MITSUBISHI

Type SW3D5F-XMOP-E Monitoring Tool
Operating Manual

MELSEC

Mitsubishi Programmable Logic Controller

● SAFETY PRECAUTIONS ●

(Always read these instructions before using this equipment.)

Before using this product, please read this manual and the relevant manuals introduced in this manual carefully and pay full attention to safety to handle the product correctly.

The instructions given in this manual are concerned with this product. For the safety instructions of the programmable controller system, please read the CPU module user's manual.

In this manual, the safety instructions are ranked as "DANGER" and "CAUTION".

| ⟨!⟩ DANGER | Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury. |
| ⚠ CAUTION | Indicates that incorrect handling may cause hazardous conditions, resulting in medium or slight personal injury or physical damage. |

Note that the ⚠CAUTION level may lead to a serious consequence according to the circumstances. Always follow the instructions of both levels because they are important to personal safety.

Please save this manual to make it accessible when required and always forward it to the end user.

[Design Instructions]

⟨!⟩ DANGER

● When data change is to be made from a peripheral device to the running PLC, configure up an interlock circuit in the outside of the PLC system to ensure that the whole system will always operate safely.
Also, determine corrective actions to be taken for the system when a communication error occurs due to a cable connection fault or the like in online operation performed from the peripheral device to the PLC CPU.

⚠ CAUTION

● Online operation performed with a peripheral device connected to the running CPU module (especially forced output) should be started after carefully reading the manual and fully ensuring safety.
Not doing so can cause machine damage or accident due to an operation mistake.

REVISIONS

※ The manual number is given on the bottom left of the back cover.

Print Date	※ Manual Number	Revision
Sep., 1999	IB (NA)-0800017-A	First edition
Sep., 1999	IB (NA)-0800017-B	Correction Subsection 8.2.4, subsection 8.2.5 Addition Subsection 8.2.5, Appendix 4.2
May, 2000	IB (NA)-0800017-C	Correction About Manuals, subsection 8.2.4, subsection 8.2.6 Addition About the Generic Terms and Abbreviations, subsection 8.2.5, subsection 8.2.6
Jul., 2000	IB (NA)-0800017-D	Addition Operating Instructions, subsection 8.2.2, subsection 8.2.7, section 13.3
Feb., 2002	IB (NA)-0800017-E	Correction Section 5.2, subsection 8.2.4, subsection 8.2.5 Addition Section 15.6
Dec., 2003	IB (NA)-0800017-F	Correction About Manuals Deletion About the Generic Terms and Abbreviation

Japanese Manual Version IB-0800013-F

Operating Instructions

(1) Starting the Tag management process
   (a) XMOP will not operate if the tag management process has not started.

   (b) If any communication problem has occurred between the Tag management
       process and XMOP, an error message as indicated below may appear.
       If such an error message or the like has appeared, restart the Tag management
       process.

       <Error message example>
       • RPC server cannot be used.
       • Remote procedure call failed, resulting in no execution.

       Restart the Tag management process in the following procedure.

       "XMOP stop" → "Logoff/Restart" → "Logon/Restart complete" → "Tag
       management process start"

(2) Designing instructions
   For designing, set the Tag management process to the "STOP" status.
   You can make setting with the tag setup utility.

(3) Reloading the Tag management process
   During execution of created user applications, do not reload the tag management
   process.

(4) Operation of XMOP
   On any personal computer where XMOP is not installed, user applications using
   XMOP will not run.

(5) Registering the XMOP custom controls
   Up to 254 XMOP custom controls may be registered to one form.
   However, when designing, register within 100 controls to one form in consideration
   of the practical use of loads, etc.

(6) Monitoring the XMOP custom controls
   When designing, more than 254 XMOP custom controls should not be monitored at
   once in consideration of the processing loads of XMOP and container application
   (VB).
   The custom controls whose form status is Show are all monitored.
   Monitoring will not be performed if you have set the tag where the form status is
   Hide and ordinary collection is not made.

(7) Saving the picture file
   When picture information is saved, it is not stored as data themselves but as a file
   pathname.
   If you have changed the picture file saving folder or file name, reset the picture
   property.

(8) When using Windows NT 4.0
   When using Windows NT 4.0, XMOP may be installed and used only on the
   administrator's authority.

(9) About Ethernet communication
   (a) When TCP/IP is used for Ethernet communication, there are the following
       restrictions.
       1) During monitoring, write to the PLC CPUs of the same logical station number
          cannot be performed.
          The following controls are restricted.
          • XMBITOPR.OCX   • XMNUMDAT.OCX
          • XMNUMBLK.OCX   • XMSTRDAT.OCX
          • XMSTRBLK.OCX   • XMWRBIT.OCX ＊1
          • XMWRWORD.OCX ＊1   • XMCLOCK.OCX (read not allowed, either)
           ＊1 When using TCP/IP to perform write, provide more than one port
                number, give a logical station number to each of them, and use them
                for read/write.
       2) XMOP (Tag management process) and the other process (e.g. device
          monitor utility, user application) cannot have simultaneous access to the PLC
          CPUs of the same logical station number.

   (b) If the CPU goes down or the Ethernet module is reset during Ethernet
       communication, the communication loop will be cut off.
       In that case, restart the personal computer.

(10) About computer link communication and CPU COM communication on Windows
     95
     On Windows 95, communication using the COM port, e.g. computer link
     communication or CPU COM communication, will cause a memory leak.
     Therefore, do not perform continuous operation.

(11) About simultaneous use of XMOP and GPPW
     When using GPPW and XMOP together on the same E71 module to make
     Ethernet communication, make the following settings.
     • Set the protocol of the "Target" screen on the Ethernet utility of CSKP to
       "UDP/IP".
     • Set SW2 of the communication condition setting switches of the E71 module to
       "OFF (binary)".

(12) About installation
   (a) When using SW3D5F-XMOP-E
       Install SW3D5F-XMOP-E after uninstalling SW2D5F-XMOP-E.

   (b) When using SW3D5F-XMOP-EV
       Install SW3D5F-XMOP-EV with SW2D5F-XMOP-E installed.
       Unless SW2D5F-XMOP-E has been installed, you cannot install SW3D5F-
       XMOP-EV.

(13) About overwrite installation
     When performing overwrite installation, install the software in the folder where it
     had already been installed.

(14) About the start menu
     When you have uninstalled XMOP, the item may remain in the start menu.
     In such a case, restart the personal computer.

(15) About reinstallation after uninstalling CSKP
    If you uninstalled CSKP with XMOP installed and then you reinstalled CSKP, the communication setting information (information set with various utilities such as the computer link utility) will be lost.
    At this time, you must make communication settings again.

(16) About the number of licenses
    The number of licenses are set to XMOP.
    Installation decreases the number of licenses by 1.
    Conversely, uninstallation increases the number of licenses by 1.
    Therefore, when deleting XMOP, always uninstall it.
    Note that the number of licenses will not increase if the folder and files are deleted on Explorer or the like.

(17) When using the Tag management process in Ethernet TCP/IP communication
    If a communication error (error code: 102, 103) that a TCP connection is broken (e.g. CPU reset, open cable) occurs during execution of the Tag management process, communication is disabled because the Tag management process will not make a TCP connection again.
    If a communication error occurs during execution of the Tag management process, reload using the Tag setup utility or restart the Tag management process after communication has been restored.

(18) About resume and other functions of the personal computer
    A communications error may occur if communications are made with the PLC CPU after setting the resume function, suspend setting, power-saving function or standby mode of the personal computer.
    Hence, any of the above functions should not be set for making communications with the PLC CPU.

(19) Precautions for USB communication
    Connecting/disconnecting the USB cable, resetting the PLC CPU, or switching power OFF/ON frequently during communications with the PLC CPU can cause a communications error, from which recovery may not be made.
    If recovery cannot be made from the communications error, completely disconnect the USB cable once and reconnect it in more than five seconds.
    (Even after this operation, an error may occur at the initial communication, but communications will be made properly at the second time and later.)

INTRODUCTION

Thank you for choosing Type SW3D5F-XMOP-E Monitoring Tool.
Before using Type SW3D5F-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.

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About Manuals

The following manuals are also related to this product.
In necessary, order them by quoting the details in the tables below.

Related Manuals

Manual Name	Manual Number (Model Code)

Type SW3D5F-CSKP-E Basic Communication Support Tool Operating Manual
 	
  This manual describes how to set up and use each utility for communication.
 	
                                                                                   (Packed with the product)
	IB-0800014
	(1LMS50)

Type SW3D5F-CSKP-E Basic Communication Support Tool Programming Manual
 	
  Provides the programming procedure, detailed explanations, and error codes of the MELSEC data link
 	
  library.   (Packed with the product)
	IB-0800015
	(1LMS51)

Type A70BDE-J71QLP23/A70BDE-J71QLP23GE/A70BDE-J71QBR13/A70BDE-J71QLR23
MELSECNET/10 Interface Board User's Manual(For SW3DNF-MNET10)
 	
  Describes the features, specifications, part names and setting of the MELSECNET/10 board, and the
 	
  installation, uninstallation and others of the driver.   (Packed with the product)
	IB-0800035
	(13JL93)

Type A80BDE-J61BT11 CC-Link System Master/Local Interface Board User's Manual
(For SW4DNF-CCLINK)
 	
  Describes the features, specifications, part names and setting of the CC-Link master board, and the
 	
  installation, uninstallation and others of the driver.   (Packed with the product)
	IB-0800175
	(13JR28)

Type A80BDE-J61BT13 CC-Link Interface Board User's Manual (For SW4DNF-CCLINK)
 	
  Describes the features, specifications, part names and setting of the CC-Link local board, and the
 	
  installation, uninstallation and others of the driver.   (Packed with the product)
	IB-0800176
	(13JR29)

Type A80BDE-A2USH-S1 PLC CPU Board User's Manual (For SW1DNF-ANU-B)
 	
  Describes the features, specifications, part names and setting of the CPU board, and the installation,
 	
  uninstallation and others of the driver.   (Packed with the product)
	IB-0800174
	(13JR27)

<u>How to Use This Manual</u>

"How to Use This Manual" is described by purposes of using XMOP.
Refer to the following and use this manual.

(1) To know the features (Section 1.1)
    Features are given in Section 1.1.

(2) Custom control and utility lists (Sections 1.2 and 1.3)
    The XMOP custom control list is provided in Section 1.2 and the utility list in Section 1.3.

(3) To know compatibility with the existing software (Section 1.4)
    Section 1.4 provides compatibility with the existing software.

(4) To know the system configuration (Section 2.1)
    This section provides system configurations available by use of XMOP.

(5) To know XMOP's operating environment and usable PLC CPUs (Section 2.2)
    XMOP's operating environment is given in Section 2.2.
    Since usable PLC CPUs are the same as those of CSKP, refer to the CSKP Operating Manual.

(6) To install or uninstall XMOP (Chapter 3)
    Read Chapter 3 which describes how to install and uninstall XMOP.

(7) To know the operation procedures of XMOP (Chapters 4 to 6)
    Chapter 4 provides the operation procedures of XMOP, Chapter 5 deals with the way of creating a tag file necessary to use XMOP, and Chapter 6 gives simple operation procedures for communication by actually using XMOP.

(8) To know the operation methods of the utilities (Chapters 7 and 8)
    Chapter 7 provides operations common to the utilities, and Chapters 8 describes how to perform operation on a utility basis.
    Read these chapters when using the utilities.

(9) To use the custom controls (Chapters 9 to 15)
    Chapters 9 to 15 give detailed explanations of the custom controls.
    Read these chapters when using the custom controls.

(10) To know the accessible devices and ranges
    The CSKP Operating Manual provides the accessible devices and ranges.
    Refer to the CSKP Operating Manual.

About the Generic Terms and Abbreviations

Unless otherwise specified, this manual uses the following generic terms and abbreviations to describe Type SW3D5F-XMOP-E Monitoring Tool.

Generic Term/Abbreviation	Description
XMOP	Abbreviation of Type SW3D5F-XMOP-E Monitoring Tool
CSKP	Abbreviation of Type SW2D5F-CSKP-E / SW3D5F-CSKP-E Basic Communication Support Tool
Windows NT 4.0	Abbreviation of Microsoft Windows NT Workstation 4.0
Windows 95	Abbreviation of Microsoft Windows 95
Windows 98	Abbreviation of Microsoft Windows 98
Windows	Generic Term of Microsoft Windows 95, Microsoft Windows 98 and Microsoft Windows NT Workstation 4.0
VB	Abbreviation of Microsoft Visual Basic 5.0 and Visual Basic 6.0
Personal computer	DOS/V-compatible personal computer of IBM PC/AT and its compatibles
GPPW	Abbreviation of GPP Function Software for Windows SW ☐ D5C-GPPW-E/SW ☐ D5F-GPPW-E
MELSECNET/10 board	Abbreviation of Type A70BDE-J71QLP23/A70BDE-J71QLP23GE/A70BDE-J71QBR13/A70BDE-J71QLR23 MELSECNET/10 interface board
CC-Link board	Abbreviation of Type A80BDE-J61BT11 CC-Link system master/local interface board and Type A80BDE-J61BT13 CC-Link interface board
CPU board	Abbreviation of Type A80BDE-A2USH-S1 PLC CPU board

<u>Meanings and Definitions of the Terms</u>

The terms used in this manual have the following meanings and definitions.

(1) Container application
    Application which can embed XMOP in its own data.(VB)

(2) Tag management process
    Process which must have been started when using the custom controls of XMOP.
    Normally, this process is started simultaneously with Windows.
    For full information, refer to Section 8.2.2.

(3) Tag
    Data table which contains a set of information necessary for communication with
    the PLC, e.g. communication settings, devices and data types.
    For full information, refer to Section 5.1.

(4) Field
    Device information created in a tag.
    For full information, refer to Section 5.1.

<u>Product Makeup</u>

XMOP consists of the following products.

(1) Type SW3D5F-XMOP-E Monitoring Tool

A total of three disks

(1 / 3)　　　　(2 / 3)　　　　(3 / 3)

(2) Manual

Operating manual　　A total of one book

(3) Others

Software registration card　　1 piece

1
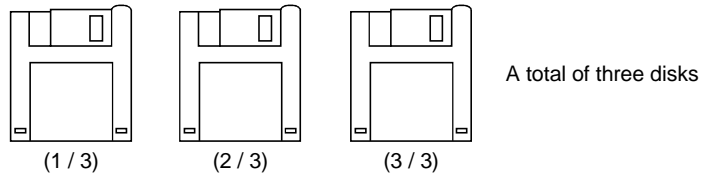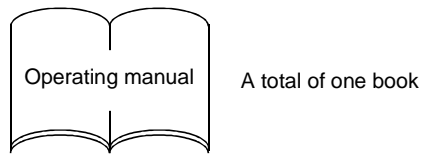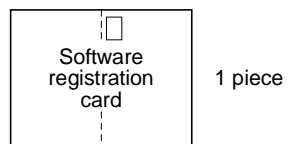
1. OVERVIEW

Type SW2D5F-XMOP-E Monitoring Tool is designed to create monitor applications using the custom controls of Visual Basic.
You can create monitor applications by simply pasting input area, display area, check box, menu and other parts and pushbuttons and other controls and setting display conditions, etc. in a form window on VB.

XMOP screen

PLC
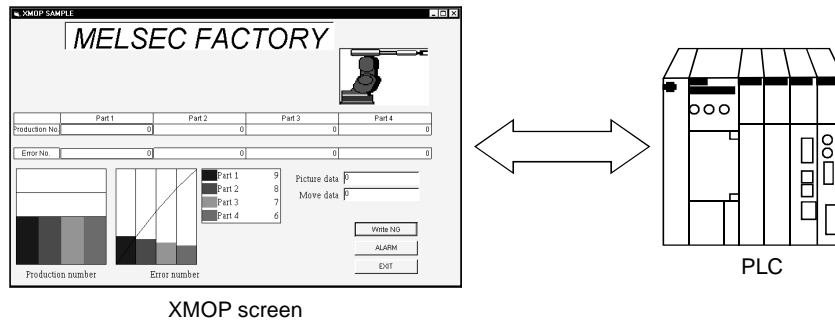
IMPORTANT

CSKP is required to create applications with XMOP.

When using created applications for monitoring, set the communication means with the CSKP utility.

For details, refer to the CSKP Operating Manual.

1.1 Features

XMOP has the following features.

(1) User-friendly development environment

VB is a user-friendly programming language designed to create Windows application software easily.

XMOP is a kind of control (custom control OCX) of that VB and is operated in the same way as VB.

In addition, a wide variety of commercially available graphic tools for Windows can be utilized to draw a monitor screen.

User-friendly development environment is achieved by utilization of the tool you are accustomed to use.

XMOP   CSKP

Monitor device data!

