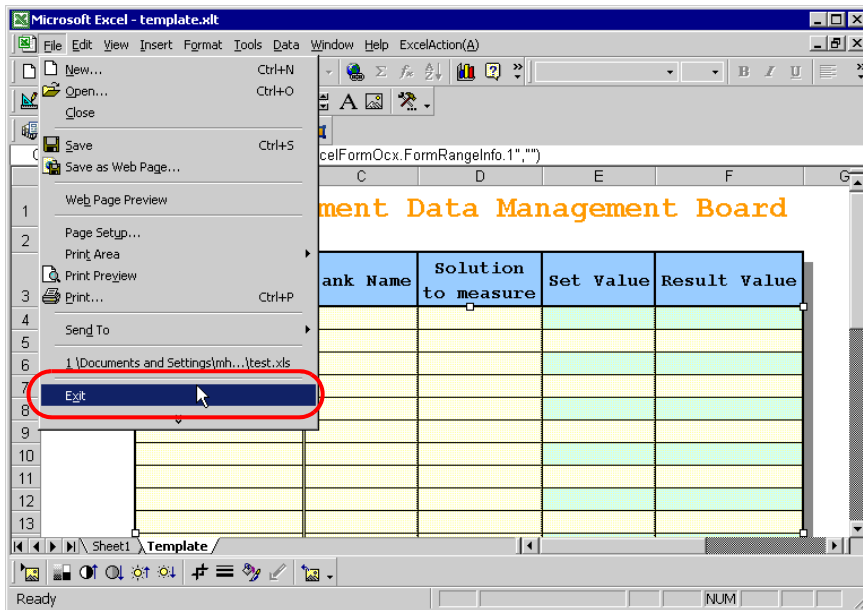
Ex.

Setting item	Setting content
Entry Node	AGP1
Device Name	PLC1
Device Address/Symbol Group	Actual Value
Target Cell Range	F4 to F23
Logging Direction	Vertical
Time Stamp	OFF
Action when cell gets full	Scroll

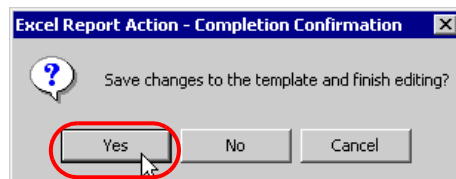
- 1) Repeat the procedures 1) to 12) in 5 to set the above items.

This is the end of the settings of a form template.

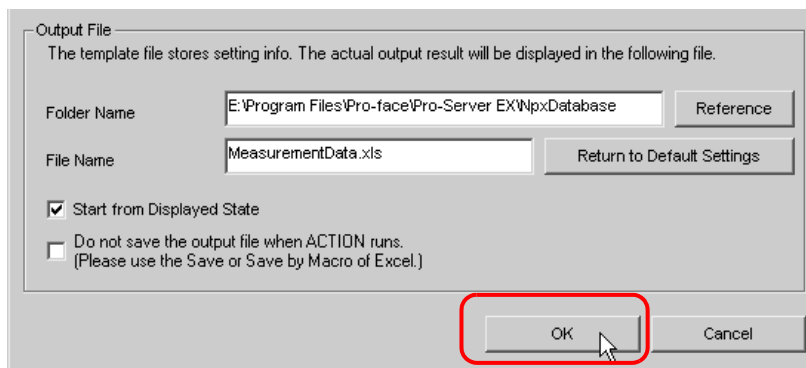
8 Close 'Excel'.



9 The following dialog box will appear, asking you if you want to save changes before closing. Click the [Yes] button.



10 On the "Create form using Excel" screen, click the [OK] button.



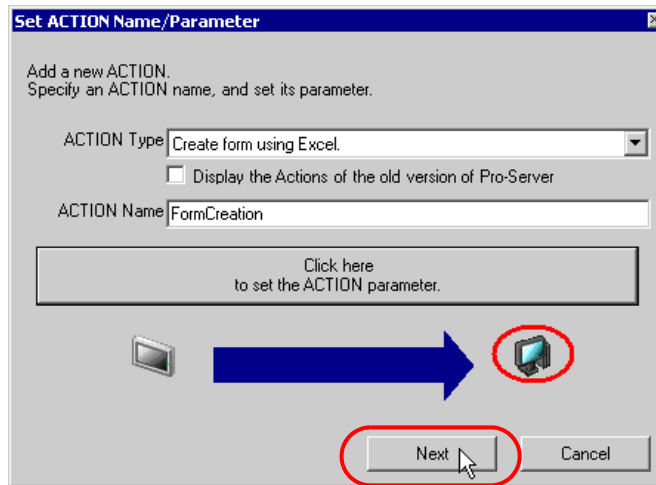
■ Setting ACTION Node/Process Completion Notification

This step sets the name of an ACTION node and the alert setting whether it should be tuned on or off when the ACTION is completed.

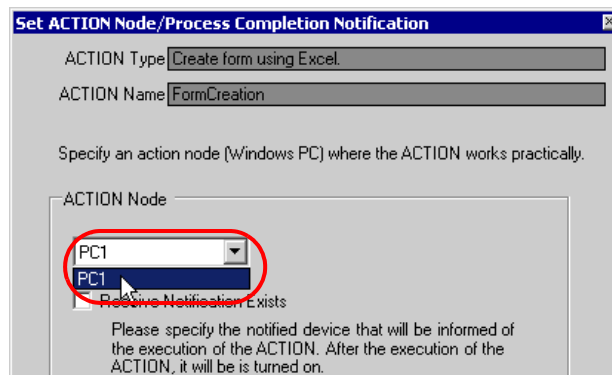
Ex.

- ACTION Node : PC1
- Receive Notification: OFF

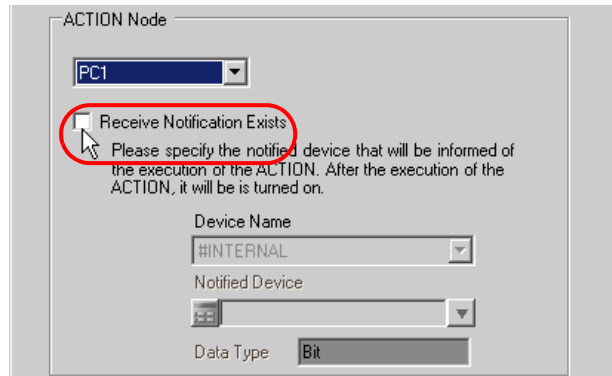
1 On the "Set ACTION Name/Parameter" screen, click the [Next] button.



2 Click the list button of [Action Node] and select "PC1" as a node where ACTION operates.



- 3 Turn off the [Receive Notification Exists] check box, if checked.



NOTE • Do not check "Receive Notification Exists".

- 4 Click the [Complete] button.

The "Set ACTION Node/Process Completion Notification" screen will disappear. On the left of the screen, the name of ACTION you set will appear.



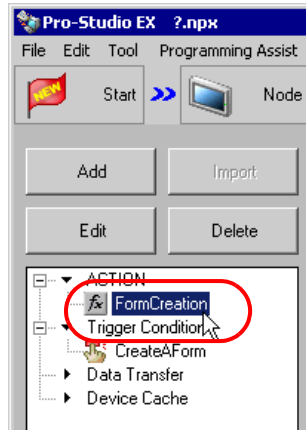
This is the end of the settings of the ACTION node and process completion notification.

■ Verifying Setting Result

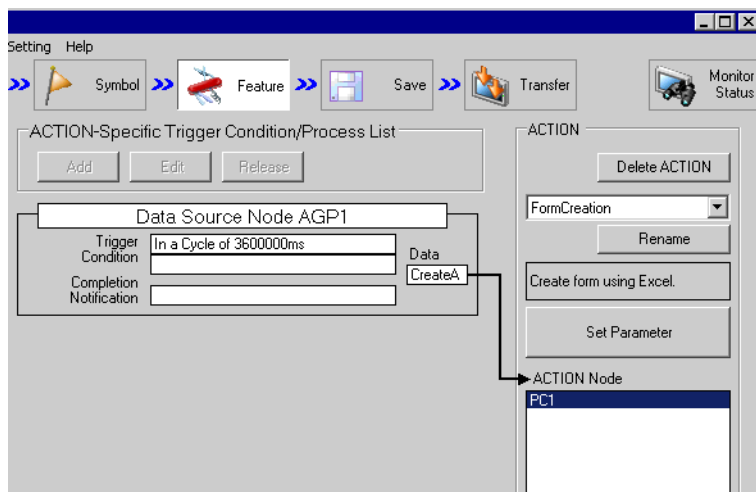
This step verifies setting results on the setting content list screen.

-
- NOTE**
- In case of the Excel Report ACTION, you cannot add, edit or delete trigger conditions from "Trigger Condition/Process List per ACTION". To change the settings, click the [Parameters Settings] button and change the settings in [Edit Template] on Excel.
-

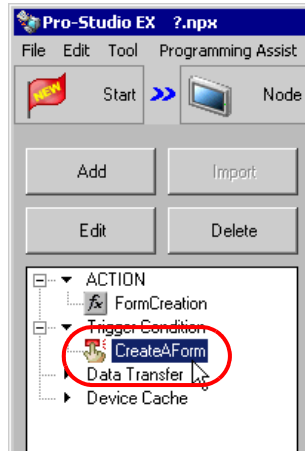
- 1 Select the ACTION name "Form Creation" from the tree display on the left of the screen.



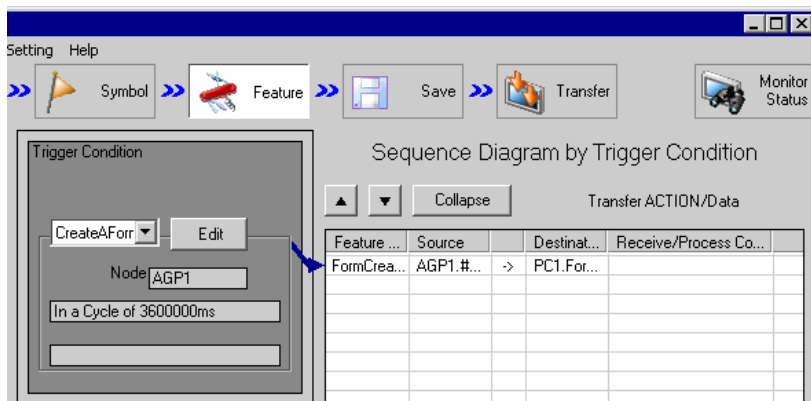
Confirm that the setting content appears on the right of the screen.



- 2 Select the trigger condition name "CreateAForm" from the tree display on the left of the screen.



Confirm that the setting content appears on the right of the screen.



This is the end of the verification of the settings.

■ Saving Network Project File

This step saves the current settings as a network project file and reloads to 'Pro-Server EX'.

Refer to "24 Saving" for details about saving a network project file.

IMPORTANT

- 'Pro-Server EX' reads a created network project file, and then executes ACTION according to the settings in the file. The settings therefore need be saved in the network project file.
- Be sure to reload the network project file to 'Pro-Server EX'. If not, ACTION will not work.

Ex.

- Path of network project file : Desktop\report.npx
- Title : EXCEL Report ACTION

■ Test Read

You can check if the settings are correct before transferring a created network project file to entry nodes.

When executing ACTION, the setting data is output to an output file. However, when executing a test read, it is reflected in a template file.

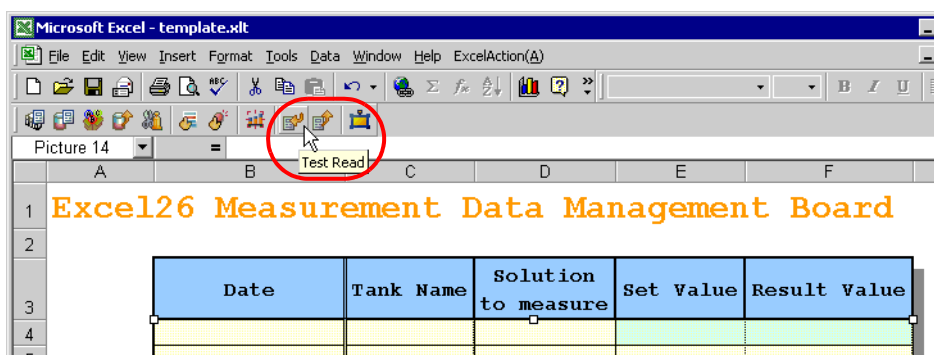
NOTE

- You do not necessarily have to perform a test read. If you skip this, proceed to "■ Transferring a Network Project File".

IMPORTANT

- To perform a test read, it is necessary that 'Pro-Server EX', to which a created network project file has been loaded, is running.

