

INTRODUCTION

Thank you for choosing Type SW2D5F-XMOP-E Monitoring Tool.

Before using Type SW2D5F-XMOP-E Monitoring Tool, please read this manual carefully to use the product to its optimum.

A copy of this manual should be forwarded to the end user.

CONTENTS

Safety Instructions	A- 1
Revisions	A- 2
Operating Instructions	A- 3
About Manuals.....	A- 10
How to Use This Manual	A- 11
About the Generic Terms and Abbreviations	A- 12
Meanings and Definitions of the Terms	A- 13
Product Makeup	A- 14
1. OVERVIEW	1- 1 to 1- 6
1.1 Features.....	1- 2
1.2 Custom Control List.....	1- 5
1.3 Utility List.....	1- 5
2. SYSTEM CONFIGURATION	2- 1 to 2- 2
2.1 System Configuration	2- 1
2.2 Operating Environment	2- 1
2.3 Usable PLC CPU.....	2- 1
3. INSTALLATION AND UNINSTALLATION	3- 1 to 3- 8
3.1 Installation.....	3- 1
3.2 Icons Registered.....	3- 6
3.3 Uninstallation	3- 7
4. OPERATION PROCEDURE	4- 1 to 4- 2
5. CREATING A TAG FILE	5- 1 to 5- 8
5.1 Getting Information on "Tag"	5- 1
5.2 What Should Be Done First	5- 2
5.3 Creating a Tag File.....	5- 4

6. CREATING A MONITOR APPLICATION **6- 1 to 6- 4**

7. OPERATIONS COMMON TO THE UTILITIES **7- 1 to 7- 6**

7.1 Starting the Utility7- 1
7.2 Closing the Utility.....7- 2
7.3 Saving the Settings7- 3
7.4 Displaying the Help Screen.....7- 4
7.5 Confirming the Version.....7- 5

8. UTILITY OPERATIONS **8- 1 to 8- 40**

8.1 Environment Setup Utility.....8- 1
 8.1.1 Operating Procedure8- 1
 8.1.2 Operations on the File Screen8- 2
 8.1.3 Operations on the Communication Screen8- 3
 8.1.4 Operations on the Comm. Interval Screen8- 4
 8.1.5 Operations on the Logging Time Screen.....8- 5
 8.1.6 About Saving Data as a Text8- 6
8.2 Tag Setup Utility8- 8
 8.2.1 Operating Procedure8- 8
 8.2.2 About the Tag Management Process8- 9
 8.2.3 Operations on the File Screen8- 11
 8.2.4 Operations on the Communication Screen8- 13
 8.2.5 About the Network Setting8- 18
 8.2.6 Operations on the Extended Screen.....8- 20
 8.2.7 Operations on the Device Monitor Screen.....8- 26
 8.2.8 Operations on the List Screen.....8- 27
8.3 Comment Setup Utility.....8- 29
 8.3.1 Operation Procedure8- 29
 8.3.2 Operations on the File Screen8- 30
 8.3.3 Operations on the Comment Screen8- 31
 8.3.4 Operations on the Comment List Screen8- 32
 8.3.5 Comment File Format.....8- 33
8.4 Alarm Summary Setup Utility8- 34
 8.4.1 Operation Procedure8- 34
 8.4.2 Operations on the File Screen8- 35
 8.4.3 Operations on the Alarm Screen.....8- 36
 8.4.4 Operations on the Alarm List Screen.....8- 38
 8.4.5 Alarm Summary File Format8- 39

9. ABOUT THE XMOP CUSTOM CONTROLS **9- 1 to 9- 12**

9.1 Properties9- 1
9.2 Property Page.....9- 3
9.3 Methods9- 5
9.4 Monitoring Start and Stop Timings9- 6
9.5 Events9- 7
9.6 Examples of Using the Custom Controls.....9- 9

10. PART DISPLAY CUSTOM CONTROLS **10- 1 to 10- 8**

10.1 Graphic Display10- 1
10.2 Blink Display10- 5
10.3 Comment Display10- 7

11. GRAPH DISPLAY CUSTOM CONTROLS **11- 1 to 11- 36**

11.1 Level Display11- 1
11.2 Line Graph Display.....11- 6
11.3 Trend Graph Display11- 12
11.4 Bar Graph Display11- 19
11.5 Pareto Chart Display11- 25
11.6 Historical Trend Graph Display11- 30

12. BLOCK DISPLAY/INPUT CUSTOM CONTROLS **12- 1 to 12- 14**

12.1 Numeric Block Data Display/Input12- 1
12.2 Character String Block Data Display/Input12- 8

13. DISPLAY/INPUT CUSTOM CONTROLS **13- 1 to 13- 12**

13.1 Numeric Data Display/Input13- 1
13.2 Character String Data Display/Input13- 5
13.3 Bit Device Operation (Bit Input)13- 8

14. INPUT CUSTOM CONTROLS **14- 1 to 14- 6**

14.1 Word Write14- 1
14.2 Bit Write14- 4

15. OTHER CUSTOM CONTROLS **15- 1 to 15- 16**

15.1 Event Occurrence.....15- 1
15.2 Snap Shot15- 3
15.3 Alarm Display15- 5
15.4 Alarm Sound Output.....15- 8
15.5 Alarm Summary Display.....15- 10

15.6 Error	15- 13
15.7 Clock Display.....	15- 14

16. PARTS COLLECTION	16- 1 to 16- 4
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APPENDICES	APP- 1 to APP- 8
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APPENDIX 1 Specifications.....	APP- 1
APPENDIX 2 Creating the Image File	APP- 2
APPENDIX 3 Operation Procedures for Samples	APP- 3
Appendix 3.1 For Use of XmopDemo.tag	APP- 3
Appendix 3.2 For Use of XmopCntl.tag	APP- 4
APPENDIX 4 Error Codes.....	APP- 5
Appendix 4.1 XMOP Error Codes	APP- 5
Appendix 4.2 Tag Error Codes.....	APP- 7

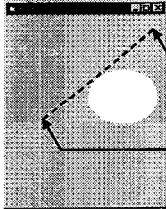
10. PART DISPLAY CUSTOM CONTROLS

10.1 Graphic Display



When the device reaches the set value, the specified figure appears on the control.

(1) Specifications

File name	XMPICTURE.OCX		
Setting quantity	30 pcs.		
Registration format	BMP or WMF file		
Moving method	Specify the moving range in the Twip unit. The starting and end points can be specified. <div style="display: flex; align-items: center; margin-top: 10px;">  <div style="margin-left: 10px;"> <p>Specify the starting point. (MStartLeft, MStartTop)</p> <p>Specify the end point. (MEndLeft, MEndTop)</p> </div> </div>		
Registered figure editing	Use a graphic tool such as Paint.		

(2) Properties

Property name	Description	Setting Range	Initial Value	Change during Execution
OCX-standard	Refer to Section 9.1 (1).	—	—	—
XMOP-common	Refer to Section 9.1 (2).		0: No move 1: Move	First tag name in tag file
MPicMove	Select whether the displayed figure is moved or not.		1	
MMovTagName	Set the tag name for movement.	0 to 32767	0	Not allowed
MMovFieldNo	Set the field of the tag for movement.			
MStartLeft	Starting point X-coordinate of the moved figure (Twip unit)			
MStartTop	Starting point Y-coordinate of the moved figure (Twip unit)			
MEndLeft	End point X-coordinate of the moved figure (Twip unit)	-2147483648 to 2147483647	32767	
MEndTop	End point Y-coordinate of the moved figure (Twip unit)		-32768	
MMoveUpper	Value at the starting point of the moved figure	—	No setting	
MMoveLower	Value at the end point of the moved figure			
MDefPicture	Set the default displayed figure. Displayed when any value not set is reached.			

Property name	Description	Setting Range	Initial Value	Change during Execution
MDataLow	Set the lower limit of the range in range setting. To show this limit only for a specific value, set the same value as in MDataHigh.	-2147483648 to 2147483647	0	Not allowed
MDataHigh	Set the upper limit of the range in range setting. To show this limit only for a specific value, set the same value as in MDataLow.		1	
MPicture	MDataLow, MDataHigh and MPicture must be set as a group.	—	No setting	
MBlinkFlag	Select whether the chosen figure is blinked or not. The blink cycle is 1 sec. uniformly. True: With blink False: Without blink		Flase	
MIndex	Specify the picture number.	1 to 30	1	Allowed

...Must be set per set number of MIndex.

(3) Property page

For the Tag and Colors setting methods, refer to Section 9.2.

(a) Picture

Set the property name relative to the figure.

POINT
For the item which needs setting per INDEX, always click the "Apply" button every time you set it to reflect the setting.

(b) Move

Set whether the figure is moved or not.

The screenshot shows the 'XMPICTURE properties' dialog box with the 'Move' tab selected. The dialog has four tabs: 'Tag', 'Picture', 'Move', and 'Colors'. The 'Move' tab contains the following fields and controls:

- Move:** A dropdown menu set to '1 - Move'.
- Tag name:** A text field containing 'tag006'.
- Field No.:** A dropdown menu set to '1'.
- Original point value:** A text field containing '32767'.
- End point value:** A text field containing '-32768'.
- Coordinates:** A section containing four spinners: 'Original pointX' (0), 'Original pointY' (0), 'End pointX' (0), and 'End pointY' (0).

Annotations with arrows point to these fields:

- An arrow points to the 'Move' dropdown with the text: 'Set whether the figure is moved or not.'
- An arrow points to the 'Tag name' field with the text: 'Set the name of the tag used.'
- An arrow points to the 'Field No.' dropdown with the text: 'Set the field number of the tag.'
- An arrow points to the 'Original point value' and 'End point value' fields with the text: 'Set the values at the starting and end points of the moved figure. (-2147483648 to 2147483647)'
- An arrow points to the 'Coordinates' section with the text: 'Set the movement setting coordinates in TWIP values. (0 to 32767)'
- An arrow points to the 'Original point value' and 'End point value' fields with the text: 'May be set only when the figure is moved.'

At the bottom of the dialog are 'OK', 'Cancel', and 'Apply' buttons.

(4) Conditions of usable tag

For both the figure and movement data, the data type is any of Short, Long and Bit.

Note that the bit type data recognized are 0 and 1 only.

(5) Precautions for designing

- The following four properties are used to make setting per picture (MIndex). Make setting per Index number.

1. MDataLow
2. MDataHigh
3. MPicture
4. MBlinkFlag

- The control pasted to a form during designing is painted white.
- For designing, the figure of MPicture registered to the MIndex value is displayed.
- The BMP or WMF file is expanded/reduced according to the display range change made after registration.
- To specify the moving range, enter the starting and end points in the Twip unit to Top and Left after the moved figure has been selected.
- If the figure is blink-specified, MDefPicture alternates with,

Selected	: MDefPicture
Not selected	: Background

 when displayed.
- If the MDataLow or MDataHigh value is equal to that of other INDEX (MIndex), the value of the smaller INDEX number has precedence.
- Unlike the VB-standard picture control, the file name is stored when the picture data is saved.

When changing the environment of the execution file or the like, also change that of the XMOP control application and picture file together.

(6) Precautions for execution

- Using many bit map files increases the program capacity extremely.
(BMP file size = length (dots) × width (dots) + approx. 1078 bits)
- When using a WMF file, the display colors may change under the influence of other applications used, if any.
When using a WMF file with the other applications, use only the primary colors or use a BMP file.
- If there are no registered figures, nothing appears on the screen.
- Some picture files may not be printed properly in the PrintForm method of VB.
Use the XMOP snap shot custom control to print.
- If a moved figure is used, it is not displayed but a background appears when the data is outside the range.

(7) Compatible events and methods

Event Click, MplcChange, MError

Method DoClick, Refresh, GetPicValue: Returned value is a LONG value.

GetPicValue cannot acquire the data of the moved figure.

10.2 Blink Display



While the specified bit device is on, the registered figure is displayed and hidden alternately at the specified interval to make it blink.

(1) Specifications

File name	XMBLINK.OCX
Display format	While the specified bit device is on, the registered figure data is blinked.

(2) Properties

Property name	Description	Setting Range	Initial Value	Change during Execution
OCX-standard	Refer to Section 9.1 (1).	—	—	—
XMOP-common	Refer to Section 9.1 (2).		—	—
MDefPicture	Specify the figure (BMP/WMF) to be displayed when blinking is off. When blinking is on, this figure alternates with the figure set to the MPicture property.		None	Not allowed
MPicture	Choose the displayed figure (BMP/WMF).			
MBlinkCycle	Set the figure blinking interval (in seconds).	1 to 60	1	

(3) Property page

For the Tag and Colors setting methods, refer to Section 9.2.

(a) Picture

Set the property name relative to the figure.

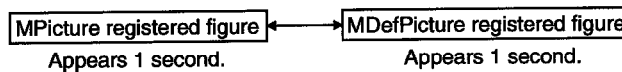
(4) Conditions of usable tag

- The data type is Bit.

(5) Precautions for designing

- If the blinking interval is set to 2 seconds, the figure registered to the MPicture property appears for 1 seconds, and the figure registered to the MDefPicture property then appears for 1 seconds.

If nothing has been registered to the MDefPicture property, the background appears.



- The control pasted to a form during designing is painted white.
- During designing, the figure of MDefPicture is displayed normally but the figure of MPicture appears when,
 1. A figure has been registered to MPicture.
 2. MPicture has been selected in the Properties window.
- Unlike the VB-standard picture control, the file name is stored when the picture data is saved.

When changing the environment of the execution file or the like, also change that of the XMOP control application and picture file together.

(6) Precautions for execution

- Since operation is repeated when the specified bit device is on, the speed may be affected due to the increased load by the figure display if a number of blink displays turn on at the same time.
- When using this function often, set the same blink interval to all the controls used. If they are set differently, much memory is needed, slowing down the entire operation.

(7) Compatible events and methods

Event Click, MPlcChange, MError

Method DoClick, Refresh, GetPlcValue: Returned value is a SHORT value.

10.3 Comment Display



According to the set device value, the character string in the comment setting file range is read and displayed in the specified color.

Using the comment setup utility, pre-create a comment setting file (*.CMT) which contains the sets of device values for showing figures and comments to be displayed. (Up to 1,000 comments)

(1) Specifications

File name	XMCMNT.OCX
Setting quantity	1000 pcs.
Comment length	40 characters
Comment editing	Use the Comment setup utility.

(2) Properties

Property name	Description	Setting Range	Initial Value	Change during Execution
OCX-standard	Refer to Section 9.1 (1).	—	—	—
XMOP-common	Refer to Section 9.1 (2).		—	—
MCmntFILE	Specify the comment setting file.		C:\MELSEC\XMOP\XMOPCMNT.CMT	Not allowed

(3) Property page

For the Tag, Fonts and Colors setting methods, refer to Section 9.2.

(a) Comment

- (4) Conditions of usable tag
 - The data type is any of Short, Long and Bit.

- (5) Precautions for designing
 - With the exception of the background color, set the display attributes of the character string to be displayed with the OCX-standard properties.
 - During designing, a comment is indicated by '\$' corresponding to 40 characters.
 - When the file is registered during designing, the first comment registered in the comment file appears.
 - Refer to Section 8.3 for the comment file format.
 - Some colors may not be displayed properly according to the color pallet setting of the display.

- (6) Precautions for execution
 - If the comment data exceeds 40 characters, only 40 characters are valid.
 - Any value specified outside the numeric range is not displayed.
 - An error occurs if any character is other than those convertible as a numeric value (+, -, 0 to 9).
 - If a comment cannot be displayed within the control width, its extra part is displayed in the next line.
 - Use a smallest possible number of files since using many files will exhaust memory extremely and affect the running speed.

- (7) Compatible events and methods
 - Event Click, MplcChange, MError
 - Method DoClick, Refresh, GetPlcValue: Returned value is a LONG value.

11. GRAPH DISPLAY CUSTOM CONTROLS

11.1 Level Display



The control is painted at the ratio (percentage) of the device value to the whole (range between the upper and lower limits).

An event is generated if the upper or lower limit is exceeded.