Personal computer

User application

VB
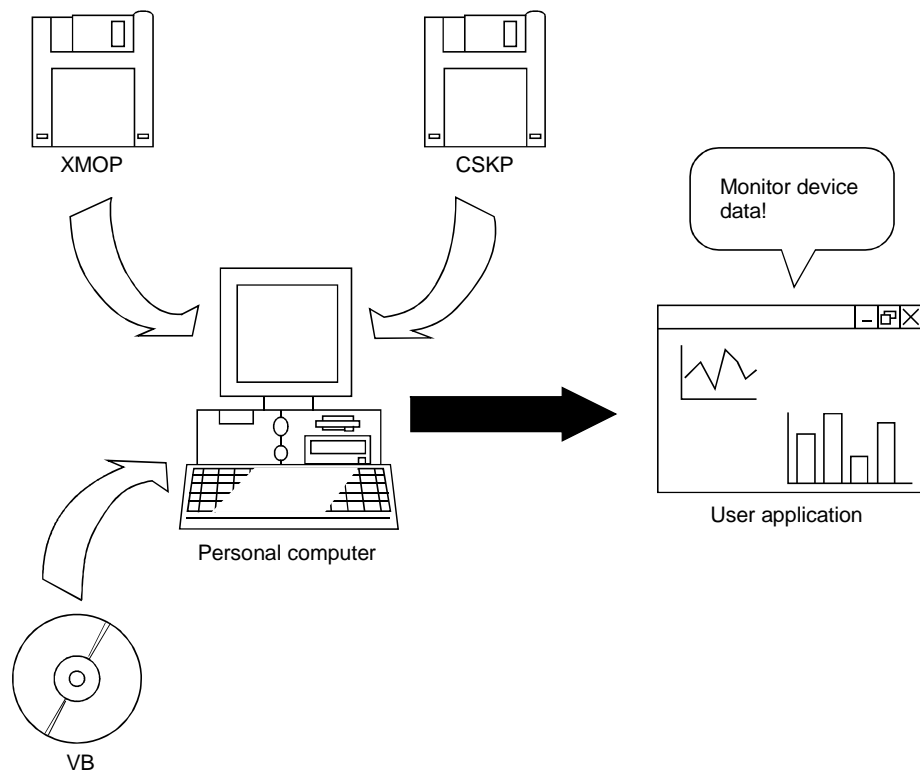
(2) Program-less run

XMOP is supplied with 23 different custom controls which are needed to monitor Factory Automation equipment, e.g. graphic display, numeric display, level display and trend graph.

Without any specific expertise, you can use them like the other standard controls to make communication with the PLC by merely pasting the necessary custom controls to a form and executing them.

(Note that property page setting is required.)

Communication with PLC

Numeric block data display/entry (XMNUBLK.OCX)

XMOP SAMPLE

	NUMBLKX1	NUMBLKX2	NUMBLKX3
NUMBLKY1	000000	000000	0000
NUMBLKY2	000000	000000	0000
NUMBLKY3	000000	000000	0000
NUMBLKY4	000000	000000	0000

Write   Cancel

Paste

Trend graph display (XMTREND.OCX)

09:41   09:41

Stop   Start/Stop sequence   Alarm   EXIT

Open the property page and make setting!

PLC

(3) Expansion of programmed processing

Since the moving image functions and custom controls have one-for-one correspondence on a monitor, programmed processing can be easily added later and monitor applications can be updated flexibly.

While maintaining compatibility with the conventional data, you can easily make modifications such as the addition of new functions.

(4) Simple communication using tags

When XMOP merely uses a tag having such information as the device types and device numbers in the environment where the tag management process is running, you can have easy access the devices set to the tag.

Trend graph

Graphic display

Numeric block data display/input

Bar graph display

Parato chart display

Numeric data display/input

Set tags used with custom controls.

Tag file

Tag 1

| Channel | Communication type (batch or random) |

| Communication interval | Network setting |

Communication status (communication or no communication)

Device type (W, D, X, etc.)

Device number

Data type (Short, Long, Char, Bit)

Field 1

Field n

n=1000 (for batch communication)
n= 256 (for random communication)

Tag n (n=1 to 1000)

Communication path
(e.g. computer link communication, Ethernet communication)

Access to PLC devices

PLC

1.2 Custom Control List

The custom controls of XMOP are listed below.

Function		File Name	Description
Parts display	Graphic display	XMPICTUR.OCX	Shows a graphic file with set values.
	Blink display	XMBLINK.OCX	Provides a blink display when the specified bit device is on.
	Comment display	XMCMNT.OCX	Shows a comment with the set device value.
Graph display	Level display	XMLEVEL.OCX	Shows a level.
	Line graph display	XMLINGRF.OCX	Shows a line graph.
	Trend graph display	XMTREND.OCX	Shows a trend graph.
	Bar graph display	XMBARGRF.OCX	Shows a bar graph.
	Pareto chart display	XMPALLET.OCX	Shows a Pareto chart.
	Historical trend graph display	XMHSTTRD.OCX	Shows a historical trend graph.
Block display/input	Numeric block data display/input	XMNUMBLK.OCX	Shows/enters numeric values in block.
	Character string block data display/input	XMSTRBLK.OCX	Shows/enters character strings in block.
Display/input	Numeric data display/input	XMNUMDAT.OCX	Shows/enters numeric value data.
	Character string data display/input	XMSTRDAT.OCX	Shows/enters character string data.
	Bit device operation (bit input)	XMBITOPR.OCX	Performs bit device operation.
Input	Word write	XMWRWORD.OCX	Writes data to a word device.
	Bit write	XMWRBIT.OCX	Writes data to a bit device.
Others	Event occurrence	XMEVENT.OCX	Causes an event at the specified timing.
	Snap shot	XMSNPSHT.OCX	Provides output, etc. to a printer.
	Alarm display	XMCATION.OCX	Shows an alarm on the screen on the basis of the set value.
	Alarm sound output	XMALARM.OCX	Provides an alarm sound on the basis of the set value.
	Alarm summary display	XMALMSMR.OCX	Shows an alarm summary.
	Error	XMERROR.OCX	Causes an error event.
	Clock display	XMCLOCK.OCX	Shows a clock on the screen.

1.3 Utility List

The XMOP utilities are listed below.

Utility Name	Description	Refer to
Environment setup utility	Used to set the environment when the tag management process starts.	Section 8.1
Tag setup utility	Used to set the tag file used by the tag management process.	Section 8.2
Comment setup utility	Used to set the comment file used for comment display (XMCMNT.OCX).	Section 8.3
Alarm summary setup utility	Used to set the alarm summary file used for alarm summary display (XMALMSMR.OCX).	Section 8.4

1.4 About Compatibility with the Existing Software

Compatibility with the existing software is listed below.

Software Name	Function Name	Compatibility	Remarks
SW2D5F-XMOP-E	Background area	○	Compatible
	Animation area		
	Figure part		
	Comment file		
	Program		

○: Compatible ×: Incompatible

Combinations with CSKP are as follows.

	SW2D5F-XMOP-E		SW3D5F-XMOP-E
	A ＊1	B or later ＊1	
SW1D5F-CSKP-E	×	×	×
SW2D5F-CSKP-E	○	○	○
SW3D5F-CSKP-E	×	○	○

○: Usable, ×: Unusable

＊1 Indicates the software version.

2

2. SYSTEM CONFIGURATION

This chapter deals with the system configuration, operating environment and usable CPU.

2.1 System Configuration

The system configuration for XMOP is similar to that for CSKP.
Refer to the CSKP Operating Manual.

2.2 Operating Environment

The operating environment of XMOP is indicated below.

Item	Description
Operating System	Windows 95, Windows 98, Windows NT Workstation 4.0 ＊1
CPU	Pentium 100MHz or more (multiprocessor incompatible)
Display	Resolution 800×600 dots or more (recommended 1024×768 dots)
Required memory capacity	32MB or more
Hard disk free space	40MB or more
Disk drive	3.5 inch (1.44MB) floppy disk drive
Corresponding container application	Visual Basic 5.0, Visual Basic 6.0

＊1 Service Pack 3 or higher is required for use of Windows NT Workstation 4.0.

2.3 Usable PLC CPU

The PLC CPU usable with XMOP is the same as those with CSKP.
Refer to the CSKP Operating Manual.

MEMO

3. INSTALLATION AND UNINSTALLATION

This chapter describes how to install and uninstall XMOP.

3.1 Installation

This section describes how to install XMOP.

```
┌─────────────────────────────────────────────────────────────────┐
│ ┌──────────┐                                                      │
│ │  POINTS  │                                                      │
│ └──────────┘                                                      │
│ (1) When using SW3D5F-XMOP-E                                      │
│     Install SW3D5F-XMOP-E after uninstalling SW2D5F-XMOP-E.        │
│ (2) When using SW3D5F-XMOP-EV                                      │
│     Install SW3D5F-XMOP-EV with SW2D5F-XMOP-E installed.           │
│     Unless SW2D5F-XMOP-E has been installed, you cannot install SW3D5F- │
│     XMOP-EV.                                                       │
│ (3) Installation decreases the number of licenses by one.         │
│ (4) When the OS is Windows NT 4.0, log on as a user who has an administrator │
│     attribute.                                                    │
│ (5) Start installation after removing all applications included in Startup and │
│     restarting Windows.                                           │
│ (6) CSKP must have been installed.                                │
│ (7) Make the first floppy disk write-enabled.                     │
└─────────────────────────────────────────────────────────────────┘
```

1. After powering on the personal computer, start Windows.
2. Choose [Start]-[Settings]-[Control Panel].
   When the control panel has opened, choose "Add/Remove Programs".

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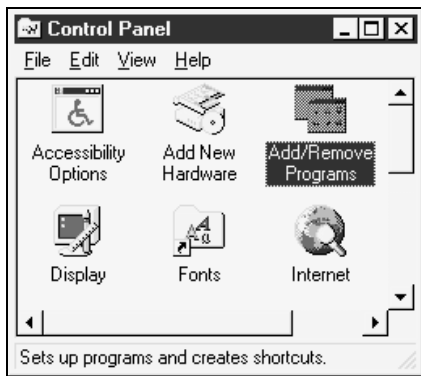
(From the preceding page)

↓

3. Click the "Install..." button.

↓

4. When the left screen has appeared, insert the first floppy disk into the FDD and click the "Next>" button..

↓
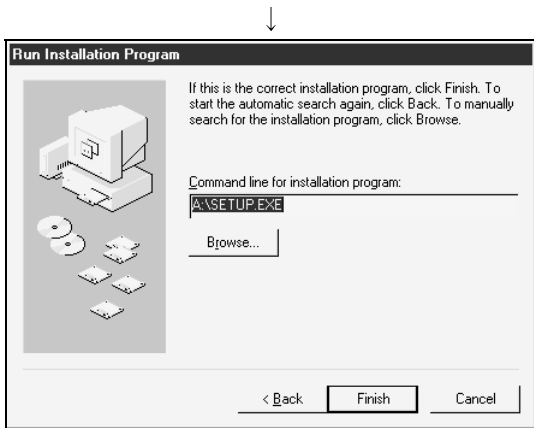
5. When the left screen has appeared, click the "Finish" button.
    If "SETUP.EXE" could not be found, click the "Browse..." button to locate "SETUP.EXE" in the FDD.

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↓

Information

ⓘ Remained lisence is 11 lisence.

OK

↓
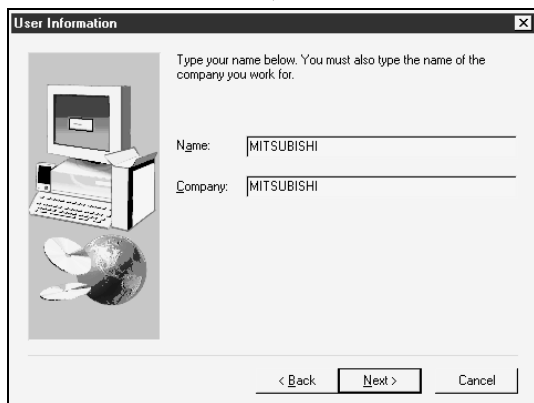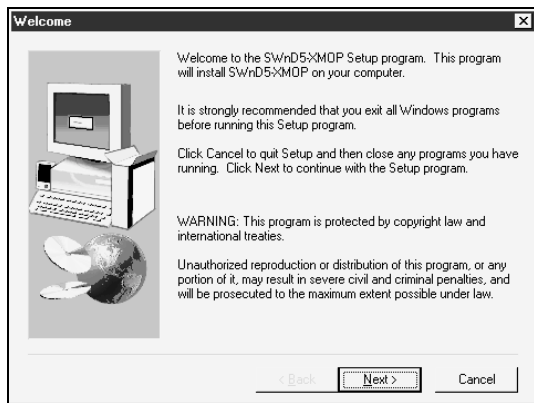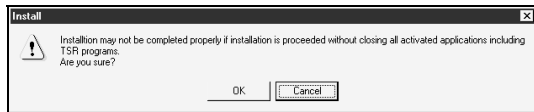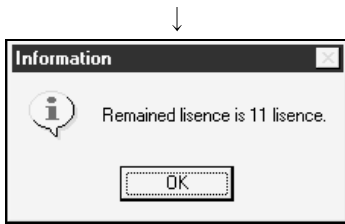
6. After a while, the screen as shown on the left will appear. Confirm the number of remaining licenses and click the "OK" button.
When there is no licenses left, installation cannot be performed.
＊ The actual number of licenses is the number of licenses plus a spare license.

Install

⚠ Installtion may not be completed properly if installation is proceeded without closing all activated applications including TSR programs.
Are you sure?

OK   Cancel

↓

7. After making sure that all your running programs are closed, click the "OK" button.
If your programs are running, close all running programs.

8. Confirm the instructions and click the "Next>" button.

Welcome

Welcome to the SWnD5-XMOP Setup program. This program will install SWnD5-XMOP on your computer.

It is strongly recommended that you exit all Windows programs before running this Setup program.

Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.

WARNING: This program is protected by copyright law and international treaties.

Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.

< Back   Next >   Cancel

↓

User Information

Type your name below. You must also type the name of the company you work for.

Name: MITSUBISHI

Company: MITSUBISHI

< Back   Next >   Cancel

9. Type your name and company name, and click the "Next>" button.
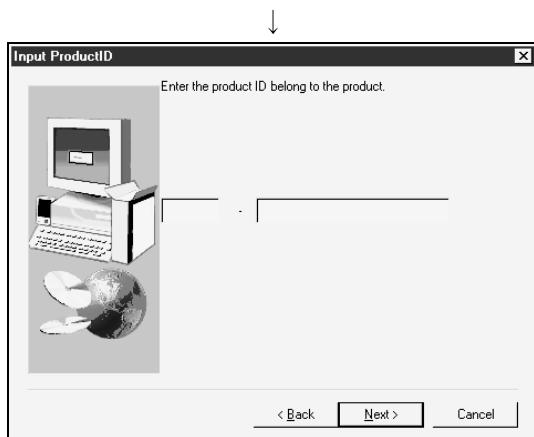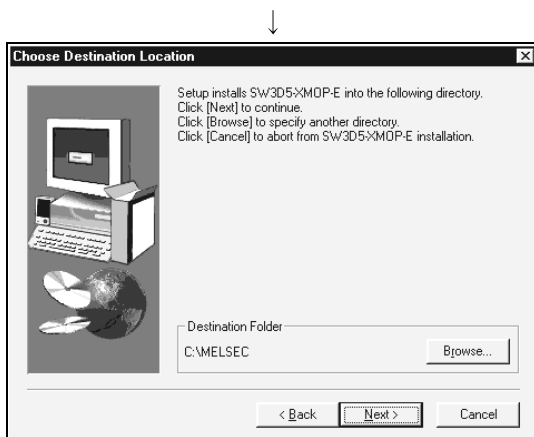
↓

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(From the preceding page)

↓

XMOP
c:\melsece\xmop\wmf\lamp\la4gr.wmf

14 %

Cancel
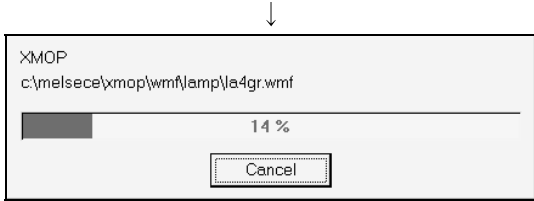
13. As installation starts, exchange the floppy disks in order according to the prompt.

↓

Information   ✕

ⓘ   Setup completed. Start Tag management process to use SW3D5-XMOP-E.

OK
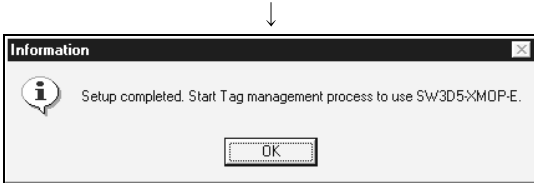
14. As the left screen appears, confirm the message, and then click the "OK" button.

↓

Setup Complete

Setup has finished copying files to your computer.

You mnst restart Windows or your computer.

⦿ Yes, I want to restart my computer now.

○ No, I will restart my computer later.

Remove any disks from their drivers, and then click Finish to complete setup.

< Back   Finish
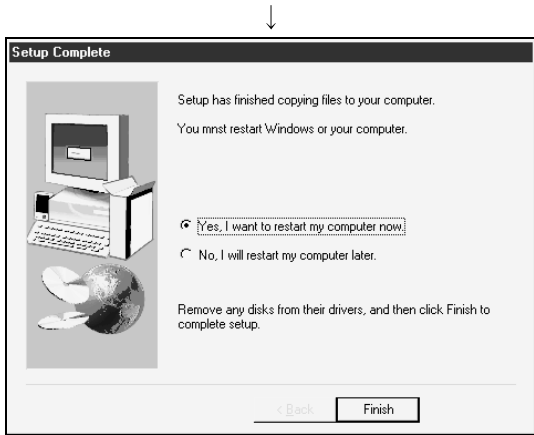
15. When the left dialog box appears, installation is complete.
    To restart, make sure that "Yes, I want to restart my computer now." is checked, and then click the "Finish" button.
    To restart later, check "No, I will restart my computer later." and then click the "Finish" button.
    ＊ The number of licenses decreases by 1 on completion of installation.

POINT	

If installation failed at any point in the above procedure and XMOP can be uninstalled, uninstall it.
The number of licenses will decrease by 1 if you do not uninstall XMOP.

3.2 Icons Registered

Installing XMOP registers the following icons in [Start]-[Programs]-[MELSEC APPLICATION]-[MONITORING TOOL (XMOP-E)].