- 1 Click the [Feature] button.
- 2 Click "ACTION" from the tree display on the left of the screen, then click the [Edit] button.
- 3 On the "Set ACTION Name/Parameter" screen, click the [Click here to set the ACTION parameter] button.
- 4 On the "Create form using Excel" screen, click the [Edit Template] button.
- 5 With the ACTION area selected, click the [Test Read] icon.



The setup contents will be read in the template.

NOTE

- Refer to "5.8 Restrictions" for details about the restrictions on test reads.

■ Transferring a Network Project File

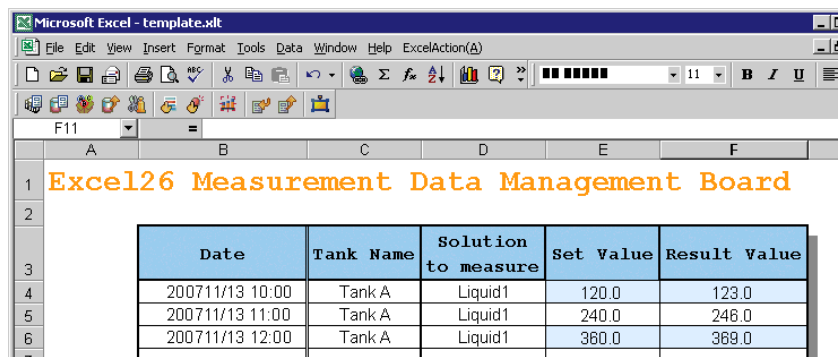
This step transfers a saved network project file to entry nodes.
Refer to "25 Transferring" for details about transferring a network project file.

NOTE

- Be sure to transfer a network project file. If not, ACTION will not work.

■ Executing ACTION

This step verifies that transferring the network project file activates ACTION, opens a form (file name: "Measurement data.xls"), and then the logging data is written in the specified location at an interval of one hour.



NOTE

- If error occurs, you can check the log in the Log Viewer. For more details, refer to "27.5 Monitoring System Event Logs".

This is the end of the explanation of this ACTION.

5.1.2 Setting Guide

This section explains how to set the parameters of ACTION.

■ "Creating form using Excel" Screen

Create form using Excel Version 1.22

Template Designation

Please specify the name of Excel template file that is the source of forms.
When you use the wizard, the theme template file is copied to a file with this name.
When you create a new template, please specify the file name.

Template File Reference

Edit Template

Output File

The template file stores setting info. The actual output result will be displayed in the following file.

Folder Name Reference

File Name Return to Default Settings

☒ Start from Displayed State

☐ Do not save the output file when ACTION runs.
(Please use the Save or Save by Macro of Excel.)

OK Cancel

Setting item		Setting content
Specify Template	Template File	Specifies the location of Excel template. Click the [Reference] button. In the "Select File" dialog box, specify the location of the template and the file name.
	Edit Template	Displays the Excel template. On the Excel template, set the read/write condition of data.

Setting item		Setting content
Output File	Folder Name	Specifies an output destination folder of the Excel file on which data are read/written. Click the [Reference] button. In the "More Folders" dialog box, specify the location of an output file.
	File Name	Sets the file name of an output file. Default is "Report_%Y%M%D.xls". NOTE <ul style="list-style-type: none"> "%Y%M%D" is set as "Year/Month/Date".
	Return to Default Settings	Resets the file name to the default, "Report_%Y%M%D.xls", if it has been changed.
	Start from Displayed State	Starts data read/write when the output file is displayed. NOTE <ul style="list-style-type: none"> Be sure to turn on this check box, if you want to create a button on the Excel sheet and use this as a trigger condition to execute ACTION. Refer to "5.6 Creating Trigger Buttons in a Form" for details about the trigger condition button.
	Do not save the output file when Action runs.	The output file is not automatically saved when executing the Action. Save the output file using the Excel menu. IMPORTANT <ul style="list-style-type: none"> If 'Pro-Server EX' or 'Excel' exits abnormally due to some reasons, the output file may not be saved and the contents may be lost. Normally, we recommend unchecking this item.

■ "Device Logging" Screen

Device Logging

Action Settings

Trigger Condition Settings

Device Settings

Node

(Trigger-Source Node)

...

Device Name

No. of Devices

1

Device Address/Symbol Group

Data Type

16Bit(Signed)

...

☒ Add Device Address/Symbol Name

☐ Add Trigger-Node Name

Note: When specifying inconsecutive memory data, please use a group symbol.

Layout Settings

Target Cell Range

\$B\$8

Logging Direction

Vertical

Horizontal

No. of Logging Data

1

Time Stamp

OFF

Forward

Backward

Use GP Time

Sample

An image of writing to a cell is shown below.
The arrow points in the direction of data logging.

D1 01

D1 02

D1 03

D1 04

1

2

3

4

3

4

5

6

4

5

6

7

5

6

7

8

6

7

8

9

7

8

9

10

No. of Blank Cells to insert between Cells

Row

0

Column

0

☐ Convert device value to certain text at Read

Action when cell gets full

☒ Clear and Overwrite

☐ Scroll

☐ New Sheet

☐ Loop

☐ In creating a sheet, clear the specified cell range and then start.

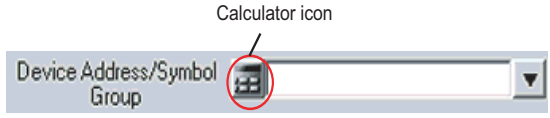

OK

Cancel

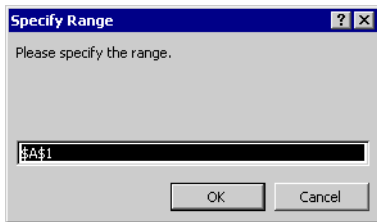
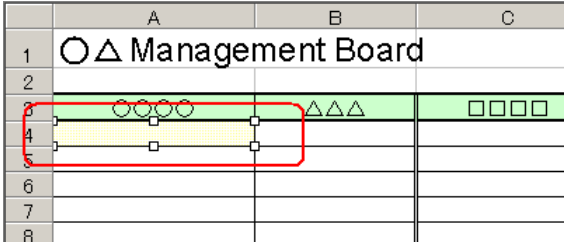
Setting item		Setting content						
Device Settings	Node	Selects entry nodes that include the devices to execute data logging.						
		<div><div>NOTE</div><div><div><div>Clicking the [...] button can retrieve or add entry nodes.</div><div>Selecting "(Trigger-Source Node)" will select the entry node that has triggered the action.</div></div></div></div>						
		<table><tr><th>Trigger Cause</th><th>Target Entry Node</th></tr><tr><td>The trigger condition satisfied</td><td>Trigger condition node (except for Pro-Server EX node)</td></tr><tr><td>The trigger button clicked</td><td>Pro-Server EX node on which you clicked the button</td></tr><tr><td>Started directly from the user program</td><td>Pro-Server EX node on which the user program is operated</td></tr></table>	Trigger Cause	Target Entry Node	The trigger condition satisfied	Trigger condition node (except for Pro-Server EX node)	The trigger button clicked	Pro-Server EX node on which you clicked the button
Trigger Cause	Target Entry Node							
The trigger condition satisfied	Trigger condition node (except for Pro-Server EX node)							
The trigger button clicked	Pro-Server EX node on which you clicked the button							
Started directly from the user program	Pro-Server EX node on which the user program is operated							

Pro-Server EX Reference Manual

5-41

Setting item		Setting content
Device Settings	Device Name	<p>Selects Device/PLCs that include the devices to execute data logging.</p> <p>NOTE</p> <ul style="list-style-type: none"> It is not necessary to set when the entry nodes are GP Series nodes and Pro-Server EX nodes.
	Device Address/ Symbol Group	<p>Sets the device address or symbol to be used.</p> <ul style="list-style-type: none"> When specifying a device address: Enter directly from the Calculator icon.  <ul style="list-style-type: none"> When specifying a symbol: Select the symbol by clicking the list button.  <p>NOTE</p> <ul style="list-style-type: none"> When setting non-sequential devices, be sure to specify a group symbol.
	Data Type	<p>Selects the data type by clicking the [...] button. Enabled only when the device address has been directly input.</p>
	No. of Devices	<p>Sets the number of the devices to execute data logging. Enabled only when the device address has been directly input.</p> <p>NOTE</p> <ul style="list-style-type: none"> When the symbol is specified, this is set automatically. When "String" is specified in [Data Type], the title of the setting item will be [No. of Characters].

Setting item		Setting content		
Add Device Address/Symbol Name		Writes the device address, symbol name, or group symbol name in the Excel cells next to the cells in which logging data have been written. In this case, depending on the data logging direction, the device address, symbol name, or group symbol name will be written in the different cells as follows.		
		Logging Direction	Display Cell Position	
		Vertical	Above the value	
		Horizontal	On the left of the value	
		Example) • Device address "D100", No. of devices "3", Write pattern "Vertical"		
		D100	D101	D102
	9:00:01			
	9:00:02			
	9:00:03			
	• Device address "D100", No. of devices "3", Write pattern "Horizontal"			
		9:00:01	9:00:02	9:00:03
	D100			
	D101			
	D102			
Add Trigger Node Name		Writes the name of the entry node that has triggered ACTION in the top of the cell.		

Setting item	Setting content
Layout Settings	<p>Displays the specified cell range. To change the cell range, click the button and select a cell range on Excel. Drag the mouse to select the cell range.</p> <p>NOTE</p> <ul style="list-style-type: none"> Setting range of cells: Rows 1 to 65536, Columns 1 to 256 Instead of using the mouse, you can type a cell range. Click the Excel screen, enter a cell range on the "Specify Range" screen, and then click the [OK] button.  <ul style="list-style-type: none"> When you specify the cell range including 1501 lines or more, only the top-left cell of the selected range seems to be specified on the display.  <ul style="list-style-type: none"> The useful function is available to check the specified cell range (Action area). Refer to "■ Action Area List" in "5.1.2 Setting Guide".
	<p>Logging Direction</p> <p>Sets the data logging direction (vertical or horizontal).</p> <p>NOTE</p> <ul style="list-style-type: none"> The write image of the content set in "Layout Settings" appears in [Sample].
	<p>No. of Logging Data</p> <p>Sets and displays the number of data logging that was calculated automatically from the specified cell range.</p>
	<p>Time Stamp</p> <p>Add time when data was written at the head of the logging data.</p> <ul style="list-style-type: none"> OFF Not add time information Forward Add time information at the head of the logging data. Backward Add time information at the end of the logging data. <p>You can select the following two types of time information by clicking the list button.</p> <ul style="list-style-type: none"> Use GP time Use PC time
	<p>No. of Blank Cells to Insert between Cells</p> <p>Sets the number of blank cells to insert (blank cells to insert between data and data) when writing data in plural cells. You can use different settings for columns and rows, respectively.</p>

Setting item	Setting content
Convert device value to certain text at Read	Converts the read device values into text. Turning on this check box will display "Text Substitution Table Settings" screen. Refer to "■ "Text Substitution Table Settings" Screen" for more details.
Action when cell gets full	Sets the action when the specified cell for data logging has got full. <ul style="list-style-type: none">• Clear and Overwrite Clears the cells, and continues logging from the beginning.• Scroll Scrolls and continues logging• New Sheet Continues logging on a new sheet. All features being output on the sheet will be copied to the new sheet.• Loop Not clears the cells, and continues logging from the beginning.
In creating a sheet, clear the specified cell range and then start.	Before copying a sheet from the template file, if data are written in the cell range of the sheet, clears the data and starts copying.

- "Trigger Condition Settings" tab

Device Logging

Action Settings Trigger Condition Settings

Action Area No. 2

When the specified trigger type (under-condition button) is satisfied, this area is executed.
Please specify a trigger type.

New Trigger Condition New Trigger Button

Logging

Edit Delete

Trigger Condition

*

Clear Cell when the following condition is satisfied.

Edit Delete

Trigger Condition

*

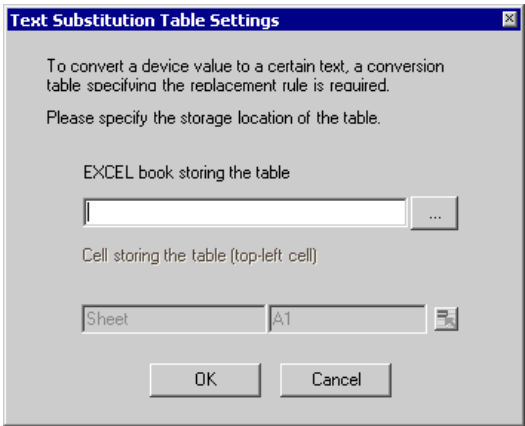
If two or more are specified, the Action is executed when any of them is satisfied.
For more complicated operation, please configure from [Excel Action][Execution Sequence List] in the menu.

