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

13. DISPLAY/INPUT CUSTOM CONTROLS

13.1 Numeric Data Display/Input

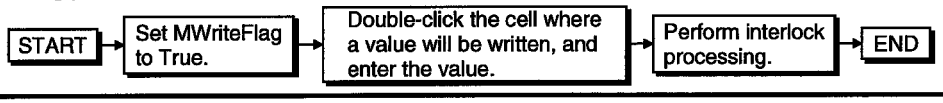
This custom control is used to display a device value and write a value to a device.
Use the corresponding property to set whether write is performed or not.

(1) Specifications

File name	XMNUMDAT.OCX
Numeric display format	Decimal/hexadecimal number
Number of display digits	1 to 18 digits
Decimal point position	Digit 0 to 16
Weighting	+, -, ×, / -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
Interlock	The following interlocking methods are available to write numeric values.

Interlock Type	Write Timing
None	When data is changed.
Message box	When you clicked the "OK" button in the message box which appeared as soon as the value is changed.
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	The writing procedure is as follows.



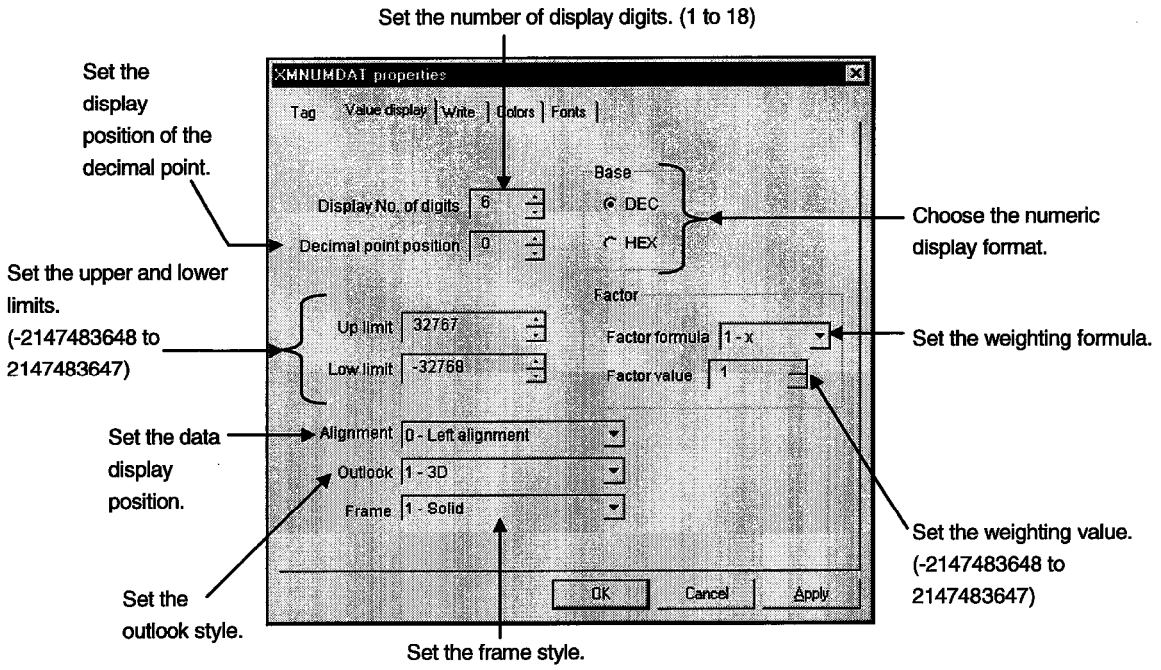
(2) Properties

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).			
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: × 2: / 3: + 4: -	0 to 4	0	Not allowed
MRate	Weighting value	-2147483648 to 2147483647	1	
MWriteLock	Set the interlock for write. 0: None 1: After message box display confirmation 2: Only at bit ON 3: Only at bit OFF	0 to 3	0	
MlockTag Name	Specify the tag name for interlock. (Valid only when 2 or 3 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

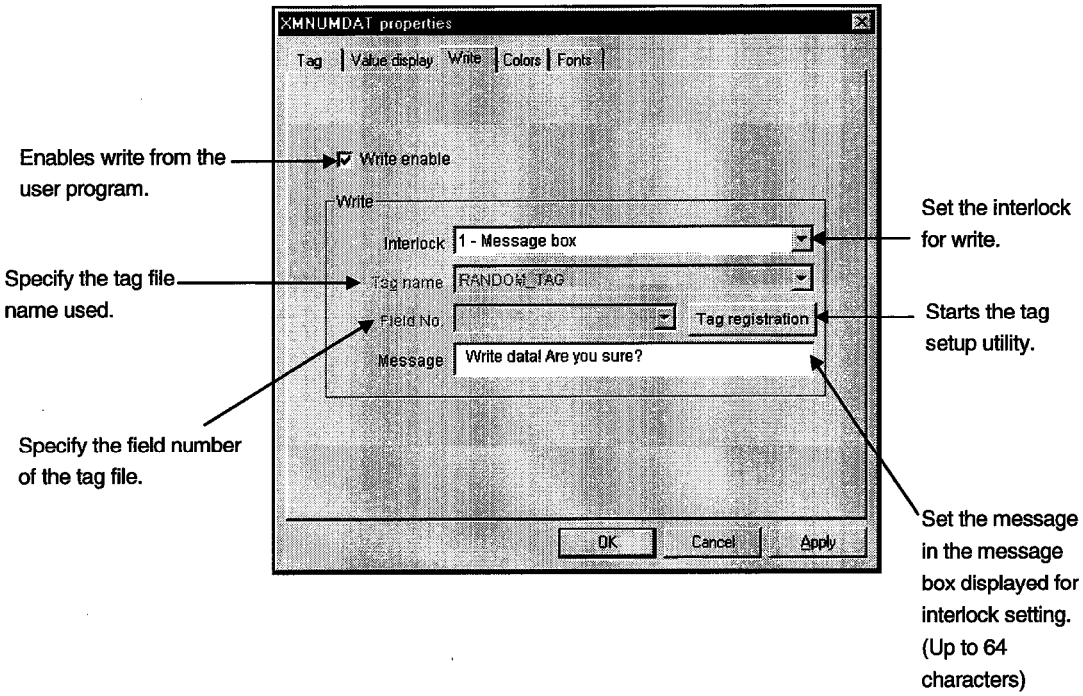
(3) Property page

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

(a) Value display



(b) Write



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

(4) Condition of usable tag

- The data type is either of Short and Long.

(5) Precautions for designing

- For designing, '0' appears to indicate a displayable area.
- 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.
- 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.
- MWriteFlag can be changed during execution and allows write to be disabled/enabled from the user program.
- When weighting has been set, the values displayed and entered are as follows.

  (Example) Weighting: x8 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.
- 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 for other than batch write to write the value.

⚠DANGER	• 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, MPlcChange
Method ..... Refresh, DoClick, GetPlcValue: Returned value is a LONG value.

13.2 Character String Data Display/Input

This custom control is used to display a device value as characters and write data to a device.
Use the corresponding property to set whether write is performed or not.

(1) Specifications

File name	XMSTRDAT.OCX
Number of characters	2 to 40 bytes (specify even bytes)
Interlock	The following interlocking methods are available to write texts. Interlock Type / Write Timing None / When data is changed. Message box / When you clicked the "OK" button in the message box displayed. 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	The writing procedure is as follows. START → Set MWriteFlag to True. → Double-click the cell where a text will be written, and enter the text. → Perform interlock processing. → END

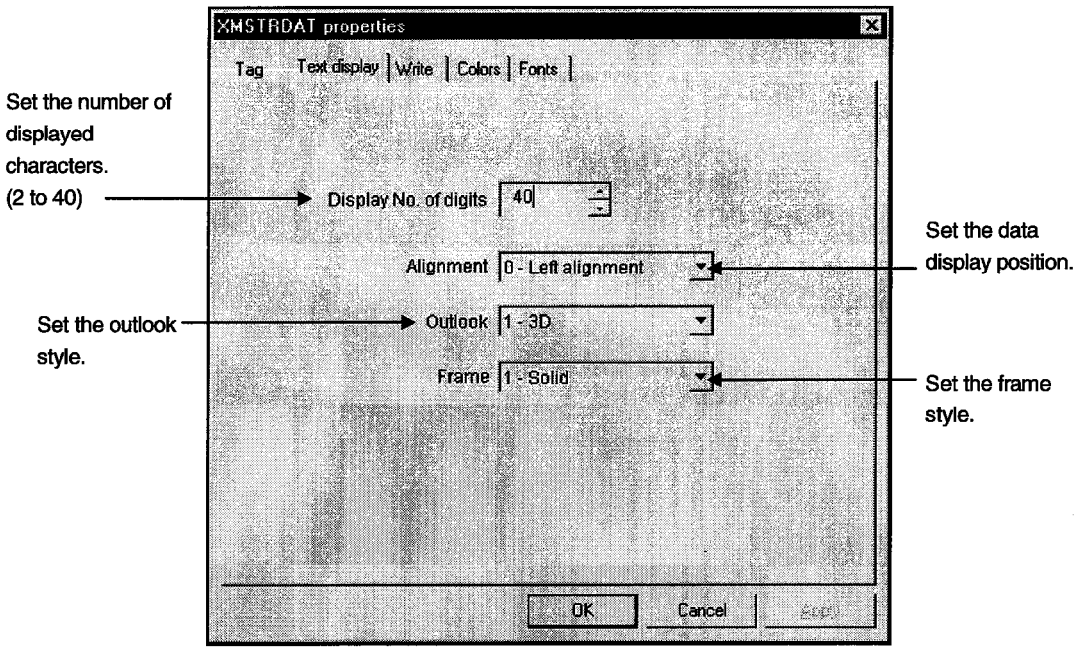
(2) Properties

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).			
MNumColor	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 1: Message box 2: Only at bit ON 3: Only at bit OFF	0 to 3	0	
MlockTag Name	Specify the tag name for interlock. (Valid only when 2 or 3 is selected in the MWriteLock property)	—	First tag name in tag file	Not allowed
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