(1) Tag management

(a) Alarm summary setup utility

Used to start the alarm summary setup utility.

(b) Comment setup utility

Used to start the comment setup utility.

(c) Tag management process

Used to start the Tag management process.

(d) Tag setup utility

Used to start the tag setup utility.

(e) Environment setup utility

Used to start the environment setup utility.

(2) XMOP Help
Used to show the help screen of XMOP.

3.3 Uninstallation

This section provides how to uninstall XMOP.

POINTS

(1) Always uninstall the program from the control panel.
Do not start installed "Uninstaller.exe" directly.
(2) Uninstallation increases the number of licenses by 1.
Therefore, always uninstall the program when deleting XMOP.
The number of licenses will not return to the previous value if a folder or file is
deleted by the user on Explorer or the like.
(3) Make the first floppy disk write-enabled.

1. Choose the [Start]-[Settings]-[Control Panel] menu.
2. As the control panel appears, double-click
   "Add/Remove Programs".

↓
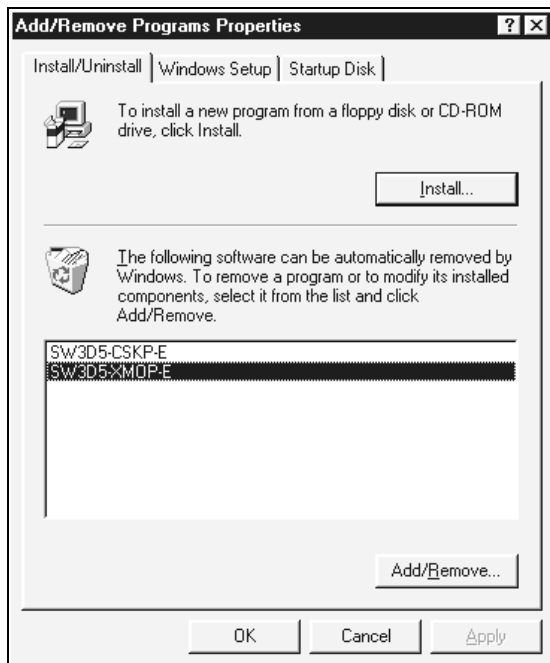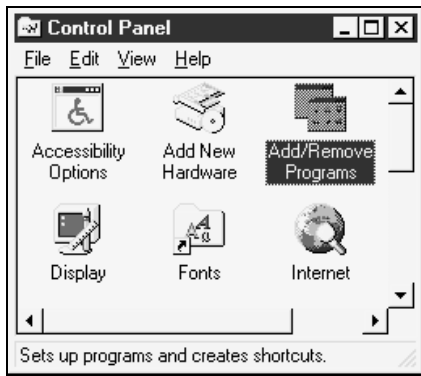
3. Choose "SW3D5-XMOP" and click the
   "Add/Remove..." button.

↓

(To the next page)

(From the preceding page)

↓

UnInstaller

Start Uninstall.
Please insert Install disk.

A:\
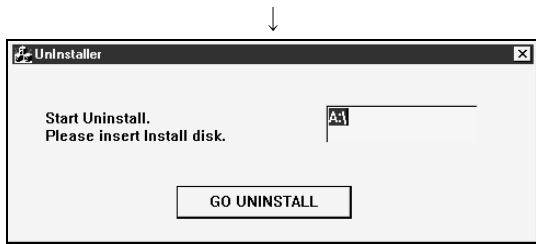
GO UNINSTALL

4. As the left screen appears, insert the first floppy disk into the floppy disk drive and click the "GO UNINSTALL" button.

↓

UnInstaller

⚠ Start uninstall.
Are you sure?

OK   Cancel
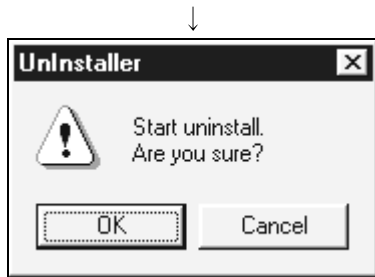
5. Clicking the "OK" button starts uninstallation.

↓

Remove Shared File?

The system indicates that the following shared file is no longer used by any programs. If any programs are still using this file and it is removed, those programs may not function. Are you sure you want to remove the shared file?

Leaving this file will not harm your system. If you are not sure what to do, it is suggested that you choose to not remove this shared component.

File name: MtiClb32.dll

Located in: C:\WINE\SYSTEM\

Yes   Yes To All   No   No to All

6. If the left screen has appeared, click the "No to All" button.
   If you click the "Yes" or "Yes to All" button, the shared file of the MELSEC software packages is removed and the other software packages may not start properly.

↓

Remove Programs From Your Computer

uninstallShield will remove the software 'SW3D5-XMOP-E' from your computer. Please wait while each of the following components is removed...

✔ Shared program files...
✔ Standard program files...
✔ Folder items...
✔ Program folders...
✔ Program directories...
✔ Program registry entries...

■■■■■■■■■■■■■■■

Uninstall successfully completed.

OK

7. When uninstallation is completed, click the "OK" button.
   ＊ The number of licenses increases by 1 on completion of uninstallation.

4. OPERATION PROCEDURE

This chapter gives the operation procedure of XMOP.

```
                         START

When using a communication card, set the communication    ············  Refer to the corresponding
card.                                                                   communication card manual.

Install CSKP.                                             ············  Refer to the CSKP
                                                                       Operating Manual.

Install VB.

Install XMOP.                                            ············  Refer to Section 3.1.

Set the communication path using the MELSEC data link    ············  Refer to the CSKP
utility.                                                                Operating Manual.

Start the Environment setup utility and make setting.    ············  Refer to Section 7.1, 7.2, 8.1.
After setting, close the utility.

When using the comment display (XMCMNT.OCX), start
the Comment setup utility and make setting.              ············  Refer to Section 7.1, 7.2, 8.3.
After setting, close the utility.

When using the alarm summary display (XMAMSMR.
OCX), start the Alarm summary setup utility and make
setting.                                                 ············  Refer to Section 7.1, 7.2, 8.4.
After setting, close the utility.

Start the Tag setup utility and make setting.            ············  Refer to Section 7.1, 7.2, 8.2.
After setting, close the utility.

Start the Tag management process.                        ············  Refer to Section 8.2.2.

After starting VB, create a user application using XMOP.  ············  Refer to Chapters 9 to 15.

After making sure that the Tag management process is      ············  If the Tag management process
running, start the created user application.                           is not running, the user
                                                                       application will not run properly.

Access the PLC CPU.

Close the user application.

                         END
```

MEMO

5. CREATING A TAG FILE

This chapter explains how to create a tag file which is utilized when using XMOP.

5.1 Getting Information on "Tag"

A tag is a data table which contains a set of information necessary for communication with the PLC CPU, e.g. communication setting, devices and data types.
By specifying a tag, XMOP can access devices defined in the tag.

Create a tag file using the Tag setup utility

Tag file

Tag 1

Channel

Communication type (batch or random)

Communication intervals

Network setting

Communication status (communication or no communication)

Device type (W, D, X, etc.)

Device number

Data type (Short, Long, Char, Bit)

Field 1

Field n

n=1000 (for batch communication)
n= 256 (for random communication)

Tag n (n=1 to 1000)

Specify the field which contains the information of the device to be accessed!

XMOP

Communication path (e.g. computer link communication, Ethernet communication)

PLC

Tag management process operates.

Access to PLC devices

> POINT
>
> When using a tag, the Tag management process must be running. For full information, refer to Section 8.2.2.

5

5.2 What Should Be Done First

This section describes the operation to be preformed first when creating a tag file.
Please read this section before creating the tag of any communication path.

1. Set the corresponding utility according to the communication form used (e.g. computer link, Ethernet).

2. Start the Environment setup utility.
(Refer to Section 7.1.)

3. Open the "File" screen and set the tag file name used. When creating a new tag file, create a new tag within the "Tag setup utility" in advance. (Refer to Section 5.3)

↓

4. Open the "Communication" screen and set channel names (aliases) to the communication channels used. The channel names set here are reflected on the Tag setup utility.

↓

5. Open the "Comm. interval" screen and set communication interval names (aliases) to the communication intervals.
The communication interval names set here are reflected on the Tag setup utility.

6. Save the data and close the Environment setup utility.
(Refer to Section 7.2 and 7.3.)

↓
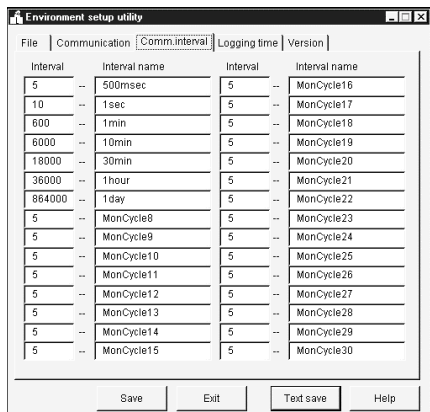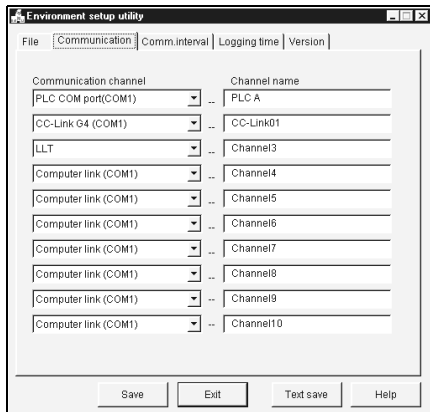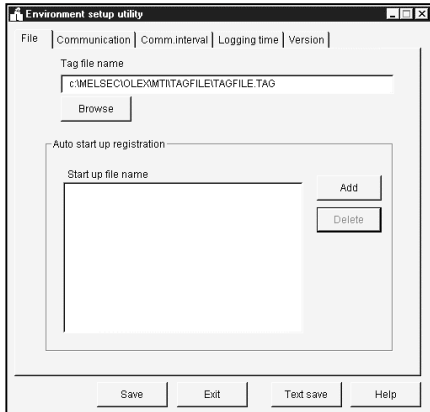
(To Section 5.3)

5.3 Creating a Tag File

This section gives how to create a tag file when collecting the device information of the PLC CPU connected via a computer link module.
Please read Section 5.2 before making setting in this section.

Tag file name   : C:\MELSEC\USER\SAMPLE2.TAG
Specified devices   : tag001 ... D0 to D15 (Short) (for 16 points)
                              tag002 ... M100 (Bit), D200 (Long)
Logical station number   : 0 (set on the computer link utility)

Personal computer   PLC

Connected to the computer link
(serial communication) module.
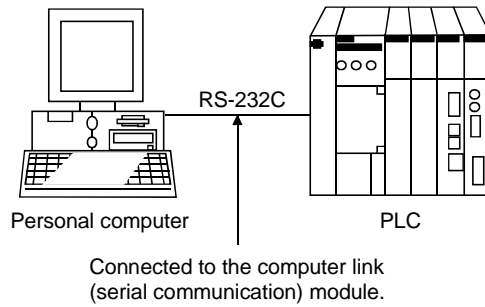
(1) Start the Tag setup utility.
    (Refer to Section 7.1.)

(2) Open the "File" screen and specify the tag file name to be set.
    If you had created no tag files, click the "New" button and create a tag file.
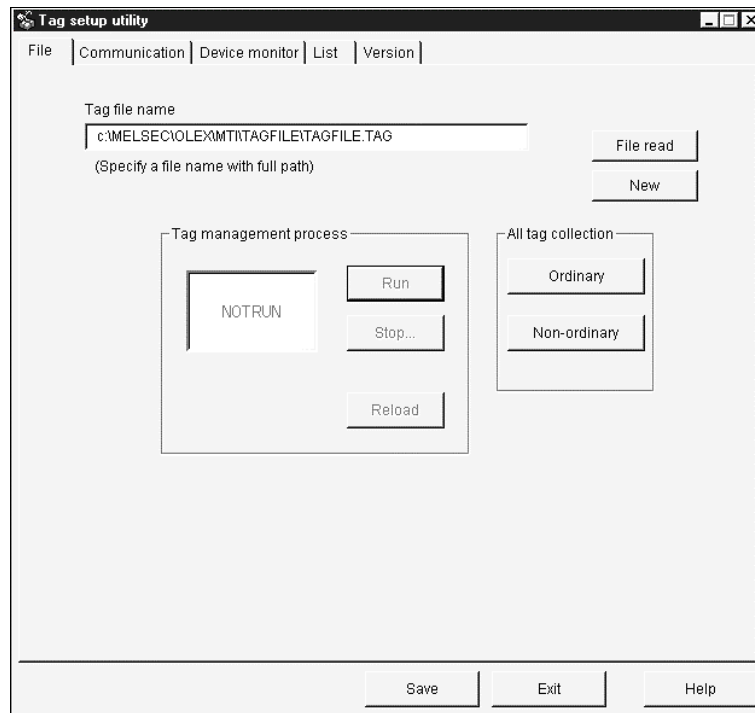
(3) Open the "Communication" screen, make setting as shown on the screen below, and click the "Tag update" button.
(Set D0 to D15.)

```
┌─ Tag setup utility ──────────────────────────────────────────────── _ □ ✕ ─┐
│                                                                              │
│  File   Communication │ Device monitor │ List │ Version │                    │
│                                                                              │
│     Tag name │tag001                          ▼│ ┌ Comm. status ┐ ┌ Tag update ┐ │
│     No. of tags : 1                             │  ⦿ Valid      │              │
│    ┌─Channel name──────┐  ┌─Network──────────┐  │  ○ Invalid    │ │ Tag name... │ │
│ 1) │ │Channel1      ▼│  │  │ ○ Host ⦿ Other  │  └───────────────┘              │
│    │ Comm. period name │  │ Network No. │ 1 │  ┌ Comm. type ┐  │ New tag...  │ │
│    │ │500msec      ▼│  │  │ Station No. │ 0 │  │  ⦿ Batch    │              │
│    │ □ Ordinary        │  └──────────────────┘  │  ○ Random   │ │ Tag copy... │ │ 3)
│    └───────────────────┘                        └────────────┘              │
│  ┌─Device──────────────────────────────┐                     │ Tag delete...│ │
│  │ ┌─Device──────────────────────────┐ │                     └─────────────┘ │
│  │ │ │D(data register)          ▼│   │ │                                     │
│ 5)│ │ Network/ │ 0 │   ○ HEX        │ │                                     │
│   │ │ Block No.         ⦿ DEC       │ │                                     │  2)
│   │ │ Device No. │ 0 │   ○ OCT       │ │                                     │
│ 4)│ │ Data type │Short        ▼│     │ │                                     │
│   │ │ Char     │ 0 │              │ │                                     │
│ 6)│ │ No. of fields: │ 16 │          │ │                                     │
│  │ └──────────────────────────────────┘ │                                     │
│  └───────────────────────────────────────┘                                     │
│     Comment │                              │         │ Extended... │          │
│                                                                              │
│                          │ Save │      │ Exit │      │ Help │                │
└──────────────────────────────────────────────────────────────────────────────┘
```
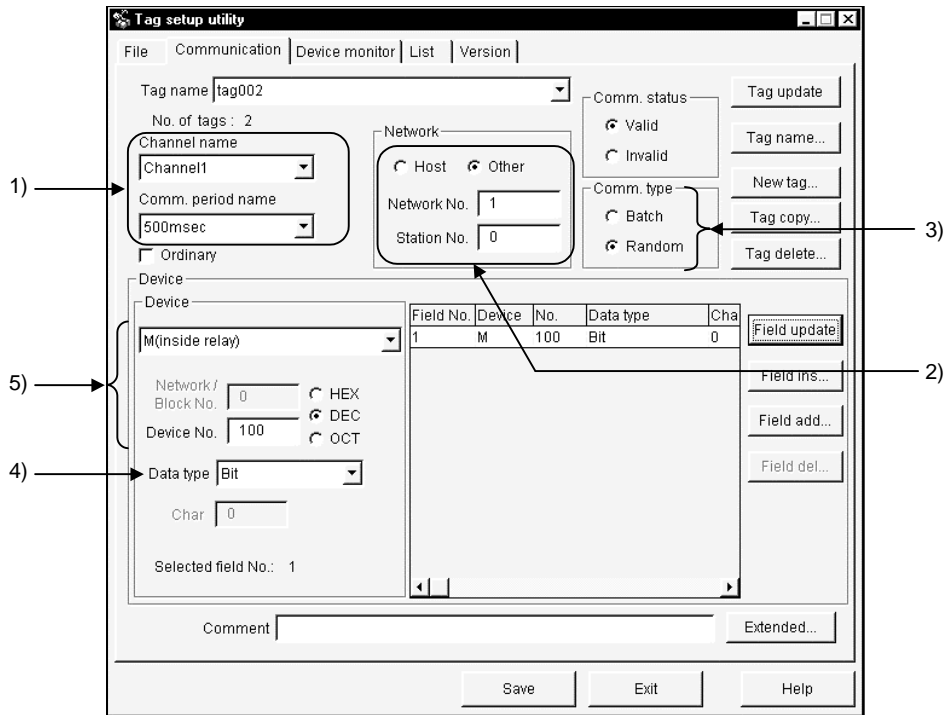
1) The data set on the Environment setup utility are reflected here.
   Set the channel of the communication form used.
   Here, set the channel name of the computer link communication.

2) Set the Network No. and Station No..
   Here, set the logical station number in the Station No. box.

3) Since only D devices are set, specify Batch here.
   When setting two or more devices, specify Random.

4) Set Short.

5) Set D0 in decimal.
   When specifying bit devices, set a multiple of 8 (a multiple of 16 for Ethernet communication).

6) Set 16 points.
   When specifying bit devices, set a multiple of 16.