OK Cancel

Setting item	Setting content
Action Area No.	Displays No. allocated to each ACTION area by template.
New Trigger Condition	The "Trigger Condition Settings" screen will appear. Click here to set a new trigger condition.
New Trigger Button	Displays the "Trigger Button" screen. Refer to "5.6.2 Setting Guide" for more details.
Logging	Selects a trigger condition for starting data logging. Click the blank line of [Trigger Condition] and then the list button to display the registered trigger condition. <div>NOTE<ul style="list-style-type: none">• When plural trigger conditions have been specified, satisfying at least one of those conditions executes ACTION.• Clicking the [Edit] button can edit the specified trigger conditions.• Clicking the [Delete] button cancels the specified trigger conditions.</div>

Setting item	Setting content
Clear Cell when the following condition is satisfied	<p>Selects a trigger condition for clearing data of the logging area. Click the blank line of [Trigger Condition] and then the list button to display the registered trigger condition.</p> <p>NOTE</p> <ul style="list-style-type: none">• When plural trigger conditions have been specified, satisfying at least one of those conditions executes ACTION.• Clicking the [Edit] button can edit the specified trigger conditions.• Clicking the [Delete] button cancels the specified trigger conditions.

- "Text Substitution Table Settings" Screen



Setting item	Setting content
Excel book storing the table	Specifies the Excel book in which the text substitution table is stored. Click the [...] button, and then specify the file on the "Open File" screen.
Cell storing the table	Specifies the book name in which the text substitution table is stored and then the cell number of the top-left of the table. On the "Specify Cell" screen, click the button and enter the cell number of the top-left of the table. <div></div>

Refer to "■ About Text Substitution of Data" for more details about a text substitution table.

■ About Text Substitution of Data

"Excel Form" ACTION has a feature of text substitution to use when writing device data in Excel cells. This feature substitutes device data into a set of characters.

Before using this feature, it is necessary to create a substitution table in which a text substitution rule is set and to save the table at an arbitrary location.

Example of Text Substitution Table

	A	B	C	D
1	Start value	terminus value	character string	
2	0		bolt	
3	1		nut	
4	2		screw	
5	100		water level low	
6	101		water level excess	
7	102		Voltage decrease	
8	103		Voltage exaggerated	
9	500	599	red	
10	600	699	blue	
11	700		green	
12	ELSE		others	
13				

- "Start Value"

Sets start values to compare device data with.

In case of using a value other than the set start values, enter "ELSE".

- "End Value"

Sets end values to compare device data with.

- "Character String"

Sets character strings to substitute.

The flow of substitution is as follows: Compares device data with the substitution table from the top row. If satisfied, writes the value of the character string of the row in the cell.

If not satisfied, retrieves data until a blank start value or "ELSE" is found.

If an "ELSE" row found, writes the character string in the "ELSE" row in the cell.

If an "ELSE" not found, writes the read value itself in the cell.

If a blank line row found, writes the compare source value itself in the cell.

The comparison method for substitution is as follows:

(1) Numeral Data

1. When only the start value is set, if the start value and device data are identical, converts the data to a character string.
2. When both the start value and end value are set, if $\text{start value} \leq \text{data} < \text{end value}$, converts the data to a character string.
3. When only the end value is set, regards the data as a blank row and ends the comparison. Then writes the compare source value itself in the cell.
4. When both the start value and the end value are set in character strings, regards the data as non-object and neglects them.
5. When the Data Type is "16Bit(Signed)", describe the integer in the table.

Example) 1,2,3,.....10,11

6. When the Data Type is HEX, describe the hexadecimal number in the table.

Example) 1,2,3,.....a,b,.....f,10,11,.....1a,1b

(2) Character String Data

If device data and the start value are identical, converts the data to a character sting. Neglects the end value, if any.

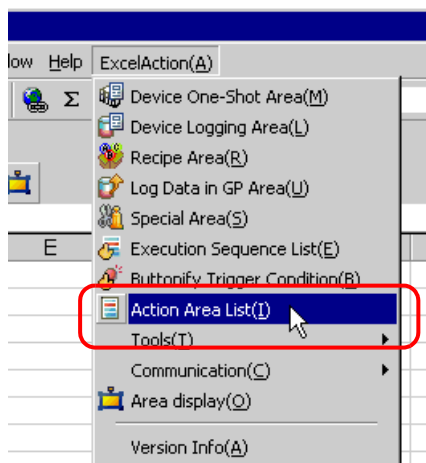
After the conversion, the cell format as well as character strings will be reflected in the output file. The format preset on the template (format for lines excluded) will therefore be overwritten. When the substitution feature is not used, the cell format will remain unchanged.

When macro characters (%DEVICE_VALUE%) for device value substitution are embedded in the string, converts the data to the character string of a device value.

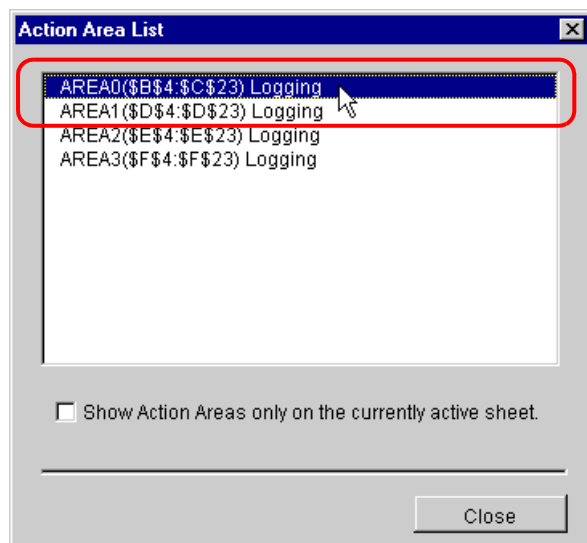
■ Action Area List

You can display the list of the specified Action area to check or edit quickly.

- 1 Click [Action Area List] under [Excel Action] on the Excel menu bar.



- 2 Click the Action area you want to check.



The selected Action area is displayed.

NOTE

- To display the Action area only on the currently displayed sheet, check [Show Action Areas only on the currently active sheet.].
- Double-click the item to display the edit screen for the selected Action area. This is useful when you want to edit quickly.

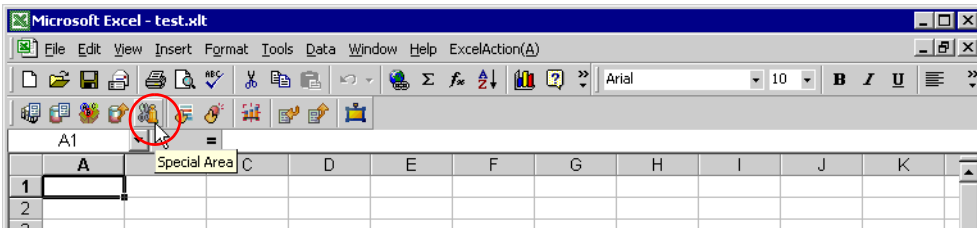
- 3 Click the [Close] button and check or edit the selected Action area.

5.2 Writing Date/Time in a Form

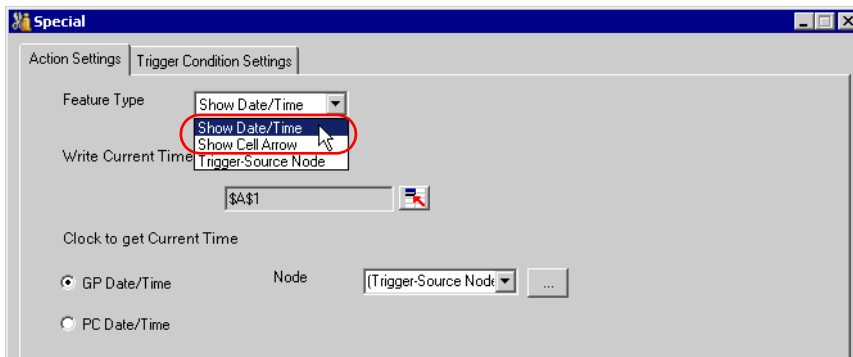
5.2.1 Try to Write Date/Time in a Form

This feature allows writing the current date and time in the specified cell of a form.

- 1 Click the [Special Area] icon on the Excel template.



- 2 Click the list button of [Feature Type] and then select [Show Date/Time].

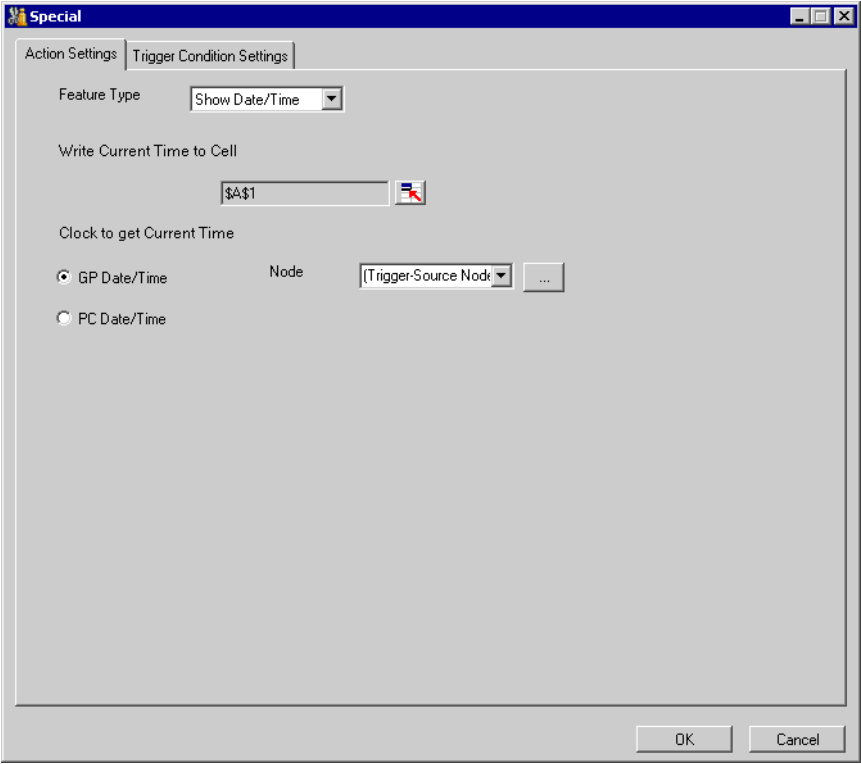


- 3 Set the content and click the [OK] button.

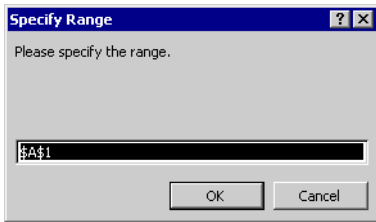
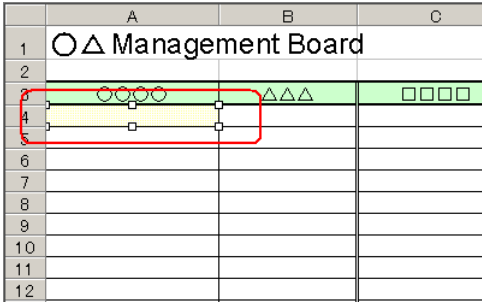
Refer to "5.2.2 Setting Guide" for more details.