(1) Specifications

File name	XMLEVEL.OCX
Moving direction	Up, down, left, right
Display format	Choose whether figures are used to display the level or figures are not used to provide a rectangular level display. When the use of figures is selected, a level display is provided using a background figure and a front figure which is used to move the level.
Upper/lower limit Alarm level Display color	 <ul style="list-style-type: none"> An event occurs if the alarm level (up) or (low) is exceeded. Setting MEmerLine allows alarm level indicating lines to appear. You can use MLevColor to specify the standard color, MUpLevColor to specify that the alarm level (up) is exceeded, and MDownLevColor to specify that the alarm level (low) is exceeded.
Alarm level change	<p>If the MProtect value is set to True, the alarm levels can be changed as follows. (Can be changed also during run)</p> <ul style="list-style-type: none"> They can be changed by operating the spin buttons. Clicking the alarm level display frame enables numeric entry. (When the MDspEmer value is set to True)
Pattern	<p>For vertical display (level direction: Top/bottom is selected)</p> <p>Pattern 1 Pattern 2 Pattern 3 Pattern 4</p> <p>For horizontal display (level direction: Left/right is selected)</p> <p>Pattern 1 Pattern 2</p>
Figures used	BMP or WMF file (Only when the use of figures is selected)
Registered figure editing	Use a graphic tool such as Paint.

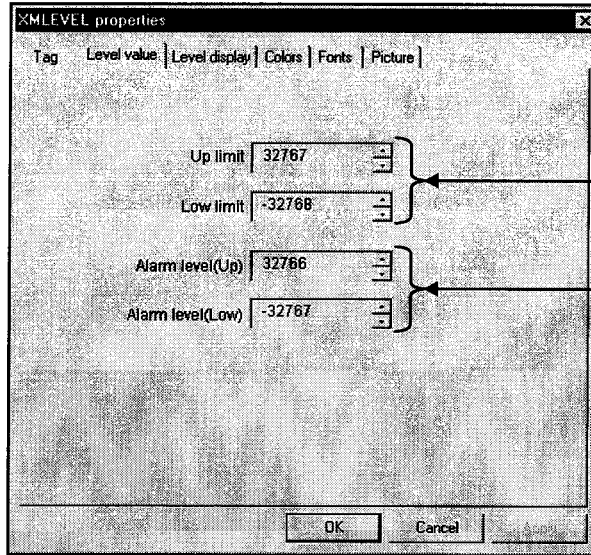
(2) Properties

Property name	Description	Setting Range	Initial Value	Change during Execution	
OCX-standard	Refer to Section 9.1 (1).	—	—	—	
XMOP-common	Refer to Section 9.1 (2).				
MLevType	Select whether figures are used for level display or not. 0: Not used 1: Used	0,1	0	Not allowed	
MLevColor	Setting of painting color for level display	—	Blue	Allowed	
MUpperLev Color	Level color when the alarm level (up) is exceeded		Red		
MLowerLev Color	Level color when the alarm level (low) is exceeded		White		
MBackColor	Setting of background color for level display		None	None	Not allowed
MDefPicture	Set the figure used as a background for graphic level display.				
MPicture	Set the figure used to move the level for graphic level display.				
MDirection	Painting direction (top→bottom, bottom→top, left→right, right→left)				
MUpper	Set the upper limit.		-2147483648 to 2147483647	32767	Allowed
MLower	Set the lower limit.			-32768	
MUpperEmer	Set the alarm level (up).			32766	
MLowerEmer	Set the alarm level (low).	-32767			
MEmerLine	Whether the alarm level lines are shown or not True: Shown False: not shown	—	Flase	Not allowed	
MDspEmer	Whether the alarm level changing texts are shown or not True: Shown False: not shown				
MDspData	Whether the level-displayed value is shown or not True: Shown False: not shown				
MDspPattern	Choose the alarm level changing text and level value display form. 0: Pattern 1 1: Pattern 2 2: Pattern 3 3: Pattern 4				
MDspColor	Set the character color when the alarm levels and current value are displayed.	—	Black	Allowed	
MDspBack Color	Set the background color when the alarm levels and current value are displayed.		White		
MProtect	Set whether the alarm levels are made rewritable or not. True: Rewritable False: Unrewritable		Flase		

(3) Property page

For the Tag, Fonts and Colors setting methods, refer to Section 9.2.

(a) Level value

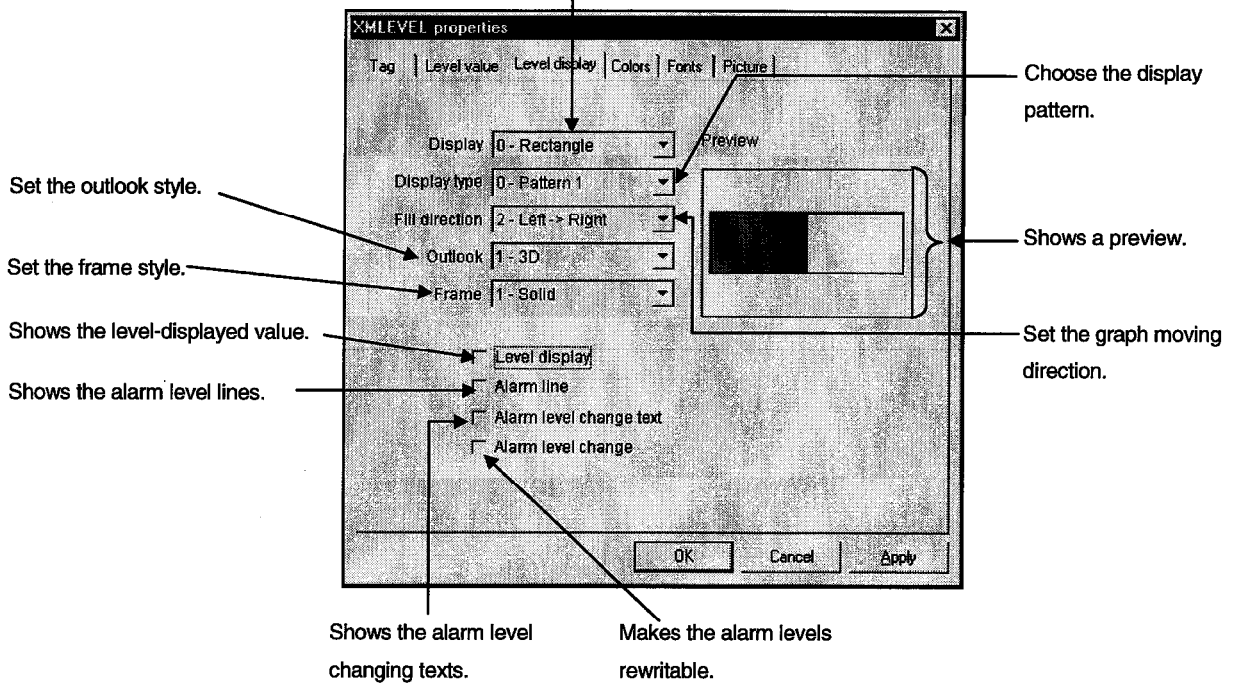


Set the upper and lower limits.
(-2147483648 to 2147483647)

Set the upper and lower limits of alarm levels.
(-2147483648 to 2147483647)

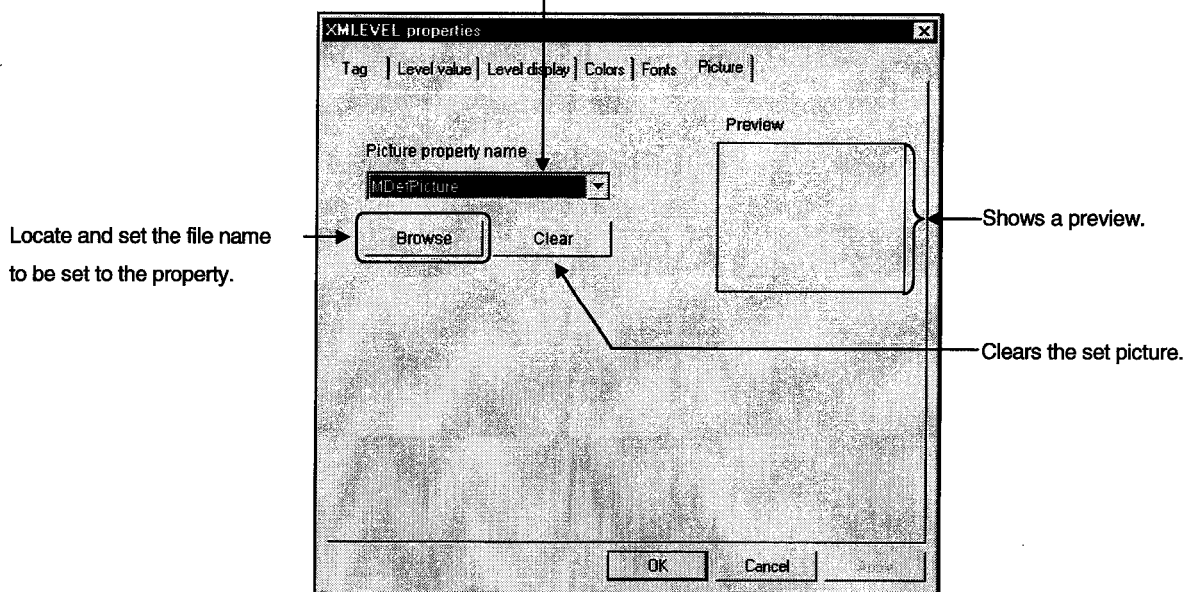
(b) Level display

Choose rectangular or graphic display.



(c) Picture

Set the property name relative to the figure.



(4) Conditions of usable tag

- The data type is either of Short and Long.

(5) Precautions for designing

- Set the display attributes of the control frame to be shown with the OCX-standard properties.
- For designing, the chart of a 50% position level appears.
- Since showing the alarm level or level data makes clearances within the control frame, the clearances are painted with the color set to the BackColor property of the OCX-standard properties.
- The alarm event occurs if the alarm level (up) or (low) is exceeded. The user should judge the GetPlcValue method in the processing of the MEmergency event, determine whether the alarm level is exceeded or not, and describe error processing.
- Unlike the VB-standard picture control, the file name is stored when the picture data is saved.
When changing the environment of the execution file or the like, also change that of the XMOP control application and picture file together.
- If you selected figures for level display, MLevColor, MUpperLevColor and MLowerLevColor are made invalid.

(6) Compatible events and methods

EventClick, MplcChange, MError, MUpper, MLower, MEmergency

MethodDoClick, Refresh, GetPlcValue: Returned value is a LONG value.

(7) Example of use

The device which changes from 0 to 1200 is level-displayed, and a message box appears when 1000 is exceeded.

(a) Properties

MDirection	Bottom→top
MUpper	1200
MLower	0
MUpperEmer	1000

(b) Alarm event processing

```
Sub XMLLevel1_MEmergency( )  
  If XMLLevel1.MupperEmer < XMLLevel1.GetPlcValue Then  
    MsgBox "Alarm level (up) is exceeded."  
  End If  
End Sub
```

11.2 Line Graph Display



A line graph which represents the values of several devices, beginning with the specified one, as the graph points of the devices are displayed on the control.

(1) Specifications

File name	XMLINGRF.OCX	
Number of lines	8	
Display format	<ul style="list-style-type: none"> • Horizontal axis lines Set the number of horizontal axis lines to be displayed. <p>Example: Setting of 3 lines</p> <p>Upper limit Horizontal lines are drawn in 25%, 50% and 75% positions. Lower limit</p>	<ul style="list-style-type: none"> • Vertical reference lines You can set in how many point increments the vertical lines will be shown. Set 0 when not displaying the vertical lines. <p>Example: 10 points are specified for the entire graph and 1 point increments are specified for the vertical lines.</p> <p>Vertical reference line</p>
Number of points	2 to 100	

(2) Properties

Property name	Description	Setting Range	Initial Value	Change during Execution
OCX-standard	Refer to Section 9.1 (1).	—	—	—
XMOP-common	Refer to Section 9.1 (2).			
MLineColor	Set the display color of line 1 to 8. 0: Black 8: Gray 1: White 9: Bright gray 2: Red 10: Dark red 3: Green 11: Dark green 4: Blue 12: Dark blue 5: Yellow 13: Bright brown 6: Magenta 14: Dark magenta 7: Cyan 15: Dark cyan	—	First line : 4 Second line : 2 Third line : 3 Fourth line : 0 Fifth line : 7 Sixth line : 6 Seventh line : 8 Eighth line : 5	Not allowed
MLineWidth	Set the thickness of line 1 to 8 in pixel unit.	1 to 100	1	Allowed
MLineStyle	Choose the type of line 1 to 8 from the combo box. 0: Solid 1: Dot 2: Broken 3: None Valid when the MLineWidth property is 1	0 to 3	0	
MBlackColor	Set the background color of the graph.	—	White	Not allowed
MSetNo	Set the number of lines to be displayed.	1 to 8	1	
MSetPoint	Set the number of points in the horizontal axis.	2 to 100	10	

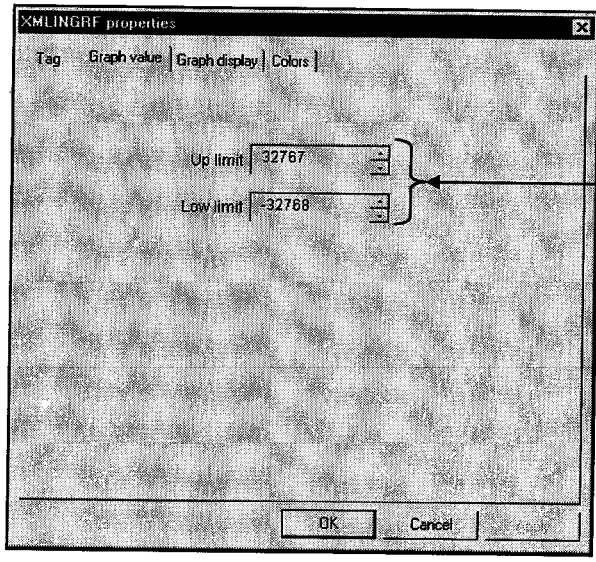
Property name	Description	Setting Range	Initial Value	Change during Execution
MUpper	Set the upper limit.	-2147483648 to 2147483647	32767	Allowed
MLower	Set the lower limit.		-32768	
MYLine	Set in how many point increments the vertical reference lines will be drawn.	0 to 99	0	Not allowed
MXLine	Set the number of horizontal axis lines to be drawn.			
MIndex	Set the line number.			

... Must be set per set number of MIndex.

(3) Property page

For the Tag, Fonts and Colors setting methods, refer to Section 9.2.

(a) Graph value



Set the upper and lower limits of the graph.
(-2147483648 to 2147483647)

(b) Graph display

Set the number of lines (1 to 8). Set the number of graph points (2 to 100).

Set in how many point increments the vertical reference lines will be drawn (0 to 99).

Set the number of horizontal axis lines to be displayed (0 to 99).

Choose the line number.

Shows a preview.

Set the outlook style.

Set the frame style.

Set the width, type and color of the graph line specified in INDEX.
 (The line type can be set only when the width is 1 point.)

POINT

For the item which needs setting per INDEX, always click the "Apply" button every time you set it to reflect the setting.

(4) Conditions of usable tag

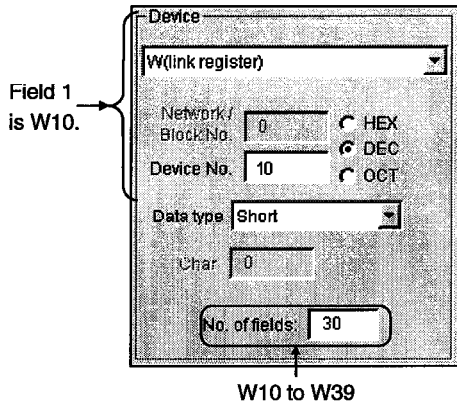
- The data type is either of Short and Long.