(4) Click the "New tag..." button and create a new tag.
Here, tag002 is created.

(5) Make setting as shown on the screen below and click the "Field update" button.
(Set M100.)

1) The data set on the Environment setup utility is reflected here.
Here, set the channel name of the computer link communication.

2) Set the logical station number in the Station No. box.
Ignore the network number as it is not used.

3) Since two devices, M100 and D200, are specified, set Random.

4) Set Bit.

5) Set M100 in decimal.

(6) Click the "Field add..." button.

(7) Make setting as shown on the screen below and click the "Field update" button.
(Set D200.)

1) Set Long.

2) Set D200 in decimal.

(8) Click the "Tag update" button.

(9) After clicking the "Save" button, click the "Exit" button to close the Tag setup utility.

6. CREATING A MONITOR APPLICATION

The following example explains a procedure to create a monitor application.
For full information on the corresponding custom controls, refer to Chapters 9 to 15.
Note that XMOP and CSKP should already have been installed.

Example: Creating an application which gathers the device data of the own station
OCX used : XMNUMDAT.OCX
Device from which data will be collected : W200

(1) Create a tag file.
Refer to Chapter 5 and Section 8.2 and create a tag file used to read W200.

(2) Create figures and pictures used (BMP, WMF file)
Using Paint or the like, create figures and pictures used with the custom control.
(Not used in this example.)

(3) Start VB.

(4) Start the Tag management process.
Refer to Section 8.2.2 and start the Tag management process.

(5) Paste the custom control to a form.
(a) Choose [Project]-[Components...] on the menu bar to show the following
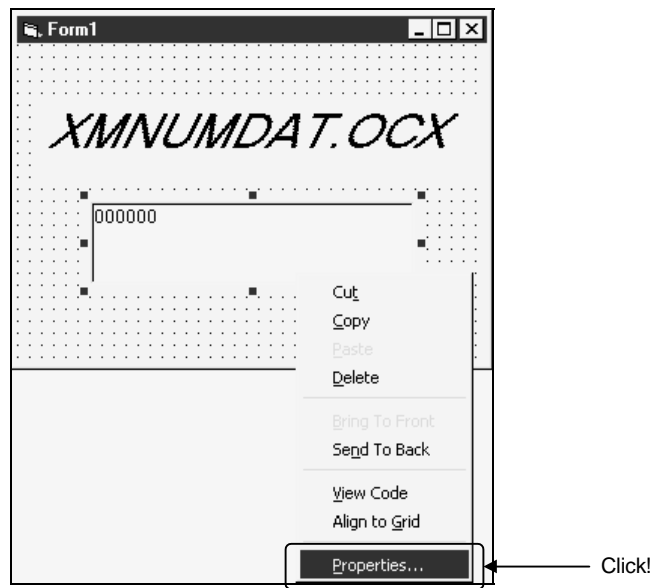screen, and register the custom control (XMNUMDAT.OCX).

6
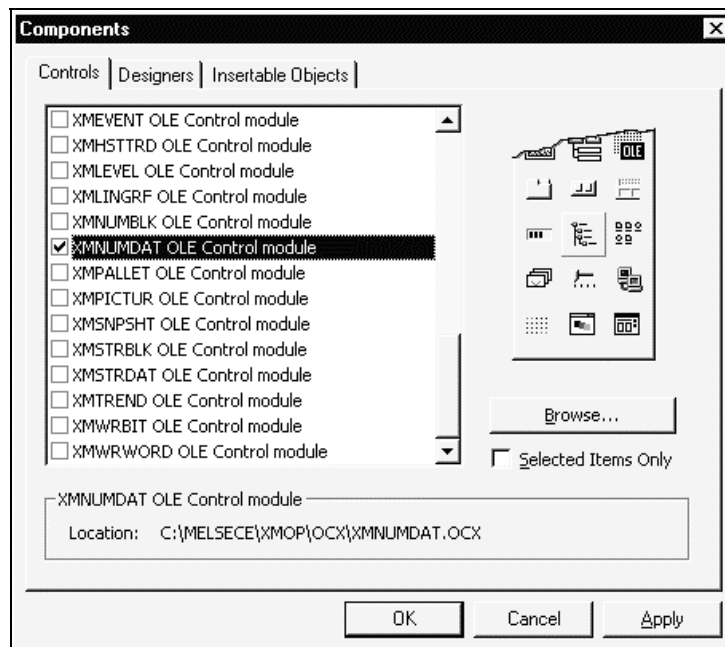
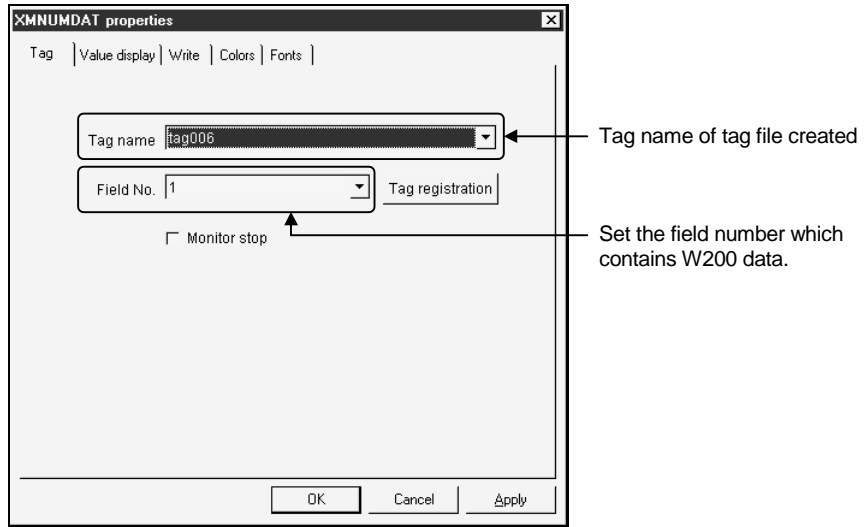(b) Click the icon registered in the tool box to paste the custom control to a form.
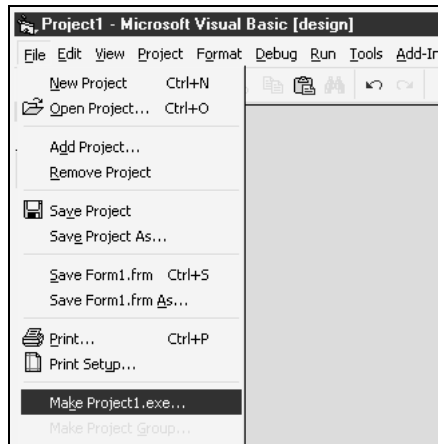

Tool box

Form
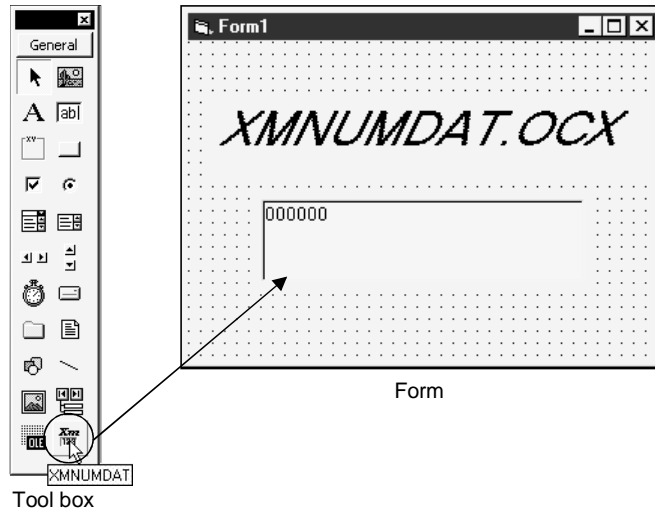
(6) Set the properties.

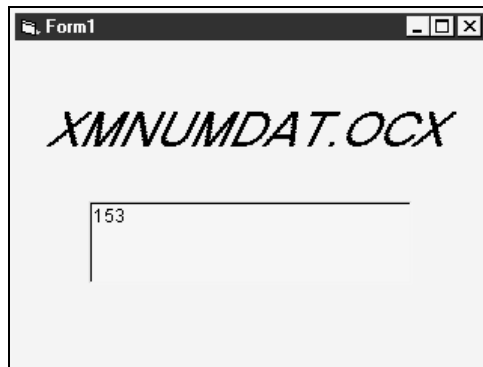(a) Right-click on the pasted custom control and click [Properties...].

Click!

(b) As the Properties page opens, set the tag name and field No. used.
Device data can be collected without specific setting on the numeric display setting, write, color and font screens.
(They are not set in this example.)

| XMNUMDAT properties |
| Tag | Value display | Write | Colors | Fonts |

Tag name tag006 ◄─── Tag name of tag file created

Field No. 1   Tag registration

☐ Monitor stop ◄─── Set the field number which contains W200 data.

OK   Cancel   Apply

(7) Create an application and monitor the device.
(a) Choose [File]-[Make✳✳✳✳✳.exe...] and create an EXE file.

Project1 - Microsoft Visual Basic [design]

File Edit View Project Format Debug Run Tools Add-Ins

New Project   Ctrl+N
Open Project...   Ctrl+O

Add Project...
Remove Project

Save Project
Save Project As...

Save Form1.frm   Ctrl+S
Save Form1.frm As...

Print...   Ctrl+P
Print Setup...

Make Project1.exe...
Make Project Group...

(b) Right-click on the pasted custom control and click [Properties...].
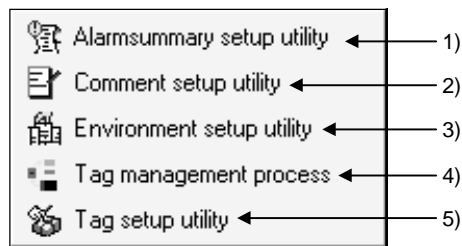
Form1

XMNUMDAT.OCX

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MEMO

7. OPERATIONS COMMON TO THE UTILITIES

This chapter describes the operations common to the utilities.
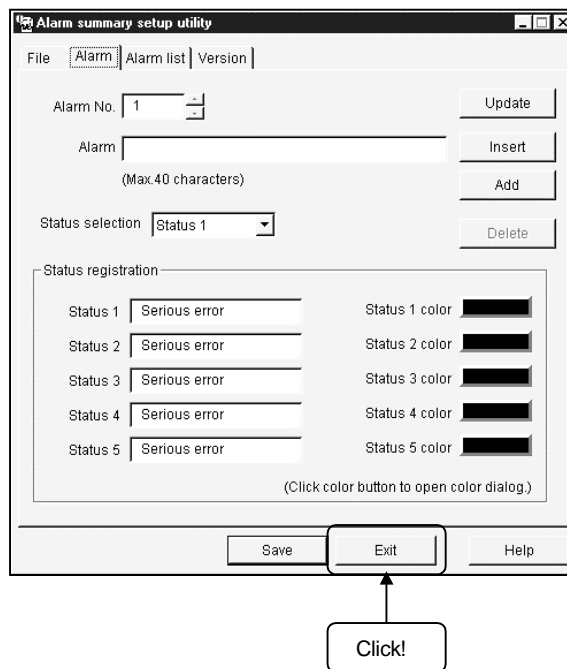
7.1 Starting the Utility

Any utility can be started by clicking the corresponding menu item among 1) to 5) shown below in the [Start]-[Programs]-[MELSEC APPLICATION]-[MONITORING TOOL (XMOP-E)]-[Tag Management] menu.

1) Start the Alarm summary setup utility.

2) Start the Comment setup utility.

3) Start the Environment setup utility.

4) Start the Tag management process.
   (For details, refer to Section 8.2.2.)

5) Start the Tag setup utility.

7.2 Closing the Utility

Any utility can be closed by clicking the "Exit" button at the bottom of the Utility screen.

7.3 Saving the Settings

The settings made on the Utility can be saved by clicking the "Save" button at the bottom of the Utility screen.
The settings will not be saved if you close the Utility without clicking the "Save" button.
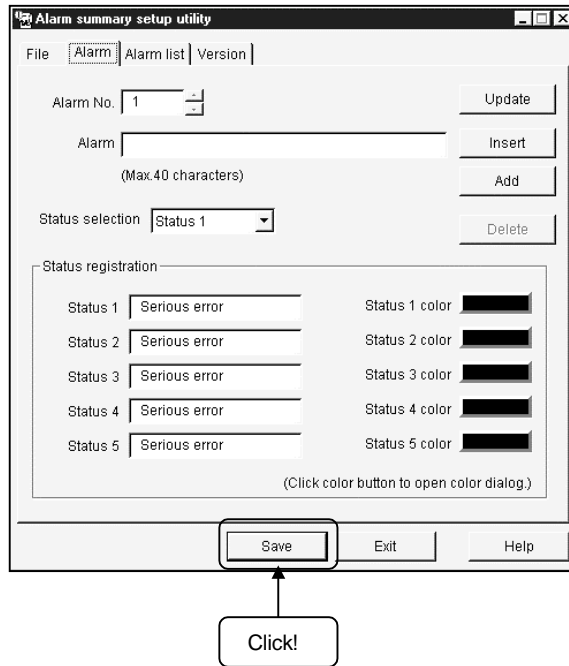
Click!

7.4 Displaying the Help Screen

The Utility help screen can be displayed by clicking the "Help" button at the bottom of the Utility screen.
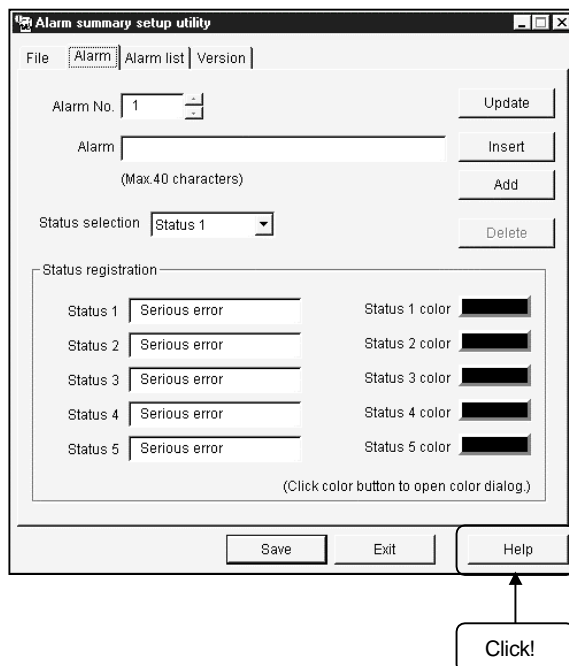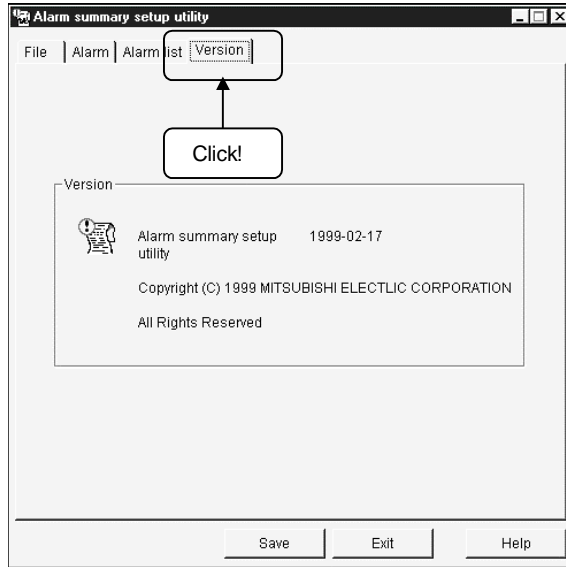

Click!

7.5 Confirming the Version

The version of the Utility can be confirmed by clicking the "Version" tab.
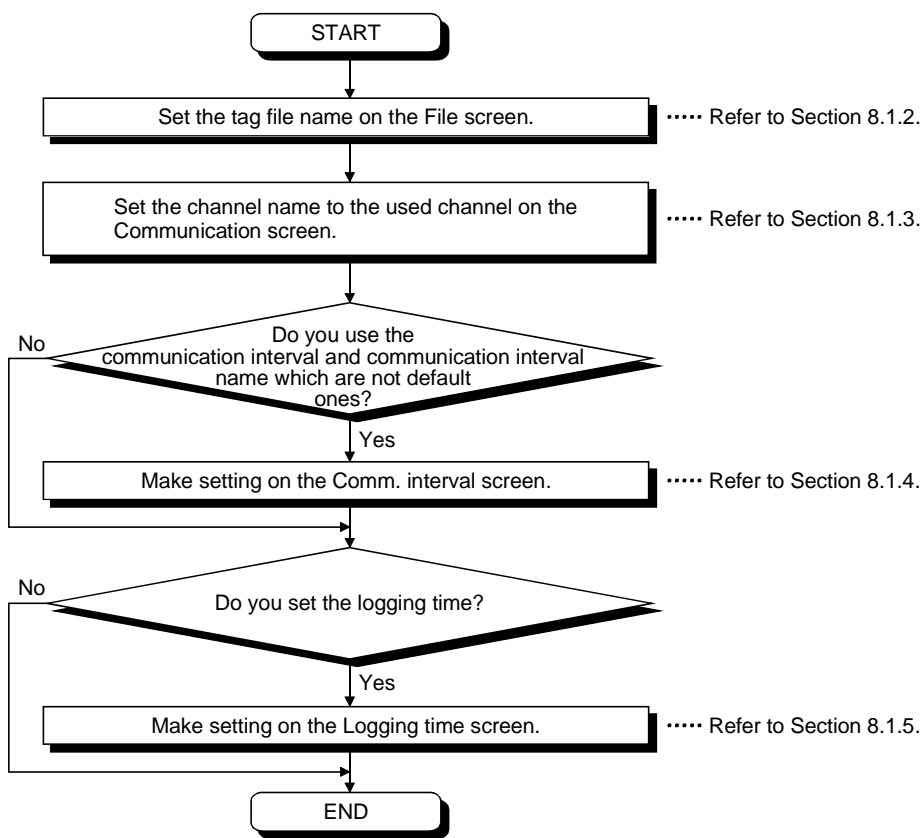
MEMO

8. UTILITY OPERATIONS

This chapter describes how to operate and set the utilities.