5.2.2 Setting Guide

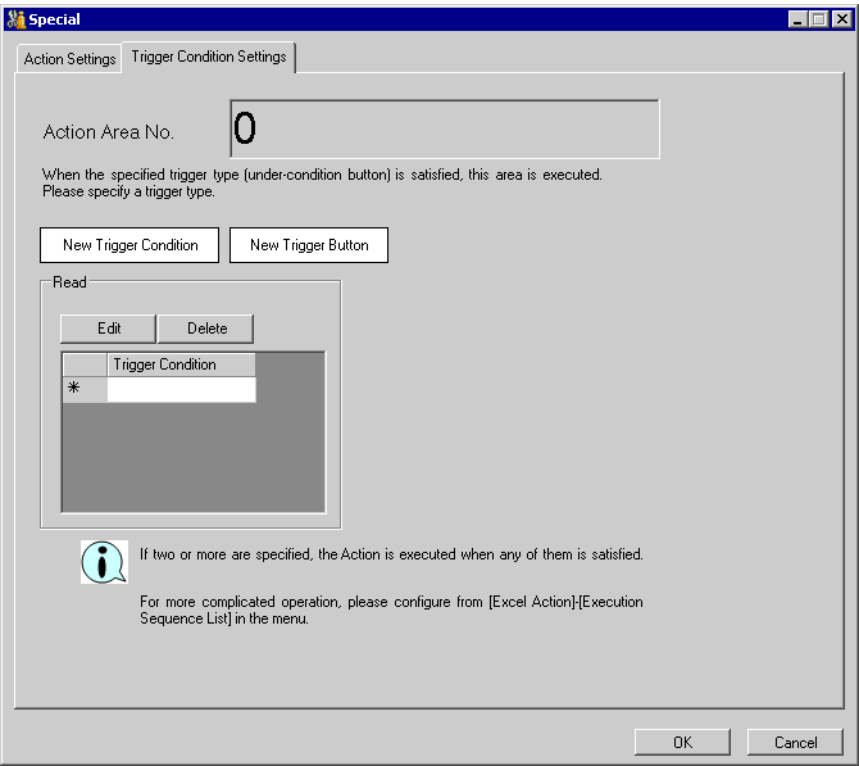
■ "Action Settings" tab



Setting item	Setting content
Feature Type	Selects the type of feature to set. <ul style="list-style-type: none">• Show Date/Time• Show Cell Arrow ("5.3 Writing Arrows in a Form")• Trigger Source Node ("5.4 Writing Trigger Source Node Names in a Form")

Setting item	Setting content
Write Current Time to Cell	<p>Specifies a cell range to write date and time. Clicking the button can select a cell range on Excel. Drag the mouse to select the cell range.</p> <p>NOTE</p> <ul style="list-style-type: none"> When you select plural cells as a cell range, the date and time will be written in the left top cell only. Setting range of cells: Rows 1 to 65536, Columns 1 to 256 Instead of using the mouse, you can type a cell range. Click the Excel screen, enter a cell range on the "Specify Range" screen, and then click the [OK] button.  <ul style="list-style-type: none"> When you specify the cell range including 1501 lines or more, only the top-left cell of the selected range seems to be specified on the display.  <ul style="list-style-type: none"> The useful function is available to check the specified cell range (Action area). Refer to "■ Action Area List" in "5.1.2 Setting Guide".
GP Date/Time PC Date/Time	<p>Writes date and time of the specified node.</p> <ul style="list-style-type: none"> GP Date/Time <p>Writes date and time of the GP. In this case, click the list button to specify the entry node.</p> <ul style="list-style-type: none"> PC Date/Time <p>Write date and time of the PC on which ACTION is operating.</p>

■ "Trigger Condition Settings" tab



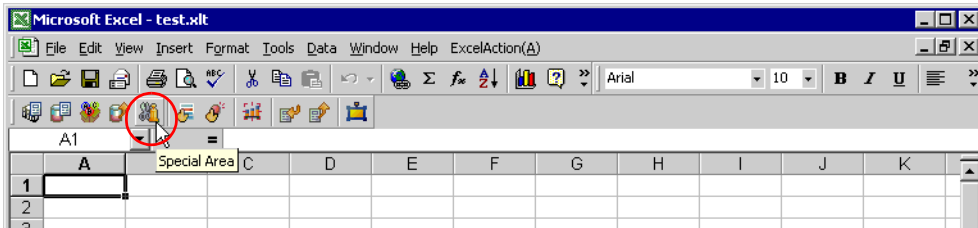
Setting item	Setting content
Action Area No.	Displays No. allocated to each ACTION area by template.
New Trigger Condition	Displays the "Trigger Condition Settings" screen. Click here to set a new trigger condition.
New Trigger Button	Displays the "Trigger Button" screen. Refer to "5.6.2 Setting Guide" for more details.
Read	Selects a trigger condition for write. Click the blank line of the [Trigger Condition] and then the list button to display the registered trigger condition. <div>NOTE<ul style="list-style-type: none">When plural trigger conditions have been specified, satisfying at least one of those conditions executes ACTION.Clicking the [Edit] button can edit the specified trigger conditions.Clicking the [Delete] button cancels the specified trigger conditions.</div>

5.3 Writing Arrows in a Form

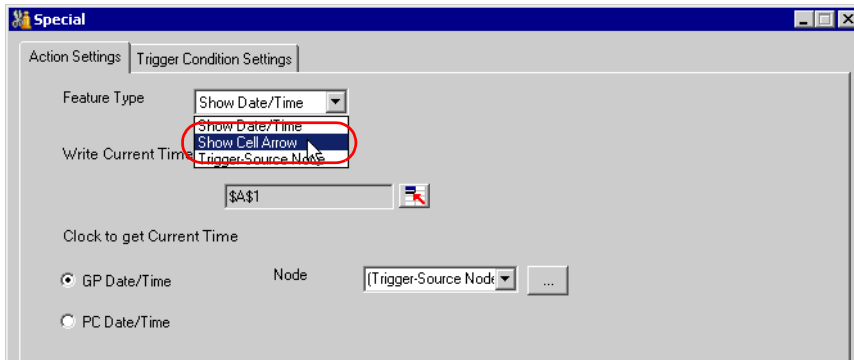
5.3.1 Try to Write Arrows in a Form

This feature allows writing arrows to show the area, etc on the specified cell of a form.

- 1 Click the [Special Area] icon on the Excel template.



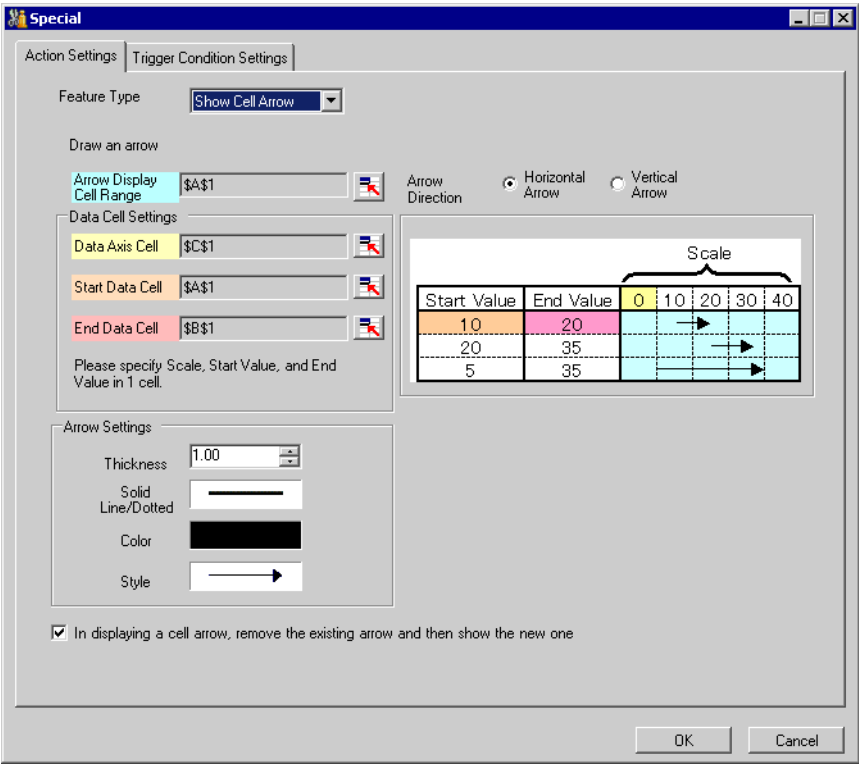
- 2 Click the [Feature Type] button and then select [Show Cell Arrow].



- 3 Set the content and click the [OK] button.


Refer to "5.3.2 Setting Guide" for more details.

5.3.2 Setting Guide



Setting item	Setting content																																																																																
	<p>Specifies a cell range to which cell arrows will be written. Clicking the button can select a cell range on Excel. Drag the mouse to select the cell range.</p> <div><div>Start Data Cell</div><div>End Data Cell</div><div>Data Axis Cell</div><table><tr><td>Start Value</td><td>End Value</td><td>0</td><td>10</td><td>20</td><td>30</td><td>40</td></tr><tr><td>10</td><td>20</td><td></td><td>→</td><td></td><td></td><td></td></tr><tr><td>20</td><td>35</td><td></td><td></td><td>→</td><td></td><td></td></tr><tr><td>5</td><td>35</td><td></td><td></td><td></td><td>→</td><td></td></tr></table><div>Display Cell Range</div></div> <div><div>NOTE</div><ul style="list-style-type: none">Setting range of cells: Rows 1 to 65536, Columns 1 to 256Instead of using the mouse, you can type a cell range. Click the Excel screen, enter a cell range on the "Specify Range" screen, and then click the [OK] button.</div> <div><div>Specify Range</div><div>Please specify the range.</div><div>A\$1</div><div>OK</div><div>Cancel</div></div> <ul style="list-style-type: none">When you specify the cell range including 1501 lines or more, only the top-left cell of the selected range seems to be specified on the display. <table><tr><td></td><td>A</td><td>B</td><td>C</td></tr><tr><td>1</td><td colspan="3">○△ Management Board</td></tr><tr><td>2</td><td></td><td></td><td></td></tr><tr><td>3</td><td>○ ○ ○ ○</td><td>△ △ △</td><td>□ □ □ □</td></tr><tr><td>4</td><td></td><td></td><td></td></tr><tr><td>5</td><td></td><td></td><td></td></tr><tr><td>6</td><td></td><td></td><td></td></tr><tr><td>7</td><td></td><td></td><td></td></tr><tr><td>8</td><td></td><td></td><td></td></tr><tr><td>9</td><td></td><td></td><td></td></tr><tr><td>10</td><td></td><td></td><td></td></tr><tr><td>11</td><td></td><td></td><td></td></tr><tr><td>12</td><td></td><td></td><td></td></tr></table> <ul style="list-style-type: none">The useful function is available to check the specified cell range (Action area).Refer to "■ Action Area List" in "5.1.2 Setting Guide".	Start Value	End Value	0	10	20	30	40	10	20		→				20	35			→			5	35				→			A	B	C	1	○△ Management Board			2				3	○ ○ ○ ○	△ △ △	□ □ □ □	4				5				6				7				8				9				10				11				12			
Start Value	End Value	0	10	20	30	40																																																																											
10	20		→																																																																														
20	35			→																																																																													
5	35				→																																																																												
	A	B	C																																																																														
1	○△ Management Board																																																																																
2																																																																																	
3	○ ○ ○ ○	△ △ △	□ □ □ □																																																																														
4																																																																																	
5																																																																																	
6																																																																																	
7																																																																																	
8																																																																																	
9																																																																																	
10																																																																																	
11																																																																																	
12																																																																																	

	1990	1995	2000	2005	2010	2015	2020
Population (millions)	1.2	1.5	1.8	2.1	2.4	2.7	3.0
GDP (trillion USD)	0.5	0.8	1.2	1.8	2.5	3.5	4.5
Urbanization (%)	30	40	50	60	70	80	90
Life expectancy (years)	55	60	65	70	75	80	85
Renewable energy (%)	10	15	20	25	30	35	40
Forest cover (%)	25	20	15	10	5	0	0
CO2 emissions (Gt)	0.5	0.8	1.2	1.8	2.5	3.5	4.5
Water stress (%)	10	20	30	40	50	60	70
Healthcare spending (GDP %)	5	7	9	11	13	15	17
Education spending (GDP %)	3	4	5	6	7	8	9
Gender inequality index	0.7	0.6	0.5	0.4	0.3	0.2	0.1
Corruption index	2.0	2.5	3.0	3.5	4.0	4.5	5.0
Climate resilience index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Digital inclusion (%)	0	5	10	15	20	25	30
Urban air quality index	50	60	70	80	90	100	110
Water quality index	40	50	60	70	80	90	100
Soil health index	30	40	50	60	70	80	90
Forest health index	20	30	40	50	60	70	80
Climate change impact index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Disaster risk index	2.0	2.5	3.0	3.5	4.0	4.5	5.0
Healthcare access index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Education access index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Gender equality index	0.5	0.6	0.7	0.8	0.9	1.0	1.1
Corruption perception index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Climate change adaptation index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Digital literacy index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Urban sustainability index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Water security index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Soil conservation index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Forest management index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Climate change mitigation index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Disaster preparedness index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Healthcare quality index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Education quality index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Gender empowerment index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Corruption reform index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Climate change resilience index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Digital innovation index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Urban livability index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Water efficiency index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Soil fertility index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Forest biodiversity index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Climate change vulnerability index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Disaster response index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Healthcare financing index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Education financing index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Gender parity index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Corruption index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Climate change impact index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Disaster risk index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Healthcare access index	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Education access index	1.0	1.					