Note that operation will not be performed if:

1. "Number of fields < number of graph lines × number of points"
2. The fields of different data types are included when the random tag was specified.

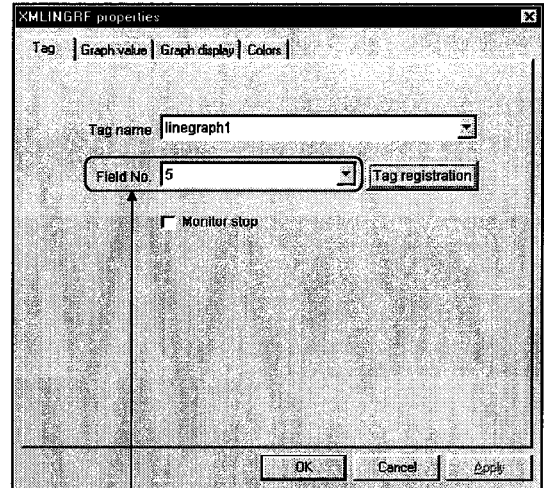
Example1: Usable tag (batch)

1. Tag data (batch)



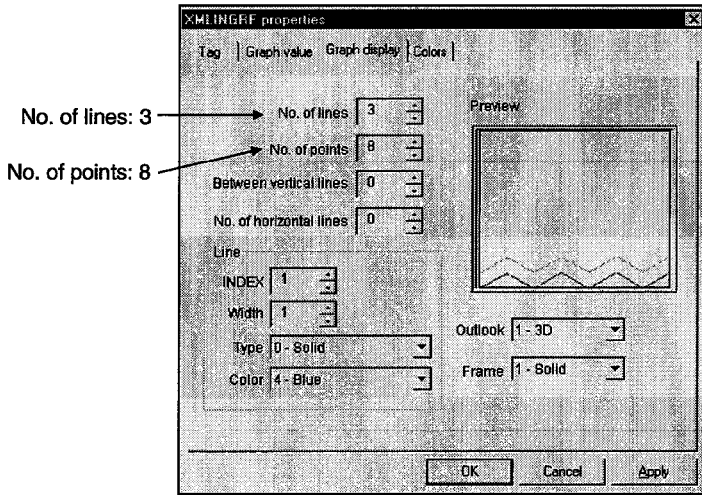
W10 to W39

2. OCX data (tag)



Set 1) of the first line as field 5 (W14).

3. OCX data (graph display)

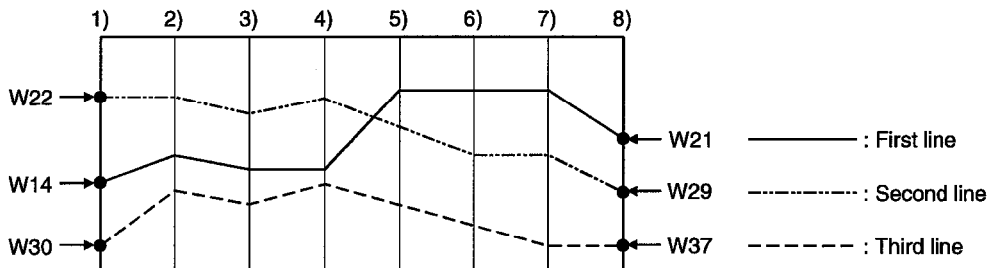


No. of lines: 3
No. of points: 8

4. Data storage format

	1)	2)	3)	4)	5)	6)	7)	8)
First line	W14	W15	W16	W17	W18	W19	W20	W21
Second line	W22	W23	W24	W25	W26	W27	W28	W29
Third line	W30	W31	W32	W33	W34	W35	W36	W37

5. Graph display



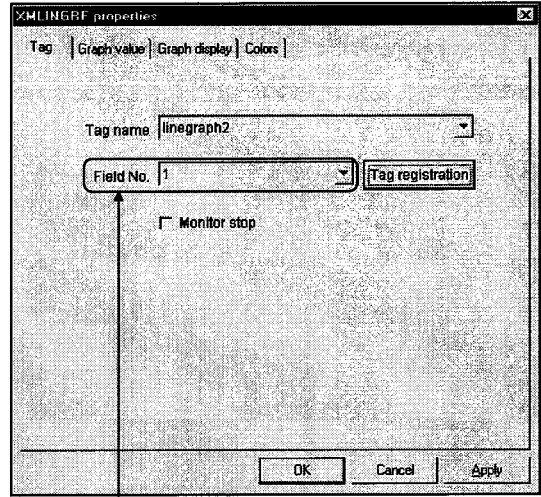
Example2: Usable tag (random)

1. Tag data (random)

Field No.	Device	No.	Data type	Cha
1	W	0	Short	0
2	W	32	Short	0
3	D	20	Short	0
4	R	10	Short	0
5	ER1	0	Short	0
6	STT	0	Short	0
7	L	10	Short	0
8	W	48	Short	0
9	STN	20	Short	0

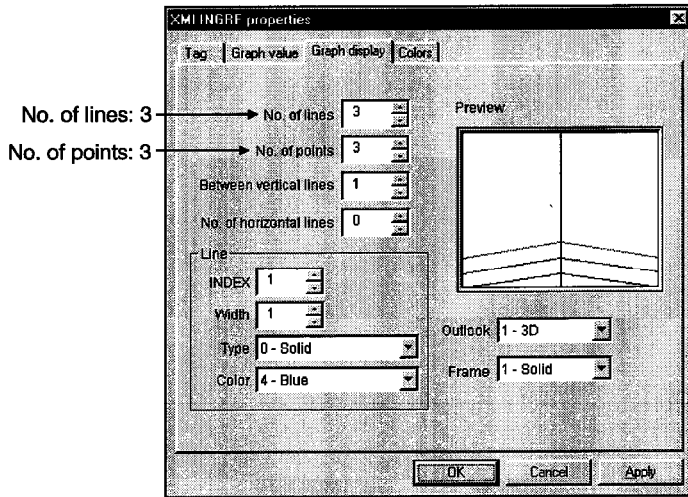
↑
Set the same data type.

2. OCX data (tag)



Set 1) of the first line as field 1 (W0).

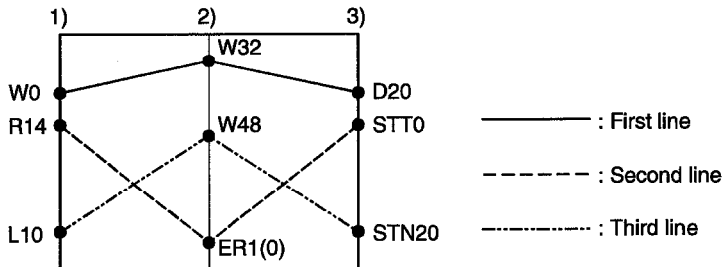
3. OCX data (graph display)



4. Data storage format

	1)	2)	3)
First line	W0	W32	D20
Second line	R10	ER1(0)	STT0
Third line	L10	W48	STN20

5. Graph display



Example3: Unusable tag (if there are different data types within the specified fields)

Tag data (random)

Field No.	Device	No.	Data type	Cha
1	W	0	Short	0
2	W	32	Short	0
3	D	20	Short	0
4	R	10	Long	0
5	ER1	0	Short	0
6	B	0	Bit	0
7	L	10	Short	0
8	W	48	Short	0
9	STN	20	Char	1

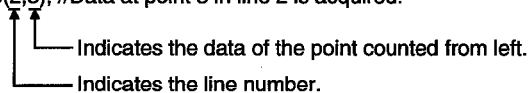
Cannot be set since there are different fields when the specified field is 1 and the number of points specified is 4 or more.

(5) Precautions for designing

- The following three properties are used to make setting per line (MIndex).
Set the number of lines set in MSetNo.
1. MLineColor 2. MLineWidth 3. MLineStyle
- The return value of the GetPlcValue method is a LONG two-dimensional array.

Example

```
XMLINGRF1.GetPlcValue(2,3); //Data at point 3 in line 2 is acquired.
```



- If the number of lines is set to 8, the numeric change (MPlcChange) event occurs when the latest data of any line changes.
- For designing, the initial value graph appears.
- An event occurs if any of the set lines exceeds the upper limit (MUpper) or lower limit (MLower).
- If MLineWidth is other than 1, MLineStyle is forced to be a solid line (0).

(6) Compatible events and methods

EventClick, MplcChange, MError, MUpper, MLower

Method ...DoClick, Refresh, GetPlcValue: Returned value is a LONG value array.

11.3 Trend Graph Display



Device values are read at the specified intervals and displayed on the control as a time series graph.

The graph is updated in real time.

(1) Specifications

File name	XMTREND.OCX	
Number of lines	8	
Display format	<ul style="list-style-type: none"> • Horizontal axis lines Set the number of horizontal axis lines to be displayed. <p>Example: Setting of 3 lines</p>	<ul style="list-style-type: none"> • Vertical reference lines You can set in how many point increments the vertical lines will be shown. Set 0 when not displaying the vertical lines. <p>Example: 10 points are specified for the entire graph and 1 point increments are specified for the vertical lines.</p>
	<ul style="list-style-type: none"> • Numeric, collection time display The user can make setting to show the numeric values and collection times. <p>The current values are displayed next to the names determined on a device basis. (Display/hide: Selectable)</p> <p>Shows the new and old data collection times of the graph. (Display/hide: Selectable)</p>	
Number of points	2 to 100	
Sampling period	1 or more seconds	
Collection form	Ordinary/non-ordinary	
Number of lines collected	Depending on restriction on the number of monitor points (Ordinary/non-ordinary)	

(2) Properties

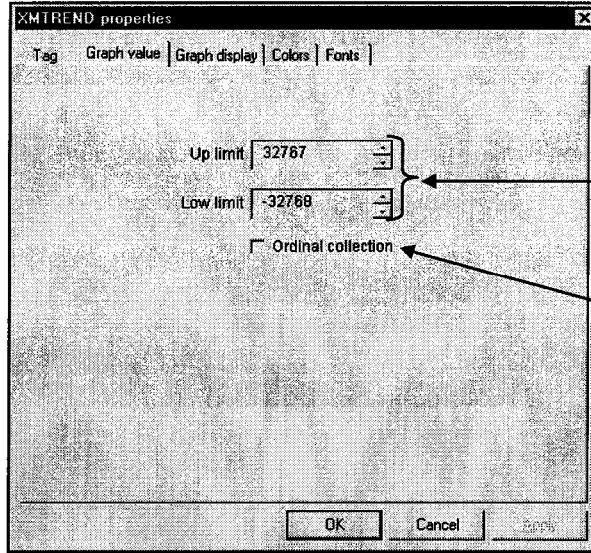
Property name	Description	Setting Range	Initial Value	Change during Execution
OCX-standard	Refer to Section 9.1 (1).	—	—	—
XMOP-common	Refer to Section 9.1 (2).			
MLineColor	Set the display color of line 1 to 8. 0: Black 8: Gray 1: White 9: Bright gray 2: Red 10: Dark red 3: Green 11: Dark green 4: Blue 12: Dark blue 5: Yellow 13: Bright brown 6: Magenta 14: Dark magenta 7: Cyan 15: Dark cyan	—	First line : 4 Second line : 2 Third line : 3 Fourth line : 0 Fifth line : 7 Sixth line : 6 Seventh line : 8 Eighth line : 5	Not allowed
NLineName	Set the name for numeric display.	Up to 32 characters	"TREND1" to "TREND8"	
MLineWidth	Set the thickness of line 1 to 8 in pixel unit.	1 to 100	1	Allowed
MLineStyle	Choose the type of line 1 to 8 from the combo box. 0: Solid 1: Dot 2: Broken 3: None Valid when the MLineWidth property is 1	0 to 3	0	
MBackColor	Set the background color of the graph.	—	White	
MSetNo	Set the number of lines to be displayed.	1 to 8	1	Not allowed
MSetPoint	Set the number of points in the horizontal axis.	2 to 100	10	
MUpper	Set the upper limit.	-2147483648 to 2147483647	32767	Allowed
MLower	Set the lower limit.		-32768	
MDspPattern	Set whether numeric values are displayed or not, and if displayed, its position. 0: Not displayed 1: Displayed on the right 2: Displayed on the left	0 to 2	0	Not allowed
MDspTime	Set whether the collection times are displayed or not. True: Displayed False: Not displayed	—	False	
MLogFlag	Set ordinary or non-ordinary collection. Ordinary collection :True Non-ordinary collection :False	—		
MYLine	Set in how many point increments the vertical reference lines will be drawn.	0 to 99	0	
MXLine	Set the number of horizontal axis lines to be drawn.			
MDspColor	Set the character color of the current values and collection times.	—	Black	Allowed
MDspBackColor	Set the background color of the current values and collection times.		White	
MIndex	Set the line number.	1 to 8	1	Allowed

... Must be set per set number of MIndex.

(3) Property page

For the Tag, Fonts and Colors setting methods, refer to Section 9.2.

(a) Graph value



Set the upper and lower limits of the graph.
(-2147483648 to 2147483647)

Data is collected when the form is not active.

(b) Graph display

Set the number of lines (1 to 8).

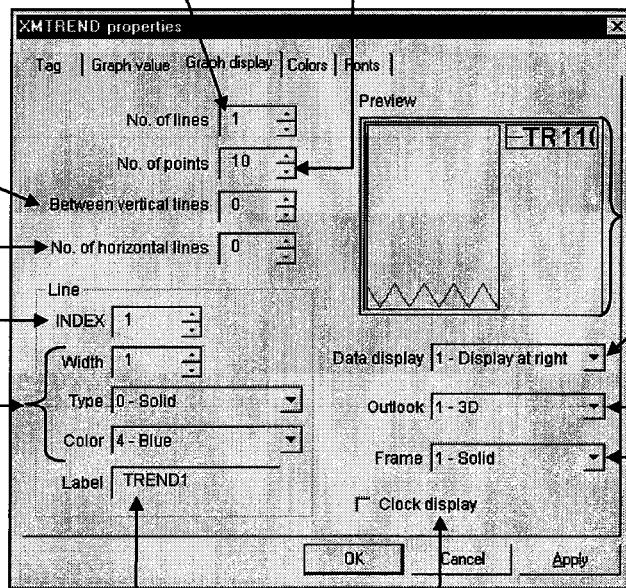
Set the number of graph points (2 to 100).

Set in how many point increments the vertical reference lines will be drawn (0 to 99).

Set the number of horizontal axis lines to be displayed (0 to 99).

Choose the line number.

Set the width, type and color of the graph line specified in INDEX.
(The line type can be set only when the width is 1 point.)



Shows a preview.

Set the position of displaying the current data.

Set the outlook style.

Set the frame style.

Set the label attached to data when data is displayed.

Shows the collection times on the screen.

POINT

For the item which needs setting per INDEX, always click the "Apply" button every time you set it to reflect the setting.

(4) Conditions of usable tag

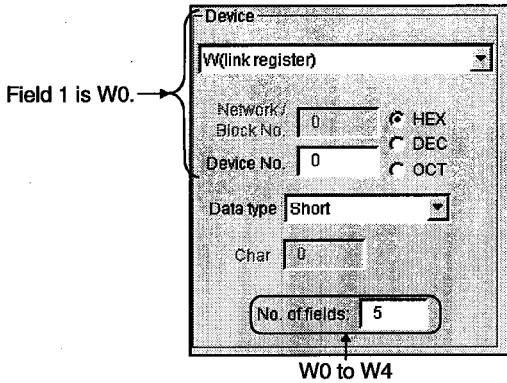
- The data type is either of Short and Long.