8.1 Environment Setup Utility

This section explains how to operate and set the Environment setup utility.

8.1.1 Operating Procedure

This section provides the procedure of operating the Environment setup utility.

```
                         ┌─────────────┐
                         │    START    │
                         └──────┬──────┘
                                │
         ┌──────────────────────────────────────────┐
         │ Set the tag file name on the File screen. │  ····· Refer to Section 8.1.2.
         └──────────────────────────────────────────┘
                                │
         ┌──────────────────────────────────────────┐
         │ Set the channel name to the used channel  │  ····· Refer to Section 8.1.3.
         │ on the Communication screen.               │
         └──────────────────────────────────────────┘
                                │
                 Do you use the
  No     communication interval and communication interval
◄────────       name which are not default
                         ones?
                                │ Yes
         ┌──────────────────────────────────────────┐
         │ Make setting on the Comm. interval screen. │  ····· Refer to Section 8.1.4.
         └──────────────────────────────────────────┘
                                │
  No ◄──────── Do you set the logging time?
                                │ Yes
         ┌──────────────────────────────────────────┐
         │ Make setting on the Logging time screen.  │  ····· Refer to Section 8.1.5.
         └──────────────────────────────────────────┘
                                │
                         ┌─────────────┐
                         │     END     │
                         └─────────────┘
```

8

8.1.2 Operations on the File Screen

These operations include the setting of the tag file name to be read for execution of the Tag management process.
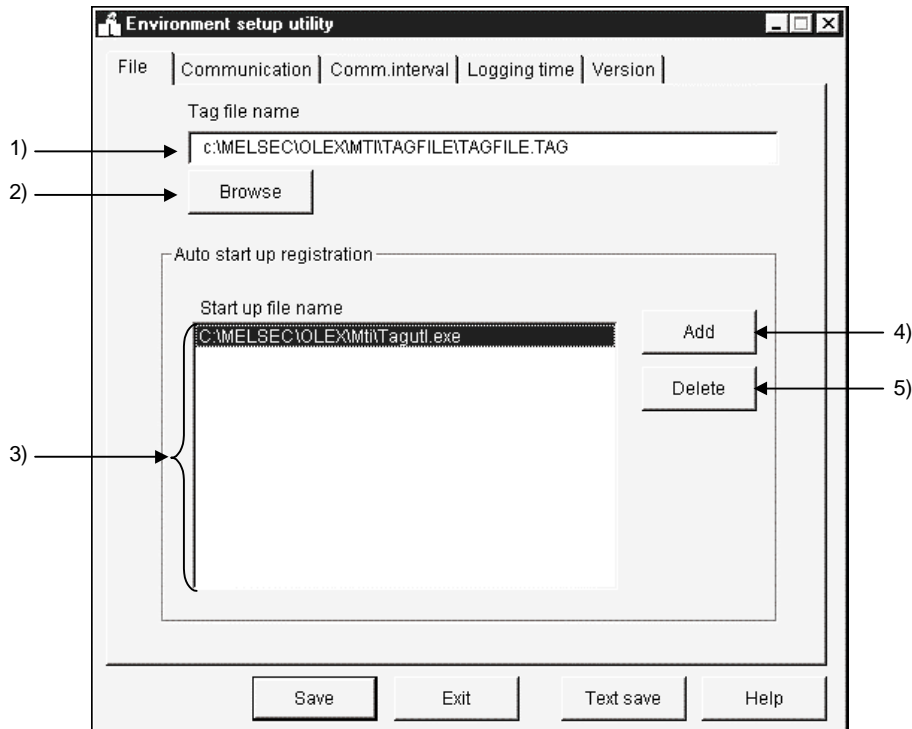
1) Tag file name

   Set the tag file which the Tag management process will read.

2) "Browse" button

   Used to find the tag file to be set in 1).
   As the file setting dialog box opens, choose the tag file.

3) Start up file name

   Shows the application started simultaneously with the starting of the Tag management process.

4) "Add" button

   Used to set the application started simultaneously.
   You can set up to a total of 16 files.
   However, the files that may be set are only those having EXE, XLS and MDB extensions. Any other files cannot be started if set.

5) "Delete" button

   Choose the file name registered in 3) by clicking it, and click this button to delete the file selected in 3) and release automatic start-up.

8.1.3 Operations on the Communication Screen

Set channel names relative to the Communication channels. (Up to 10 names)
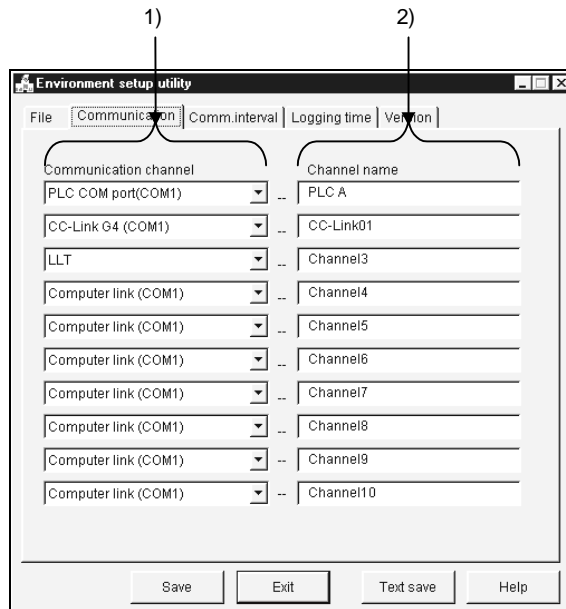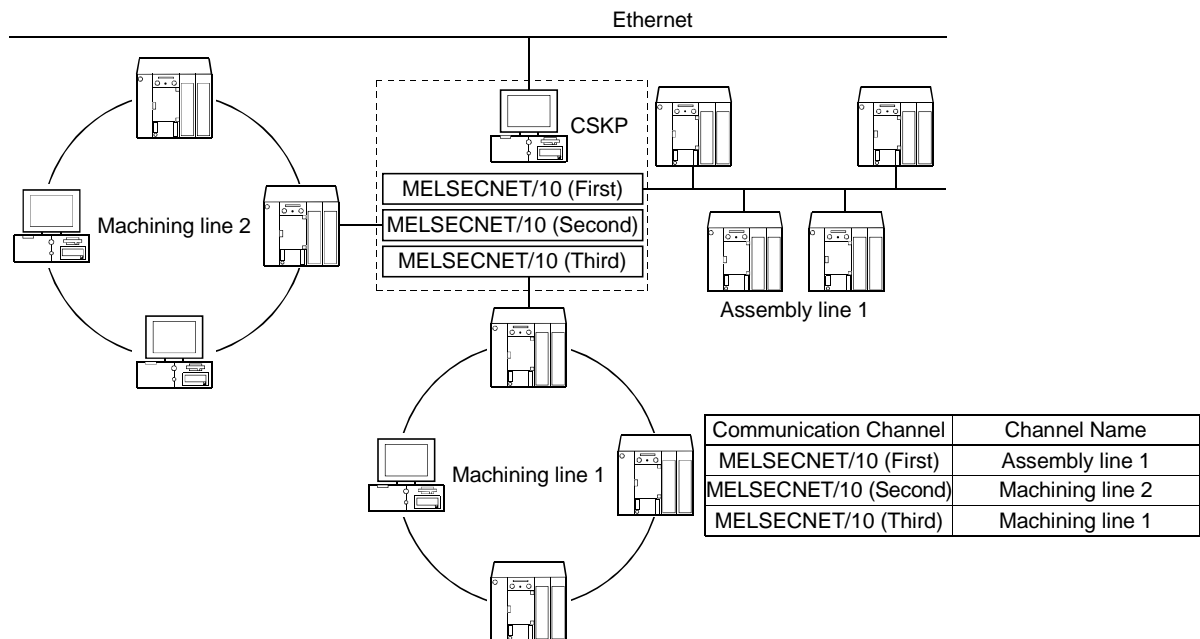

1) Communication Channel
  Choose the communication channels relative to the channel names.

2) Channel Name
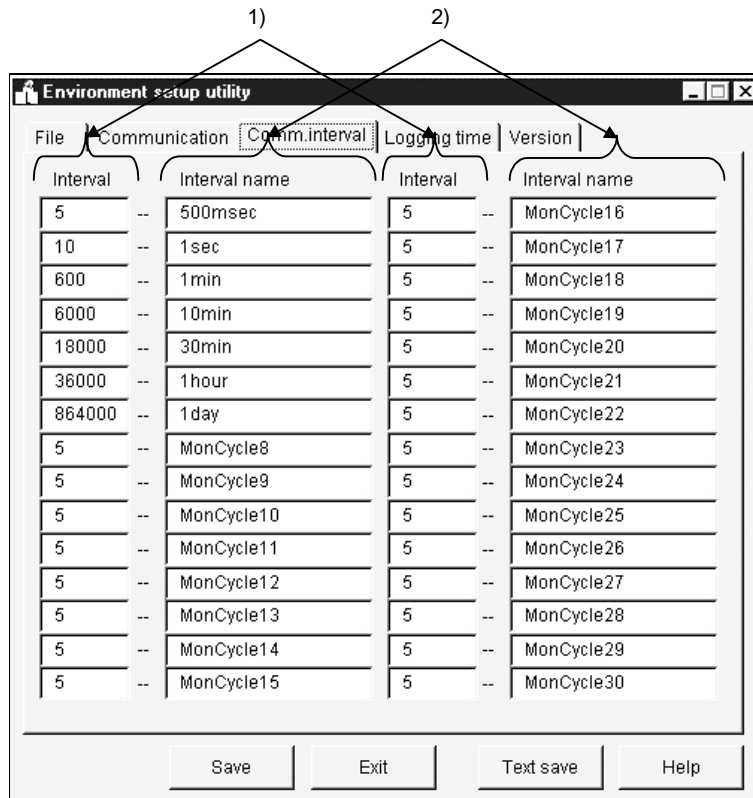 Set only the channel names with which the user's desired names will be used.
  The user makes communication setting with the Tag setup utility on the basis of the
  channel names set.

Setting example

Communication Channel	Channel Name
MELSECNET/10 (First)	Assembly line 1
MELSECNET/10 (Second)	Machining line 2
MELSECNET/10 (Third)	Machining line 1

8.1.4 Operations on the Comm. Interval Screen

You can attach any names to the Communication intervals and define them as the communication names. (Up to 30 names)

1)   2)

Interval		Interval name	Interval		Interval name
5	--	500msec	5	--	MonCycle16
10	--	1sec	5	--	MonCycle17
600	--	1min	5	--	MonCycle18
6000	--	10min	5	--	MonCycle19
18000	--	30min	5	--	MonCycle20
36000	--	1hour	5	--	MonCycle21
864000	--	1day	5	--	MonCycle22
5	--	MonCycle8	5	--	MonCycle23
5	--	MonCycle9	5	--	MonCycle24
5	--	MonCycle10	5	--	MonCycle25
5	--	MonCycle11	5	--	MonCycle26
5	--	MonCycle12	5	--	MonCycle27
5	--	MonCycle13	5	--	MonCycle28
5	--	MonCycle14	5	--	MonCycle29
5	--	MonCycle15	5	--	MonCycle30

Environment setup utility

File Communication Comm.interval Logging time Version

Save   Exit   Text save   Help

1) Comm. Interval
   Intervals can be set in 100ms increments.
   Hence, "5" sets the communication interval to 500ms.
   (The setting range is 1 to 864000.)

2) Comm. Interval Name
   Set the user's desired names.
   The user makes communication setting with the Tag setup utility on the basis of the communication interval names set.

8.1.5 Operations on the Logging Time Screen

Set the time zones when the logging operation of the Tag management process will be performed.
You can set up to four zones.
(In XMOP, this screen is used when using a historical trend graph.)

1)   2)   3)
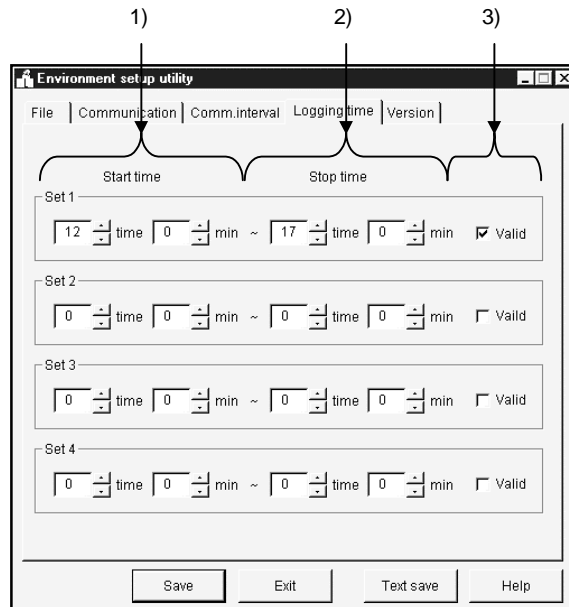
1) Start time
   Set the data logging operation-starting time of the Tag management process.
   Type the set time on a 24-hour basis. (Setting range: 0:00 to 23:59)

2) Stop time
   Set the data logging operation-ending time of the Tag management process.
   Type the set time on a 24-hour basis. (Setting range: 0:00 to 23:59)

3) Valid/invalid check box
   Set whether the set operation times are made valid or not.
   Check the box to make the set times valid.
   When the box is unchecked, the set times are invalid.

| POINTS |
(1) If the period between the Start time and the Stop time is longer than 24 hours, their settings cannot be made.
(2) The settings on this screen are valid only when you have checked "Log within the operation time period" in Logging Setting within "Extended" on the Tag setup utility. For details, refer to Section 8.2.6 (3).
(3) If you have made the logging setting, the following folder is created but never delete it.
   Deleting it will disable proper logging.
   Alternatively, if you want to delete all log information or change the personal computer time, delete all files in the folder.

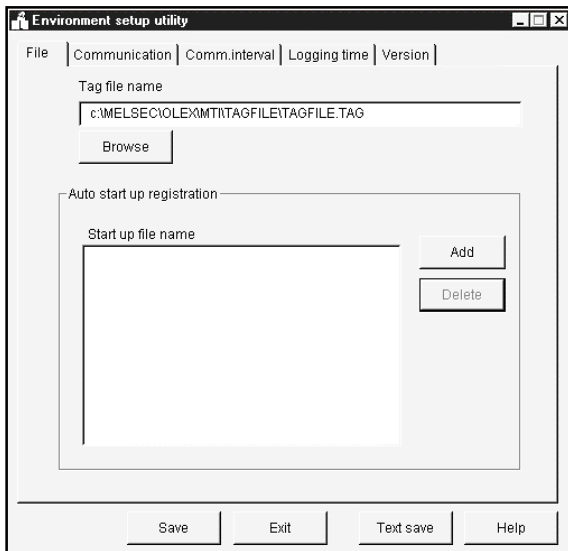   <HD drive>-<User-defined folder>-<CSKP>-<MTI>-<LOGFILE>

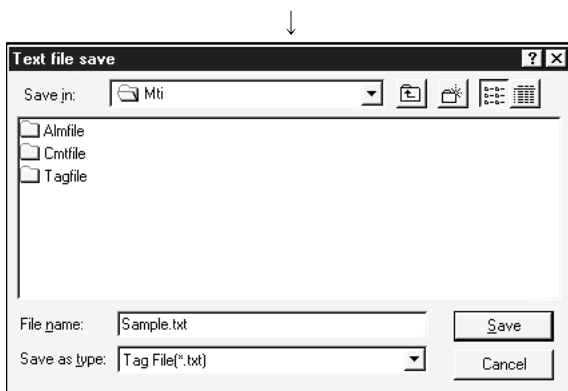## 8.1.6 About Saving Data as a Text

By clicking the "Text save" button at the bottom of the Environment setup utility, the settings made with the Environment setup utility can be saved as a text file.

(1) Operation procedure

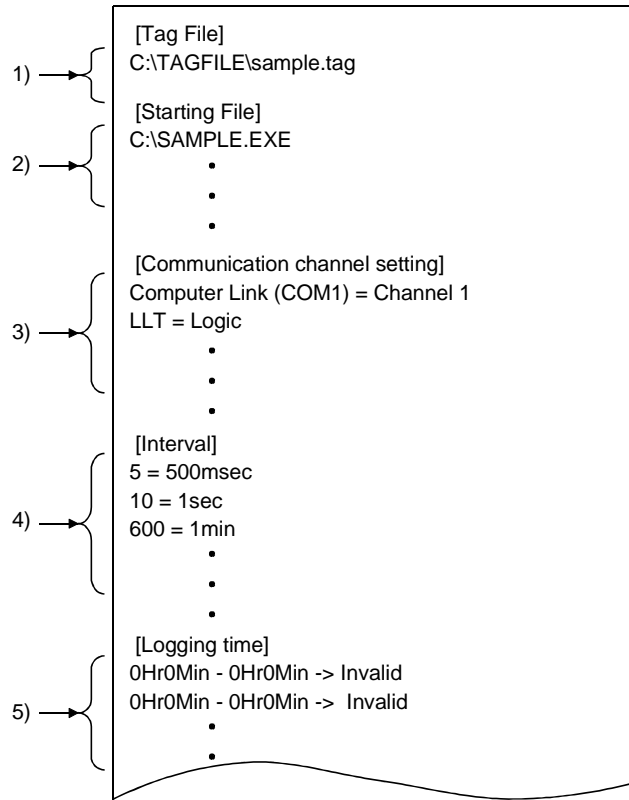Perform the following procedure to save the data of the setting in a text file.