Setting item		Setting content
Arrow Settings	Thickness	Sets the thickness of arrows (mm).
	Solid Line/Dotted Line	Sets the type of arrow line.
	Color	<div>Sets the color of arrows. On the "Color Settings" screen, set color and click the [OK] button.</div> <div></div>
	Style	Sets the style of arrows.
In displaying a cell arrow, remove the existing arrow, and then show a new one		Before displaying a cell arrow, clears the existing arrow and then show a new one.

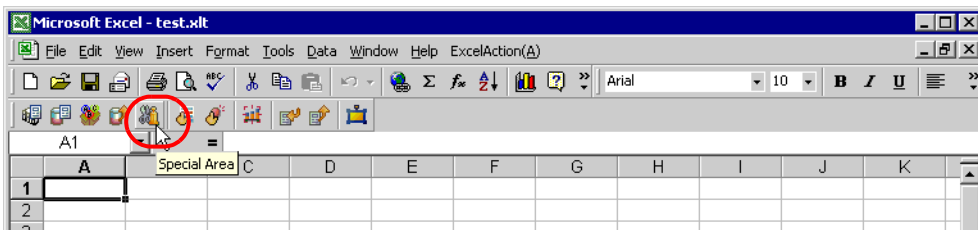
5.4 Writing Trigger Source Node Names in a Form

5.4.1 Try to Write Trigger Source Node Names in a Form

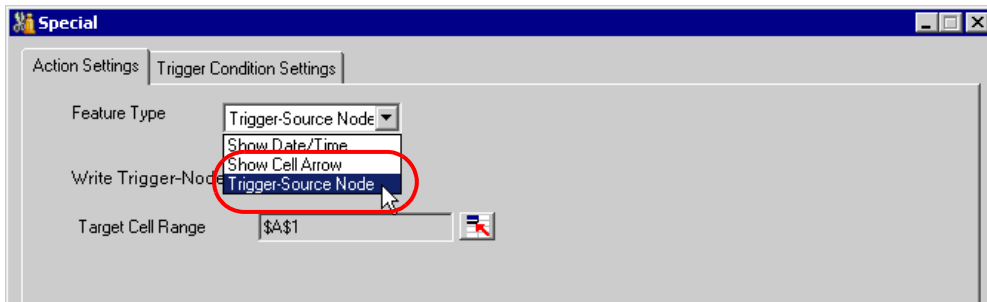
This feature allows writing the name of a trigger source node in the specified cell of a form.

A trigger source node means an entry node which satisfies the trigger condition.

- 1 Click the [Special Area] icon on the Excel template.



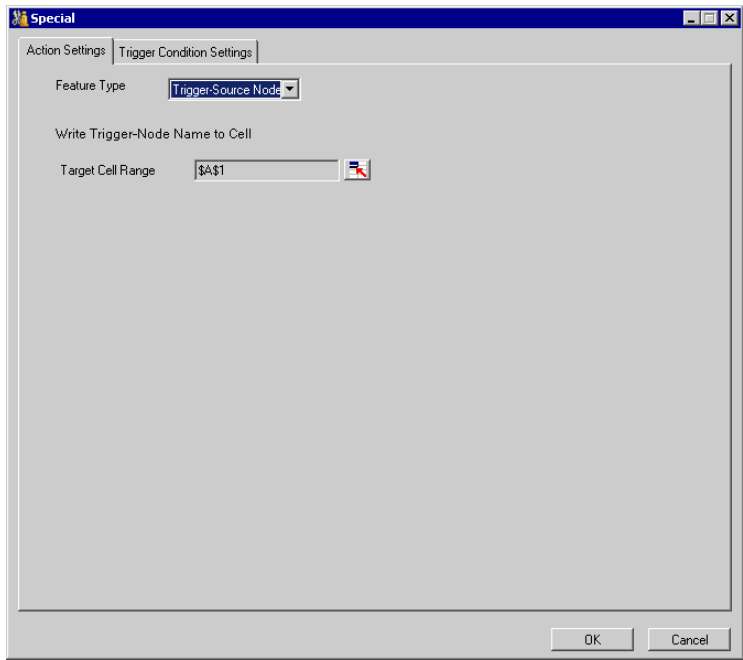
- 2 Click the list button of [Feature Type] and then select [Trigger Source Node].



- 3 Set the content and click the [OK] button.

Refer to "5.4.2 Setting Guide" for more details.

5.4.2 Setting Guide



Setting item	Setting content																																												
Target Cell Range	<p>Specifies a cell range to which node names will be written. Clicking the button can select a cell range on Excel. Drag the mouse to select the cell range.</p> <div><div>NOTE</div><ul style="list-style-type: none">When you select plural cells as a cell range, the node name will be written in the left top cell only.Setting range of cells: Rows 1 to 65536, Columns 1 to 256Instead of using the mouse, you can type a cell range. Click the Excel screen, enter a cell range on the "Specify Range" screen, and then click the [OK] button.</div> <div><div><div>Specify Range</div><div>Please specify the range.</div><div>\$A\$1</div><div>OKCancel</div></div></div> <ul style="list-style-type: none">When you specify the cell range including 1501 lines or more, only the top-left cell of the selected range seems to be specified on the display. <div><table><tr><td></td><td>A</td><td>B</td><td>C</td></tr><tr><td>1</td><td colspan="3">○△ Management Board</td></tr><tr><td>2</td><td></td><td></td><td></td></tr><tr><td>3</td><td>○ ○ ○ ○</td><td>△ △ △</td><td>□ □ □ □</td></tr><tr><td>4</td><td>□</td><td></td><td></td></tr><tr><td>5</td><td></td><td></td><td></td></tr><tr><td>6</td><td></td><td></td><td></td></tr><tr><td>7</td><td></td><td></td><td></td></tr><tr><td>8</td><td></td><td></td><td></td></tr><tr><td>9</td><td></td><td></td><td></td></tr><tr><td>10</td><td></td><td></td><td></td></tr></table></div> <ul style="list-style-type: none">The useful function is available to check the specified cell range (Action area).Refer to "■ Action Area List" in "5.1.2 Setting Guide".		A	B	C	1	○△ Management Board			2				3	○ ○ ○ ○	△ △ △	□ □ □ □	4	□			5				6				7				8				9				10			
		A	B	C																																									
1	○△ Management Board																																												
2																																													
3	○ ○ ○ ○	△ △ △	□ □ □ □																																										
4	□																																												
5																																													
6																																													
7																																													
8																																													
9																																													
10																																													

5.5 Arranging Sequence of ACTION (New Form)

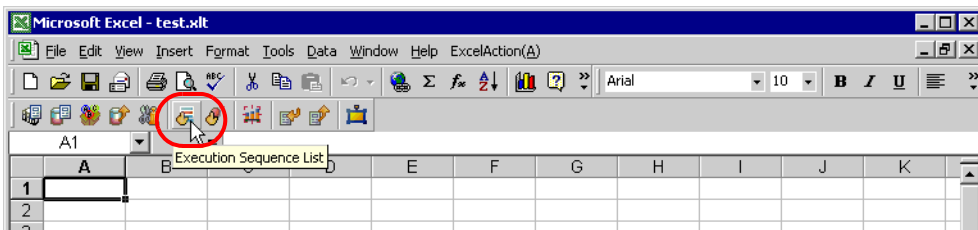
5.5.1 Try to arrange sequence of ACTION

This function allows you to specify the executing sequence of Excel Report Action, or Excel Operation Function including New Sheet or New Book.

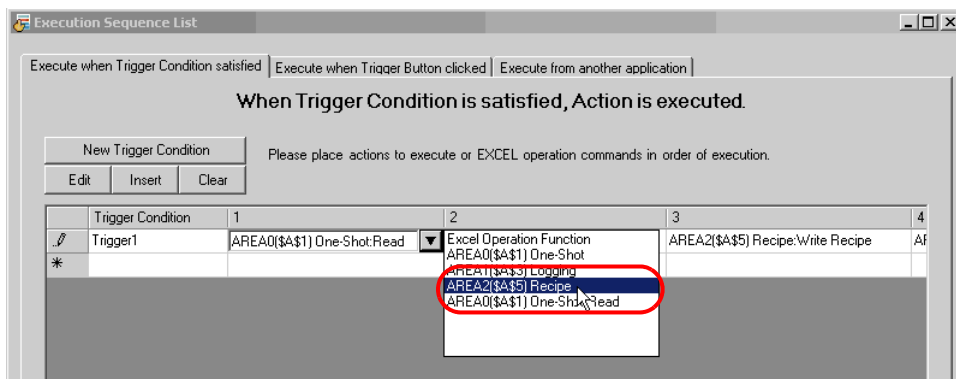
It is capable of displaying 1 to 40 ACTION items. Sorting, editing, and deleting are possible.

Here is the example how to change the executing sequence of multiple setup ACTION.

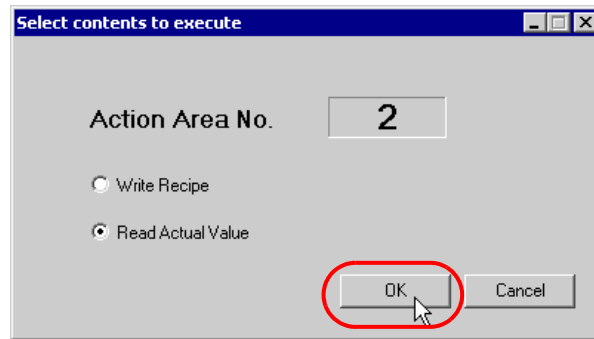
- 1 Click the [Execution Sequence List] icon on the Excel template.



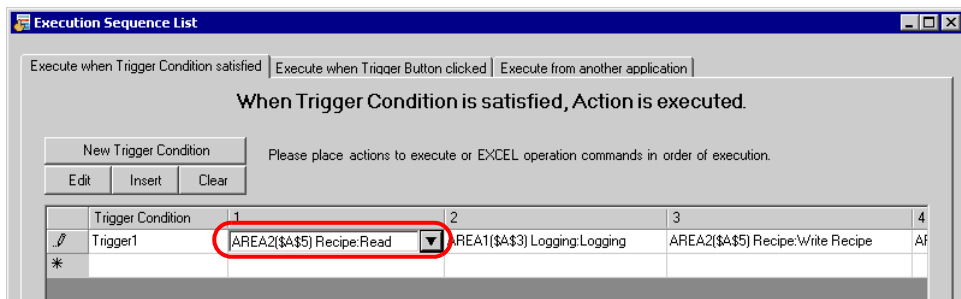
- 2 After clicking the ACTION name with the executing sequence "1", select the ACTION to execute for the first time.



- 3 Select the ACTION type in the "Select contents to execute" screen, and click the [OK] button.



The ACTION name with the executing sequence "1" changes to the selected ACTION name.



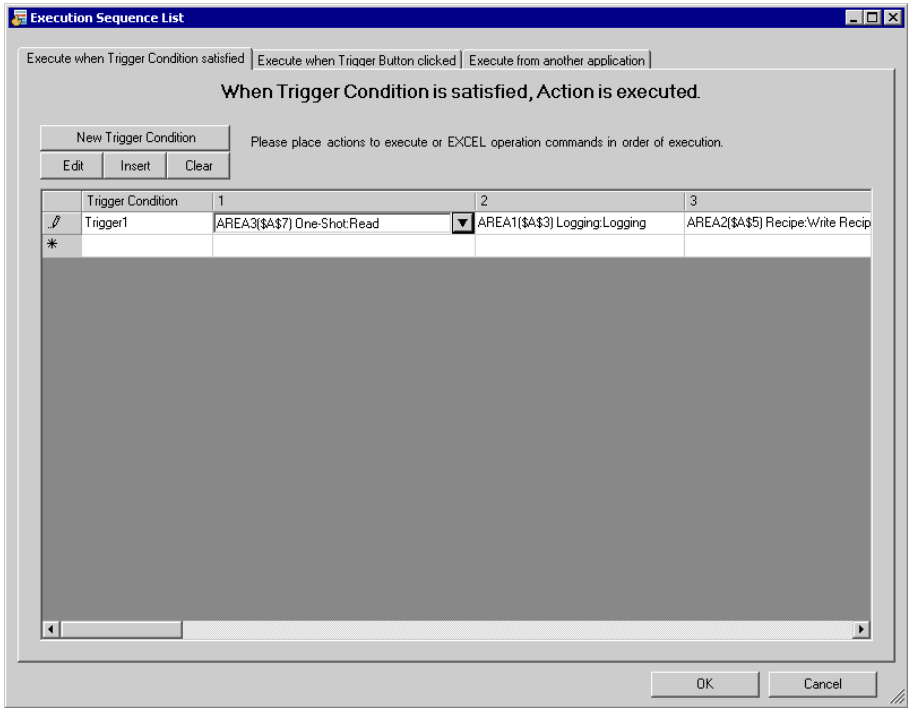
- 4 Similarly, click the ACTION name with other executing sequence and click the [OK] button.
Refer to "5.5.2 Setting Guide" for more details.