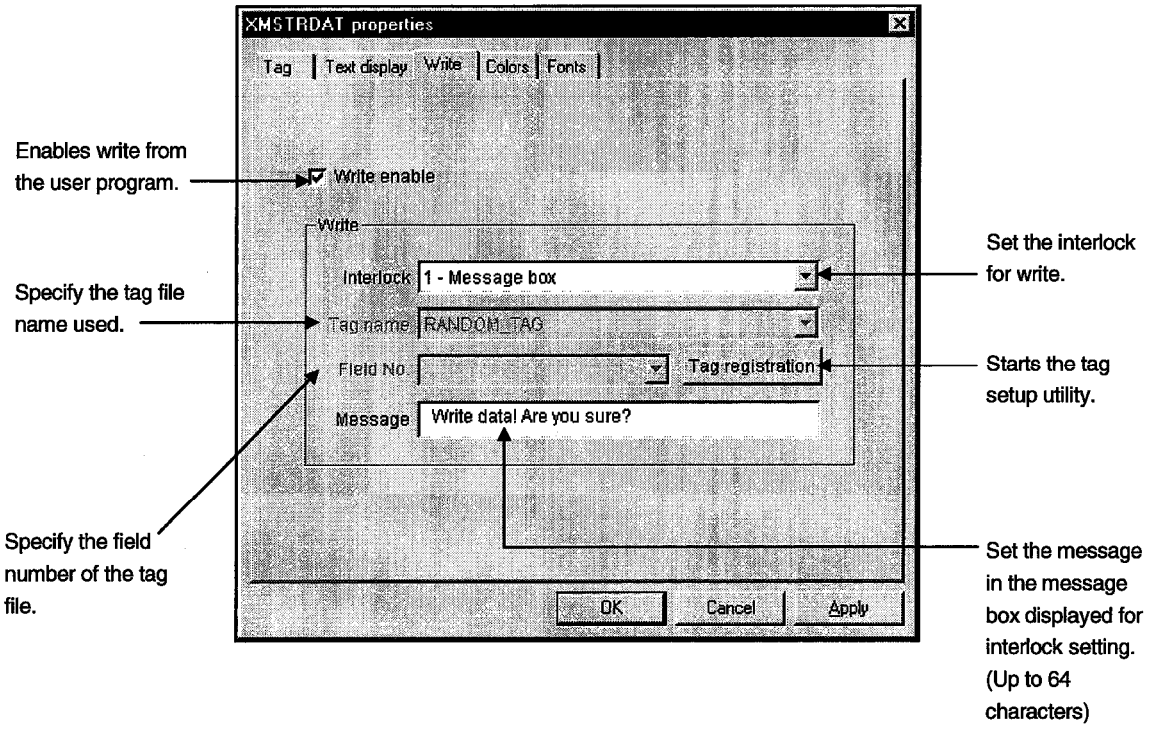
(3) Property page

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

(a) Text display



(b) Write



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

(4) Condition of usable tag
- The data type is Char.

(5) Precautions for designing
- 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.
- In a write enable status, double-clicking a cell shows a caret and enables entry. After entering a value, press the Enter key to write the value.

⚠DANGER	• 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, MPlcChange
Method ..... Refresh, DoClick, GetPlcValue: Returned value is STRING.

13.3 Bit Device Operation (Bit Input)

This custom control is designed to control the value of the specified bit device (ON/OFF).
If setting has been made to show a button or the like which represents ON and OFF states, the button matching the current device value appears on the control during monitoring.
Also, clicking that button controls the device value and changes the button indication to an after-control status.

(1) Specifications

File name	XMBITOPR.OCX
Display data	Set the bit map images of the ON and OFF states as described below. Normally, this custom control is used for monitoring to show the bit map image according to the device value. A button appears when a figure is not used. Description 1) Alternate OFF ⟷ ON • Outputs the opposite of the current value when clicked. 2) Set OFF → ON • Outputs ON if the current value is OFF. Provides no output when the current value is ON. 3) Reset ON → OFF • Outputs OFF if the current value is ON. Provides no output when the current value is OFF. 4) Switch OFF → ON → OFF • Outputs ON when the button goes down or OFF when the button comes up.
Input condition	The input object is where the mouse is operated or the tab key is pressed.
Write condition	Output is provided on a type basis for each bit where the mouse is operated or the tab key is pressed.
Interlock	You can choose the interlocking method for writing a value from among the following methods. 1. None 2. Write enabled after unlocking by clicking 3. Write enabled only when the specified bit device turns on 4. Write enabled only when the specified bit device turns off The following operation is performed when you select "2 (Write enabled after unlocking by clicking)". Example: When Alternate is specified LockON ••• During locking, the text set in MLockCaption* is displayed on the button in the color of MLockColor. Click, return. ON — The time set in MLockTime has elapsed. OFF → LockON LockOFF

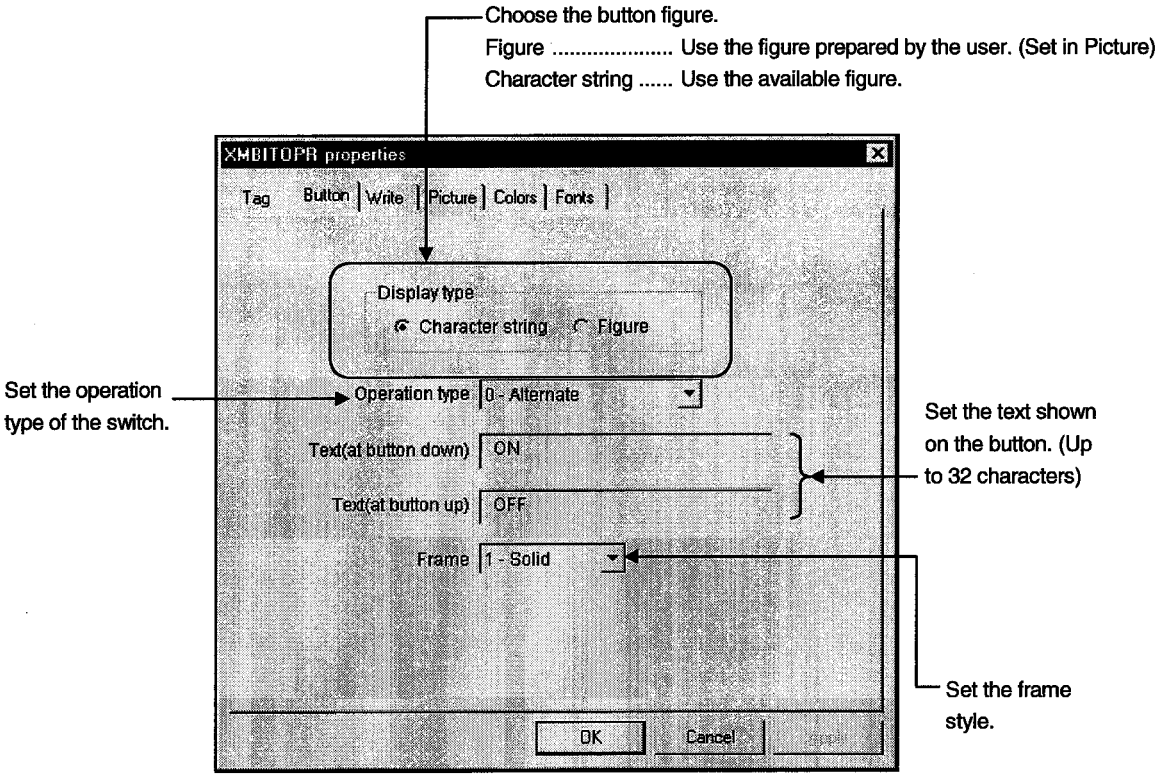
(2) Properties

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).			
MDspPattern	Set the button shape. 0: Text display 1: User setting	0, 1	0	Not allowed
MPicName [Down]	Set the shape of the button when pressed (BMP/WMF). (Valid when MDspPattern is "1")	—	None	
MPicName [Up]	Set the shape of the button when not pressed (BMP/WMF). (Valid when MDspPattern is "1")			
MCaption [Down]	Set the text when the button is pressed. (Valid when MDspPattern is "0")	Up to 32 characters	"OFF"	
MCaption [Up]	Set the text when the button is not pressed. (Valid when MDspPattern is "0")		"ON"	
MSwitchType	Set the operation type. 0: Alternate 2: Reset 1: Set 3: Switch	0 to 3	0	
MWriteLock	Set the interlock for write. 0: None 2: Only at bit ON 1: Click lock 3: Only at bit OFF	0 to 3	0	
MlockTag Name	Specify the tag name for interlock. (Valid only when 2 or 3 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	
MLockColor	Set the display color when lock is placed by clicking. (Valid only when 1 is selected in the MWriteLock property)		White	
MLockCaption Down	Specify the displayed text when the monitor bit is off during a lock. (Valid only when 1 is selected in the MWriteLock property)	Up to 32 characters	"LockON"	
MLockCaption Up	Specify the displayed text when the monitor bit is on during a lock. (Valid only when 1 is selected in the MWriteLock property)		"LockOFF"	
MLockTime	Set the time when the unlock status is changed to the lock status. (Valid only when 1 is selected in the MWriteLock property)	1 to 3600	5(sec)	