1. Click the "Text save" button on the Environment setup utility.

↓

2. As the left dialog box appears, set the saving place and file name and click the "Save" button.

(2) File data

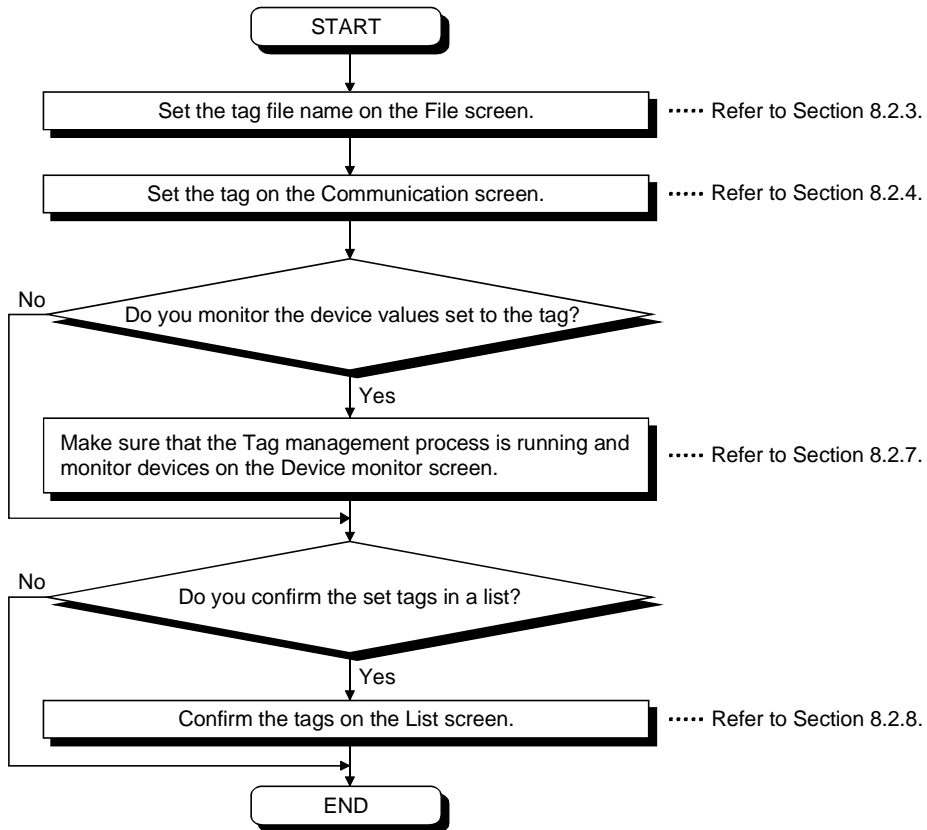The data of the created text file will be described.

```
        [Tag File]
1) →    C:\TAGFILE\sample.tag

        [Starting File]
2) →    C:\SAMPLE.EXE
                •
                •
                •

        [Communication channel setting]
        Computer Link (COM1) = Channel 1
3) →    LLT = Logic
                •
                •
                •

        [Interval]
        5 = 500msec
        10 = 1sec
4) →    600 = 1min
                •
                •
                •

        [Logging time]
        0Hr0Min - 0Hr0Min -> Invalid
        0Hr0Min - 0Hr0Min ->  Invalid
5) →            •
                •
```

1) Indicates the data set to the tag file name on the "File" screen.

2) Indicates the data set to automatic start-up registration on the "File" screen.

3) Indicates the data set to the "Communication" screen.

4) Indicates the data set to the "Comm. interval" screen.

5) Indicates the data set to the "Logging time" screen.

8.2 Tag Setup Utility

This section provides how to operate and set the Tag setup utility.

8.2.1 Operating Procedure

The following flowchart provides the operation procedure of the Tag setup utility.

```
                    ┌─────────────┐
                    │    START    │
                    └──────┬──────┘
                           │
          ┌────────────────────────────────────┐
          │ Set the tag file name on the File    │ ····· Refer to Section 8.2.3.
          │ screen.                              │
          └────────────────┬─────────────────────┘
                           │
          ┌────────────────────────────────────┐
          │ Set the tag on the Communication     │ ····· Refer to Section 8.2.4.
          │ screen.                              │
          └────────────────┬─────────────────────┘
                           │
     No          ◇─────────────────────────◇
  ◁──────────────  Do you monitor the device
                    values set to the tag?
                 ◇─────────────────────────◇
                           │ Yes
          ┌────────────────────────────────────┐
          │ Make sure that the Tag management    │ ····· Refer to Section 8.2.7.
          │ process is running and monitor       │
          │ devices on the Device monitor screen.│
          └────────────────┬─────────────────────┘
                           │
     No          ◇─────────────────────────◇
  ◁──────────────  Do you confirm the set tags
                    in a list?
                 ◇─────────────────────────◇
                           │ Yes
          ┌────────────────────────────────────┐
          │ Confirm the tags on the List screen. │ ····· Refer to Section 8.2.8.
          └────────────────┬─────────────────────┘
                           │
                    ┌─────────────┐
                    │     END     │
                    └─────────────┘
```

8.2.2 About the Tag Management Process

The Tag management process is a process which provides a communication method using a tag on the basis of the information set with the Environment setup utility and the information of the tag file.
When using a tag, the Tag management process must be running.

(1) Starting method
Click [Start]-[Programs]-[MELSEC APPLICATION]-[MONITORING TOOL (XMOP-E)]-[Tag management]-[Tag management process].

POINT

(1) Before starting the Tag management process, you need to create a tag file with the Tag setup utility and specify the tag file with the Environment setup utility.
(2) When the Tag management process is running, the Tag setup utility communicates with the Tag management process.
If the Tag setup utility is disabled from making normal communication due to forced exit from the Tag management process, for example, the following or similar error message may appear.
If the error message has appeared, restart the Tag management process.
<Error message example>
• RPC server cannot be used.
• Remote procedure call failed, resulting in no execution.

---

(2) Ending method
To close the Tag management process, force it to end.
Alternatively, choose "Tag management process" on the task bar and press the "Alt" + "F4" keys.

(3) Reloading procedure
The Tag management process must be reloaded to reflect the modified/added tag file for use during execution of the Tag management process.

1) Stop the Tag management process.
Open the "File" screen and click the "Stop…" button.
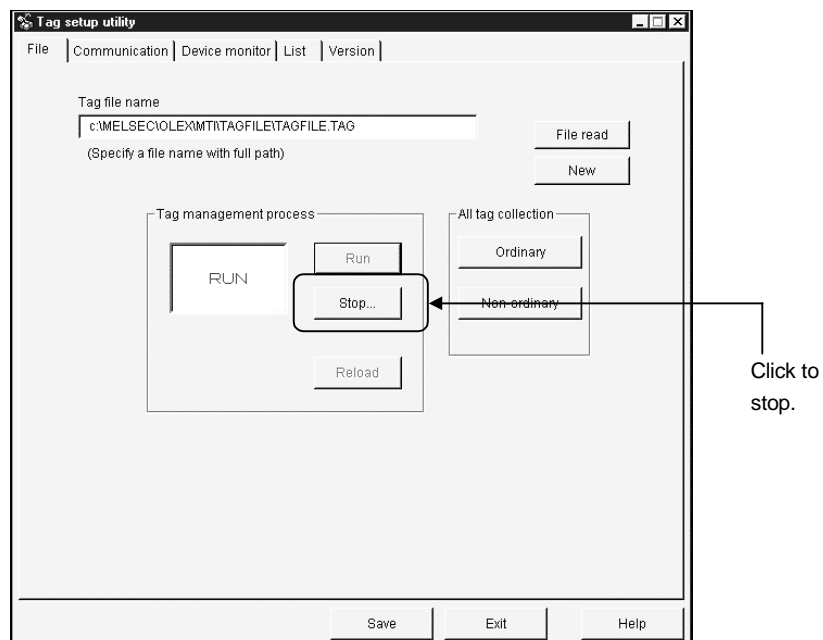
2) Edit the tag file.

3) Update the modified/added tag information.
Open the "Communication" screen, modify/add tags and click the "Tag Update" button.

4) Click the "Save" button to save the information.

5) Reload the Tag management process.
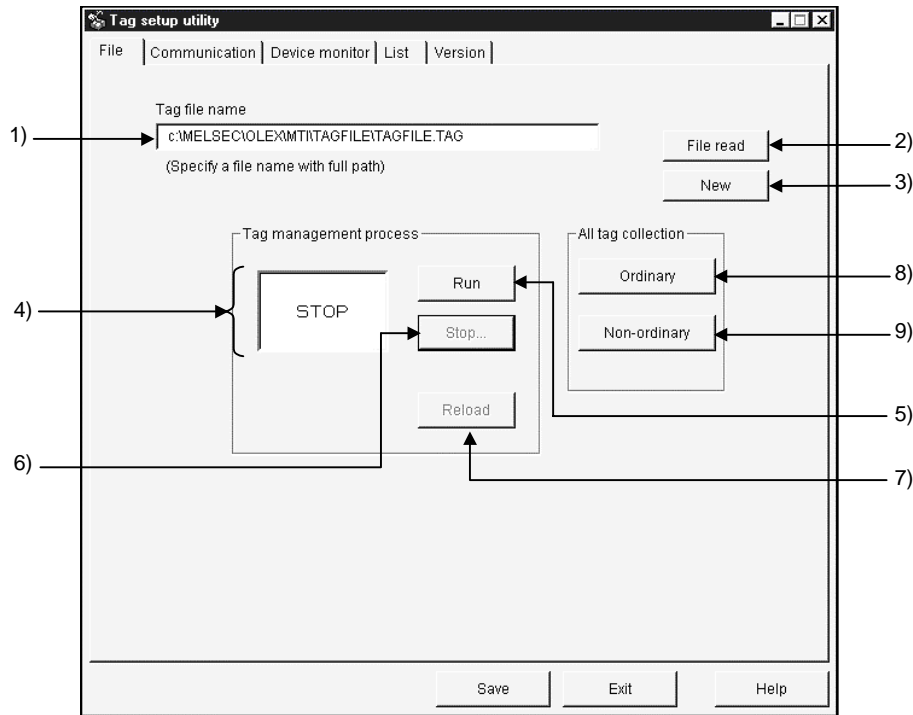Click the "Reload" button to reload the Tag management process.

Click to reload.
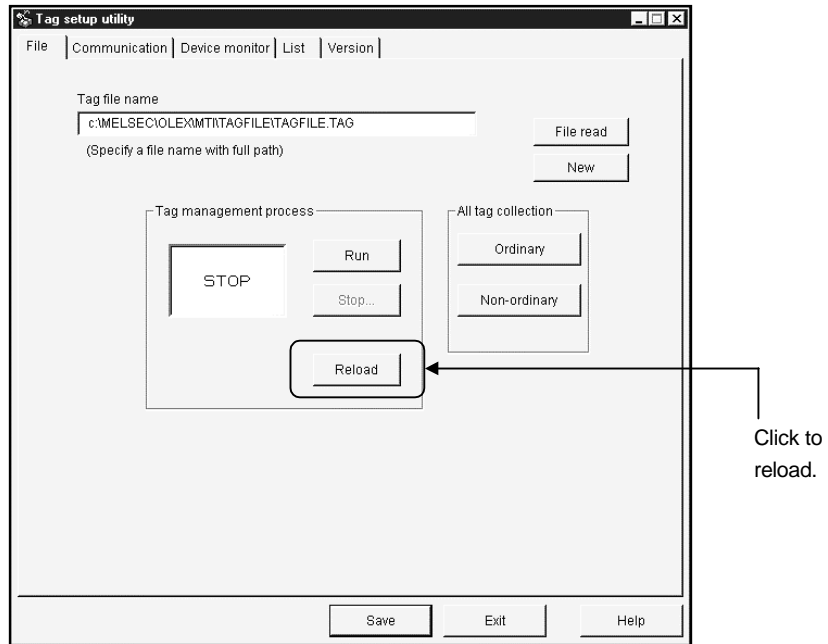
6) Execute the Tag management process.
Click the "Execute" button to run the Tag management process.

Click to execute.
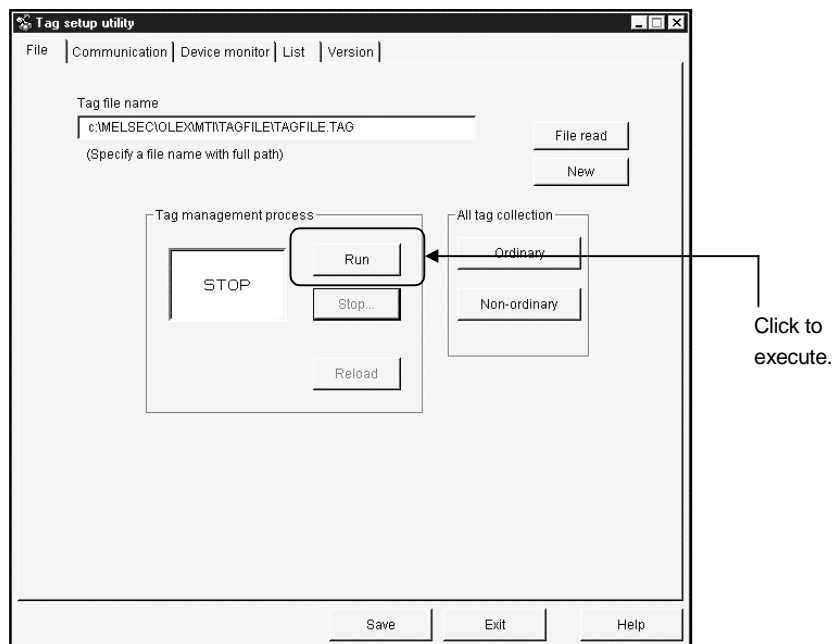
8.2.3 Operations on the File Screen

Set the tag file to be saved, collection timing, and whether the Tag management process is run or stopped.

1) Tag file name

Specify the tag file name to be set.

2) "File read" button

Used to find the tag file to be set in 1).
As the file setting dialog box opens, choose the tag file.

3) "New" button

Used to create a new tag file.
As the file setting dialog box opens, set the name of a new tag file to be created.

4) Tag management process operating status

Indicates the current status of the Tag management process.

RUN .... Indicates that the Tag management process is "running".
STOP .... Indicates that the Tag management process is "at a stop".
NOT RUN .... Indicates that the Tag management process is not started.

5) "Run" button

Used to run the Tag management process.
You cannot use this button to start the Tag management process.
(This button cannot be selected when the Tag management process has not yet been started.)

6) "Stop..." button
Used to stop the Tag management process.
You cannot use this button to end the Tag management process.
(This button cannot be selected when the Tag management process has not yet been started.)

7) "Reload" button
Used to reload the Tag management process.
Note that this button may be selected only during the stop of the Tag management process.

8) "Ordinary" button
Used to set all collection timings of the set tags to "Ordinary" in batch.

   Ordinary .... Data is always collected independently of whether the application using the tags is active or inactive.

9) "Non-ordinary" button
Used to set all collection timings of the set tags to "Non-ordinary" in batch.

   Non-ordinary .... Data is collected only when the application using the tags is active.

POINT

The Tag management process has great influence on the processing speed of the personal computer.
When using other application, it is recommended to stop the Tag management process.

8.2.4 Operations on the Communication Screen

Set the network, devices, etc. to the tag.
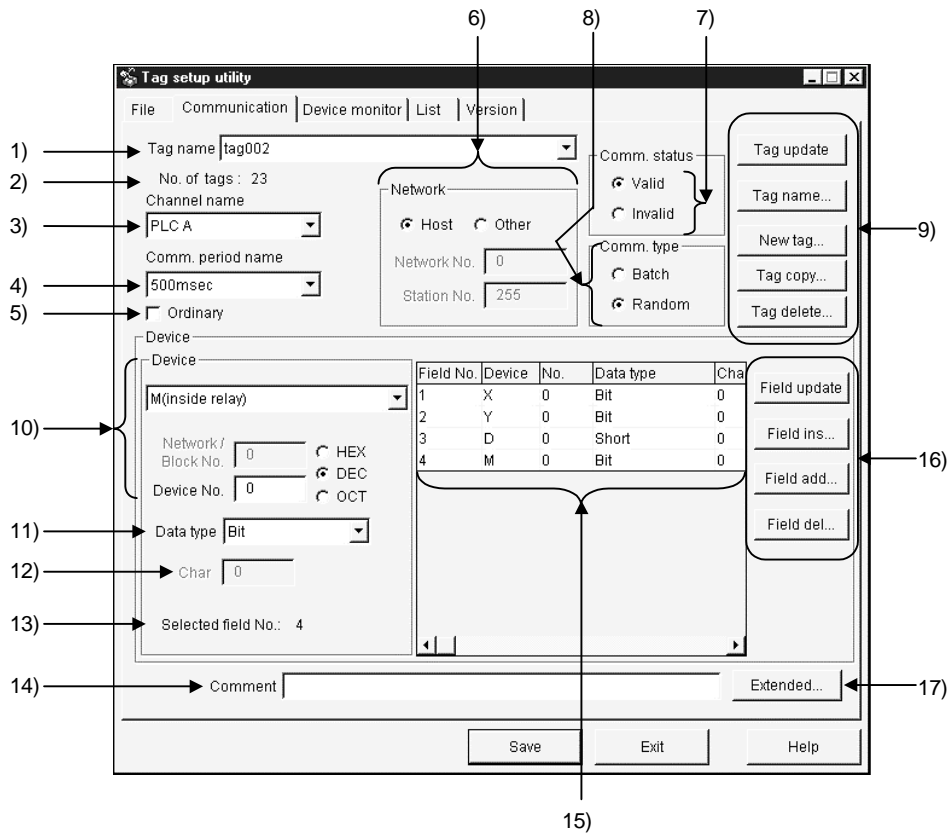
1) Tag Name

   Choose the tag name to which the setting will be registered.