Note that operation will not be performed if:

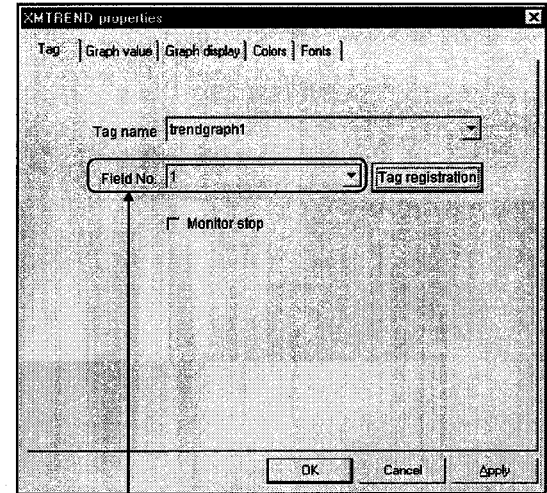
1. "Number of fields < number of graph lines"
2. The fields of different data types are included when the random tag was specified.

Example1: Usable tag (batch)

1. Tag data (batch)

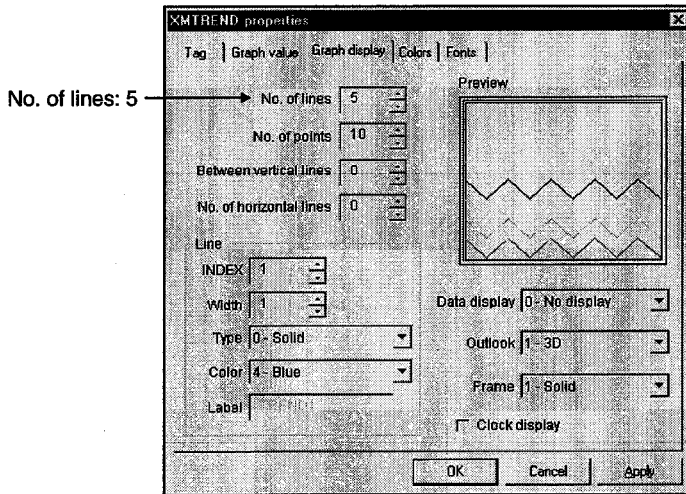


2. OCX data (tag)

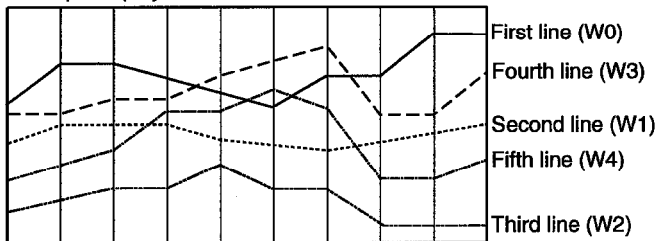


Set the first line as field 1 (W0).

3. OCX data (graph display)



4. Graph display



Example2: Usable tag (random)

1. Tag data (random)

Field No.	Device	No.	Data type	Cha
1	W	0	Short	0
2	W	32	Short	0
3	D	20	Short	0
4	R	10	Short	0
5	ER1	0	Short	0
6	QSB	0	Short	0
7	L	10	Short	0

Set the same data type.

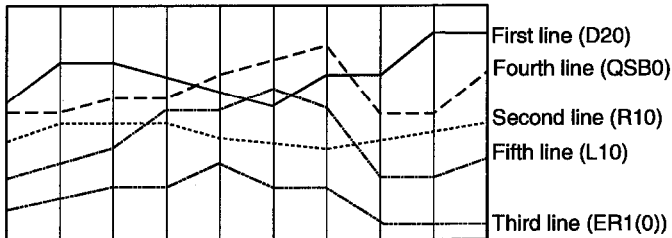
3. OCX data (graph display)

No. of lines: 5

2. OCX data (tag)

Set the first line as field 3 (D20).

4. Graph display



Example3: Unusable tag (if there are different data types within the specified fields)

Tag data (random)

Field No.	Device	No.	Data type	Cha
1	W	0	Short	0
2	W	32	Short	0
3	D	20	Short	0
4	R	10	Long	0
5	ER1	0	Short	0
6	B	0	Bit	0
7	L	10	Short	0
8	W	48	Short	0
9	STN	20	Char	1

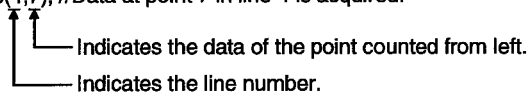
Cannot be set since there are different fields when the specified field is 1 and the number of lines specified is 4 or more.

(5) Precautions for designing

- The following four properties are used to make setting per line (MIndex).
Set the number of lines set in MSetNo.
1. MLineColor 2. MLineWidth 3. MLineStyle 4. MLineName
- The return value of the GetPicValue method is a LONG two-dimensional array.

Example

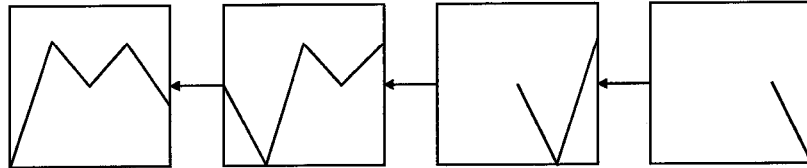
```
XMTREND1.GetPicValue(4,7); //Data at point 7 in line 4 is acquired.
```



- Since showing the clock or collected data makes clearances within the control frame, the clearances are painted with the color set to the BackColor property of the OCX-standard properties.
- An event occurs if any of the set lines exceeds the upper limit (MUpper) or lower limit (MLower).
- If MLineWidth is other than 1, MLineStyle is forced to be a solid line (0).
- If the number of lines is set to 8, the numeric change (MPicChange) event occurs when the latest data of any of the eight lines changes.
- If the number of lines is set to 8, the upper limit (MUpper) or lower limit (MLower) excess event occurs when any of the eight lines exceeds the upper or lower limit.
- When ordinary collection (MLogFlag) is set to True, data collection is performed if the form is not active. However, if a monitor stop is made, ordinary collection is not performed and the data is cleared.

- The graph display is shifted from right to left.

<Graph display>



When the display has reached its limit, the whole display is shifted.

The line is drawn as if it extends from right to left until the displayed points are drawn.

The line begins to be drawn from the right.

(6) Compatible events and methods

EventClick, MplcChange, MError, MUpper, MLower

MethodDoClick, Refresh, GetPlcValue: Returned value is a LONG value array.

11.4 Bar Graph Display



Device values are read at the specified intervals and displayed as a bar graph. As in level display, bars are painted at the percentages of the device values to the upper and lower limits specified by device values and their ranges are varied to display the levels.

(1) Specifications

File name	XMBARGRF.OCX
Number of lines	8
Display format	<p>You can set the number of horizontal axis lines. The following screen assumes the setting of 8 lines.</p> <p>The user can set the bar-to-bar distance.</p> <ul style="list-style-type: none"> • Numeric display The current values are displayed next to the names determined on a device basis. This display may also be provided on the left side. (Display/hide: Selectable)
Sampling period	1 or more seconds
Collection form	Ordinary/non-ordinary

(2) Properties

Property Name	Description	Setting Range	Initial Value	Change during Execution
OCX-standard	Refer to Section 9.1 (1).	—	—	—
XMOP-common	Refer to Section 9.1 (2).			
MBarColor	Set the display color of line 1 to 8. 0: Black 8: Gray 1: White 9: Bright gray 2: Red 10: Dark red 3: Green 11: Dark green 4: Blue 12: Dark blue 5: Yellow 13: Bright brown 6: Magenta 14: Dark magenta 7: Cyan 15: Dark cyan	—	First line : 4 Second line : 2 Third line : 3 Fourth line : 0 Fifth line : 7 Sixth line : 6 Seventh line : 8 Eighth line : 5	Not allowed
MBarName	Set the name for numeric display.	Up to 32 characters	"BARGRF1" to "BARGRF8"	Not allowed
MBarColor	Set the background color of the graph.	—	White	Allowed
MSetNo	Set the number of bars to be displayed.	2 to 8	2	Not allowed

Property Name	Description	Setting Range	Initial Value	Change during Execution
MBarReduce	Set the bar-to-bar distance.	0 to 100	0	Allowed
MUpper	Set the upper limit.	-2147483648 to 2147483647	32767	
MLower	Set the lower limit.		-32768	
MDspPattern	Set whether numeric values are displayed or not, and if displayed, its position. 0: Not displayed 2: Displayed on the left 1: Displayed on the right	0 to 2	0	Not allowed
MXLine	Set the number of horizontal axis lines to be drawn.	0 to 99		
MDspColor	Set the character color of the current values and collection times.	—	Black	Allowed
MDspBackColor	Set the background color of the current values and collection times.		White	
MIndex	Set the line number.	1 to 8	1	

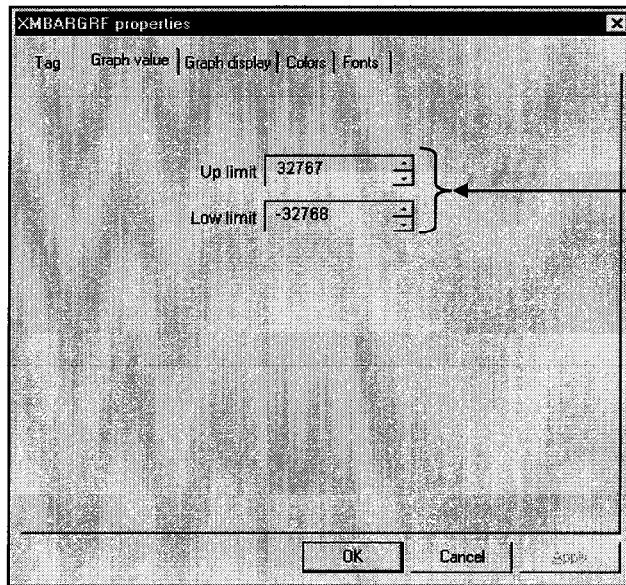


... Must be set per set number of MIndex.

(3) Property page

For the Tag, Fonts and Colors setting methods, refer to Section 9.2.

(a) Graph value



Set the upper and lower limits of the graph. (-2147483648 to 2147483647)

(b) Graph display

The screenshot shows the 'XMBARGRF properties' dialog box with the following settings and annotations:

- No. of bars:** 8. Annotation: "Set the number of bars (2 to 8)." (with arrow pointing to the field)
- Bar width ratio:** 100. Annotation: "Set the bar-to-bar distance. (0 to max. width)" (with arrow pointing to the field)
- No. of horizontal lines:** 0. Annotation: "Set the number of horizontal axis lines to be displayed (0 to 99)." (with arrow pointing to the field)
- Bar section:**
 - INDEX:** 1. Annotation: "Choose the bar number." (with arrow pointing to the field)
 - Color:** 4 - Blue. Annotation: "Set the color of the bar specified in INDEX." (with arrow pointing to the field)
 - Label:** BARGRF1. Annotation: "Set the label attached to data when data is displayed." (with arrow pointing to the field)
- Preview:** Shows a 3D bar chart with a legend listing BAR -1, BAR108, BAR354, BAR215, BAR360, BAR106, BAR213, and BAR353. Annotation: "Shows a preview." (with arrow pointing to the preview window)
- Data display:** 1 - Display at right. Annotation: "Set the position of showing the current data." (with arrow pointing to the dropdown)
- Outlook:** 1 - 3D. Annotation: "Set the outlook style." (with arrow pointing to the dropdown)
- Frame:** 1 - Solid. Annotation: "Set the frame style." (with arrow pointing to the dropdown)

Buttons at the bottom: OK, Cancel, Apply.

POINT

For the item which needs setting per INDEX, always click the "Apply" button every time you set it to reflect the setting.

(4) Conditions of usable tag

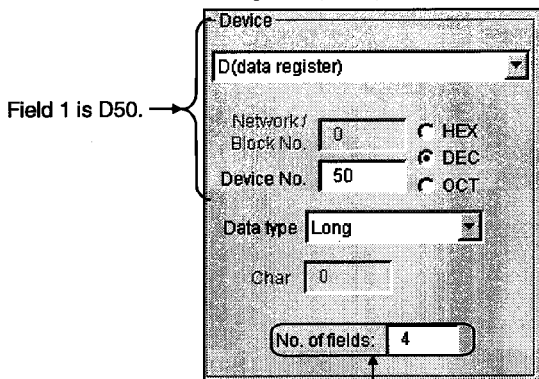
- The data type is either of Short and Long.

Note that operation will not be performed if:

1. "Number of fields < number of graph lines"
2. The fields of different data types are included when the random tag was specified.

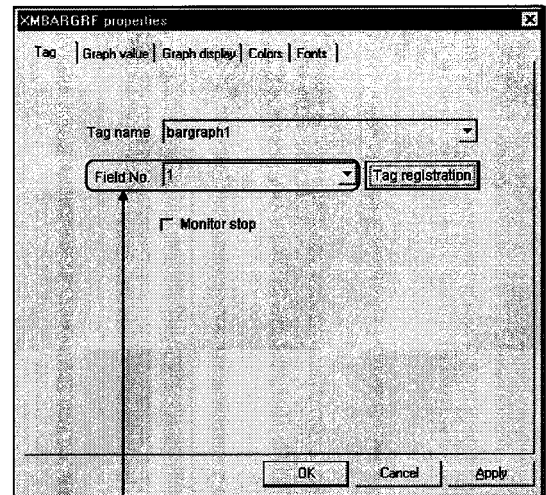
Example1: Usable tag (batch)

1. Tag data (batch)



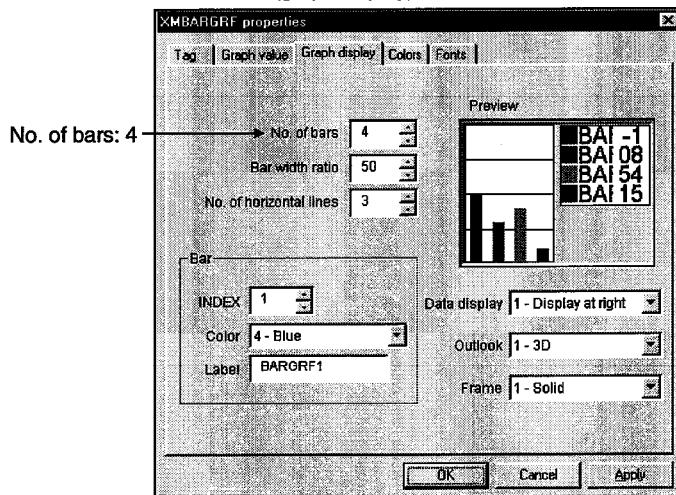
D50 to D57 (2 words for 1 field because of Long type)

2. OCX data (tag)



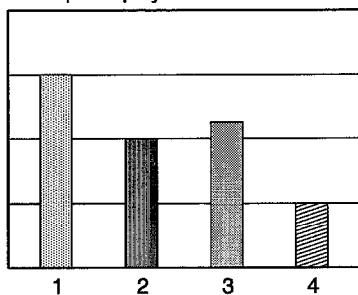
Set the first bar as field 1 (D50).

3. OCX data (graph display)



No. of bars: 4

4. Graph display



- First line (D50, D51)
- Second line (D52, D53)
- Third line (D54, D55)
- Fourth line (D56, D57)

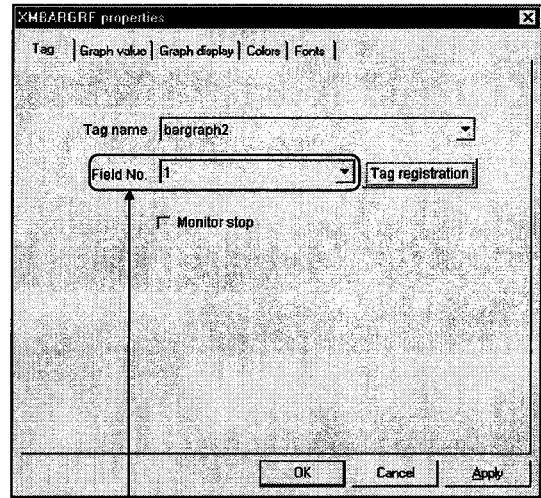
Example2: Usable tag (random)

1. Tag data (random)

Field No.	Device	No.	Data type	Cha
1	D	10	Short	0
2	W	32	Short	0
3	SD	20	Short	0
4	F	10	Short	0
5	ER1	0	Short	0
6	QSB	0	Short	0
7	L	10	Short	0

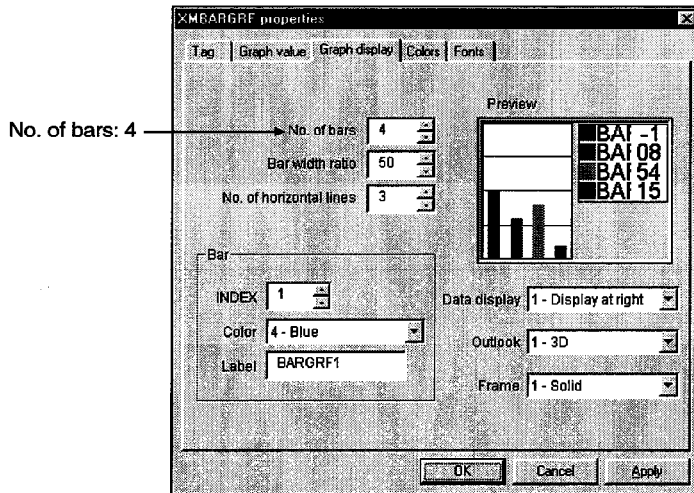
Set the same data type.