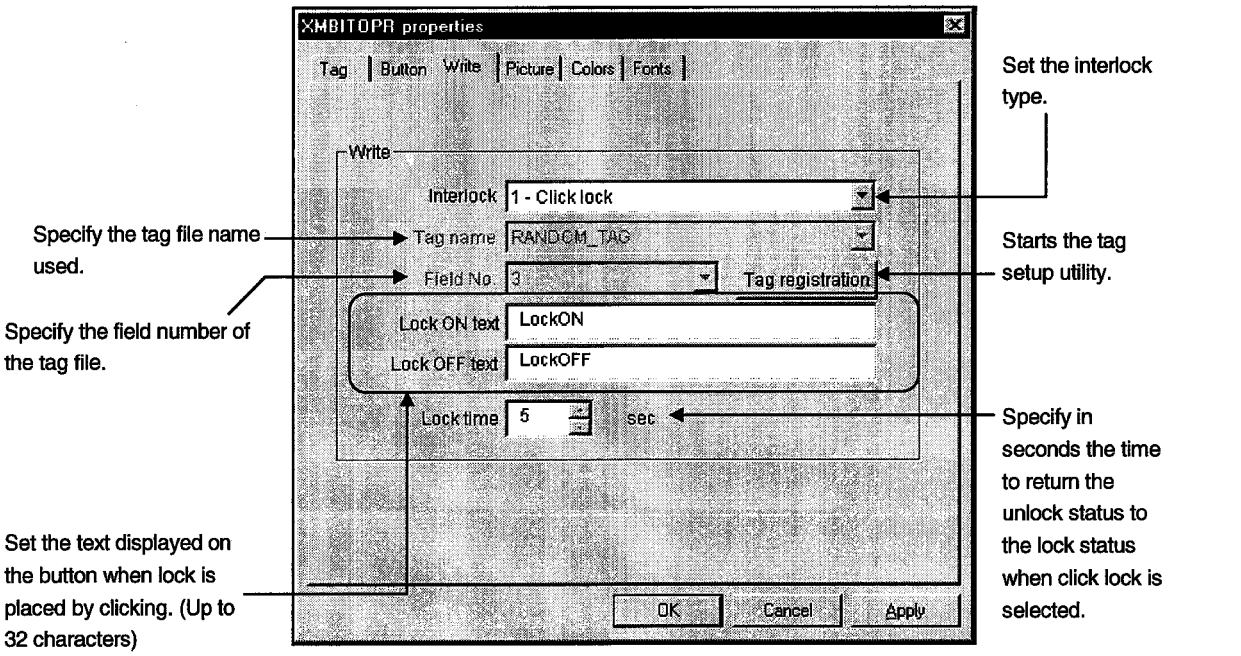
(3) Property page

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

(a) Button

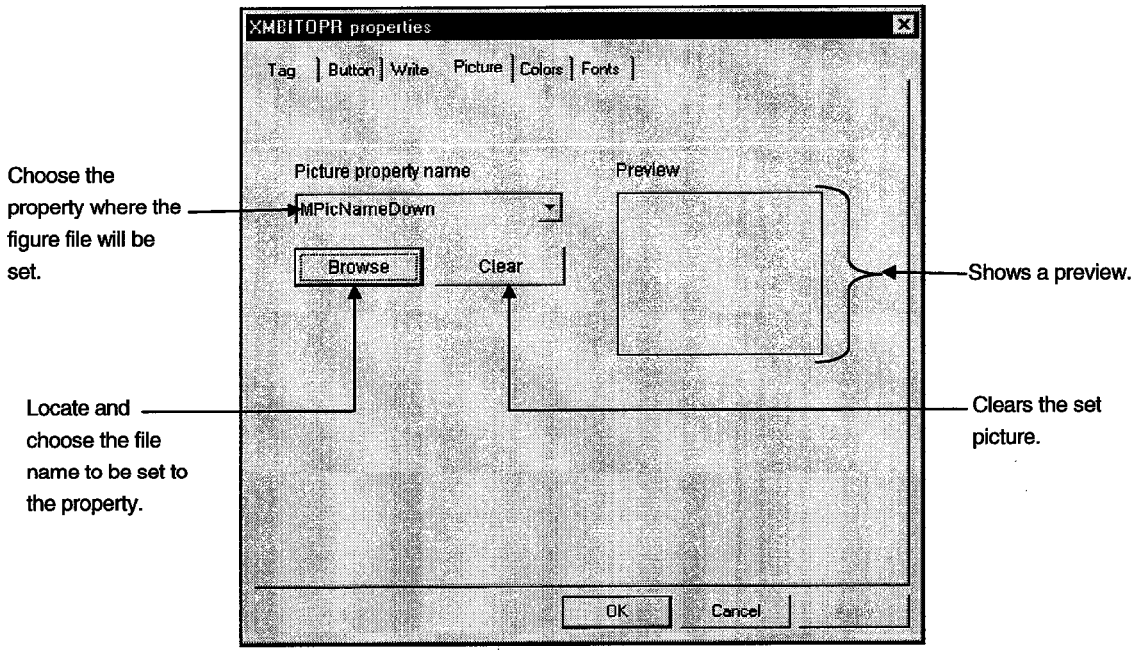


(b) Write



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

(c) Picture



(4) Condition of usable tag

- The data type is Bit.

(5) Precautions for designing

- How soon the actual device value will change after button operation depends on the performance of the communication network.
- Do not use the "Switch" operation type for machine control or the like. Using it may cause abnormal operation due to misoperation since the interlock function is not provided.
- 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.
- When you set Set in Operation type, the button goes down when the bit turns on.
- When you set Reset in Operation type, the button goes down when the bit turns off.

⚠DANGER

- 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, MPlcChange
Method ..... Refresh, DoClick, GetPlcValue: Returned value is SHORT.

MEMO

14. INPUT CUSTOM CONTROLS

14.1 Word Write

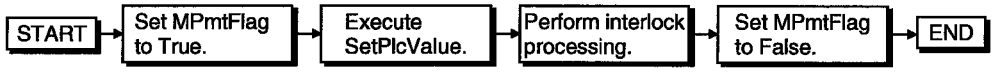
This custom control is used to write a value to a word device.

(1) Specifications

File name	XMWRWORD.OCX
Display format	An icon appears during setting but nothing is shown for execution.
Interlock	The following interlocking methods are available to write a value to a word device.

Interlock Type	Write Timing
None	When the SetPlcValue method was executed.
Message box	When you clicked the "OK" button in the message box which appeared as soon as the SetPlcValue method was executed.
Only at bit ON	When the SetPlcValue method was executed and the bit device set as an interlock is on.
Only at bit OFF	When the SetPlcValue method was executed and the bit device set as an interlock is off.

Write procedure	The writing procedure is as follows.



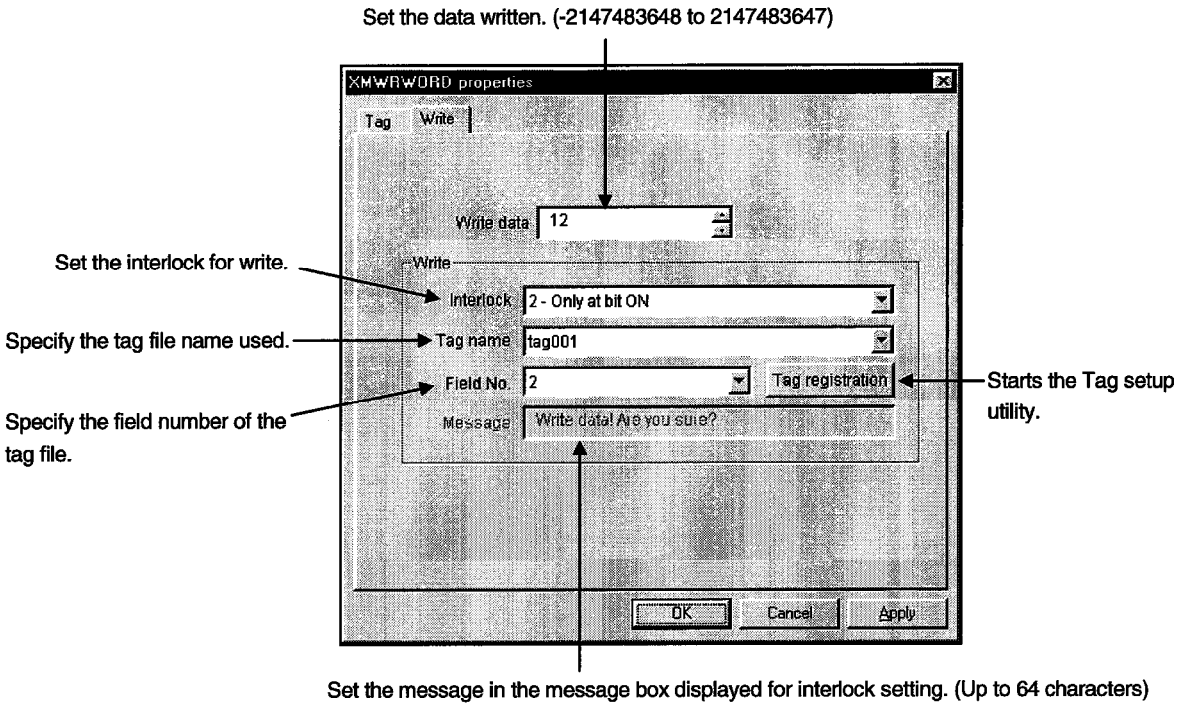
(2) Properties

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).			
MPmtFlag	Set whether write is enabled or disabled. True: Write enabled False: Write disabled	—	False	Allowed
Mdata	Set the data written.	-2147483648 to 2147483647	0	
MWriteLock	Set the interlock for write. 0: None 1: Message box 2: Only at bit ON 3: Only at bit OFF	0 to 3	0	Not allowed
MLockTagName	Specify the tag name for interlock. (Valid only when 2 or 3 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 1 is selected in the MWriteLock property)	Up to 64 characters	"Write data! Are you sure?"	Allowed

(3) Property page

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

(a) Write



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

(4) Condition of usable tag

- The data type is either of Short and Long.

(5) Precautions for designing

- MPmtFlag is available for the word write OCX to prevent write from overlapping. Set the write enable flag (MPmtFlag) to True immediately before write, and return it to False as soon as write is over.
  A failure to perform this operation will cause malfunction.

⚠DANGER	• 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, MWrite

Method .....SetPlcValue

(7) Example of use

This examples writes 100 to the field number 1 of the tag name "Valve 1" when a command button is pressed.

```
Sub  OOOOOO_Click( )
{
     If XMWRWORD1.MPmtFlag = FALSE Then  'Change to TRUE if FALSE
          XMWRWORD1.MPmtFlag = TRUE
          XMWRWORD1.MTagName = "Valve 1"  'Tag name: Valve 1
          XMWRWORD1.MFieldNo = 1          'Field No. 1
          XMWRWORD1.MMdata = 100          'Value written: 100
          err = XMWRWORD1.SetPlcValue     'Write executed
          If err < > SUCCESS Then         'Error occurs if write fails
               MsgBox"Communication error"
          End If
          XMWRWORD1.MPmtFlag = FALSE      'Set to FALSE after write is over
     End If
}
```

14.2 Bit Write

This custom control is used to write a value to a bit device.

(1) Specifications

<table>
<tr><td>File name</td><td>XMWRBIT.OCX</td></tr>
<tr><td>Display format</td><td>An icon appears during setting but nothing is shown for execution.</td></tr>
<tr><td>Interlock</td><td>The following interlocking methods are available to write a value to a bit device.
<table>
<tr><th>Interlock Type</th><th>Write Timing</th></tr>
<tr><td>None</td><td>When the SetPlcValue method was executed.</td></tr>
<tr><td>Message box</td><td>When you clicked the "OK" button in the message box which appeared as soon as the SetPlcValue method was executed.</td></tr>
<tr><td>Only at bit ON</td><td>When the SetPlcValue method was executed and the bit device set as an interlock is on.</td></tr>
<tr><td>Only at bit OFF</td><td>When the SetPlcValue method was executed and the bit device set as an interlock is off.</td></tr>
</table></td></tr>
<tr><td>Write procedure</td><td>The writing procedure is as follows.
START → Set MPmtFlag to True. → Execute SetPlcValue. → Perform interlock processing. → Set MPmtFlag to False. → END</td></tr>
</table>