2) No. of tags

   Shows the number of tags registered currently.

3) Channel name

   Choose the channel name set with the Environment setup utility. (Refer to Section 8.1.3.)

4) Comm. period name

   Choose the communication interval name set with the Environment setup utility. (Refer to Section 8.1.4.)

5) Ordinary
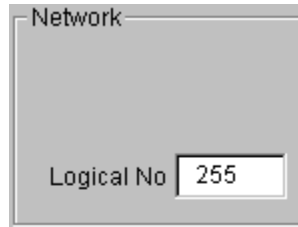
   When this box is checked, data is always collected independently of whether the application using the tags is active or inactive.
   When this box is unchecked, data is collected only when the application using the tags is active.
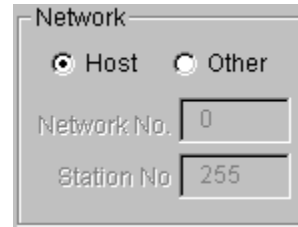
6) Network
   To perform a communication, enter the logical station number and network settings.
   Refer to Section 8.2.5.

Logical Station

```
┌─Network─────────────┐
│                     │
│                     │
│                     │
│                     │
│  Logical No  255    │
│                     │
└─────────────────────┘
```

Direct Station

```
┌─Network─────────────┐
│  ⦿ Host   ○ Other   │
│                     │
│  Network No.   0    │
│                     │
│  Station No   255   │
└─────────────────────┘
```

7) Comm. status
   Set whether the communication of the set tag is valid or invalid.
   If you set Invalid, communication is not made.

8) Comm. type
   Specify "Batch" or "Random" as the way of access to the PLC.
   Batch ....Choose this when accessing the specified points of a single device
                 name.
   Random.....Choose this when accessing one point of each of many device names.

9) Tag-related buttons

"Tag Update" ....Used to update the tag data set to the tag file.
To save the data, click the "Save" button.

"Tag name..." ....Used to create the tag name automatically or change it.
The tag name created automatically is set as follows.
(The default tag name is the automatically created tag name.)

$$* \quad ** \quad ** \quad ****$$

Device number
Device name
Station number
Channel ID
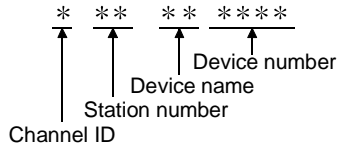
Example: When channel ID 1 is selected and W device No. 0 of the own station is specified

Tag name: 1FFWD0000

"New tag..." ....Used to create a new tag. (Up to 32 characters)
When entering a tag name, you cannot use the following characters.
"\", "/", ":", "*", "?", """, "<", ">", "|"

"Tag copy" ..... Used to copy the tag currently being edited.

"Tag delete" ..... Used to delete the tag currently being edited.

10)Device

    Device ....Choose the type of the device used for communication.

    Network/Block No. ....You can enter data when you specify any of the following devices.

Device Name	Description
L∗ (Except L)	Set the network No. of the specified device.
ER	Set the block No. of the specified device.
EM	
ED	

    Device No..................Set the device No. of the specified device type.

    HEX, DEC, OCT ....Specify the hexadecimal, decimal or octal when setting the extension No. or device No.

        HEX........Hexadecimal

        DEC........Decimal

        OCT........Octal

POINTS

(1) If you selected Batch in Communication Type and "Bit" in Data Type, specify the device number as a multiple of 8 (0, 8, 16, ...) and the field count as a multiple of 16 (0, 16, 32, ...).

However, when using any of the following communications, specify the device number as a multiple of 16 (0, 16, 32, ...).

- Computer Link (when using C24, UC24)
- Ethernet (when using E71 (TCP/IP))
- CC-Link (access to own station RX, RY, SB)

(2) Note that the following devices cannot be accessed if they are set to the "random communication tag" and "write tag" in CC-Link communication.

- CC-Link board-dedicated devices (RX, RY, RW, RBM, RAB)
- SB, SW (when CC-Link board is used)

---

11)Data type

    Determine the data type relative to the set device.

12)Char

    Specify the number of characters to reserve the number of device points.

    The number of characters is up to 40 characters.

    (Valid only when Char is selected in Data Type.)

13)Selected (Field No.)

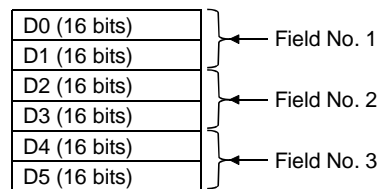   Selected field No............ This number appears when the communication type is
                          Random.

                          The field No. of the item currently selected in the field
                          preview appears.

    Field count..................... This number appears when the communication type is
                          Batch.

                          Set the field count which reserves the devices in the unit
                          specified in Data Type.

                          Example: If Device = D, Device No. = 0, Data Type =
                                    Long, and field count = 3, devices of 32 bits are
                                    reserved as a single field since the data type is
                                    Long.

D0 (16 bits)	⎫
D1 (16 bits)	⎬ ← Field No. 1
D2 (16 bits)	⎫
D3 (16 bits)	⎬ ← Field No. 2
D4 (16 bits)	⎫
D5 (16 bits)	⎬ ← Field No. 3

14)Comment

    Comment the tag.

15)Field preview

    Shows the field data set until now.

    Alternatively, clicking selects the field.

    (Appears only when "Random communication" is chosen in Communication Type.)

16)Field button (valid only when Random is selected in Communication Type)

    "Field update"...... Used to register the current setting in the selected field.

    "Field ins..." .... Used to insert a new field in a place preceding the currently
                      selected field.

    "Field add..."........ Used to create a new field in the last field.

    "Field del..." .... Used to delete the currently selected field.

17)Extended...

Used to show the dialog screen where logging setting and Hand shake are set.

(Setting example for random communication)

For random communication with W100 (Short), D0 (Long) and ER0 (block No. 1) (Short)

W100 setting
- 1) Choose communication type "Random".
- 2) Choose device type "W" and type device number "100".
- 3) Click the "Field update" button. (Use the data type of default single precision.)

D0 setting
- 4) Click the "Field add" button.
- 5) Choose device type "D" and type "0" in Device No.
- 6) Choose data type "Long".
- 7) Click the "Field update" button.

ER0 setting
- 8) Click the "Field add" button.
- 9) Choose device type "ER" and type "0" in Device No.
- 10) Type block No. "1".
- 11) Click the "Field update" button. (Use the data type of default single precision.)
- 12) Click the "Tag Update" button.
- 13) Click the "Save" button.

(Setting example for batch communication)

For batch communication with 10 points starting from W100 (Short)

W100 setting
- 1) Choose communication type "Batch".
- 2) Choose device type "W" and type device number "100".
- 3) Type "10" in Field.
- 4) Click the "Tag Update" button.
- 5) Click the "Save" button.
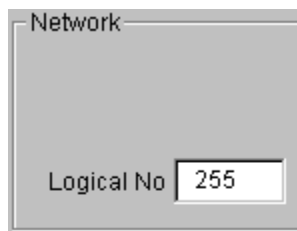
8.2.5 About the Network Setting

The settings of "Network" on the "Communication" screen change with the communication path used as indicated below.

```
POINTS
To perform the Computer link, Ethernet, CPU COM, CPU USB or CC-Link G4
communication, set the network settings the same as those made on the "Target"
screen within the CSKP.
```
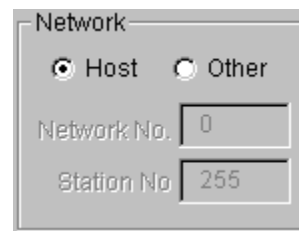
(1) Displayed network settings
The settings displayed on the "Network setting" screen vary with each communication made within the CSKP and so forth.

Logical Station

Direct Station

```
Network
Logical No    255
```

```
Network
⊙ Host    ○ Other
Network No.    0
Station No    255
```

The following shows the station number specification methods applicable to each communication.

Communication	Station number specification method	
	Logical Station	Direct Station
Computer link	○	×
Ethernet	○	×
CPU COM	○	○
CPU USB	○	○
MELSECNET/10	×	○
CC-Link	×	○
CC-Link G4	○	×
CPU board	×	○
Shared device	×	○
LLT	×	○

○: Applicable, ×: N/A

(2) Host setting
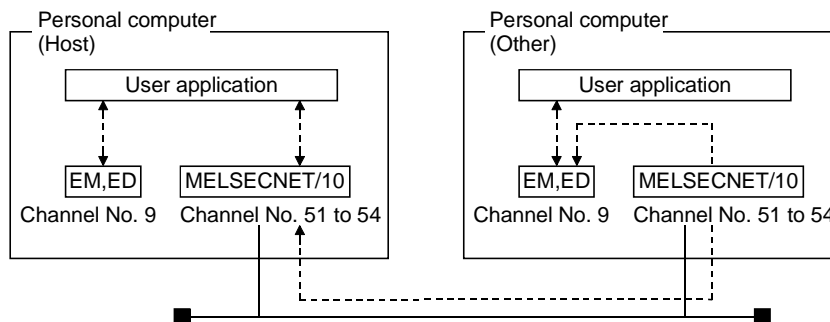When you choose Host in the network setting, the settings are as follows.

Communication	Description
Computer link	Not used.
Ethernet	
CPU COM	
CPU USB	
MELSECNET/10	Access is made to the own personal computer.
CC-Link	
CC-Link G4	Not used.
CPU board	Access is made to the own personal computer (equivalent to A2USHCPU-S1).
Shared device	Access is made to the EM and ED devices of the own personal computer.
LLT	Access is made to LLT on the own personal computer.

(3) Other setting

When you select Other in "Network Setting", the settings are as follows.

Communication		Description	
		Network number	Station number
Computer link		Not used.	Set the logical station number specified on the utility.
Ethernet			
CPU COM			
CPU USB			
CC-Link G4			
MELSECNET/10		Set the network number.	Set the station number.
CC-Link		Not used.	Set the station number.
CPU board	Via MELSECNET/10	Set the network number.	Set the station number.
Shared device	Via MELSECNET/10	Set the network number.	Set the station number.
LLT		Not used.	Not used.

POINTS

(1) The shared devices (EM, ED) may be set only on Windows NT4.0 using the shared device utility.

They cannot be set on Windows 95 or Windows 98.

However, the shared devices (EM, ED) on Windows NT4.0 can be accessed from Windows 95 or Windows 98.

(2) To access the shared devices (EM, ED) of the other personal computer (other station), specify the channel of MELSECNET/10 which is used as a communication path.

(3) Please set local station in LLT.

8.2.6 Operations on the Extended Screen

Set the Condition, Logging and Hand shake.

POINT
Note that the following devices cannot be accessed if they are set on the "Logging" screen and "Handshake" screen in CC-Link communication. • CC-Link board-dedicated devices (RX, RY, RW, RBM, RAB) • SB, SW (when CC-Link board is used)

(1) Explanation of buttons
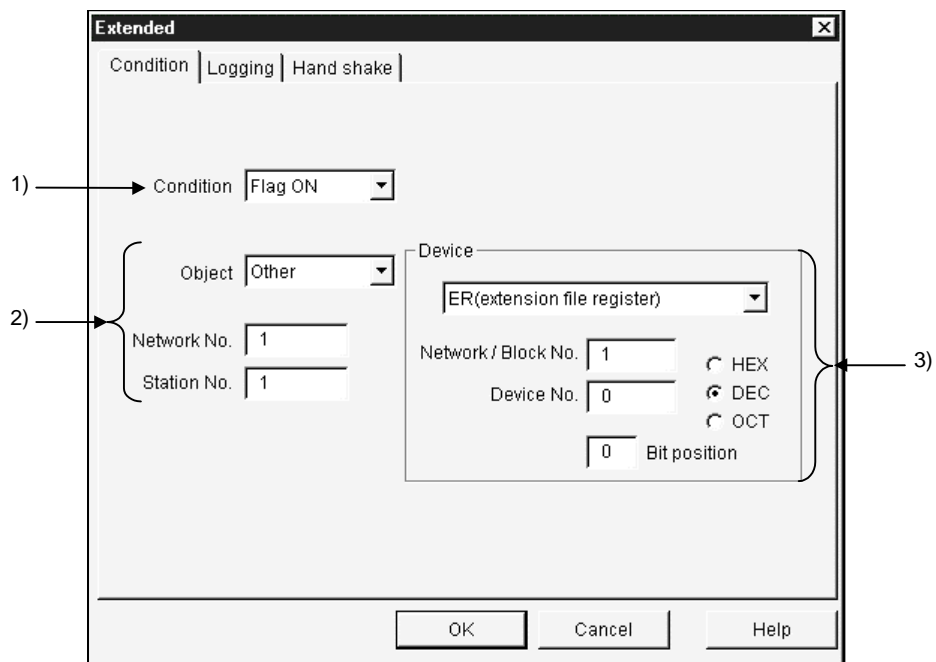The buttons function as follows.

"OK" ....Used to make the setting valid and return to the Communication Setting screen.
"Cancel" ...Used to make the setting invalid and return to the Communication Setting screen.
"Help" ....Used to display Help.

(2) Condition
Set the condition of signaling data collection.

1) Condition
Set the condition of collecting data.

No Setting...........The collection condition on this screen is not reflected.
Flag ON ....Data can be collected only when the specified bit device is ON.
Flag OFF ....Data can be collected only when the specified bit device is OFF.

2) Network setting

Set the network No. and station No. of the device used as the collection condition.

Object .... Choose any of the following items in the combo box.

Host .... The device of the own station is set as the collection condition.

Other .... The device of the other station is set as the collection condition.

Also, you can enter the network No..

According to Tag .... The device of the station number whose setting was Updated on the communication setting screen is set as The collection condition. (Refer to Section 8.2.4.)

Network No. .... Specify the network No.

(Valid only when Other Station is selected in Station Setting.)

Station No. .... Set the station number.

(Valid only when Other Station is selected in Station Setting.)

POINTS

(1) Note that if you have specified "According to Tag" in Station Setting and then changed the station number in "Communication", that change is not reflected on the station setting of "Extended".

(2) When setting "Other" in Station Setting (making transient communication), it is assumed that the communication speed will be affected greatly. Therefore, when specifying the station, we recommend you to specify "Host".

---

3) Device

Device type ....Choose the type of the device used for communication.

Network/Block No. ...You can enter data when you specify any of the following devices.

Device Name	Description
L∗	Set the network No. of the specified device.
ER	
EM	Set the block No. of the specified device.
ED	

Device No. ....Set the device No. of the specified device type.

HEX, DEC, OCT ....Specify the hexadecimal, decimal or octal when setting the extension No. or device No.
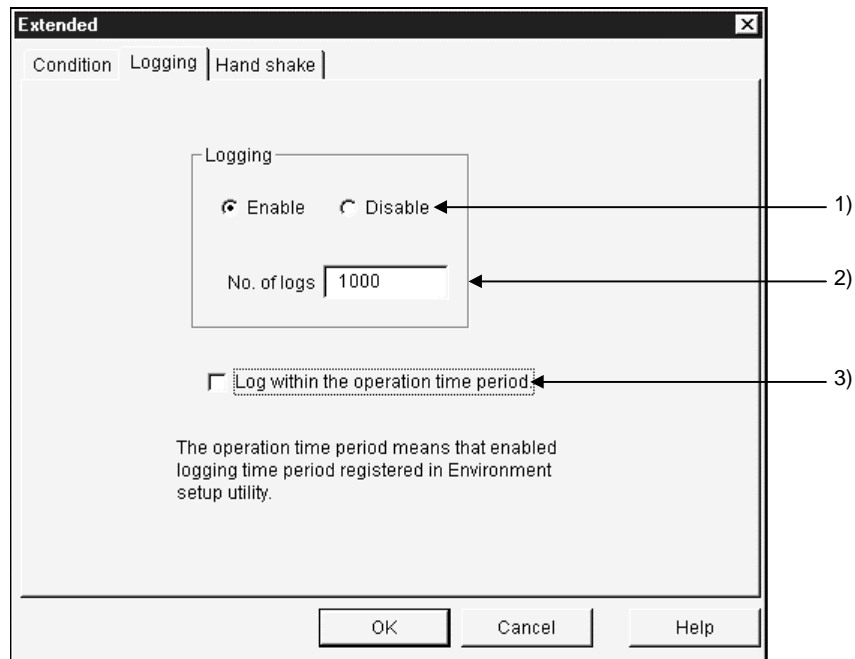
HEX........Hexadecimal

DEC........Decimal

OCT........Octal

Bit Position ....Set the bit used as the collection condition when you specified the word device.

(3) Logging
Set whether logging is specified or not.

1) Logging
Set whether logging is made or not.

Enable .... As soon as the Tag management process has started, data
collection starts and log data is saved.
Disable.......... Logging is not made.

2) No. of logs
Set the number of log data to be collected. (1 to 10000)

3) Logging within the operation time period
Data is collected according to the operation time set on the Environment setup
utility.

(Refer to Section 8.1.5.)

POINTS

(1) Set the communication interval to 1 second or longer in the tag to which logging
setting is made.
(2) When you have chosen Logging within the operation time period, the Tag
management process will not operate if none of the logging settings of the
Environment setting utility is valid. Always set the logging time.
(3) When you exit from the Tag management process, the log file remains as
<User-defined folder>-<CSKP>-<MTI>-<LOGFILE>\tagname.log.
When you have changed the personal computer time, delete the above file.