5.5.2 Setting Guide

■ "Execute when Trigger Condition satisfied" Tab

This tab displays the ACTION to be executed when the Trigger Condition is satisfied, or the sequence of Excel Operation Function.

It is capable of displaying 1 to 40 ACTION items separately by the trigger condition.

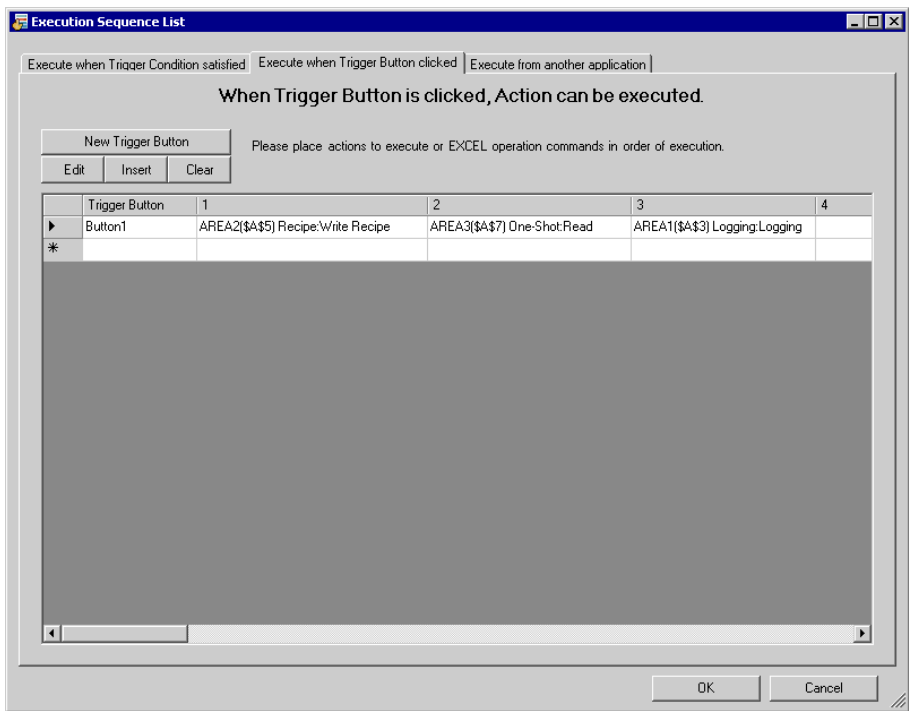


Setting item	Setting content
New Trigger Condition	Displays the "Trigger Condition Settings" screen. Click here to set a new trigger condition.
Edit	When selecting the Trigger Condition, you can click the [Edit] button to edit the Trigger Condition. Also, when selecting the ACTION to execute or Excel Operation Function, you can click the [Edit] button to display each edit screen.
Insert	Inserts an empty cell. You can specify the ACTION or Excel Operation Function.
Clear	Clears the content of the row where a trigger condition is displayed.
Trigger Condition	Displays the name of the trigger condition. To change a trigger condition, click the trigger condition name and then click the list button to select a new one.
Execution Sequence (1 to 40)	Displays the ACTION items or the Excel operation function items in sequence (1 to 40). To change the sequence, click one of the ACTION items or of the Excel operation function items, and then click the list button to select new ones. <div>NOTE</div> <ul style="list-style-type: none">Clicking "Excel Operation Function" displays the "Excel Operation Function Setting" screen.Refer to "■ "Excel Operation Function" Screen" Screen" for more details.

■ "Execute when Trigger Button clicked" Tab

This tab displays the ACTION or the sequence of Excel Operation Function to be executed when you click the created trigger button.

It is capable of displaying 1 to 40 ACTION items separately by the trigger button.



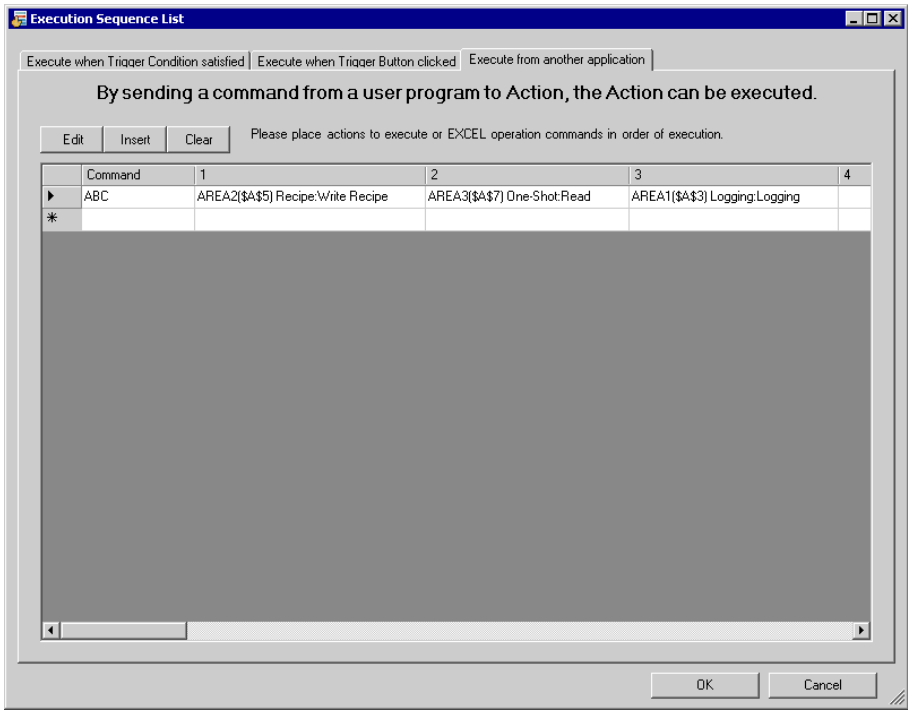
Setting item	Setting content
New Trigger Button	Displays the "Trigger Button" screen. Click here to set a new trigger button.
Edit	When selecting the Trigger Condition, you can click the [Edit] button to edit the trigger button. Also, when selecting the ACTION to execute or Excel Operation Function, you can click the [Edit] button to display each edit screen.
Insert	Inserts an empty cell. You can specify the ACTION or Excel Operation Function.
Clear	Clears the content of the row where a trigger button is displayed.
Trigger Button	Displays the name of a trigger button. To change a trigger button, click the trigger button name and then click the list button to select a new one.
Execution Sequence (1 to 40)	Displays the ACTION items or the Excel operation function items in sequence (1 to 40). To change the sequence, click one of the items of the ACTIONs or of the Excel Operation Functions, and then click the list button to select new ones. <div>NOTE</div> <ul style="list-style-type: none">Clicking "Excel Operation Function" displays the "Excel Operation Function Setting" screen. Refer to "■ "Excel Operation Function" Screen" for more details.

■ "Execute from another application" tab

You can execute ACTION by sending the command from the user program to the Excel Report Action.

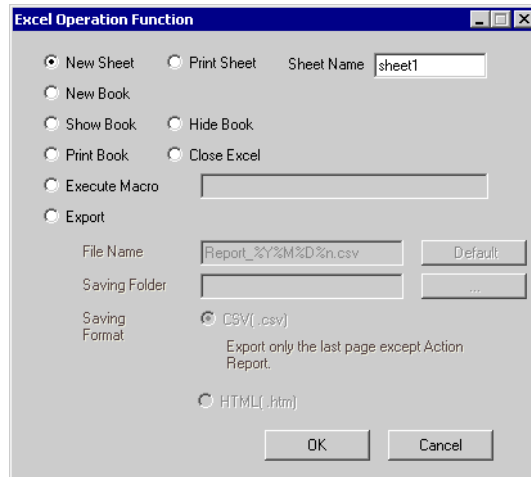
This tab displays the ACTION (Logging or Recipe function) or Excel Operation Function to be executed when sending this command.

It is capable of displaying 1 to 40 ACTION items separately by the trigger command.



Setting item	Setting content
Edit	When selecting the ACTION to execute or Excel Operation Function, you can click the [Edit] button to display each edit screen.
Insert	Inserts an empty cell. You can specify the ACTION or Excel Operation Function.
Clear	Clears the content of the row where a trigger button is displayed.
Command	Inputs the trigger command created by the user program. Ex) You can use the following API function to send the command to Excel Report Action. "ABC" corresponds to the trigger command. WriteDeviceStr("PC1","Action1","ABC",5)
Execution Sequence (1 to 40)	Displays the ACTION items or the Excel operation function items in sequence (1 to 40). To change the sequence, click one of the ACTION items or of the Excel operation function items, and then click the list button to select new ones. <div>NOTE</div> <ul style="list-style-type: none">Clicking "Excel Operation Function" displays the "Excel Operation Function Setting" screen. Refer to "■ "Excel Operation Function" Screen" Screen" for more details.

■ "Excel Operation Function" Screen



Setting item	Setting content
New Sheet	<p>Creates a new sheet by copying a specified sheet from the template.</p> <p>NOTE</p> <ul style="list-style-type: none"> You cannot use the following characters as a sheet name. ",", "=", "+", "-", ".", "/", "\", " " When the cells used for write on "Device One-shot", etc are specified as data cells, you cannot see the cells on the new sheet.
Print Sheet	<p>Prints the latest output sheet in the template file. Select a template sheet to print in [Sheet Name].</p>
New Book	Creates a new output book by copying a template book.
Show Book	Displays an output book.
Hide Book	Hides an output book.
Print Book	Prints the all sheets in an output book except for ACTION report sheets.
Close Excel	Closes Excel.
Execute Macro	<p>Executes macro. Enter a macro name to execute in the text box.</p> <p>NOTE</p> <ul style="list-style-type: none"> You cannot use the following characters as a macro name. ",", "=", "+", "-", ".", "/", "\", " "
Export	<p>Exports data in a specified format. Specify the file name, save folder, save format (CSV or HTML) of a file to export.</p> <p>NOTE</p> <ul style="list-style-type: none"> You cannot use the following characters as a file name. ",", "=", "+", "-", ".", "/", "\", " "

5.6 Creating Trigger Buttons in a Form

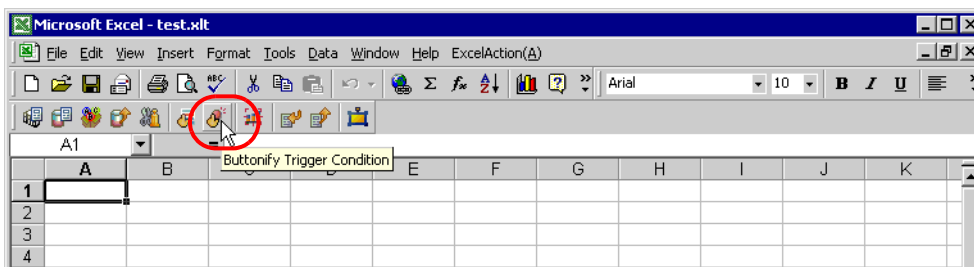
5.6.1 Try to Create Trigger Buttons in a Form

This feature allows creating a button on Excel. This button can be used as a trigger condition to execute ACTION.

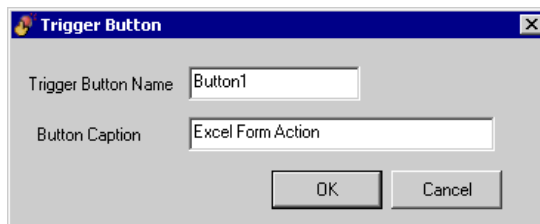
NOTE

- ACTION you can execute by the trigger button is "Excel Report" Action only.
- You cannot use the trigger button to exit Excel or open a new book.
- When specifying [Freeze Panes] in Excel, you can put a trigger button on the fixed window, not the scrollable window.
- When specifying [Split] in Excel, do not put a trigger button on the split windows.

- 1 Click the [Buttonify Trigger Condition] icon on the Excel template.



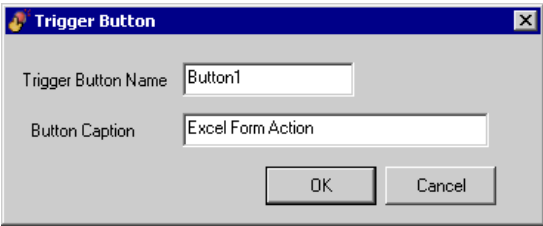
Displays the "Trigger Button" screen.