2. OCX data (tag)



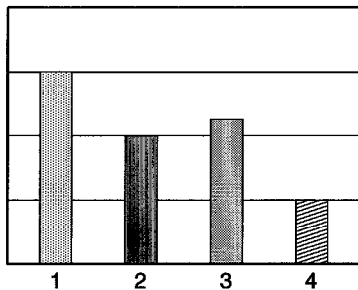
Set the first bar as field 1 (D10).

3. OCX data (graph display)



No. of bars: 4

4. Graph display



- First bar (D10)
- Second bar (W32)
- Third bar (SD20)
- Fourth bar (F10)

Example3: Unusable tag (if there are different data types within the specified fields)

Tag data (random)

Field No.	Device	No.	Data type	Cha
1	W	0	Short	0
2	W	32	Short	0
3	D	20	Short	0
4	R	10	Long	0
5	ER1	0	Short	0
6	B	0	Bit	0
7	L	10	Short	0
8	W	48	Short	0
9	STN	20	Char	1

Cannot be set since there are different fields when the specified field is 1 and the number of bars specified is 4 or more.

(5) Precautions for designing

- The following two properties are used to make setting per line (MIndex).
Set the number of lines set in MSetNo.
 1. MBarColor 2. MBarName
- Since showing the scroll bar or collected data makes clearances within the control frame, the clearances are painted with the color set to the BackColor property of the OCX-standard properties.
- For designing, the initial value graph appears.
- The return value of the GetPlcValue method is a LONG array.

Example

```
XMBARGRF1.GetPlcValue(2); //Data of bar 2 is acquired.
```

↑ Indicates the bar number.

(6) Compatible events and methods

EventClick, MplcChange, MError, MUpper, MLower

MethodDoClick, Refresh, GetPlcValue: Returned value is a LONG value array.

11.5 Pareto Chart Display



Device values are read at the specified intervals and displayed in a Pareto chart. A Pareto chart provides the level display of device values in percentage, with the sum of the values of the monitored devices handled as the upper limit. The devices monitored are displayed from left to right in the order of larger values.

(1) Specifications

File name	XMPALLET.OCX
Number of lines	8
Display format	<p>A Pareto chart is shown as follows.</p> <p>Bar graph Line graph</p> <p>Sum of collected values</p> <p>100% →</p> <p>0 →</p> <p>0% →</p> <p>Vertical line (Display/hide: Can be set)</p> <ul style="list-style-type: none"> Product A 2500 Product B 1000 Product C 562 Product D 362 Product E 0 Product F 0 Product G 0 <p>• Numeric display The current values are displayed next to the names determined on a device basis. (Display/hide: Selectable)</p>
Sampling period	1 or more seconds

(2) Properties

Property Name	Description	Setting Range	Initial Value	Change during Execution
OCX-standard	Refer to Section 9.1 (1).	—	—	—
XMOP-common	Refer to Section 9.1 (2).	—	—	—
MBarColor	Set the display color of line 1 to 8. 0: Black 8: Gray 1: White 9: Bright gray 2: Red 10: Dark red 3: Green 11: Dark green 4: Blue 12: Dark blue 5: Yellow 13: Bright brown 6: Magenta 14: Dark magenta 7: Cyan 15: Dark cyan	—	First line : 4 Second line : 2 Third line : 3 Fourth line : 0 Fifth line : 7 Sixth line : 6 Seventh line : 8 Eighth line : 5	Not allowed
NBarName	Set the name for numeric display.	Up to 32 characters	"PALLET1" to "PALLET8"	
MBackColor	Set the background color of the graph.	—	White	Allowed
MSetNo	Set the number of lines to be displayed.	2 to 8	2	Not allowed
MYLine	Set whether the vertical lines are displayed or not. True: Displayed False: Not displayed	—	True	Allowed

Property Name	Description	Setting Range	Initial Value	Change during Execution
MLineStyle	Set the type of line graph line. 0: Solid 2: Broken 1: Dot 3: None	0 to 3	0	Not allowed
MDspPattern	Set whether numeric values are displayed or not, and if displayed, its position. 0: Not displayed 2: Displayed on the left 1: Displayed on the right	0 to 2		
MDspColor	Set the character color of the current values.	—	Black	Allowed
MDspBackColor	Set the background color of the current values.		White	
MIndex	Set the line number.		1 to 8	

 ... Must be set per set number of MIndex.

(3) Property page

For the Tag, Fonts and Colors setting methods, refer to Section 9.2.

(a) Graph display

Set the number of lines (2 to 8).

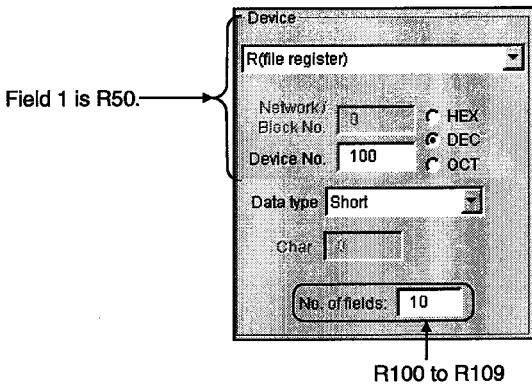
POINT
For the item which needs setting per INDEX, always click the "Apply" button every time you set it to reflect the setting.

(4) Conditions of usable tag

- The data type is either of Short and Long.
- Note that operation will not be performed if:
1. "Number of fields < number of graph lines"
 2. The fields of different data types are included when the random tag was specified.

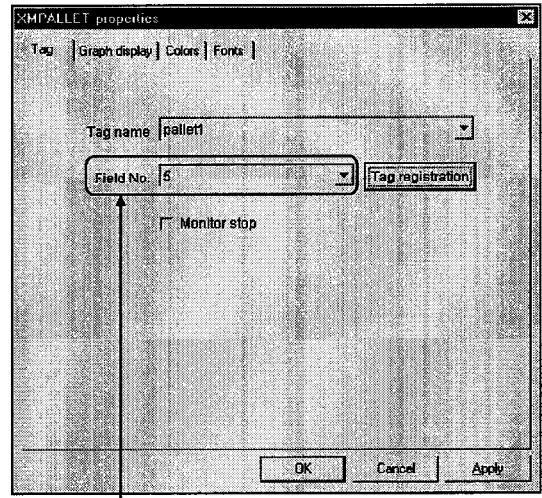
Example1: Usable tag (batch)

1. Tag data (batch)



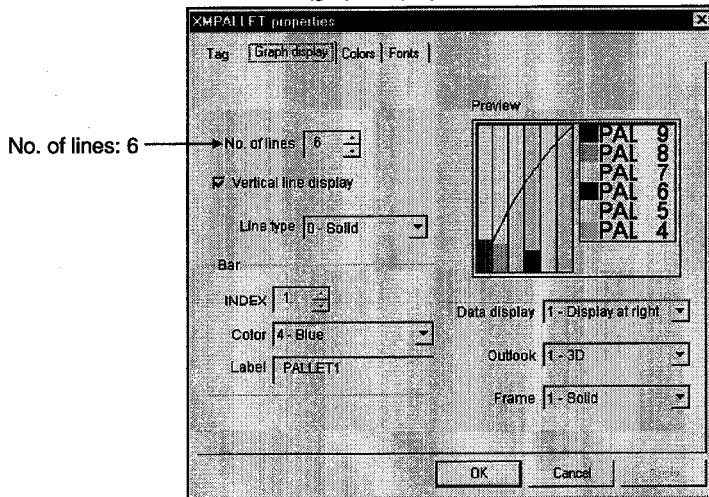
R100 to R109

2. OCX data (tag)



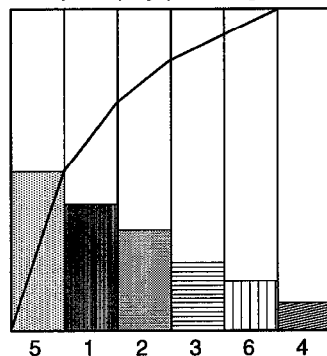
Set the first bar as field 5 (R104).

3. OCX data (graph display)



No. of lines: 6

4. Graph display (Rearranged in order of larger to smaller values)



Bar	Value
First bar (R104)	25
Second bar (R105)	15
Third bar (R106)	10
Fourth bar (R107)	3
Fifth bar (R108)	40
Sixth bar (R109)	7

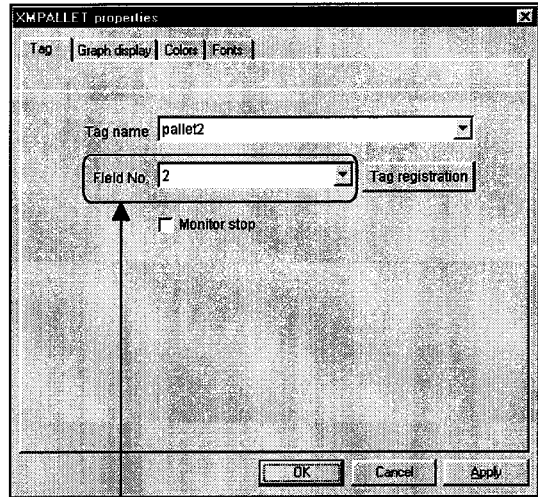
Example2: Usable tag (random)

1. Tag data (random)

Field No.	Device	No.	Data type	Cha
1	D	10	Short	0
2	W	32	Short	0
3	SD	20	Short	0
4	F	10	Short	0
5	ER1	0	Short	0
6	QSB	0	Short	0
7	L	10	Short	0

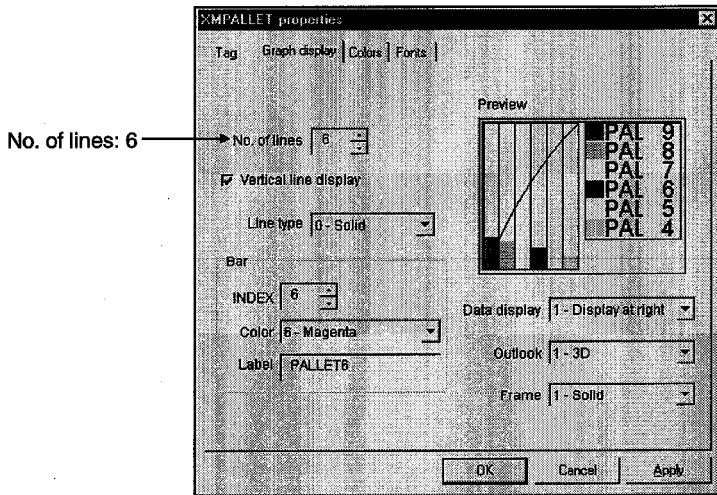
Set the same data type.

2. OCX data (tag)

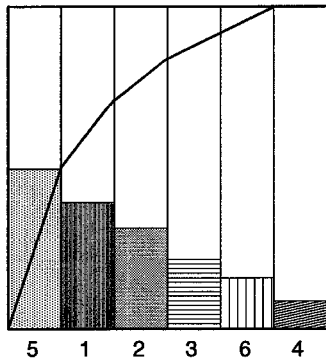


Set the first bar as field 2 (W32).

3. OCX data (graph display)



4. Graph display(Rearranged in order of larger to smaller values)



Bar	Value
First bar (D10)	25
Second bar (W32)	15
Third bar (SD20)	10
Fourth bar (F10)	3
Fifth bar (ER1)	40
Sixth bar (QSB0)	7

Example3: Unusable tag (if there are different data types within the specified fields)

Tag data (random)

Field No.	Device	No.	Data type	Cha
1	W	0	Short	0
2	W	32	Short	0
3	D	20	Short	0
4	R	10	Long	0
5	ER1	0	Short	0
6	B	0	Bit	0
7	L	10	Short	0
8	W	48	Short	0
9	STN	20	Char	1

Cannot be set since there are different fields when the specified field is 1 and the number of lines specified is 4 or more.

(5) Precautions for designing

- The following two properties are used to make setting per line (MIndex). Set the number of lines set in MSetNo.
 1. MBarColor
 2. MBarName
- Since showing the collected data makes clearances within the control frame, the clearances are painted with the color set to the BackColor property of the OCX-standard properties.
- For designing, the initial value graph appears.

(6) Precautions for execution

- If there is any negative value collected, a proper graph display will not be provided. Do not enter a negative value.

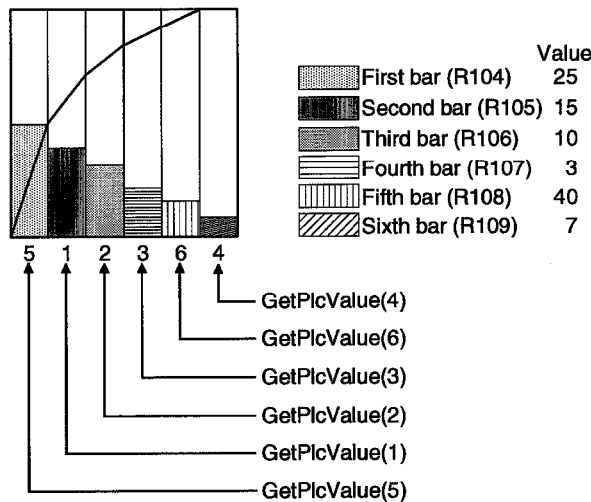
(7) Compatible events and methods

EventClick, MplcChange, MError

MethodDoClick, Refresh, GetPlcValue: Returned value is a LONG value array.

Long GetPlcValue (MIndex)

Example



11. 6 Historical Trend Graph Display



Device values are read at the specified intervals to display a time series line graph. A graph overflowing the screen is shifted for display. The graph shifted can be confirmed using the scroll bar.