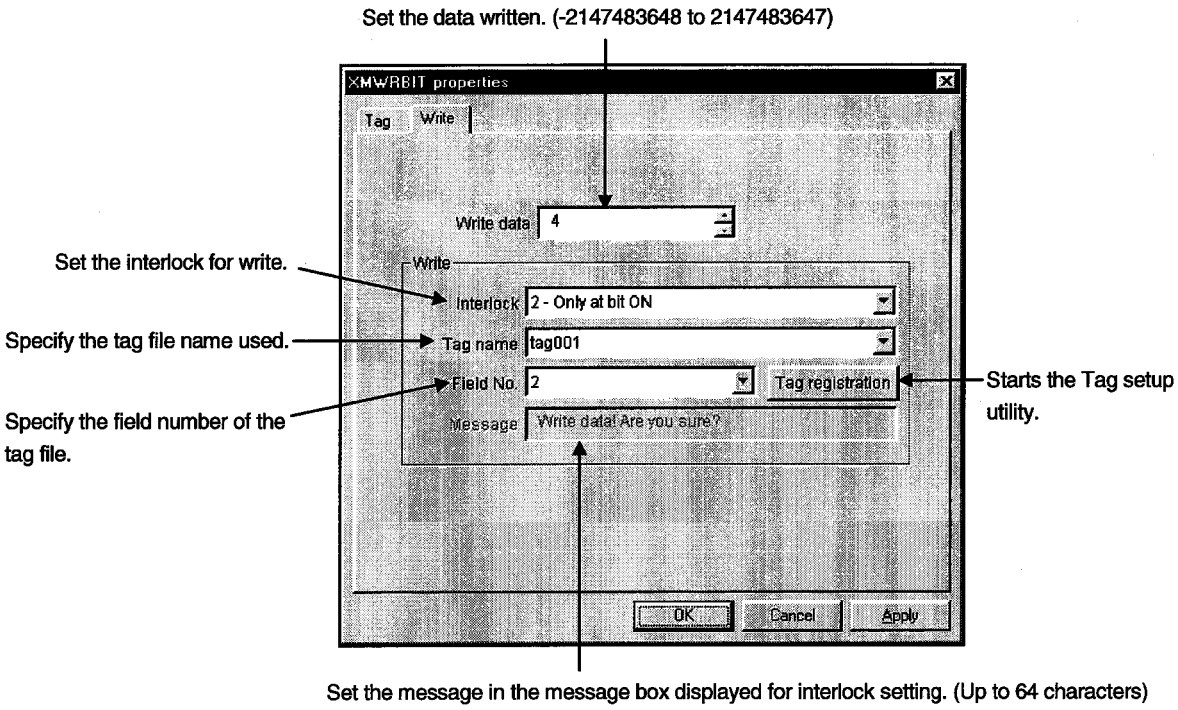
(2) Properties

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).			
MPmtFlag	Set whether write is enabled or disabled. True: Write enabled False: Write disabled	—	False	Allowed
Mdata	Set the data written.	-2147483648 to 2147483647	0	
MWriteLock	Set the interlock for write. 0: None 1: Message box 2: Only at bit ON 3: Only at bit OFF	0 to 3	0	Not allowed
MLockTagName	Specify the tag name for interlock. (Valid only when 2 or 3 is selected in the above property)	—	First tag name in tag file	
MLockFieldNo	Specify the field number of the tag (Valid only when the above property is used)		1	
MLockMessage	Set the text to be displayed in the message box. (Valid only when 1 is selected in the MWriteLock property)	Up to 64 characters	"Write data! Are you sure?"	Allowed

(3) Property page

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

(a) Write



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

(4) Condition of usable tag

- The data type is Bit.

(5) Precautions for designing

- An error occurs if a value is written to any field other than bit-specified.
- Written data is OFF if it is "0", or ON if other than "0".
- MPmtFlag is available for the bit write OCX to prevent write from overlapping.
  Set the write enable flag (MPmtFlag) to True immediately before write, and return it to False as soon as write is over.
  A failure to perform this operation will cause malfunction.

⚠DANGER	• 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, MWrite
Method .....SetPlcValue

(7) Example of use
This examples turns on the bit of the field number 2 of the tag name "Valve 1" when a command button is pressed.

```
Sub OOOOOO_Click( )
{
    If XMWRBIT1.MPmtFlag = FALSE Then      'Change to TRUE if FALSE
        XMWRBIT1.MPmtFlag = TRUE
        XMWRBIT1.MTagName = "Valve 1"      'Tag name: Valve 1
        XMWRBIT1.MFieldNo = 2              'Field No. 2
        XMWRBIT1.MMdata = TRUE             'Bit is turned on
        err = XMWRBIT1.SetPlcValue         'Write executed
        If err < > SUCCESS Then            'Error occurs if write fails
            MsgBox"Communication error"
        End If
        XMWRWORD1.MPmtFlag = FALSE         'Set to FALSE after write is over
    End If
}
```

15. OTHER CUSTOM CONTROLS

15.1 Event Occurrence

This function causes an event when the value of the specified bit device changes.
Programming must be done to use this function.

(1) Specifications

File name	XMEVENT.OCX
Display format	An icon appears during setting but nothing is shown for execution.

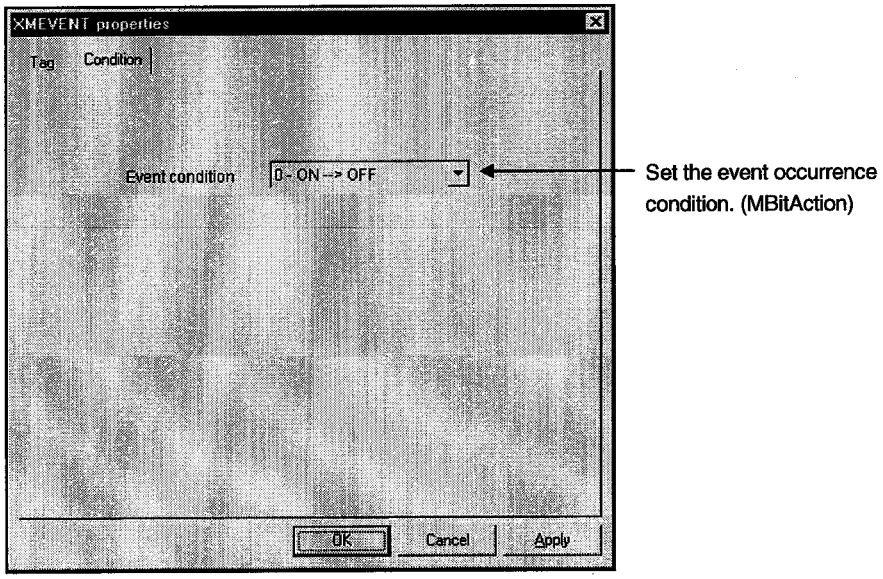
(2) Properties

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).			
MBitAction	Set the event occurrence condition. 0: ON → OFF 2: ON ↔ OFF 1: OFF → ON 3: None	0 to 3	2(ON ↔ OFF)	Allowed

(3) Property page

For the tag setting method, refer to Section 9.2

• Condition



(4) Condition of usable tag

- The data type is Bit.

(5) Compatible events and methods

Event ..... MBitAction, Merror

Method ..... GetPlcValue: Returned value is SHORT.

(6) Example of use

This examples shows the number of leading edges of the specified bit device.

```
Sub XMEVENT1_MBitAction( )
    dummy = Label1.Caption      'Value being displayed is imported
    dummy = dummy + 1           '+1
    Label1. Caption = dummy     'Redisplay
End Sub
```

15.2 Snap Shot

When the value of the specified bit device turns to ON, this function outputs the hard copy of the form where the snap shot setting has been made to a BMP format file (max. 100 files) or the printer.

(1) Specifications

File name	XMSNPSHT.OCX
Display forma	Pasting this custom control shows the same figure as the standard command button. To hide the figure, set the Visible property to False.

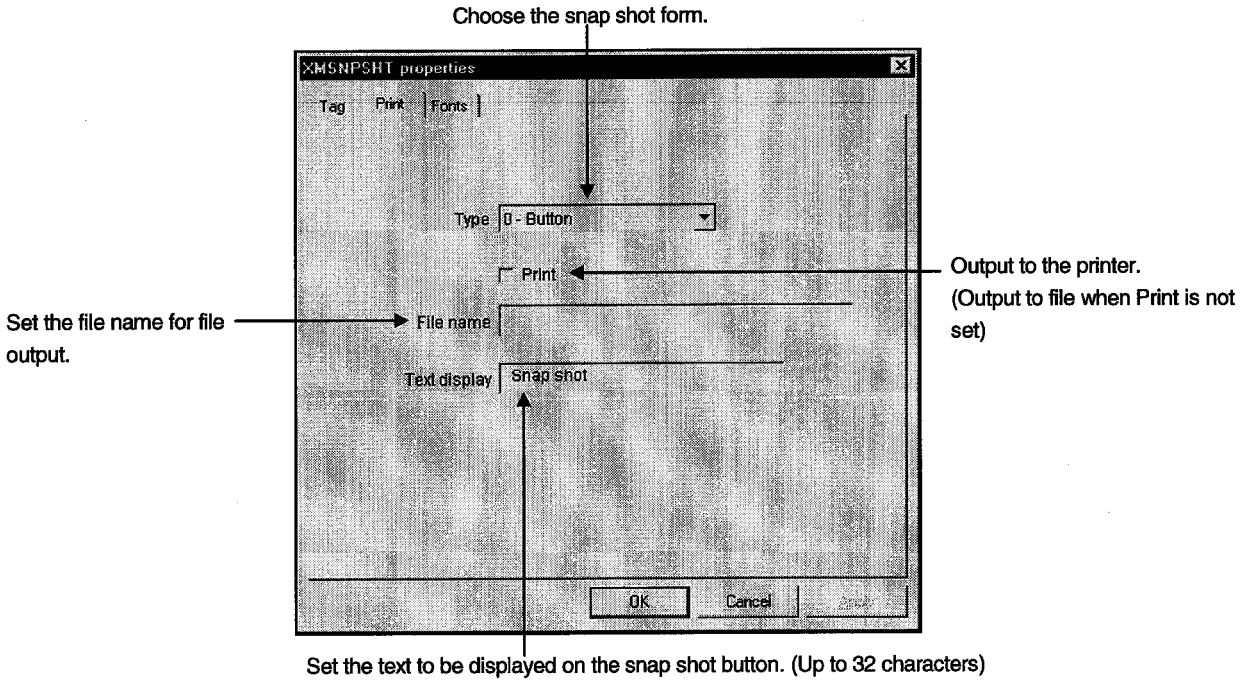
(2) Properties

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).			
MSnapStyle	Set how to execute the snap shot. 0: Button ON 1: Specified bit device ON 2: Button ON and specified bit device ON	0 to 2	0	Not allowed
MPrint	Choose the snap shot function. True: Printer output False: File output	—	Flase	Allowed
MFileName	Set the output destination file name for file output.		None	Not allowed
MCaption	Set the text to be displayed on the button.	Up to 32 characters	"Snap shot"	Allowed

(3) Property page

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

• Print

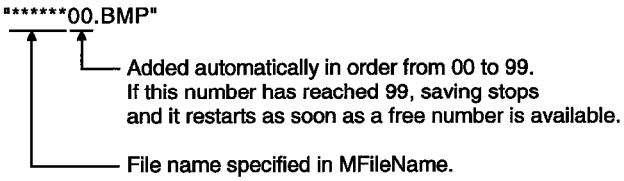


(4) Condition of usable tag

- The data type is Bit.

(5) Precautions for designing

- When the custom control is pasted to a form during designing, a button appears as in default setting.
- Data printed by the printer is in full color on a form basis.
  (Light/shade printing for a two-color printer)
- Setting 0 in MSnapStyle executes the specified snap shot function when the button is pushed down.
- Setting 1 in MSnapStyle executes the snap shot function when the specified bit device turns on.
- When saved in a file, a form is saved as a BMP file.
- A file name of up to 6 characters may be specified in MFileName.
- Specify the file name as follows.