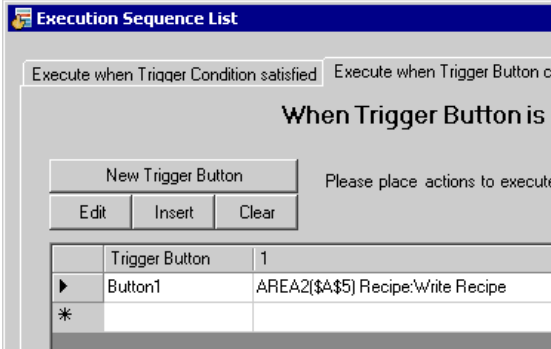


- 2 Set the content and click the [OK] button.

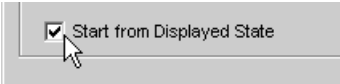
Refer to "5.6.2 Setting Guide" for more details.

5.6.2 Setting Guide



Setting item	Setting content
Trigger Button Name	<p>Set the name to identify the trigger button in the 'Pro-Studio EX'. This will be displayed such as in the Execution Sequence List screen as shown below.</p> 
Button Caption	Sets the caption to display above the button.

- NOTE**
- Executing ACTION requires that the output file on which the button is located be open. Check the [Start from Displayed State] check box on the "Create form using Excel" screen.



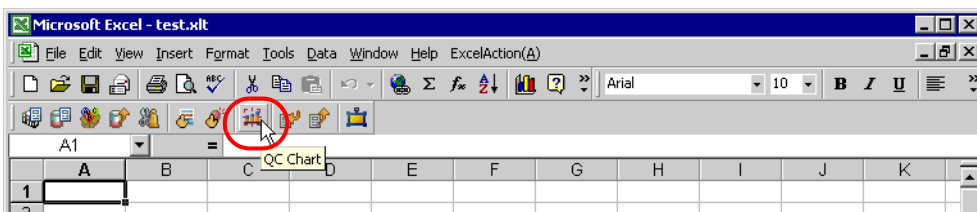
- The trigger button is disabled during outputting to Excel. The trigger button becomes effective when the ACTION is completed.

5.7 Creating QC Charts in a Form

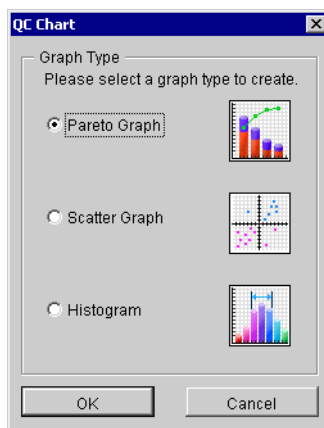
5.7.1 Try to Create QC Charts in a Form

This feature allows creating a QC chart such as a Pareto graph and a scatter graph on the Excel template.

- 1 Click the [QC Chart] icon on Excel.



The "QC Chart" screen will appear.



- 2 Set the content and click the [OK] button.

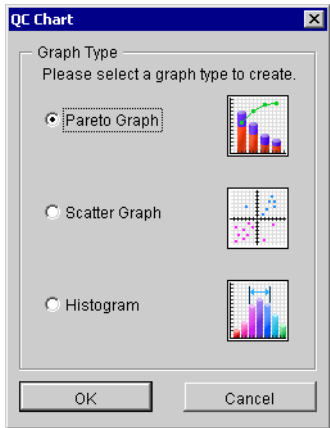
Refer to "5.7.2 Setting Guide" for more details.

NOTE

- There are some restrictions when using this feature with 'Microsoft Excel 2002' or later. Refer to "5.8 Restrictions" for more details.

5.7.2 Setting Guide

■ "QC Chart" screen



Setting item	Setting content
Graph Type	<p>Select the type of a graph to create and then click the [OK] button.</p> <p>The following graphs can be created:</p> <ul style="list-style-type: none"> • Pareto Graph • Scatter Graph • Histogram

■ "Create Pareto Graph" Screen

The "Create Pareto Graph" dialog box is shown. It has a title bar with a close button. The "Input Data" section has "Label Range:" and "Data Range:" labels with corresponding text boxes and selection icons. The "Output Settings" section has "Output-Destination Start Cell:" with a text box and a selection icon. The "Graph-To-Display Settings" section has "Graph Title:" with a text box, "Highlight:" with three radio buttons (Up to 80%, Top 3, OFF), and a checkbox for "Combine items with a ratio less than 1%". At the bottom are "OK" and "Cancel" buttons.

Setting item		Setting content
Input Data	Label Range	<p>Specifies a cell range of a label of the data items for input data. Clicking the button can select a cell range on Excel. Drag the mouse to select the cell range.</p> <div>NOTE</div> <ul style="list-style-type: none">Setting range of cells: Rows 1 to 1500, Columns 1 to 256Instead of using the mouse, you can type a cell range. On the "Specify Range" screen, enter a cell range and then click the [OK] button.
	Data Range	<p>Specifies a cell range of input data. Clicking the button can select a cell range on Excel. Drag the mouse to select the cell range.</p>
Output Settings	Output-Destination Start Cell	<p>Specifies a reference range to which a graph to create will refer.</p>
Graph-To-Display Settings	Graph Title	<p>Enter the title of a graph to create.</p>
	Highlight	<p>Highlights the following items.</p> <ul style="list-style-type: none">Up to 80% Highlights the main items with cumulative percentage 80% or more.Top 3 items Highlights the top three items.OFF Turns off highlighting.
	Combine items with a ratio less than 1%	<p>Combines the items of a ratio less than 1% into one single item as "Others".</p>

■ "Create Scatter Graph" Screen

Create Scatter Graph

Input Data

Value of X (A single row or column):

Value of Y (A single row or column):

Graph-To-Display Settings

Graph Title:

OK Cancel

Setting item		Setting content
Input Data	Value of X	<p>Specifies a cell range of X-axis value of input data. Clicking the button can select a cell range on Excel. Drag the mouse to select the cell range.</p> <div>NOTE</div> <ul style="list-style-type: none">Setting range of cells: Rows 1 to 1500, Columns 1 to 256When you specify plural rows or columns, the data of one single row or column will be used to create a graph.Instead of using the mouse, you can type a cell range. On the "Specify Range" screen, enter a cell range and then click the [OK] button.
	Value of Y	<p>Specifies a cell range of Y-axis value of input data. Clicking the button can select a cell range on Excel. Drag the mouse to select the cell range.</p> <div>NOTE</div> <ul style="list-style-type: none">Setting range of cells: Rows 1 to 1500, Columns 1 to 256When you specify plural rows or columns, the data of one single row or column will be used to create a graph.Instead of using the mouse, you can type a cell range. On the "Specify Range" screen, enter a cell range and then click the [OK] button.
Graph-To-Display Settings	Graph Title	<p>Enter the title of a graph to create.</p>

■ "Create Histogram" Screen

The "Create Histogram" dialog box is shown with the following sections:

- Input Data:** Data Range: [Text Box] [Excel Icon]
- Output Settings:** Output-Destination Start Cell: [Text Box] [Excel Icon]
- Min Value:** ☒ Auto, ☐ Specify: [Text Box]
- Max Value:** ☒ Auto, ☐ Specify: [Text Box]
- No. of Classes:** ☒ Auto, ☐ Specify: [Text Box]
- Graph-To-Display Settings:** Title: [Text Box], Outline: ☒ OFF, ☐ ON
- Buttons:** OK, Cancel

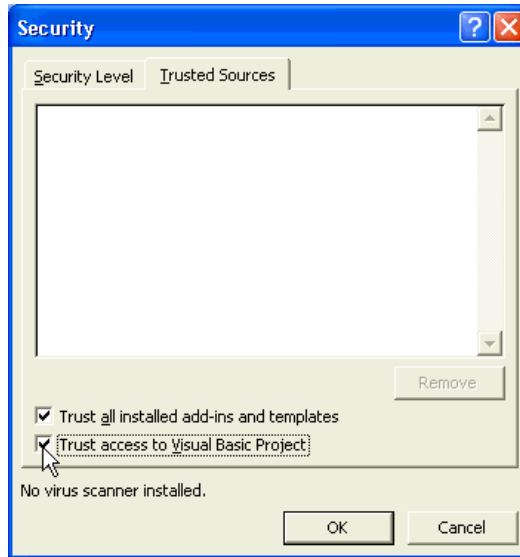
Setting item		Setting content
Input Data	Data Range	<p>Specifies a cell range of input data. Clicking the button can select a cell range on Excel. Drag the mouse to select the cell range.</p> <p>NOTE</p> <ul style="list-style-type: none"> Setting range of cells: Rows 1 to 1500, Columns 1 to 256 Instead of using the mouse, you can type a cell range. On the "Specify Range" screen, enter a cell range and then click the [OK] button.
Output Settings	Output-Destination Start Cell	Specifies a reference range to which a graph to create will refer.
Min Value		<p>Specifies a range of values of target data.</p> <ul style="list-style-type: none"> Auto Uses the minimum value of a specified input data. Specify Uses the value entered in the text box.
Max Value		<p>Specifies a range of values of target data.</p> <ul style="list-style-type: none"> Auto Uses the maximum value of a specified input data. Specify Uses the value entered in the text box.
No. of Classes		<p>Specifies the number of intervals to display.</p> <ul style="list-style-type: none"> Auto Obtains the number of classes from Sturge's law ($1+3.3 \cdot \text{LOG}_{10}(\text{No. of Data})$), rounding off after the decimal point). Specify Uses the value entered in the text box.
Graph-To-Display Settings	Title	Enter the title of a graph to create.
	Outline	<p>Selecting "ON" outlines the bar on a histogram. When a small number of classes are selected, this makes the graph easily viewable.</p>

5.8 Restrictions

■ Using 'Microsoft Excel 2002' or later

When using these features with 'Microsoft Excel 2002' or later, turn on the following check box of the window.

- (1) On the menu bar, select [Tools] - [Macro] - [Security].
- (2) On the security screen, click the [Reliable Issuer] tab.
- (3) Check the [Trust Access to the Visual Basic Project] check box.



If not checked, an error may occur while using the following features.

- [Tool] - [QC Chart]

Tools of Pareto graph, etc. cannot be used.

- [Tool] - [Insert Sample]

Form templates cannot be used.

■ Combined Cells

Do not set an ACTION area on combined cells.

For example, if you set an ACTION area on the cells as shown below, correct operation can not be guaranteed.

	A	B	C	D
1	D100	D101	D102	D103
2				
3				
4				
5				
6				
7				

■ Over-pasted ACTION Areas

When you over-paste plural ACTION areas of different size, read/write will be executed in the pasted order.

■ Action Report Sheet

This ACTION automatically adds the sheet called "Action Report" in the output book when creating the output book.

This Action Report sheet always describes the latest record for how this ACTION outputs the data to the output book. Refer to this report when checking how the process proceeds.

In addition, this ACTION executes the following operation based on the record in the Action Report sheet when the output book is once closed and reopened.

If you rewrite the contents of the Action Report sheet, it could cause the error, such as this ACTION does not normally operate. Be careful not to rewrite it.

■ Operation in ACTION area when error occurs

When you actually write/read in "Device Logging" function and exceed the ACTION area, perform the common operation as follows:

1) When performing a test read/ a test write

Error screen is displayed.

2) When executing ACTION in runtime

It will be recorded as ACTION error in the Log Viewer of the 'Pro-Server EX'.

■ Write Operation of Device One-Shot Recipe

When writing the cell value in "Device One-Shot" or "Recipe" and the cell is empty, 0 will be written for the numeral type, blank will be written for the character string type.

Also, when the data type is the character string, but you do not set the target cell format to "character string", you sometimes fail to write correctly.

In this case, you need to change the cell format to "character string" in advance.

■ Excel Window Size

When you open the setting screen of the Action Area, the Excel window is always displayed in regular size. (back to the regular size if maximized) The Excel user interaction mode is disabled then, you cannot operate Excel.

If the setting screen is hidden behind the Excel window, the screen and task tray windows will blink and notify the user. Blinking will stop automatically when the setting screen comes forward.

■ Grouping of Action Areas

Action Areas cannot be grouped. If grouped, the cell range cannot be managed correctly. Do not release the group of Action Areas.

■ When deleting a line or row in the Action Area

When deleting a line or row in which the Action Area exists, the Action Area sometimes becomes linear depending on the object positioning setting. As the Action Area still exists in such status, the ACTION in that area will be executed when the Trigger Condition is satisfied.

Perform the following operation to display the object positioning.