(1) Specifications

File name	XMHSTTRD.OCX
Number of lines	4
Display format	<p>You can set the number of horizontal axis lines. The following screen assumes the setting of 3 lines.</p> <ul style="list-style-type: none"> • Numeric display reference line (movable) Set the reference line for numeric display. • Numeric display The current values are displayed next to the names determined on a device basis. (Display/hide: Selectable) • Graph changeover Click either button to change between graphs when the data of two or more historical trend graphs are collected. • Collection time display Shows the new and old data collection times of the graph. (Display/hide: Selectable)
Number of points	100
Sampling period	1 or more seconds (communication interval set to tag)
Collection form	Ordinary
Number of historical points	1 to 10000 (number of logging points set to tag)
Number of historical trend graphs	Depending on restriction on the number of monitor points

(2) Properties

Property Name	Description	Setting Range	Initial Value	Change during Execution
OCX-standard	Refer to Section 9.1 (1).	—	—	—
XMOP-common	Refer to Section 9.1 (2).	—	—	—
MGraphNo	Set the number of graphs for historical trend graph display.	1 to 5	1	Not allowed
MBackColor	Set the background color of the graph (used in all graphs).	—	White	Allowed
MDspColor	Set the character color of the specified values and times.		Black	
MDspBack Color	Set the background color of the specified values and times.		White	

11. GRAPH DISPLAY CUSTOM CONTROLS

MELSEC

Property Name	Description	Setting Range	Initial Value	Change during Execution
MTagName	Set up to the tags used with graphs 1 to 5. (Specify on a graph basis.)		As in XMOP-common.	—
MLineColor	Set the display color of line 1 to 8. 0: Black 8: Gray 1: White 9: Bright gray 2: Red 10: Dark red 3: Green 11: Dark green 4: Blue 12: Dark blue 5: Yellow 13: Bright brown 6: Magenta 14: Dark magenta 7: Cyan 15: Dark cyan	—	First line : 4 Second line : 2 Third line : 3 Fourth line : 0	Not allowed
MLineWidth	Set the thickness of line 1 to 4 in pixel unit.	1 to 100	1	
MLineStyle	Choose the type of line 1 to 4. 0: Solid 1: Dot 2: Broken 3: Transparent	0 to 3	0	
MLineName	Set the name for numeric display.	Up to 32 characters	"HSTTRD11" to "HSTTRD55"	
MSetNo	Set the number of graph lines.	1 to 4	1	Allowed
MPoint	Set the number of points in the vertical axis.	2 to 100	10	
MUpper	Set the upper limit.	-2147483648 to 2147483647	32767	
MLower	Set the lower limit.		-32468	
MYLine	Set in how many point increments the vertical reference lines will be drawn.	0 to 99	0	Not allowed
MXLine	Set the number of horizontal axis lines to be drawn.			
MDspTime	Set whether times are displayed or not (set on a graph basis). True: Displayed False: Not displayed	—	False	
MDspPattern	Set whether numeric values are displayed or not, and if displayed, its position. 0: Not displayed 2: Displayed on the left 1: Displayed on the right	0 to 2	0	
MIndex	Set the line number.	1 to 4	1	Allowed
MGraphIndex	Specify the graphs (whole).	1 to 5	1	



... Must be set per set number of MIndex.



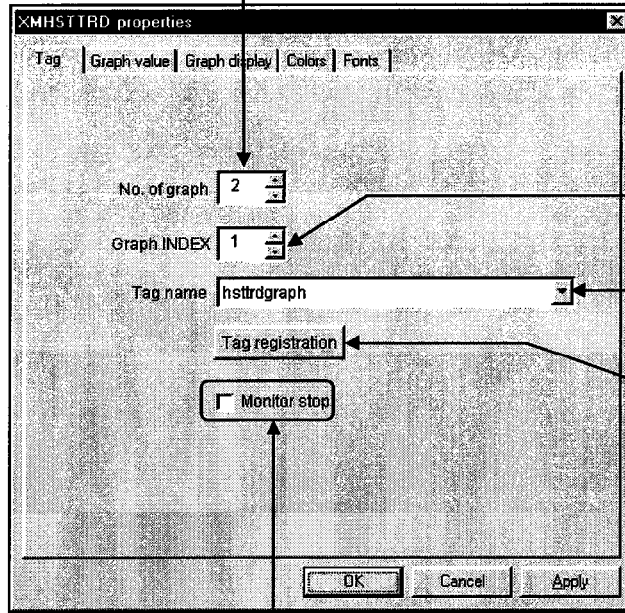
... Must be set per set number of MGraphIndex.

(3) Property page

For the tag and color setting methods, refer to Section 9.2.

(a) Tag

Set the number of graphs (1 to 5).



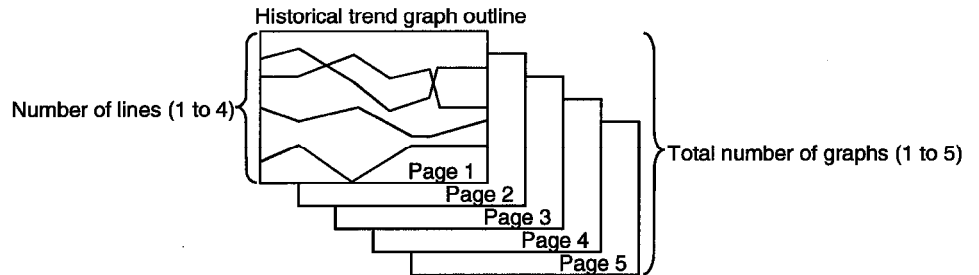
Set the graph relative to the tag (page basis).

Set the tag relative to Graph INDEX.

Start the tag setup utility.

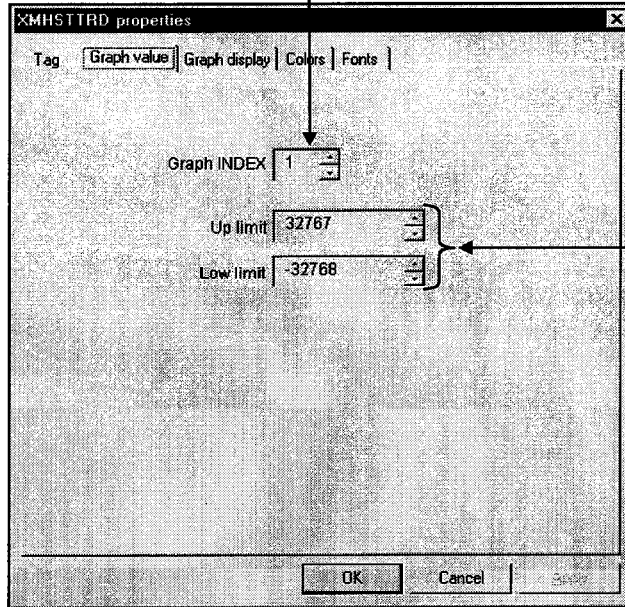
Check to stop the monitor function.

POINT
 For the item which needs setting per INDEX, always click the "Apply" button every time you set it to reflect the setting.



(b) Graph value

Set the graph number to which setting will be made (1 to 5).



Set the upper and lower limits of the graph. (-2147483648 to 2147483647)

(c) Graph display

Set the graph number to which setting will be made (1 to 5).

Set the number of lines (1 to 4).

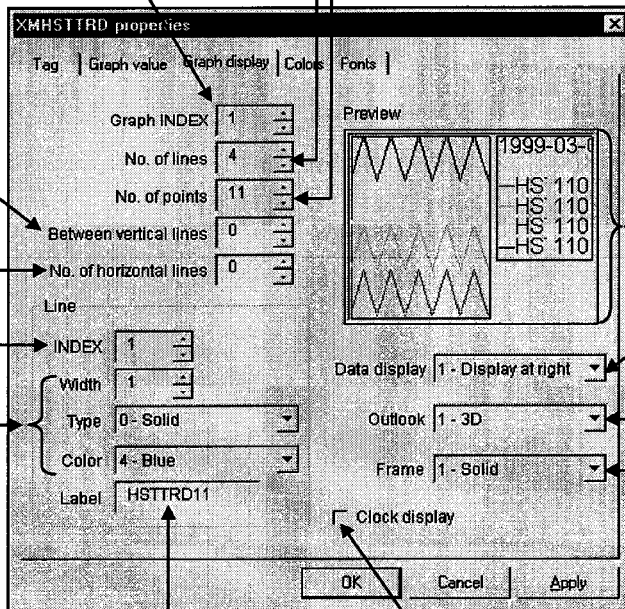
Set the number of graph points (2 to 100).

Set in how many point increments the vertical reference lines will be drawn (0 to 99).

Set the number of horizontal axis lines to be displayed (0 to 99).

Set the line number (1 to 4).

Set the width, type and color of the graph line specified in INDEX.



Shows a preview.

Set the position of displaying the current data.

Set the outlook style.

Set the frame style.

Set the label attached to data when data is displayed.

Shows the collection times on the screen.

POINT

For the item which needs setting per INDEX, always click the "Apply" button every time you set it to reflect the setting.

(4) Conditions of usable tag

Under the following conditions, create tags dedicated to the historical trend graph OCX.

- Set the tag collection cycle to 1 second or larger.
- The data type is either of Short and Long and Log is specified.

Note that operation will not be performed if:

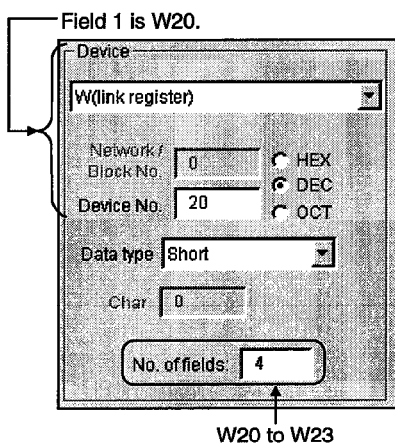
1. "Number of fields < number of graph lines"
2. The fields of different data types are included when Random tag was specified.

POINTS

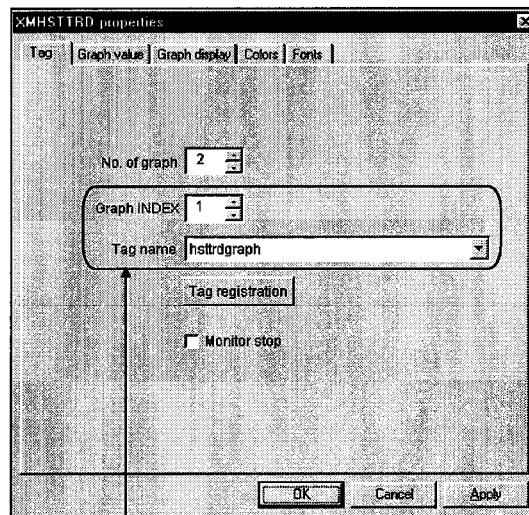
- Set log designation on the "Extended" screen of the tag setup utility.
- Do not enter unnecessary data into the tag data.
If there are data more than required, operation may not be performed.

Example1: Usable tag (batch)

1. Tag data (batch)



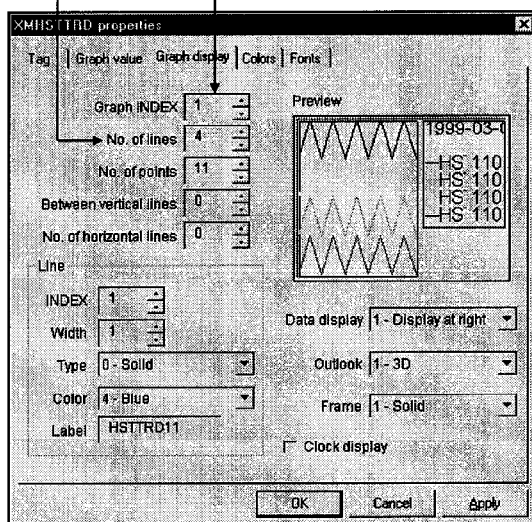
2. OCX data (tag)



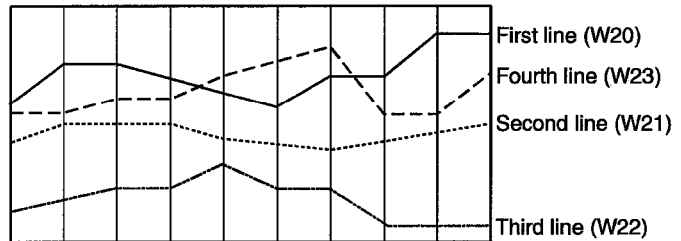
Set tags corresponding to the number of graphs.

3. OCX data (graph display)

No. of lines: 4 First graph



4. Graph display



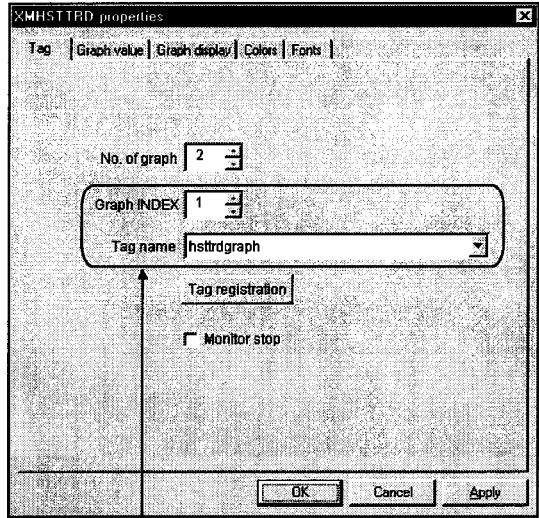
Example2: Usable tag (random)

1. Tag data (random)

Field No.	Device	No.	Data type	Cha
1	D	10	Short	0
2	W	32	Short	0
3	SD	20	Short	0
4	F	10	Short	0
5	ER1	0	Short	0
6	QSB	0	Short	0
7	L	10	Short	0

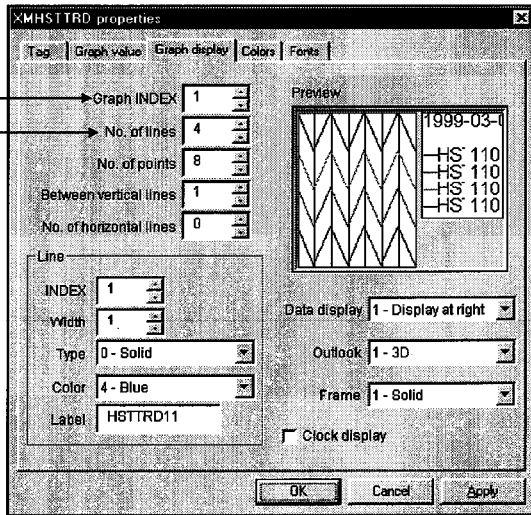
Set the same data type.

2. OCX data (tag)



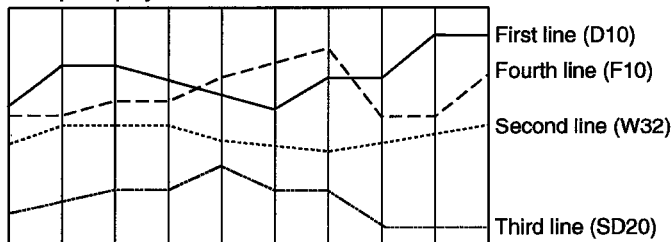
3. OCX data (graph display)

First graph
No. of lines: 4



Set tags corresponding to the number of graphs.

4. Graph display



Example3: Unusable tag (if there are different data types within the specified fields)

Tag data (random)

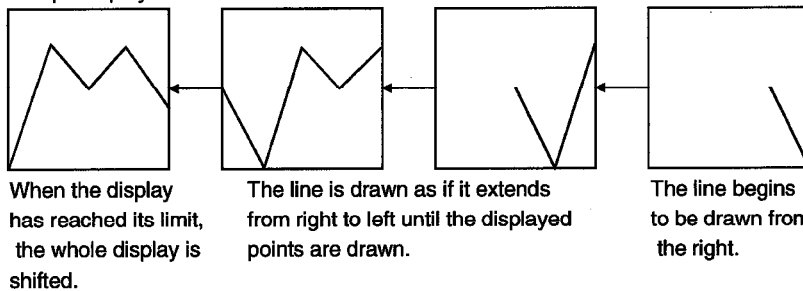
Field No.	Device	No.	Data type	Cha
1	W	0	Short	0
2	W	32	Short	0
3	D	20	Short	0
4	R	10	Long	0
5	ER1	0	Short	0
6	B	0	Bit	0
7	L	10	Short	0
8	W	48	Short	0
9	STN	20	Char	0

Cannot be set since there are different fields when the specified field is 1 and the number of lines specified is 4 or more.

(5) Precautions for designing

- The tag file used with this custom control should be used as dedicated tags. Therefore, there is no field setting property.
- The following four properties are used to make setting per graph (MGraphIndex).
1. MSetNo 2. MPoint 3. MUpper 4. MLower
- The following four properties are used to make setting per line (MIndex). Set the number of lines set in MSetNo.
1. MLineColor 2. MLineWidth 3. MLineStyle 4. MLineName
- Since showing the collected data makes clearances within the control frame, the clearances are painted with the color set to the BackColor property of the OCX-standard properties.
- For designing, the initial value graph appears.
- In MGraphNo, set the number of graphs monitored by the historical trend graph display custom control.
- You need to set the data of the number of graphs set in MGraphNo.
- The graph display is shifted from right to left.
- The numeric display reference line can be moved by dragging the mouse.