(6) Precautions for execution

- The snap shot control does not function in a hide status.
- Print data is expanded/reduced for adjustment and output onto whole paper.
- When MPrint is set to True, data is not output to the file if the file name is specified in MFileName. (Printer output only)
- If the other window covers the form, that window is printed.

(7) Compatible events and methods

Event .....MSnapShot, MError
Method .....GetPlcValue: Returned value is SHORT.

15.3 Alarm Display

This function shows the registered text figure (circle, rectangle) on the control on the basis of the set device value range.

(1) Specifications

File name	XMCATION.OCX
Setting quantity	30 pcs.
Display format	Specify a single circle or rectangle text in the specified device value range. Fault occurrence (Rectangle) Normal operation (Circle)
End timing	The sound output end timing can be selected for sound output.
Font	According to the OS specifications

(2) Properties

Property Name	Description	Setting Range	Initial Value	Change during Execution
OCX-standard	Refer to Section 9.1 (1).	—	—	Not allowed
XMOP-common	Refer to Section 9.1 (2).			
MDefShape	Select the default display figure. 0: Rectangle 1: Circle	0,1	0 (rectangle)	
MDefShape Color	Choose the default figure color. 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	0 to 15	1 (white)	
MDefFont Color	Choose the default font color. Choices are the same as those of MDefShapeColor.		0 (black)	
MDefCaption	Set the default message.	Up to 32 characters	"Alarm display"	
MDataLow	Set the device value range. When the specified device value whose lower limit is MDataLow and upper limit is MDataHight is between MDataLow and MDataHight, the figure specified in MShape, MTextColor, MFontColor and MCaption appears. When sound output is selected, MSoundFile is output.	-2147483648 to 2147483647	0	
MDataHight			1	
MShape	Select the display figure. 0: Rectangle 1: Circle	0,1	0 (rectangle)	
MShapeColor	Choose the displayed figure color. Choices are the same as those of MDefShapeColor.	0 to 15	15 (white)	
MFontColor	Choose the displayed font color.		0 (black)	

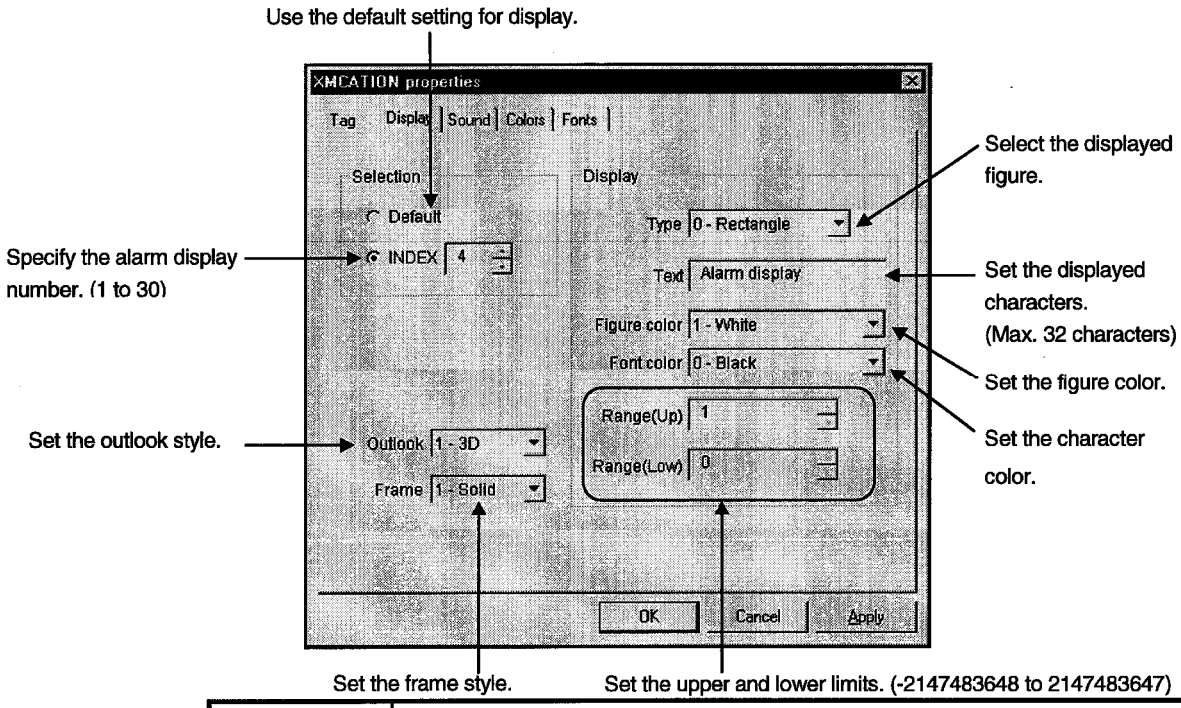
Property Name	Description	Setting Range	Initial Value	Change during Execution
MCaption	Set the displayed message.	Up to 32 characters	"Alarm display"	
MSoundUsed	Set whether a sound is used or not. True: Used False: Not used	—	False	
MSoundEnd	Set the end timing of the sound. 0: One time output..... Sound is ended after the specified WAV file is output once. 1: Click stop..... Sound is output until the user clicks the control. 2: Time stop..... Sound is output until the given time elapses. 3: Click, Time stop..... Sound is output until either condition holds.	0 to 3	3	Not allowed
MEndTime	Set the time until the sound stops (100ms increments). (Valid only when 2 is selected in the above property)	1 to 36000	600 (1 minute)	
MSoundFile	Set the WAV file to be output.	—	None	
MIndex	Set the alarm display number.	1 to 30	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.

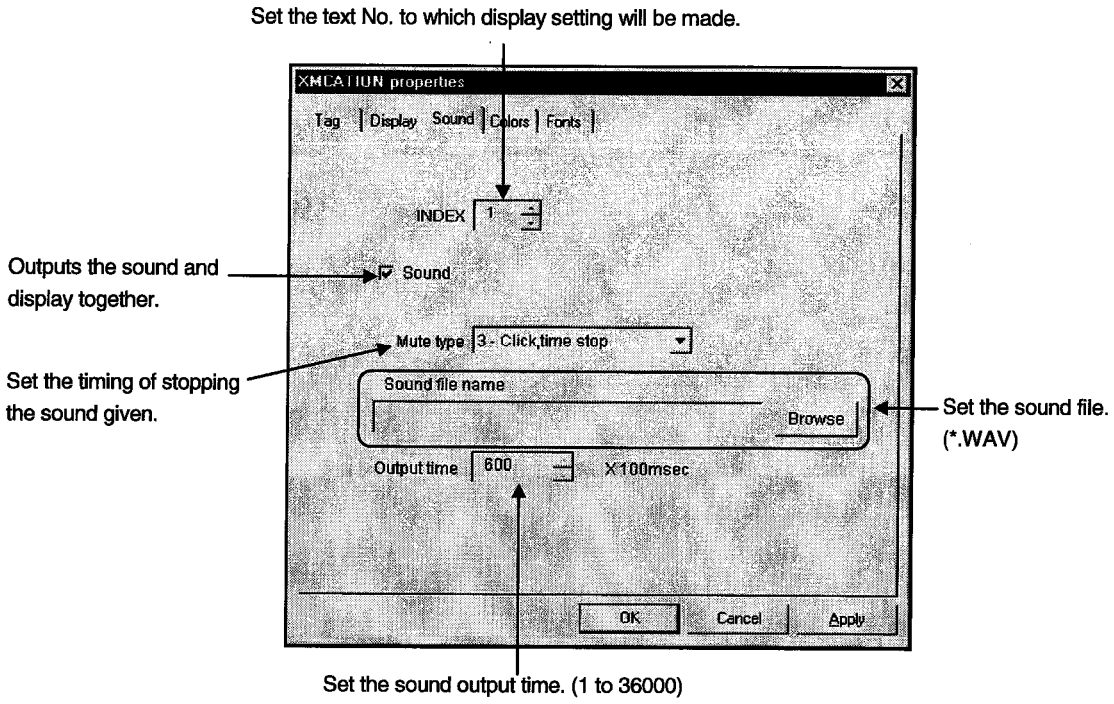
(a) Display



POINT

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

(b) Sound



POINT

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

(4) Condition of usable tag

- The data type is any of Short, Long and Bit.

(5) Precautions for designing

- For designing, the control is shown with the data of the property specified in MIndex.
- The sound output function is compatible with a personal computer which has the voice output function.
- Since sound registration is made by specifying a file, one registered sound must be saved in a single WAV format file.
- To use the device value as one point and not as a range, set the same value to DataLow and DataHigh.
- No figure is displayed if the value of DataLow is greater than that of DataHigh.
- The font is common to all texts with the exception of the color specified.
- If the setting range is the same as that of the other index, the setting range of the smaller index number has precedence.
- Use one sound outputting control in one project.

(6) Compatible events and methods

Event .....Click, MPlcChange, MError

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

15.4 Alarm Sound Output

To provide a sound, this function outputs the registered sound file (WAV file) on the basis of the set device value range.

(1) Specifications

File name	XMALARM.OCX
Setting quantity	30 pcs.
Display format	An icon appears during setting but nothing is shown for execution.
Registered sound designation	Assign one sound to the specified device value range.
Registered sound	Specify the WAV file.
End timing	The sound output end timing can be selected when sound output is selected.