Right-click - Object Format - Property - Object Positioning

Above status occurs when selecting "Move or Change Size According to Cell" here.

General auto shape operation in Excel is applied to the operation in the Action Area.

■ Restrictions on Copying or Cutting and Pasting the Action Area

When you paste the Action area using Ctrl+C & Ctrl+V or Ctrl+X & Ctrl+V, specify [Target Cell Range] for the copied Action area.

The Action area just after pasting remains the same [Target Cell Range] as that for the original Action area.

	A	B	C	D
1				
2				
3				
4				
5				
6				
7				

■ Copy Restriction by Ctrl + drag in the Action Area

When normally executing Ctrl+C & Ctrl+V to copy the Action Area, it will adhere to the cell just after pasting.

Also, if you move the Action Area, it will continue to adhere to the cell.

Note that the restriction will be added if you copy by Ctrl + drag due to the restriction for OCX and Excel. If you copy by Ctrl + drag, the Action Area just after Ctrl + drag will not adhere to the cell. The Action Area will not adhere to the cell if you move it, either.

This happens because this Action Area is not placed under the control of the Excel New Form add-in. This Action Area is placed under the control of the Excel New Form add-in in the following cases.

When saving

When opening the setting screen (corresponding Action Area only)

When opening the "Execution Sequence List" screen

When one of the above operations is executed, the Action Area will adhere to the cell, and continue to adhere in the following operation. Note that this restriction is applied not only for the Action Area but also when dragging & copying the Sheet.

■ Functions which are not executed by a Test Read

The following functions are not executed by a Test Read.

Device Logging

"Add Trigger-Node Name"

"Time Stamp" (PC time is available)

"Action when cell gets full"

"In creating a sheet, clear the specified cell range and then start"

Special - "Show Date/Time"

"GP Date/Time" (PC Date/Time is available)

Special - "Show Cell Arrow"

"In displaying a cell arrow, remove the existing arrow, and then show a new one"

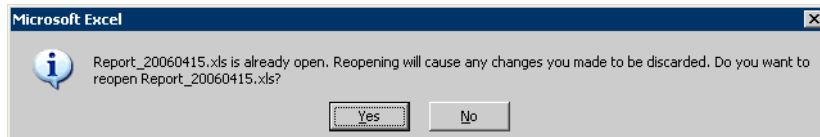
Special - "Trigger Source Node"

■ In the case of closing the displayed output book

If you have mistakenly closed an output book of Excel Report ACTION, follow these steps to open it again:

Dragging and dropping the book to open will make it read-only and the start button etc. invalid.

1. Double-click the output book.
2. When the following dialog box appears, select "No" to open it.



■ Receive notification

You cannot set the receive notification which indicates the completion of ACTION.

■ When setting "Trigger-Source Node"

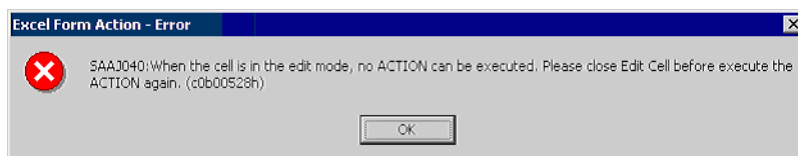
When setting "Trigger-Source Node" at node in Excel Report action, node type and device are uncertain.

Therefore, the device address is displayed in red. But, it is no problem.

■ Edit the output file

While Excel Report Action is executing, you can not edit the output file.

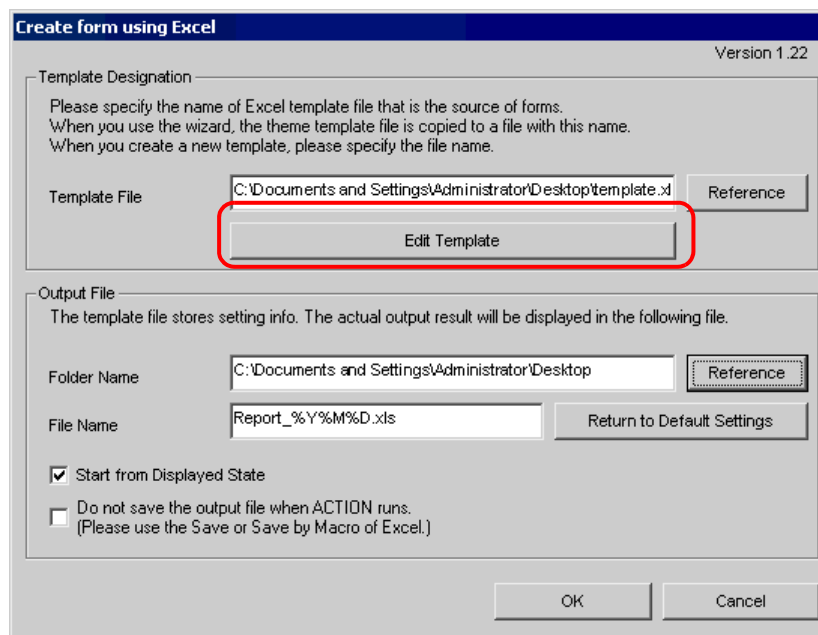
Therefore, it becomes very difficult to operate Excel at the setting in which the Trigger condition satisfies at a short cycle. Moreover, the following error message is displayed when the Action is executed during editing the output file.



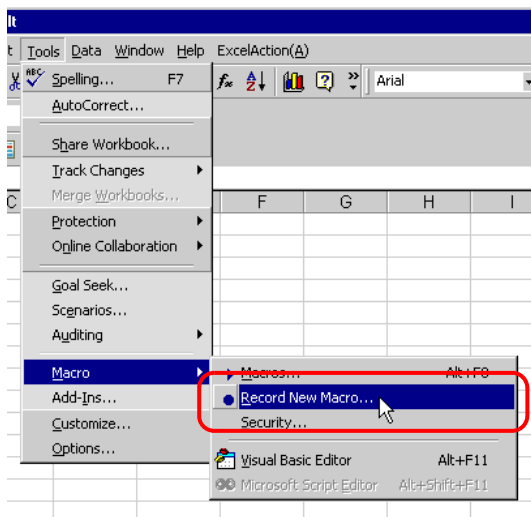
■ Excel Auto Save Function

The Excel auto save function does not operate due to the Excel restrictions. To save automatically, create the Excel save macro using the following procedure and execute the created save macro by Action.

- 1 Open a template you want to save automatically using 'Pro-Studio EX'.

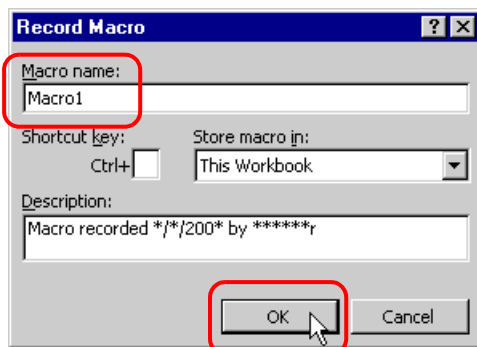


- 2 Select "Macro" and "Record New Macro" from the "Tools" menu.



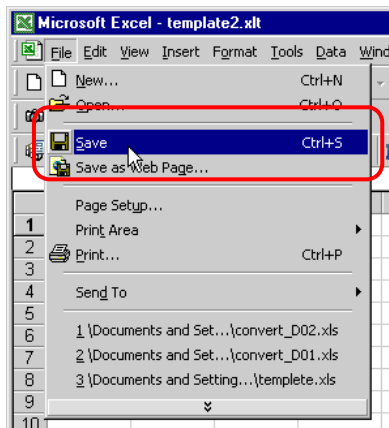
- 3 Enter the macro name "Macro1" and click the [OK] button.

Recording the macro starts.



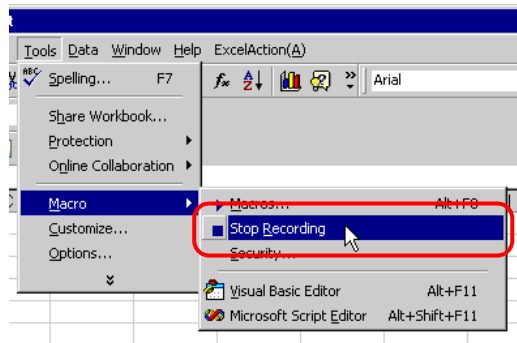
- 4 Select "Save" from the "File" menu.

"Macro1" is recorded in the macro.

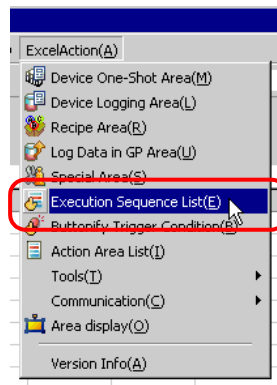


- 5 Select "Macro" and "Stop Recording" from the "Tools" menu.

Recording the macro is complete.

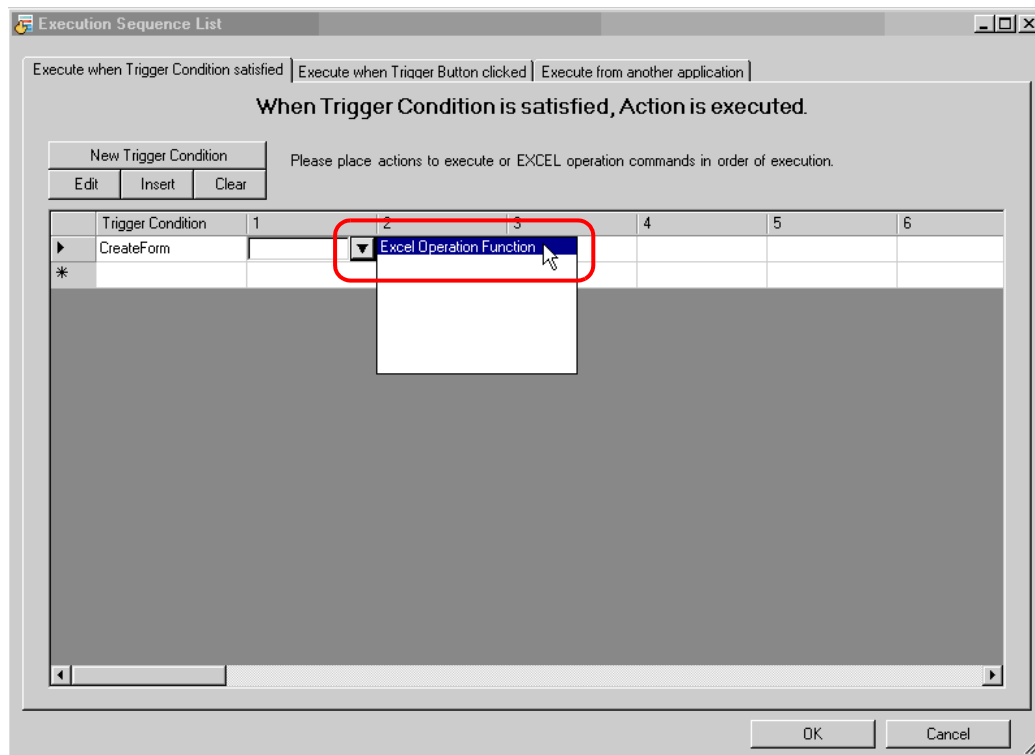


- 6 Select "Execution Sequence List" from the "Excel Action" menu.

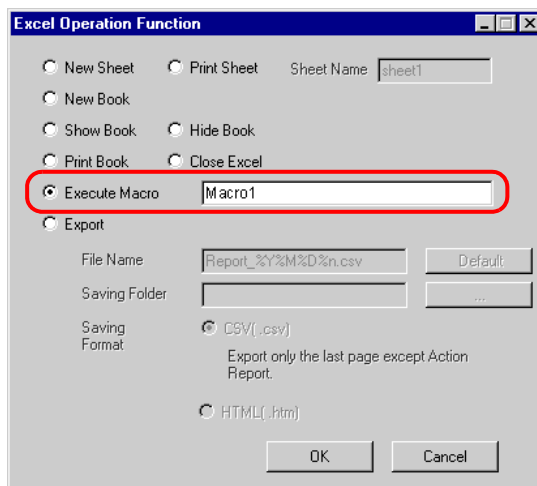


- 7 Create the trigger condition save automatically.

- 8 Select the created trigger condition and "Excel Operation Function".



- 9 Select "Execute Macro" and enter the macro name "Macro1".



- 10 Click the [OK] button.

- 11 Finish editing the template.

- 12 Save/Reload the setting contents.

According to the created trigger condition, the template is automatically saved.