<Graph display>



(6) Compatible event and method

EventMError *¹
MethodRefresh

*1 In the historical trend graph, an error event related to communication cannot be acquired for the MError event.

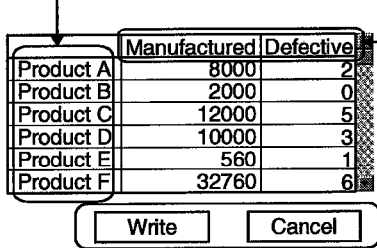
12. BLOCK DISPLAY/INPUT CUSTOM CONTROLS

12.1 Numeric Block Data Display/Input



Device values are read from blocks of the specified devices to show them vertically and horizontally. Alternatively, numeric values may be entered to write them to devices.

(1) Specifications

File name	XMNUMBLK.OCX																
Number of blocks	Column: Max. 30 blocks Row: Max. 10 blocks																
Table format	Columns and rows																
Numeric display format	Decimal/hexadecimal number																
Number of display digits	1 to 18 digits																
Decimal point position	Digit 0 to 16																
Weighting	+, -, x, / -2147483648 to 2147483647																
Minimum value	Short or Long type minimum value to maximum value -1																
Maximum value	Short or Long type minimum value +1 to maximum value																
Data entry method	Choose the cell whose data will be changed. Double-click and enter a value, then press the Enter key.																
Display format	 <ul style="list-style-type: none"> Block character display Desired texts appear. (Show/hide: Selectable) Batch-written by MWriteLock property. If (1 or 2) is specified, these buttons appear. 																
Data direction	<p>The user can set the data direction for block display.</p> <p>Column direction</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>1</td><td>3</td><td>5</td><td>7</td></tr> <tr><td>2</td><td>4</td><td>6</td><td>8</td></tr> </table> <p>Row direction</p> <table border="1" style="display: inline-table;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td>5</td><td>6</td><td>7</td><td>8</td></tr> </table>	1	3	5	7	2	4	6	8	1	2	3	4	5	6	7	8
1	3	5	7														
2	4	6	8														
1	2	3	4														
5	6	7	8														
Interlock	<p>The following interlocking methods are available to write numeric values.</p> <table border="1"> <thead> <tr> <th>Interlock Type</th> <th>Write Timing</th> </tr> </thead> <tbody> <tr> <td>None</td> <td>When data is changed.</td> </tr> <tr> <td>Batch write</td> <td>When you clicked the "Write" button.</td> </tr> <tr> <td>Batch write (message box)</td> <td>When you clicked the "OK" button in the message box which appeared as soon as you clicked the "Write" button.</td> </tr> <tr> <td>Only at bit ON</td> <td>When the bit device set as an interlock turned on.</td> </tr> <tr> <td>Only at bit OFF</td> <td>When the bit device set as an interlock turned off.</td> </tr> </tbody> </table>	Interlock Type	Write Timing	None	When data is changed.	Batch write	When you clicked the "Write" button.	Batch write (message box)	When you clicked the "OK" button in the message box which appeared as soon as you clicked the "Write" button.	Only at bit ON	When the bit device set as an interlock turned on.	Only at bit OFF	When the bit device set as an interlock turned off.				
Interlock Type	Write Timing																
None	When data is changed.																
Batch write	When you clicked the "Write" button.																
Batch write (message box)	When you clicked the "OK" button in the message box which appeared as soon as you clicked the "Write" button.																
Only at bit ON	When the bit device set as an interlock turned on.																
Only at bit OFF	When the bit device set as an interlock turned off.																
Write procedure	<p>The writing procedure is as follows.</p> <pre> graph LR START[START] --> SetMWriteFlag[Set MWriteFlag to True.] SetMWriteFlag --> DoubleClick[Double-click the cell where a value will be written, and enter the value.] DoubleClick --> PerformInterlock[Perform interlock processing.] PerformInterlock --> END[END] </pre>																

(2) Properties

Property Name	Description	Setting Range	Initial Value	Change during Execution
OCX-standard	Refer to Section 9.1 (1).	—	—	—
XMOP-common	Refer to Section 9.1 (2).			
MYBlock	Set the number of blocks in the Y (column) direction.	1 to 30	1	Not allowed
MXBlock	Set the number of blocks in the X (row) direction.	1 to 10	1	
MDataDirection	Set the display direction of block data. 0: Column direction 1: Row direction	0, 1	0	
MNumColor	Set the character color for numeric display.	—	Black	Allowed
MBackColor	Set the background color for numeric display.		White	
MNoType	Choose the numeric display format. 0: Decimal number 1: Hexadecimal number	0, 1	0	Not allowed
MStrLen	Specify the number of display digits.	1 to 18	6	
MDecPoint	Set the position of the decimal point display digit.	0 to 16	0: (no indication)	
MUpper	Set the upper limit.	-2147483648 to 2147483647	32767	Allowed
MLower	Set the lower limit.		-32768	
MExchange	Choose the weighting format. 0: None 1: x 2: / 3: + 4: -	0 to 4	0	Not allowed
MRate	Weighting value	-2147483648 to 2147483647	1	
MWriteLock	Set the interlock for write. 0: None 3: Only at bit ON 1: Batch write 4: Only at bit OFF 2: Batch write (message box)	0 to 4	0	
MLockTagName	Specify the tag name for interlock. (Valid only when 3 or 4 is selected in the MWriteLock property)	—	First tag name in tag file	
MLockFieldNo	Specify the field number of the tag. (Valid only when the MLockTagName property is used)		1	
MLockMessage	Set the text to be displayed in the message box. (Valid only when 2 is selected in the MWriteLock property)	Up to 64 characters	"Write data! Are you sure?"	
MWriteFlag	Set whether write is valid or invalid. True: Write valid False: Write invalid	—	False	Allowed
MDspPattern	Set the block character display. 0: No display 1: Column display only 2: Row display only 3: Both display	0 to 3	0	Not allowed
MYString	Set the display text in the column direction.	Up to 32 characters	"NUMBLKY1" to "NUMBLKY30"	
MXString	Set the display text in the row direction.		"NUMBLKX1" to "NUMBLKX30"	
MYBlockNo	Set the block number in the column direction.	1 to 30	1	Allowed
MXBlockNo	Set the block number in the row direction.	0 to 10		
MXBlockWidth	Set the cell width.	1 to 1000	100	Not allowed
Mblock Alignment	Set the alignment of the block-displayed values. 0: Left alignment 1: Right alignment 2: Center alignment	0 to 2	1	
MYStr Alignment	Set the alignment of the column direction text. 0: Left alignment 1: Right alignment 2: Center alignment		0	
MXStr Alignment	Set the alignment of the row direction text. 0: Left alignment 1: Right alignment 2: Center alignment		2	

(3) Property page

For the Tag, Fonts and Colors setting methods, refer to Section 9.2.

(a) Value display

Set the display position of the decimal point. (0 to 18)

Set the upper and lower limits. (-2147483648 to 2147483647)

Set the numbers of column and row blocks. (Column: 1 to 30, Row: 1 to 10)

Set the data display position in the table.

Set the outlook style.

Set the number of display digits. (1 to 18)

Set the weighting formula.

Set the weighting value. (-2147483648 to 2147483647)

Set the block number. Block 0 is the block for a column text.

Set the width of the block in points. (1 to 1000)

Choose the numeric display format.

Set the frame style.

Specify the display direction of the table.

(b) Text display

Choose the display format for block text display.

Aligns the displayed texts in the specified ways.

Specify the texts and set blocks for block text display. (Up to 32 characters)

POINT

When setting a text in each block, always click the "Apply" button every time you set it to reflect the setting.

(c) Write

Set the interlock for write.

Enables write from the user program. → Write enable

Specify the tag file name used. → Tag name: RANDOM_TAG

Specify the field number of the tag file. → Field No. [dropdown]

Starts the tag setup utility. → Tag registration

Set the message in the message box displayed for interlock setting. (Up to 64 characters) → Message: Write data! Are you sure?

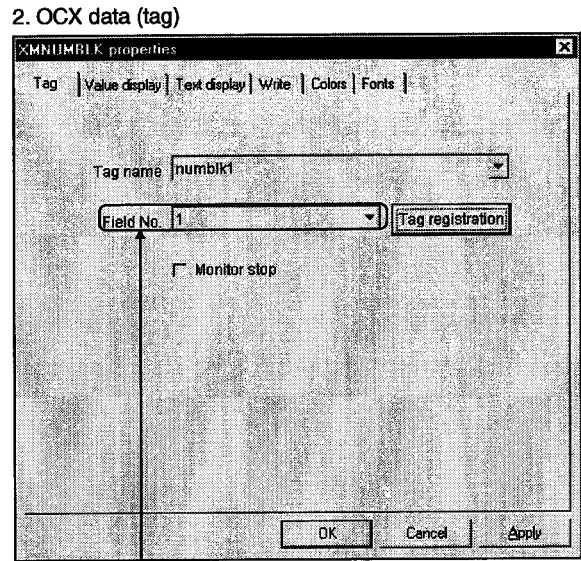
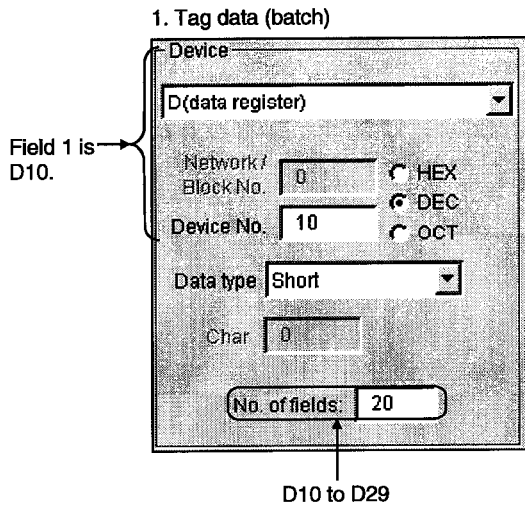
Buttons: OK, Cancel, Apply

POINT	Specify the tag of Bit data type as the tag used for interlock.
--------------	---

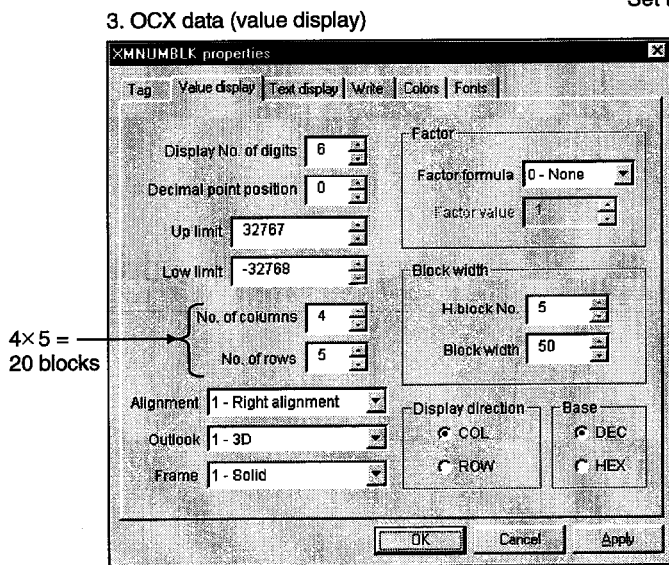
(4) Conditions of usable tag

- The data type is either of Short and Long.
- Note that operation will not be performed if:
- "Number of fields < column blocks × row blocks"
 - The fields of different data types are included when the random tag was specified.

Example1: Usable tag (batch)



Set the first block as field 1 (D10).



4. Block display (display direction: column)

D10	D14	D18	D22	D26
D11	D15	D19	D23	D27
D12	D16	D20	D24	D28
D13	D17	D21	D25	D29

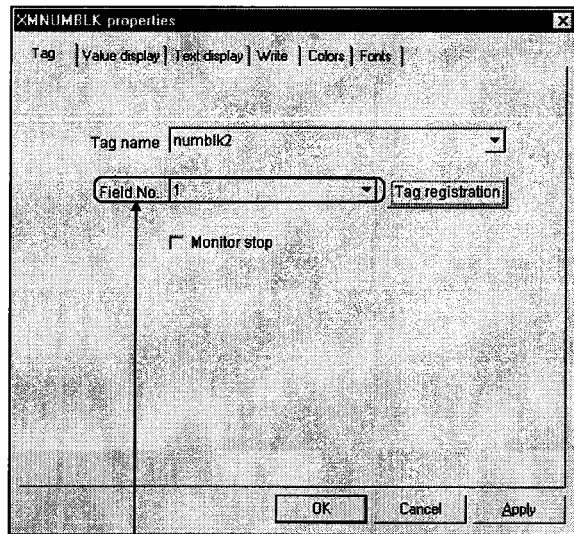
Example2: Usable tag (random)

1. Tag data (random)

Field No.	Device	No.	Data type	Cha
1	D	10	Short	0
2	W	32	Short	0
3	SD	20	Short	0
4	F	10	Short	0
5	ER1	0	Short	0
6	QSB	0	Short	0
7	L	10	Short	0

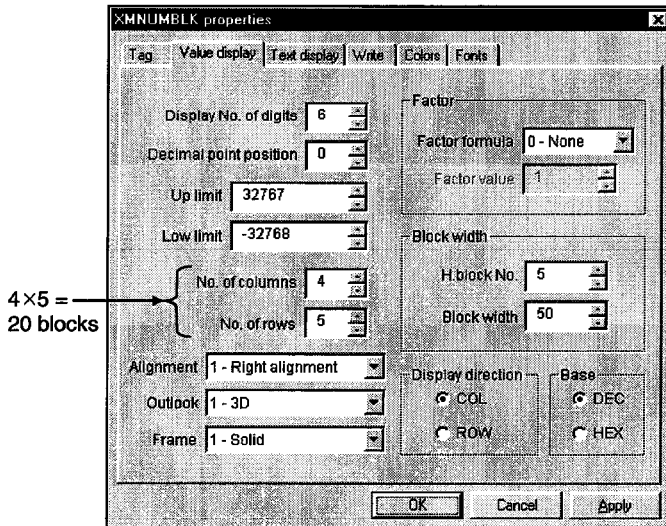
Set the same data type.

2. OCX data (tag)



Set the first block as field 1 (D10).

3. OCX data (value display)



4. Block display (display direction: column)

D10	F10
W32	ER1(0)
SD20	QSB0

Example3: Unusable tag (if there are different data types within the specified fields)

Tag data (random)

Field No.	Device	No.	Data type	Cha
1	W	0	Short	0
2	W	32	Short	0
3	D	20	Short	0
4	R	10	Long	0
5	ER1	0	Short	0
6	B	0	Bit	0
7	L	10	Short	0
8	W	48	Short	0
9	STN	20	Char	1

Cannot be set since there are different fields when the specified field is 1 and the number of points specified is 4 or more.

(5) Precautions for designing

- Since specifying batch write makes clearances within the control frame, the clearances are painted with the color set to the BackColor property of the OCX-standard properties.
- For designing, '0' appears to indicate the number of digits.
- An error message appears if the set value is outside the range.
- With the exception of the display color and background color, the attributes of the text displayed are set by the OCX-standard properties.
- Any value in excess of the upper or lower limit is highlighted.
- "****" appears if a value exceeds the number of display digits.
- MWriteFlag can be changed during execution and allows write to be disabled/enabled from the user program.
- The numeric change (MPlcChange) event occurs when any of the block data changes.
- An event occurs if any block exceeds the upper or lower limit.
- Any fractional part generated by weighting is discarded.
- When weighting has been set, the device value is used to make an upper/lower value check.
- When weighting has been set, the values displayed and entered are as follows.