(2) Properties

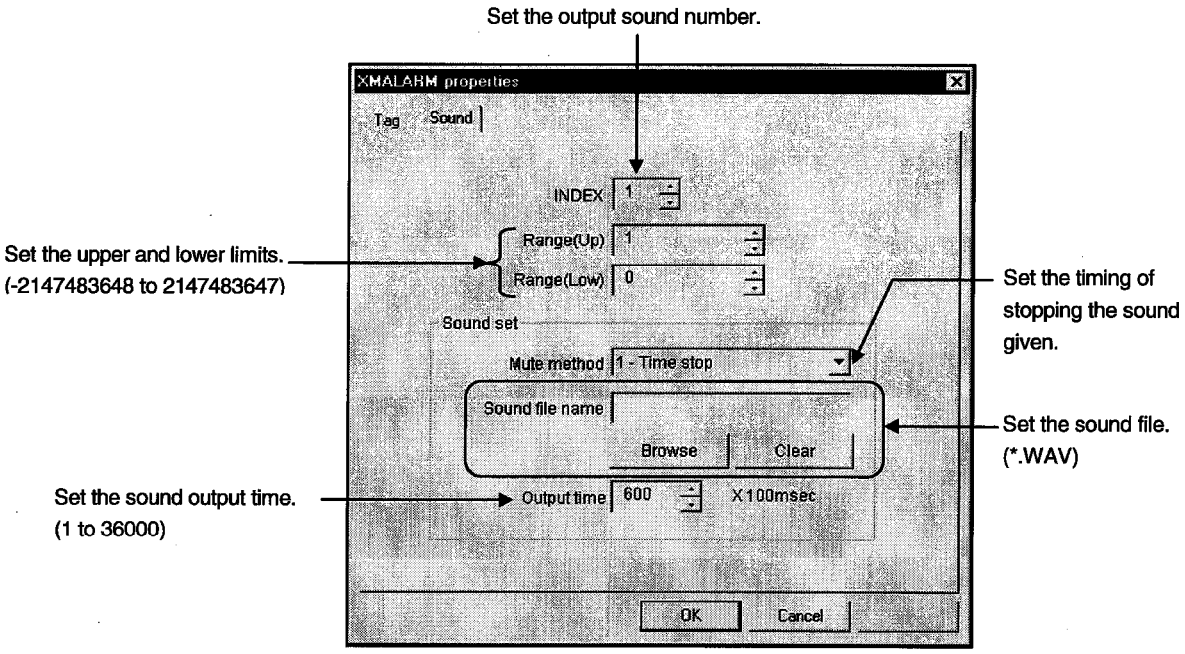
Property Name	Description	Setting Range	Initial Value	Change during Execution
OCX-standard	Refer to Section 9.1 (1).	—	—	—
XMOP-common	Refer to Section 9.1 (2).			
MDataLow	Set the device value range. When the specified device value whose lower limit is MDataLow and upper limit is MDataHight is between MDataLow and MDataHight, the sound specified in MSoundFile is output.	-2147483648 to 2147483647	0	Not allowed
MDataHight			1	
MSoundEnd	Set the end timing of the sound. 0: One time output....Sound is ended after the specified WAV file is output once. 1: Time stop.....Sound is output until the given time elapses.	0,1	1	
MEndTime	Set the time until the sound stops (100ms increments). (Valid only when 1 is selected in the above property)	1 to 36000	600 (1 minute)	
MSoundFile	Specify the output sound.	—	None	
MIndex	Set the sound number.	1 to 30	1	Allowed

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

(3) Property page

For the tag setting method, refer to Section 9.2.

• Sound



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

(4) Condition of usable tag

• The data type is any of Short, Long and Bit.

(5) Precautions for designing

• For designing, the control is shown with the data of the property specified in MIndex.
• The sound output function is compatible with a personal computer which has the voice output function.
• Since sound registration is made by specifying a file, one registered sound must be saved in a single WAV format file.
• To use the device value as one point and not as a range, set the same value to DataLow and DataHigh.
• No sound is output if the value of DataLow is greater than that of DataHigh.
• If the setting range is the same as that of the other index, the setting range of the smaller index number has precedence.
• Use one sound outputting control in one project.

(6) Compatible events and methods

Event .....Click, MPlcChange, MError

Method .....DoClick( ), Refresh( ), GetPlcValue( ): Returned value is LONG.

15.5 Alarm Summary Display

When the specified bit device turns ON, this function displays the message set to the alarm summary file together with the ON time in the specified color.
Also, it shows the restoration time when the device turns OFF.
Pre-create the alarm summary file (*.ALM) using the alarm summary setup utility. (You can set up to 300 points.)

(1) Specifications

<table>
<tr><td>File name</td><td>XMALMSMR.OCX</td></tr>
<tr><td>Number of monitoring points</td><td>Max. 300 pcs.</td></tr>
<tr><td>Display format</td><td>
• If the message is not yet confirmed, the "Confirm" cell is painted with the same color as the "Class" cell. Click it to deactivate.
• The times of occurrence and restoration are indicated "year/month/day hour:minute:second".
• Newer data are added to the bottom.
Not yet confirmed.
<table>
<tr><th>Confirm</th><th>Occurred time</th><th>Restored time</th><th>Alarm message</th><th>Class</th></tr>
<tr><td>1</td><td>*****</td><td>*****</td><td>Valve1: malfunction</td><td>Serious error</td></tr>
<tr><td>2</td><td>*****</td><td>*****</td><td>Machine1: malfunction</td><td>Light trouble</td></tr>
<tr><td>3</td><td>*****</td><td>*****</td><td>Valve 2: malfunction</td><td>Serious error</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table>
Deletes the confirmed message from the alarm summary. → Confirm delete
Restore delete
Deletes the message of restored failure from the alarm summary.
All data delete
Deletes all data from the alarm summary.
</td></tr>
<tr><td>Alarm information registration</td><td>According to the alarm summary setup utility</td></tr>
<tr><td>Slave function</td><td>
The user can select the slave function in the alarm summary function.
Only two pieces of latest information in the other alarm summary are displayed as shown below.
Newer data are shown from top in order.
Valve1 : malfunction
Machine1: malfunction
The display color changes with the degree of a failure.
</td></tr>
</table>

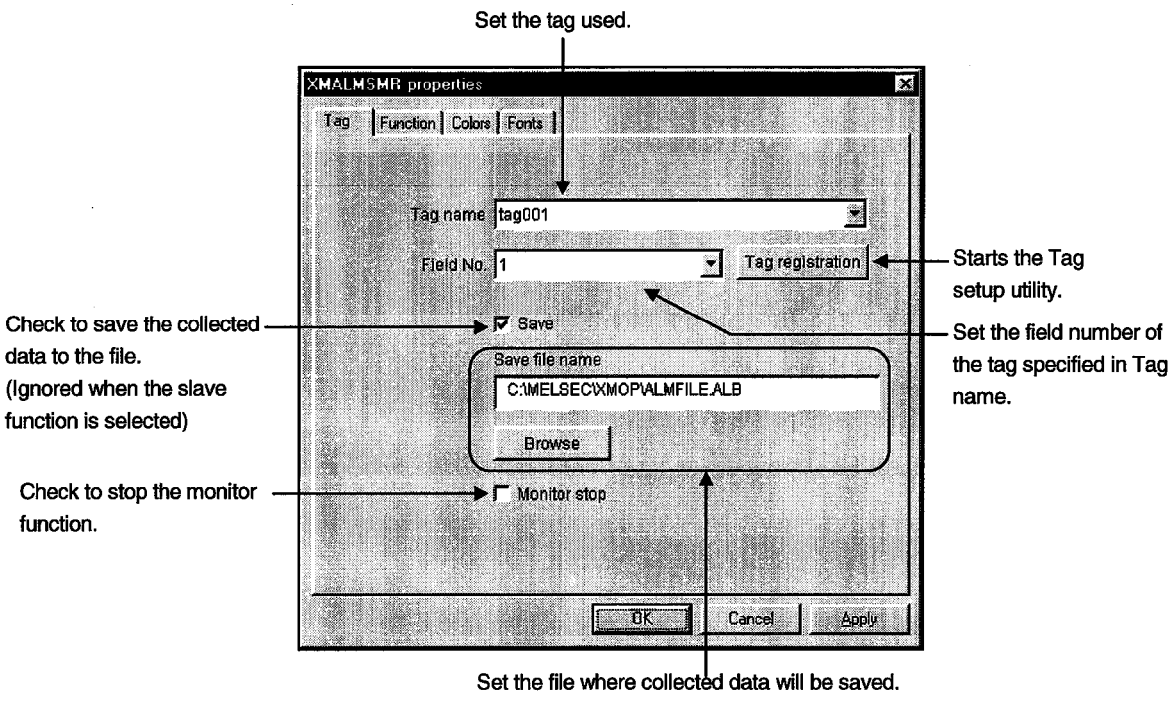
(2) Properties

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).			
MAlarmStyle	Select between the alarm summary custom control functions. 0: Alarm summary 1: Slaved functions	0, 1	0	Not allowed
MAlarmNo	Set the number of alarms collectable.	1 to 32767	1000	
MDspPattern	Set the display format when the data has exceeded the number of collectable alarms. 0: No operation..... Display does not change until the button is pressed to delete the data. 1: Delete undo data... Old data of restored failure are deleted in order and new alarms are collected.	0, 1	1	
MSaveAlarm	Set whether the final status is saved and reflected on the next. 0: Not saved 1: Saved		0	
MAlarmFile	Specify the alarm summary file name used.	—	"C:MELSEC\XMOP\ALMFILE.ALM"	
MFileName	Set the file where data is saved at the end. (Valid only when 1 is selected in the MSaveAlarm property)		"C:\MELSEC\XMOP\ALMFILE.ALB"	
MXBlockWidth	Specify the cell width.	1 to 1000	100	
MIndex	Specify the block number.	0 to 4	0	

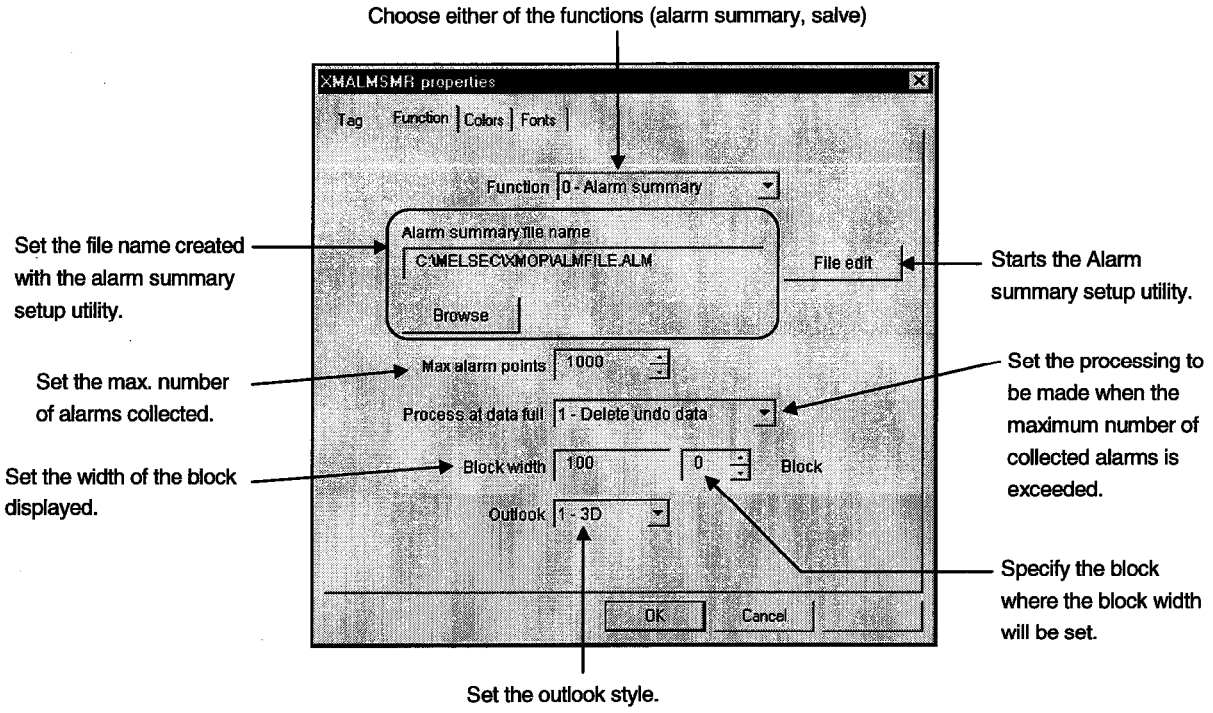
(3) Property page

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

(a) Tag



(b) Function



POINT
When setting the block width, always click the "Apply" button per block to reflect the setting.