(Example) Weighting: $\times 8$ Device value: 5 (decimal display)

On-screen display: 40 ("40" is shown as a result of multiplying 5 by 8)

Entered value : 5 (Device value of "5" is entered)

- The value weighted is not included in the judgment of the upper or lower limit. Judgment is based on the actual value.
- The returned value of the GetPlcValue() method is long. This value is acquired by specifying a block.
- In a write enable status, double-clicking a cell shows a caret and enables entry. After entering a value, press the Write button for batch write, or press the Enter key or move to another cell for other than batch write to write the value.



- For data change control exercised for the running PLC, configure up an interlock circuit in the sequence program to ensure that the whole system will always operate safely. Also, determine corrective actions to be taken for occurrence of a data communication error between your personal computer and PLC CPU.

(6) Compatible events and methods

Event MError, Click, MWrite, MUpper, MLower, MVScroll, MHScroll, MplcChange

Method Refresh, DoClick, GetPlcValue: Returned value is a LONG two-dimensional array.

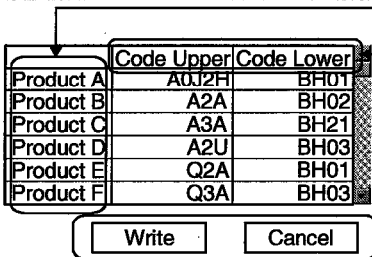
Long GetPlcValue (column block number, row block number)

12.2 Character String Block Data Display/Input



Device values are read from blocks of the specified devices to show texts in lines. Alternatively, numeric values may be entered to write them to devices.

(1) Specifications

File name	XMSTRBLK.OCX																
Number of blocks	Column: Max. 30 blocks Row: Max. 10 blocks																
Table format	Columns and rows																
Number of displayed characters	2 to 40 bytes (specify even bytes)																
Data entry method	Choose the cell whose data will be changed. Double-click and enter a text, then press the Enter key.																
Display format	 <ul style="list-style-type: none"> Block character display Desired texts appear. (Show/hide: Selectable) Batch-written by MWriteLock property. If (1 or 2) is specified, these buttons appear. 																
Data direction	<p>The user can set the data direction for block display.</p> <p style="text-align: center;">Column direction</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>1</td><td>3</td><td>5</td><td>7</td></tr> <tr><td>2</td><td>4</td><td>6</td><td>8</td></tr> </table> <p style="text-align: center;">Row direction</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td>5</td><td>6</td><td>7</td><td>8</td></tr> </table>	1	3	5	7	2	4	6	8	1	2	3	4	5	6	7	8
1	3	5	7														
2	4	6	8														
1	2	3	4														
5	6	7	8														
Interlock	<p>The following interlocking methods are available to write texts.</p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 30%;">Interlock Type</th> <th>Write Timing</th> </tr> </thead> <tbody> <tr> <td>None</td> <td>When data is changed.</td> </tr> <tr> <td>Batch write</td> <td>When you clicked the "Write" button.</td> </tr> <tr> <td>Batch write (message box)</td> <td>When you clicked the "OK" button in the message box which appeared as soon as you clicked the "Write" button.</td> </tr> <tr> <td>Only at bit ON</td> <td>When the bit device set as an interlock turned on.</td> </tr> <tr> <td>Only at bit OFF</td> <td>When the bit device set as an interlock turned off.</td> </tr> </tbody> </table>	Interlock Type	Write Timing	None	When data is changed.	Batch write	When you clicked the "Write" button.	Batch write (message box)	When you clicked the "OK" button in the message box which appeared as soon as you clicked the "Write" button.	Only at bit ON	When the bit device set as an interlock turned on.	Only at bit OFF	When the bit device set as an interlock turned off.				
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Only at bit ON	When the bit device set as an interlock turned on.																
Only at bit OFF	When the bit device set as an interlock turned off.																
Write procedure	<p>The writing procedure is as follows.</p> <pre> graph LR START[START] --> SetFlag[Set MWriteFlag to True.] SetFlag --> DoubleClick[Double-click the cell where a text will be written, and enter the text.] DoubleClick --> Interlock[Perform interlock processing.] Interlock --> END[END] </pre>																

(2) Properties

Property Name	Description	Setting Range	Initial Value	Change during Execution
OCX-standard	Refer to Section 9.1 (1).	—	—	—
XMOP-common	Refer to Section 9.1 (2).			
MYBlock	Set the number of blocks in the Y (column) direction.	1 to 30	1	Not allowed
MXBlock	Set the number of blocks in the X (row) direction.	1 to 10	1	
MDataDirection	Set the display direction of block data. 0: Column direction 1: Row direction	0, 1	0	
MStrColor	Set the character color for numeric display.	—	Black	Allowed
MBackColor	Set the background color for numeric display.		White	
MStrLen	Specify the number of display digits.	2 to 40	40	Not allowed
MWriteLock	Set the interlock for write. 0: None 3: Only at bit ON 1: Batch write 4: Only at bit OFF 2: Batch write (message box)	0 to 4	0	
MLockTagName	Specify the tag name for interlock. (Valid only when 3 or 4 is selected in the MWriteLock property)	—	First tag name in tag file	
MLockFieldNo	Specify the field number of the tag. (Valid only when the MLockTagName property is used)		1	
MLockMessage	Set the text to be displayed in the message box. (Valid only when 2 is selected in the MWriteLock property)	Up to 64 characters	"Write data! Are you sure?"	
MWriteFlag	Set whether write is valid or invalid. True: Write valid False: Write invalid	—	False	Allowed
MDspPattern	Set the block character display. 0: No display 1: Column display only 2: Row display only 3: Both display	0 to 3	0	Not allowed
MYString	Set the display text in the column direction.	Up to 32 characters	"STRBLKY1" to "STRBLKY30"	
MXString	Set the display text in the row direction.		"STRBLKX1" to "STRBLKX30"	
MYBlockNo	Set the block number in the column direction.	1 to 30	1	Allowed
MXBlockNo	Set the block number in the row direction.	1 to 10		
MXBlockWidth	Set the cell width.	1 to 1000	100	Not allowed
Mblock Alignment	Set the alignment of the block-displayed values. 0: Left alignment 1: Right alignment 2: Center alignment	0 to 2	1	
MYStr Alignment	Set the alignment of the column direction text. 0: Left alignment 1: Right alignment 2: Center alignment		0	
MXStr Alignment	Set the alignment of the row direction text. 0: Left alignment 1: Right alignment 2: Center alignment		2	

(3) Property page

For the Tag, Fonts and Colors setting methods, refer to Section 9.2.

(a) Text display

The screenshot shows the 'XSTRBLK properties' dialog box with the following settings and annotations:

- Display No. of digits:** 40 (Annotation: Set the number of displayed characters. (2 to 40))
- Alignment:** 1 - Right alignment (Annotation: Set the data display position in the table.)
- Outlook:** 1 - 3D (Annotation: Set the outlook style.)
- Frame:** 1 - Solid (Annotation: Set the frame style.)
- V.text alignment:** 0 - Left alignment
- H.text alignment:** 2 - Center alignment (Annotation: Specify the alignment methods of the column and row direction texts.)
- Block:** 1 (Annotation: Set the block number. Block 0 is the block for a column text.)
- Block width:** 100 (Annotation: Set the block width in points. (1 to 1000))
- Display type:** 1 - Display only vertical (Annotation: Choose the display format of the block text display.)
- Direction:** COL, ROW (Annotation: Specify the display direction of the table.)
- Text:**
 - V.text alignment: STRBLKY1, 1, Block
 - H.text alignment: STRBLKX1, 1, Block
(Annotation: Specify the texts and set blocks for block text display. (Up to 32 characters))
- Buttons:** OK, Cancel, Apply

Additional annotations on the left side:

- Set the numbers of column and row blocks. (Column: 1 to 30, Row: 1 to 10)

POINT

When setting a text in each block, always click the "Apply" button every time you set it to reflect the setting.

(b) Write

Enables write from the user program. → Write enable

Specify the tag file name used. → Tag name: RANDOM_TAG

Specify the field number of the tag file. → Field No. []

Set the interlock for write. → Interlock: 2 - Batch write (message box)

Starts the tag setup utility. → Tag registration

Set the message in the message box displayed for interlock setting. (Up to 64 characters) → Message: Write data! Are you sure?

Buttons: OK, Cancel, Apply

<p>POINT</p> <p>Specify the tag of Bit data type as the tag used for interlock.</p>
--

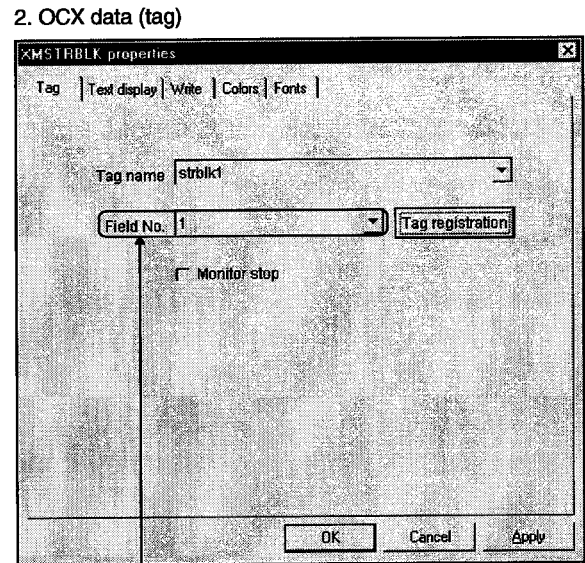
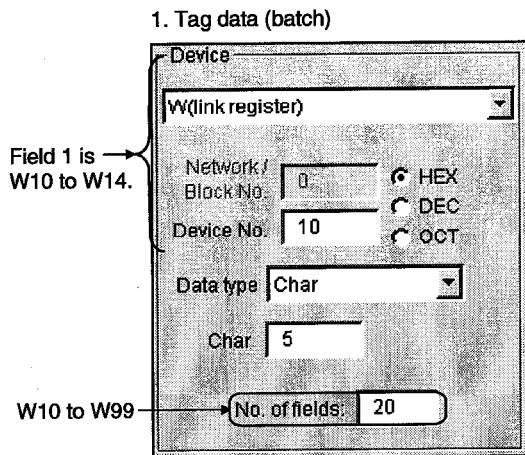
(4) Conditions of usable tag

- The data type is Char.

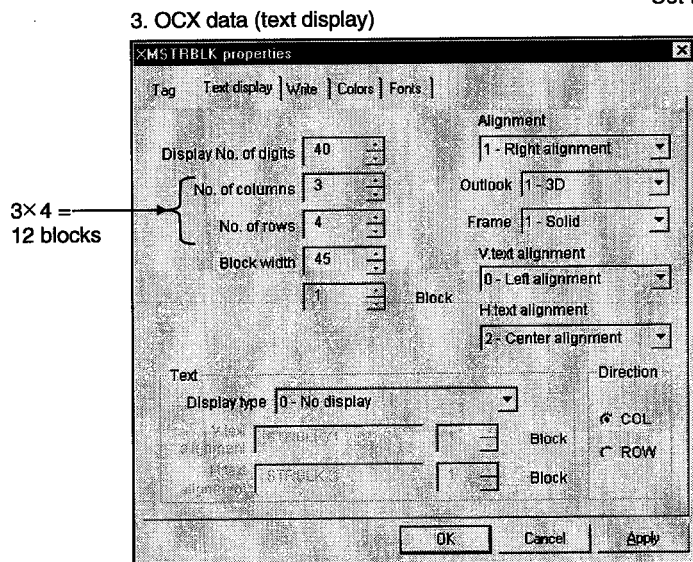
Note that operation will not be performed if:

1. "Number of fields < column blocks × row blocks"
2. The fields of different data types are included when the random tag was specified.

Example1: Usable tag (batch)



Set the first block as field 1 (W10 to W14).



4. Block display (5 characters in one cell) (display direction: column)

W10 to W14	W30 to W34	W50 to W54
W15 to W19	W35 to W39	W55 to W59
W20 to W24	W40 to W44	W60 to W64
W25 to W29	W45 to W49	W65 to W69

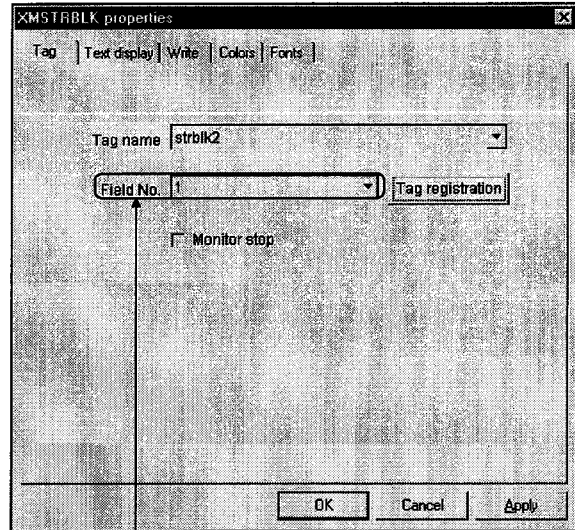
Example 2: Usable tag (random)

1. Tag data (random)

Field No.	Device	No.	Data type	Cha
1	D	10	Char	5
2	W	32	Char	10
3	SD	20	Char	3
4	ER9	10	Char	4
5	LW1	64	Char	7
6	R	0	Char	5

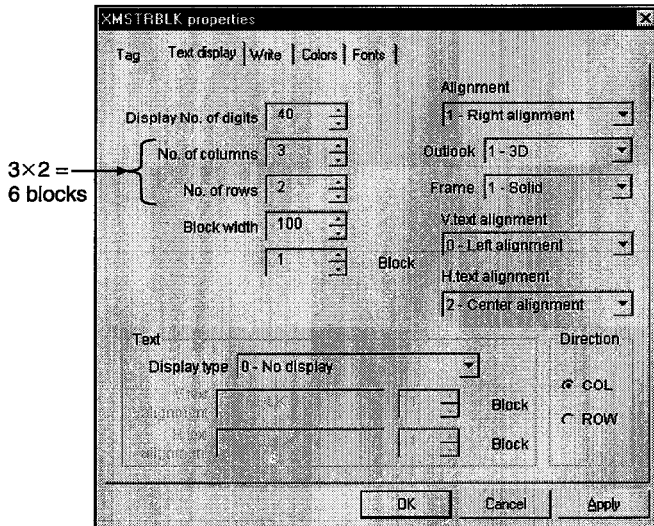
Set the same data type.

2. OCX data (tag)



Set the first block as field 1 (D10 to D14).

3. OCX data (text display)



4. Block display (display direction: column)

D10 to D14	ED9(10) to ED9(13)
W32 to W41	LW1(64) to LW1(70)
SD20 to SD22	R0 to R4

Example3: Unusable tag (if there are different data types within the specified fields)

Tag data (random)

Field No.	Device	No.	Data type	Cha
1	W	32	Char	10
2	B	0	Bit	0
3	R	10	Char	5
4	ER2	0	Char	30
5	B	0	Char	4
6	A	0	Short	0
7	D	10	Char	5
8	D	15	Char	1
9	F	0	Long	0

Cannot be set since there are different fields when the specified field is 1 and the number of points specified is 4 or more.

(5) Precautions for designing

- Since specifying batch write makes clearances within the control frame, the clearances are painted with the color set to the BackColor property of the OCX-standard properties.
- For designing, '\$' appears inside the frame.
- With the exception of the display color and background color, the attributes of the text displayed are set by the OCX-standard properties.
- MWriteFlag can be changed during execution and allows write to be disabled/enabled from the user program.
- The returned value of the GetPlcValue method is String.
This value is acquired by specifying a block.
- In a write enable status, double-clicking a cell shows a caret and enables entry. After entering a value, press the Write button for batch write, or press the Enter key or move to another cell for other than batch write to write the value.



- For data change control exercised for the running PLC, configure up an interlock circuit in the sequence program to ensure that the whole system will always operate safely.
Also, determine corrective actions to be taken for occurrence of a data communication error between your personal computer and PLC CPU.

(6) Compatible events and methods

Event MError, Click, MWrite, MVScroll, MHScroll, MPlcChange

Method Refresh, DoClick, GetPlcValue: Returned value is a STRING two-dimensional array.

String GetPlcValue (column block, row block)