(4) Conditions of usable tag

- The data type is Bit.
  (It is recommended to use it as the tag dedicated to alarm summary.)
  Note that operation will not be performed if:
  1. "Number of fields < number of alarms"
  2. The fields of different data types are included when the random tag was specified.

(5) Precautions for designing

- For designing, only the frame appears.
- Since the alarm summary custom control monitors many points, merely pasting one control has great influence on the running speed.
- This control which locates the same file in one system must not exist.
- The form where the alarm summary control is pasted must always be on memory.

(6) Precautions for execution

- Up to the user-specified number of data are displayed on the screen.
  If the user-specified number of data is exceeded, they are collected in the method specified in MDspPattern.
  If "No operation" has been selected as specified by the user, a new alarm will be ignored until the old alarm is deleted by pressing the button.

(7) Compatible events and methods

Event ..... Click, MPlcChange, MError
Method ..... DoClick, Refresh, GetPlcValue: Returned

15.6 Error

When a fault has occurred in the Tag management process, this function causes an error event and passes the error number to the user.

(1) Specifications

File name	XMERROR.OCX
Display format	An icon appears during setting but nothing is shown for execution.

(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).			
MTagName	The tag name in error is saved.	—	None	Not allowed
MErrorID	The corresponding error identifier is saved.		0	
MErrorNo	The fault that occurred is saved.			

(3) Condition of usable tag

- There is no tag setting.

(4) Precautions for execution

- The error ID and No. saved are always the latest information. Old data is not left.

(5) Compatible events and methods

Event .....MError
Method .....None

(6) Example of use

```
Sub XMERROR1_Merror( )
    Label1.Caption = "Error occurrence"
    Label2.Caption = "Tag name:" + XMError1.MTagName
    Label3.Caption = "Error identifier" + Str$( XMError1.MErrorID)
    Label4.Caption = "Error detail number" + Str$( XMError1.MErrorNo)
End Sub
```

15.7 Clock Display

This function shows a clock (year/month/day hour:minute:second) on the screen.

(1) Specifications

File name	XMCLOCK.OCX
Display format	The information of "year/month/day hour:minute:second" is shown as follows. 1997/03/25 11:15:02
Font	According to the OS specifications

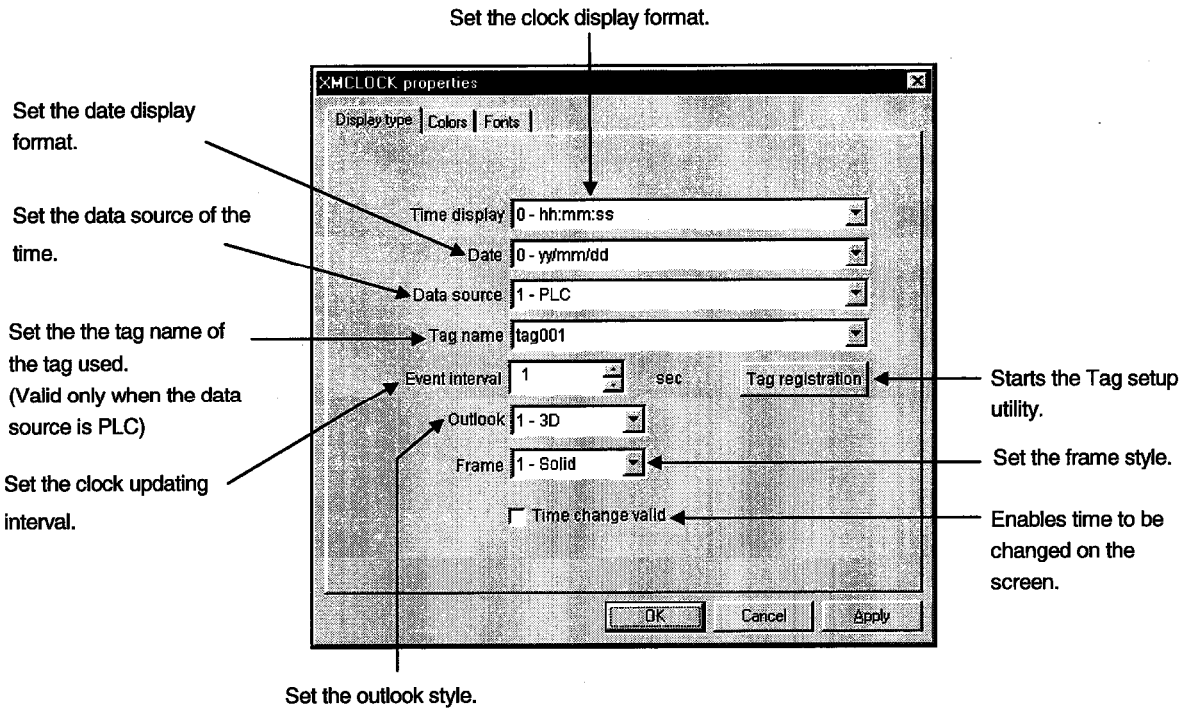
(2) Properties

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).			
MTimeStyle	Specify the time display form. 0: hh:mm:ss 2 : None 1: hh:mm	0 to 2	0 (hour:minute :second)	Allowed
MDayStyle	Specify the date display form. 0: yy/mm/dd 2: None 1: mm/dd		0 (year/month /day)	
MClock	Set the data source of the clock data. 0: PC 1: PLC	0,1	0 (personal computer)	Not allowed
Mevent Interval	Set the interval of generating the MClock event in seconds.	1 to 3600	1(sec)	
MTagName	Specify the tag file name for clock data collection. (Valid for PLC only)	—	None	
MWriteFlag	Set whether the time change (PLC only) is valid or invalid. True: Valid False: Invalid		False	Allowed
MErrorID	The corresponding error identifier is saved.		0	Not allowed
MErrorNo	The fault that occurred is saved.			

(3) Property page

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

(a) Function



(4) Conditions of usable tag

- The PLC-specified tag.

(5) Precautions for designing

- For designing, the default time is displayed according to the time pasted to the form.
- Pasting two or more of this custom control will affect the monitoring speed. It is recommended to paste one control to one form.
- Clicking the control in a time change enable status shows a caret and allows entry. Press the Enter key to write the value.
- An error message is returned if wrong setting is made for entry.
- The write format of the clock data is the same as the display format.
- Since the clock operates between 1971 and 2036, set the clocks of the personal computer and PLC to within that time range.
  If the time is outside this range, the clock will operate assuming that the year is 1971.

(6) Precautions for execution

- Change the time in accordance with the setting of MTimeStyle and MDayStyle.

Examople: MTimeStyle: 0 (hour:minute:second) MDayStyle: 1 (month/day)

POINT
Some PLC CPU types do not have the clock function. Do not use the clock display function if the PLC does not have the clock function.

(7) Compatible events and methods

Event ..... MClock, MError

Method ..... Refresh

16. PARTS COLLECTION

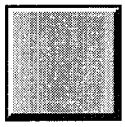
The following parts (*.BMP, *.WMF) are included when XMOP is installed.
The last alphabet in a file name indicates the color of the part.

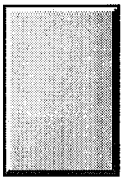
○○○○○○_.BMP(WMF)
↑
Indicates the color of the part.

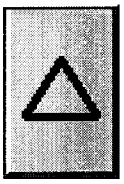
B ••••Blue
BG••••Blue green
G ••••Green
GR••••Gray
R •••• Red
W •••• White
Y •••• Yellow

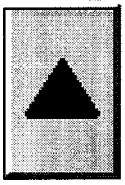
(1) Buttons

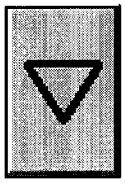
Stored in [Install folder]-[XMOP]-[BMP(WMF)]-[BUTON].

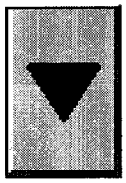
BU1_ 

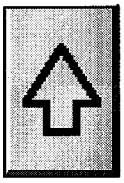
BU2_ 

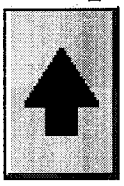
BU31_ 

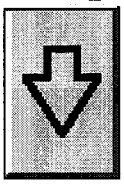
BU32_ 

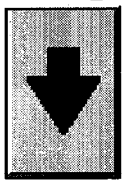
BU41_ 

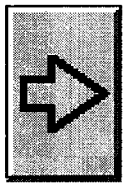
BU42_ 

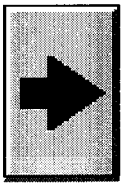
BU51_ 

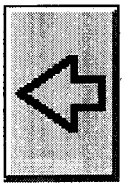
BU52_ 

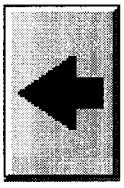
BU61_ 

BU62_ 

BU71_ 

BU72_ 

BU81_ 

BU82_ 

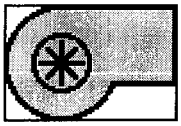
BU91_ 

BU92_ 

(2) Fan

Stored in [Install folder]-[XMOP]-[BMP(WMF)]-[FAN].

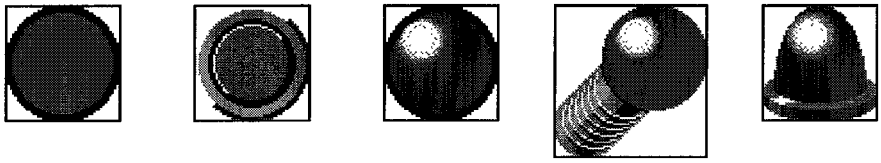
FAN1_



(3) Lamps

Stored in [Install folder]-[XMOP]-[BMP(WMF)]-[LAMP].

LA1_ LA2_ LA3_ LA4_ LA5_



(4) Points

Stored in [Install folder]-[XMOP]-[BMP(WMF)]-[POINT].

P01_ P02_ P03_

(5) Pumps

Stored in [Install folder]-[XMOP]-[BMP(WMF)]-[POMP].

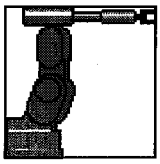
POM11_ POM12_

(6) Arm robots

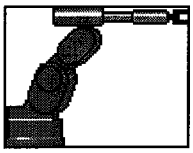
(a) Arm robots 1

Stored in [Install folder]-[XMOP]-[BMP(WMF)]-[ROBO1].

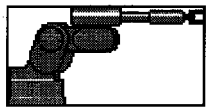
R011_



R012_



R013_



(b) Arm robots 2

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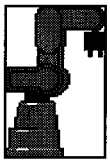
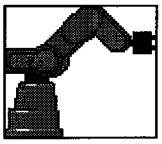
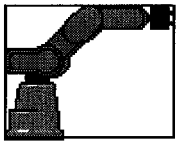
R021_



R022_



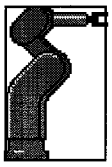
R023_



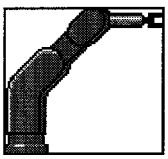
(c) Arm robots 3

Stored in [Install folder]-[XMOP]-[BMP(WMF)]-[ROBO3].

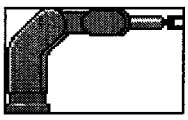
R031_



R032_



R033_



(7) Switches

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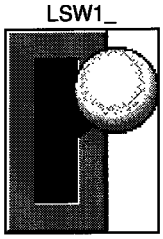
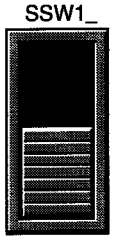
LSW1_



SSW1_



(8) Tanks

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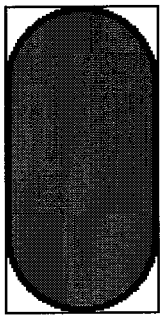
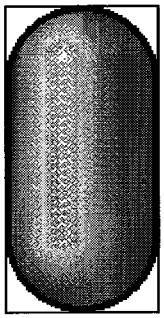
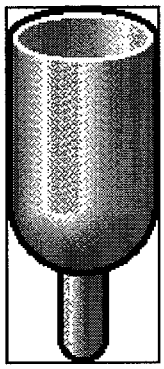
T1_



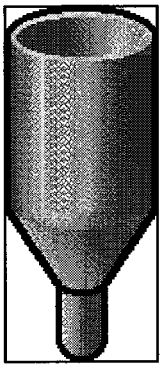
T2_



T3_



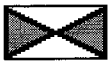
T4_



(9) Valves

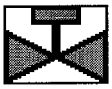
Stored in [Install folder]-[XMOP]-[BMP(WMF)]-[VALB].

VAL1_



VAL2_

VAL3_



VAL4_

VAL5_

VAL6_

APPENDICES

APPENDIX 1 Specifications

XMOP has the following specifications.

Item	Monitor Screen	Canvas Screen
Number of screens	230 forms/application (according to VB specifications)	
Figure type	According to the VB and Operating System specifications	
Painting pattern		
Number of figures registered		
Screen title		
Statement		
Figure parts	BMP and WMF are used as parts.	
Number of monitor points	No specific restrictions (up to the limit of VB)	
	Max. control name: 254 pcs./form Note that the number of controls may exceed 254 for control arrays.	

APPENDIX 2 Creating the Image File

The background and figure display image data to be pasted to a form is created in the BMP or WMF format for use.
Create this image data using Paint of Windows or a Windows-compatible graphic tool available on the market.
The maximum number of controls is 600 per application and 255 per form.
Note that the maximum number of controls may change with the controls used.

POINT
Note that using a bit map file too often will increase the file size. BMP file size = length (dots) × width (dots) + about 1078 bytes

APPENDIX 3 Operation Procedures for Samples

This section explains operating procedures for use of XMOP samples.

Appendix 3.1 For Use of XmopDemo.tag

(1) Make setting with the Environment setup utility
Start the environment setup utility and choose "XmopDemo.tag".
Also set the first communication change as the necessary channel.

(2) Read the sample tag
Start the tag setup utility and read the sample tag.
Save destination: <Install folder>-<Samples>-<Demo>-XmopDemo.tag

(3) Set the assigned devices and network as required
Set the tag devices and network as required.

(4) Start VB and read the sample (XmopDemo.VBP)

(5) Set the comment file
Register the demonstration comment file to XMCMNT.OCX.
Save destination: <Install folder>-<Samples>-<Demo>-Comment.cmt

(6) Set the alarm summary file
Set the demonstration alarm summary file to XMALMSMR.OCX.
Save destination: <Install folder>-<Samples>-<Demo>-AlmSmr.alm

(7) Register pictures to XMPICTUR.OCX

(8) Run

Appendix 3.2 For Use of XmopCntl.tag

(1) Make setting with the Environment setup utility
Start the environment setup utility and choose "XmopCntl.tag".
Also set the first communication change as the necessary channel.

(2) Read the sample tag
Start the tag setup utility and read the sample tag.
Save destination: <Install folder>-<Samples>-<Demo>-XmopCntl.tag

(3) Set the assigned devices and network as required
Set the tag devices and network as required.

(4) Start VB and read the sample (XmopDemo.VBP)

(5) Run

APPENDIX 4 Error Codes

This section lists the error codes displayed when XMOP is used.

Appendix 4.1 XMOP Error Codes

The following table lists the error codes generated by XMOP.

Error Code		Error Definition	Corrective Action
Identifier	Number		
2	-1	Memory shortage Memory necessary to run custom controls is short.	As memory may be short, execute after closing other running applications.
2	-2	Upper limit excess Monitored value has risen above the upper limit.	Prevent the monitored value from rising above the upper limit.
2	-3	Lower limit excess Monitored value has fallen below the lower limit.	Prevent the monitored value from falling below the lower limit.
2	-4	Unauthorized input Input data is wrong.	Enter correct data.
2	-5	File open error Opening of the specified file failed.	Set the existing file name.
2	-6	Unauthorized drive name Access cannot be made to the specified drive.	Specify the existing drive name.
2	-7	Folder creation failure Folder creation failed.	Since the specified disk does not have enough free space, increase the space.
2	-8	File read error Read of the specified file failed.	Check that the file is correct.
2	-9	File write error Write to the file failed.	Since the specified disk does not have enough free space, increase the space.
2	-11	Unauthorized file type Specified file type does not exist.	Specify the correct file.
2	-12	No existing file Specified file does not exist.	Specify the existing file.
2	-13	Abnormal end of thread Thread for monitoring ended abnormally.	Check for a communication fault.
2	-15	Inversion of lower and upper limits Values of the upper and lower limits inverted.	Set correct values to the upper and lower limits.
2	-16	Invalid property value Invalid property value was specified.	Specify the proper property value.
2	-17	Not supported for execution Attempt was made to change the property which is not allowed to change during execution.	Do not make change during execution.
2	-19	No free file name There is no free file name to be created for snap shot.	Delete the unnecessary snap shot file.
2	-20	Default printer information acquirement failure Printer information acquirement failed.	Check that the printer is connected.
2	-21	Printing failure Snap shot printing failed.	

Error Code		Error Definition	Corrective Action
Identifier	Number		
3	-1	Unauthorized data type error Data type read or written is wrong.	Specify the correct data.
3	-2	Memory acquirement error Memory acquirement failed.	Re-execute after closing other running applications, if any.
3	-3		
3	-5	Resource acquirement error Resource acquirement failed.	
3	-6		
3	-11	Shared memory acquirement error Shared memory acquirement failed.	
3	-12		
3	-13		
3	-14		
3	-15		
3	-16	Picture file error Specified picture file does not exist.	Specify the correct directory and file name.
3	-20	File error Specified file does not exist.	
3	-30	BMP file fault Specified file is not a bit map file.	Choose the correct bit map file.
3	-31		
3	-32	Metafile fault Specified file is not a metafile, or acquirement of memory for storing the metafile failed.	Confirm that the file is a correct metafile. When it is a correct metafile, re-execute after closing other running applications, if any.
3	-33		
3	-34		
3	-35		
3	-36		
3	-37		
3	-38		
3	-101	File name error Specified file name is wrong.	Specify the correct file name.
3	-140	Data type error Data type of the specified tag is not the same as that of the fields.	Choose the fields having the consecutively same data type.
3	-1001	Automatic tag collection error Automatic collection of tag data failed.	Check that the specified tag exists. Also check for an error in the error viewer.
3	-1002	Tag information acquirement error Acquirement of tag information failed.	
3	-1003	Unauthorized tag name Specified tag name is unauthorized.	
3	-1004	Data type mismatch Tag and field number specified have the data type unusable for the specified custom control.	Specify the tag of correct data type.

Appendix 4.2 Tag Error Codes

The following table lists the error codes displayed when tags are used.

Error Code		Error Definition	Corrective Action
Identifier	Number		
1	-1	Specified tag file is abnormal.	Choose the tag file created using the tag setup utility.
1	-2	Failure to acquire shared memory. Memory for operation cannot be acquired due to memory shortage.	Execute after closing other running applications.
1	-3	Failure to acquire local memory. Memory for operation cannot be acquired due to memory shortage.	
1	-4	Failure to acquire resources. Acquirement of resources failed.	Since memory may be short, execute after closing other running applications.
1	-5	Tag name is wrong.	Specify the tag name registered as a valid tag in the specified tag file.
1	-6	Thread creation failed.	Since memory may be short, execute after closing other running applications.
1	-7	Registry contents are wrong. Registry information is corrupted.	Reinstall software.
1	-8	Timing of registration to user event is wrong.	As the set user timing is 0, set a proper value.
1	-9	Specified log timing is abnormal.	In a log-specified tag, log collection cannot be done at the timing of less than 1 second. Correct the collection timing.
1	-10	Collection condition is wrong.	Set a correct collection condition.
1	-11	Handshake time-out error	Make setting to make handshake established.
1	-12	Tag management process status is wrong.	Make tag information correct.
1	-13	Reload occurred in tag management process.	Perform reload-related processing since reload occurred in tag management process.
1	-14	Specified buffer size is wrong.	Specify proper buffer size.
1	-15	Tag not specified for logging was handled as a logged tag.	Choose a log-specified tag.
1	-16	Specified field number exceeds the number of tag fields.	Specify a proper field number.
1	-17	Number of fields is wrong.	Specify a proper field number and number of read/write fields.
1	-18	Number of read/write fields is wrong.	Specify a proper number of read/write fields.
1	-19	Event of a tag which is not normally read was awaited.	Specify the tag normally read.
1	-20	Specified tag is not normally collected.	Specify the tag normally collected.
1	-21	Error event occurred.	
1	-23	Data specified to wait for event is wrong.	

Error Code		Error Definition	Corrective Action
Identifier	Number		
1	-24	Clock reading was attempted by specifying the CPU which does not have the clock reading function.	Specify the CPU having the clock function.
1	-25	Log data saving failed.	Free space of hard disk may be small. Increase the free space of hard disk.
1	-27	Time-out occurred during clock data write.	Check that the special devices used to write clock data are in write-ready status.
1	-30	Request device is not set.	For handshake read, set the request device.

Type SW2D5F-XMOP-E Monitoring Tool Operating Manual

MODEL	SW2D5F-XMOP-E-O-E
MODEL CODE	1LMS44
IB(NA)66896-A(9903)MEE	

MITSUBISHI ELECTRIC CORPORATION

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