(4) Hand shake

Set the Hand shake data.
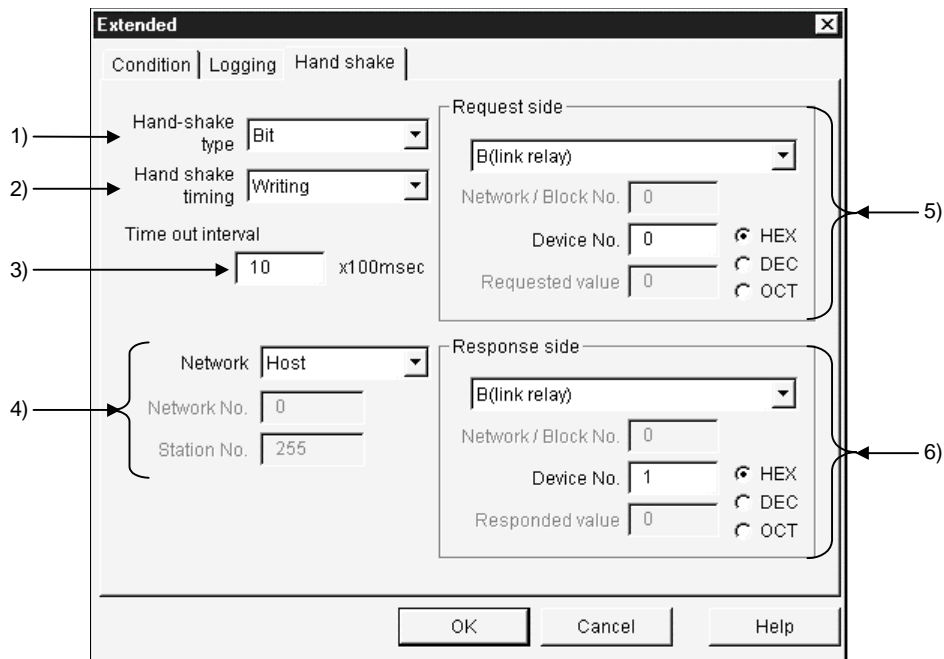
1) Hand-shake type

Choose the way of handshaking.

Bit............................Hand shake is made in accordance with ON and OFF of
                         bit devices.

• Operation sequence

Request bit ON → Data transfer → Response bit ON → Request bit OFF →
Response bit OFF → Completion

Word........................Hand shake is performed according to the values stored
                         into word devices.

• Operation sequence

Request value stored into request word device → Data transfer → Response
value stored into response word device → 0 stored into request word device
→ 0 stored into response word device → Completion

Unconditional ..... Data transfer is made without Hand shake.

2) Hand shake timing

Set the timing of handshaking.

3) Time out interval

Set the time-out period. (1 to 36000)

Time-out is a period from "request device set" to "request device reset" for
write, and a period from "response device set" to "response device reset" for
read.

4) Network

Set the network No. and station No. of the devices used for Hand shake.

Choose any of the items in the Network Setting combo box.

Host .... The devices of the own station are set to Hand shake.

Other .... The devices of the other station are set to Hand shake. Also, you can enter the network No.

According to tag .... The devices of the station number set on the Communication setting screen are set to Hand shake. (Refer to Section 8.2.4.)

Network No. .... Specify the network No. (Valid only when Other Station is selected in Station Setting.)

Station. No. .... Set the station number. (Valid only when Other Station is selected in Station Setting.)

5) Request side

Specify the device used as a request side flag.

Set the device type, network/block No., device number, and HEX, DEC or OCT as in this section, (2), 3).

Request value .... Set the value written to the word device as a request value. (Valid only when the word device is selected in Hand-shake type.)

6) Response side

Specify the device used as a response side flag.

Set the device type, network/block No., device number, and HEX, DEC or OCT as in this section, (2), 3).

Response value ...... Set the value written to the word device as a response value. (Valid only when the word device is selected in Hand-shake type.)


POINTS

(1) Note that if you have specified "According to tag" in Network Setting and then changed the station number in "Communication", that change is not reflected on the station setting of "Extended".

(2) When setting "Other" in Network Setting (making transient communication), it is assumed that the communication speed will be affected greatly. Therefore, when specifying the station, we recommend you to specify "Host".

(3) When the tag specified for handshake is specified to Logging for reading, the data collection of the other tag communicating at the same time will be affected extremely. (It will take longer time.)

(4) Set the Hand shake time out interval so that the communication interval value is greater than the Hand shake time out value.

(a) Hand shake timing

Hand shake is made as shown in the following timing charts.

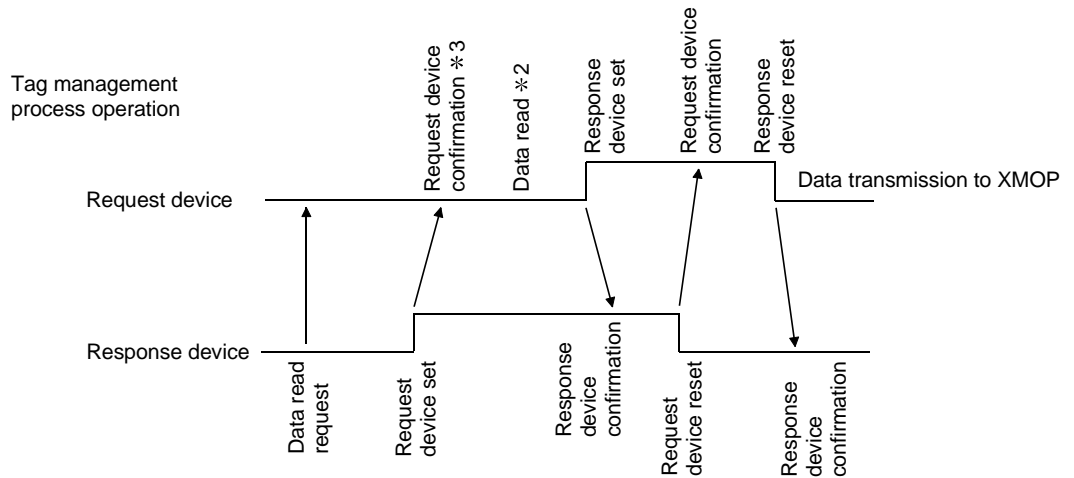1) When data is written to Tag management process device memory
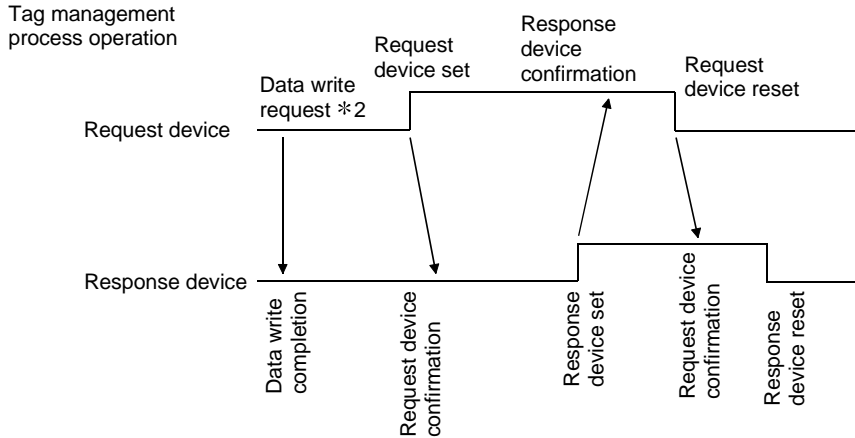
*1 For PLC operation, a program must be written using the sequence ladder or MELSEC data link library.
*2 Request of XMOP to write data to device memory.
   Since the Tag management process makes this request actually, the Tag management process is on the request side.

2) When data is read from Tag management process device memory

When time-out occurs, read data is discarded.

*1 For PLC operation, a program must be written using the sequence ladder or MELSEC data link library.
*2 The Tag management process reads the device memory data.
   It is not read unless the request device is set on XMOP.
   After reading data, the Tag management process sets the response device.
*3 An error (-30) occurs if the request device has not been set for request device confirmation.

8.2.7 Operations on the Device Monitor Screen

Monitor devices based on the data of the tag file currently under control of the Tag management process.
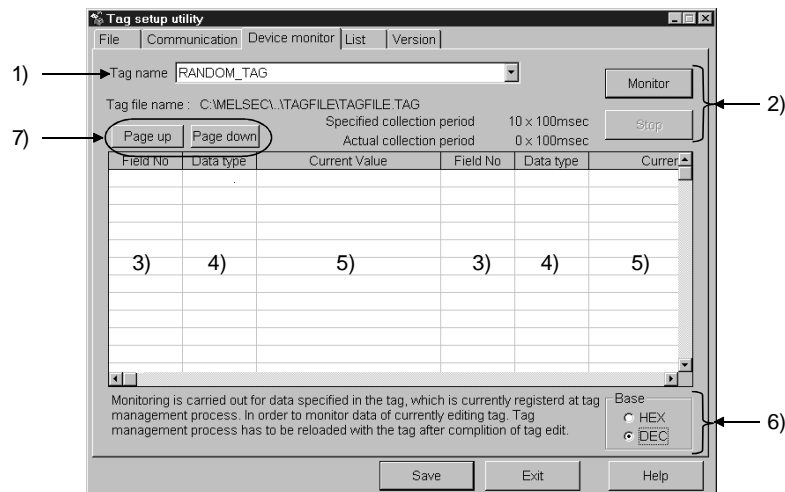
1) Tag name
Devices are monitored based on the data of the tag specified here.

2) Monitor and Stop buttons
"Monitor": Used to start monitor. "Stop": Used to stop monitor.

3) Field No.
Shows the field numbers being monitored.

4) Data type
Shows the data types of the devices set to the fields.

5) Current value
Shows the current device values. (When bit device is ON: "*")

6) Base
Set the format of the data to be displayed.

HEX ... Hexadecimal display
DEC ... Decimal display

7) PageUp, PageDown buttons
Used to scroll screen by screen if the fields take up more than one screen.
If all the fields can be displayed on one screen, the PageUp and PageDown buttons do not appear.

POINTS

(1) Monitor stops when you change the screen (to the file setting, communication setting or other screen) by tab operation.
(2) When monitoring the tag being edited, save the edited tag and restart the Tag management process.

8.2.8 Operations on the List Screen

List the data set to the tag file.
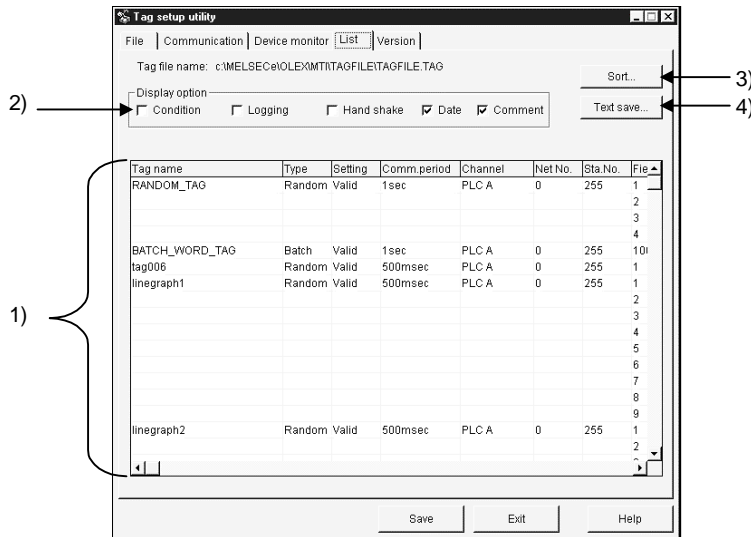
1) Setting display
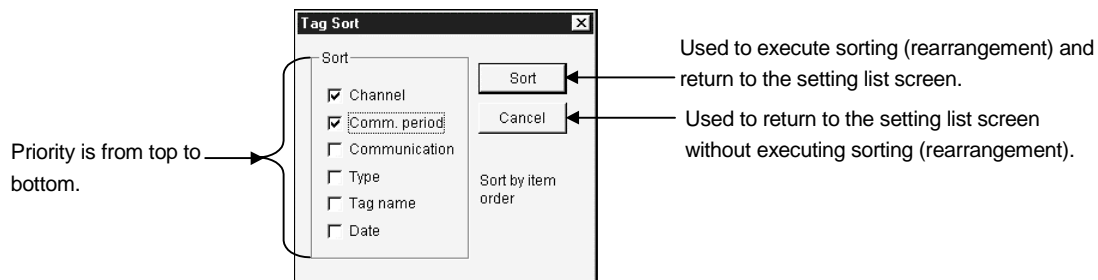   Tags registered to the tag file are listed.

2) Display option
    Check and display the items you want to display in addition to the data currently
    being shown.

3) "Sort..." button
    As the following dialog box opens, set the sort conditions (Two or more conditions
    may be set.)
    Note that priority is from top to bottom.
    Items not checked return to the initial states.

Used to execute sorting (rearrangement) and
return to the setting list screen.

Used to return to the setting list screen
without executing sorting (rearrangement).

Priority is from top to
bottom.

POINTS
(1) Sorting of character strings, such as comments, are made in ASCII code order. (Not in alphabetical order.)
(2) Data in the sorted status cannot be saved in the tag file.

4) "Text save" button
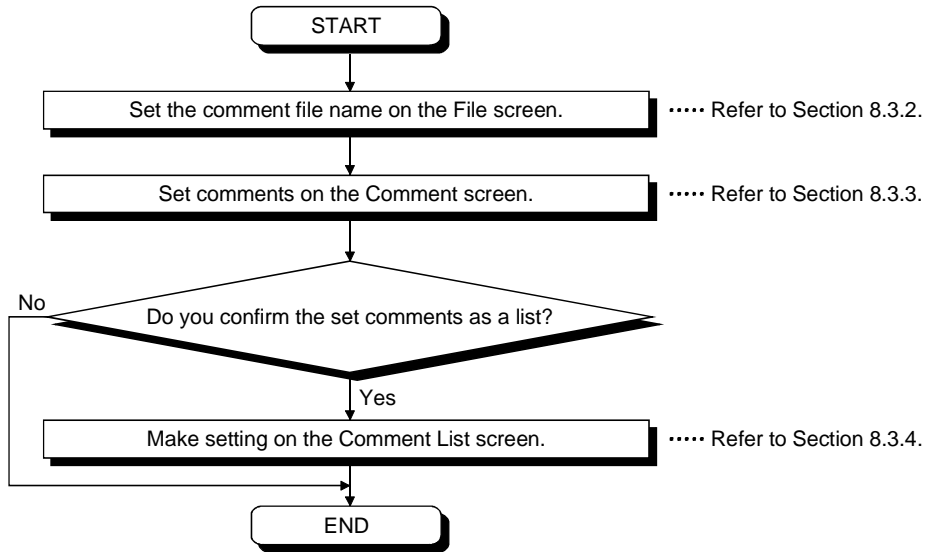   Used to save the currently displayed data in the specified text file.

POINT
Data is saved as a text in the sorted status.

8.3 Comment Setup Utility

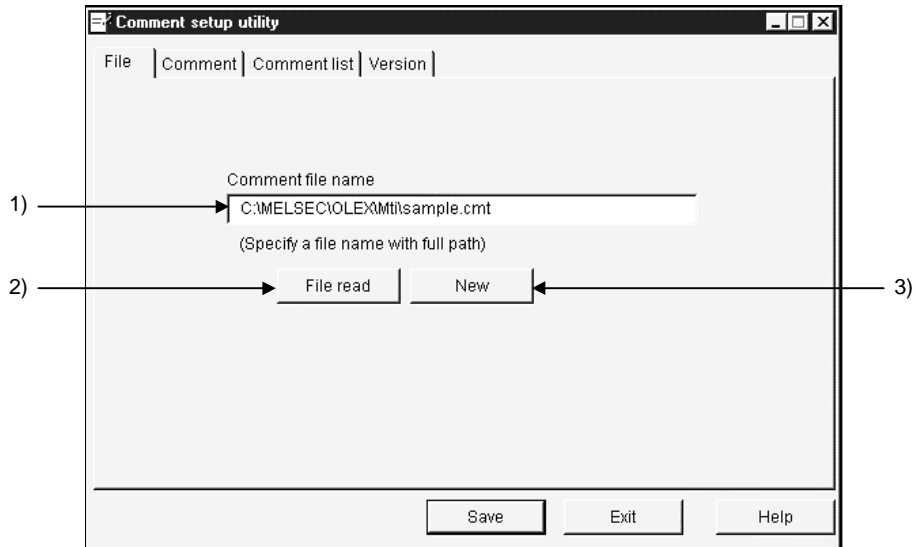This section describes the operation and setting procedures of the Comment setup utility.

8.3.1 Operation Procedure

The following flowchart provides the operation procedure of the Comment setup utility.

START

Set the comment file name on the File screen. ····· Refer to Section 8.3.2.

Set comments on the Comment screen. ····· Refer to Section 8.3.3.

No — Do you confirm the set comments as a list?

Yes

Make setting on the Comment List screen. ····· Refer to Section 8.3.4.

END

8.3.2 Operations on the File Screen

Set the file where comments will be saved.

1) Comment file name
   Specify the comment file name to be set.

2) "File read" button
   Used to find the comment file to be set in 1).
   As the file setting dialog box opens, set the comment file.

3) "New" button
   Used to create a new comment file.
   As the file setting dialog box opens, set a new comment file.

8.3.3 Operations on the Comment Screen

Set the definition, display range and character color of a comment.
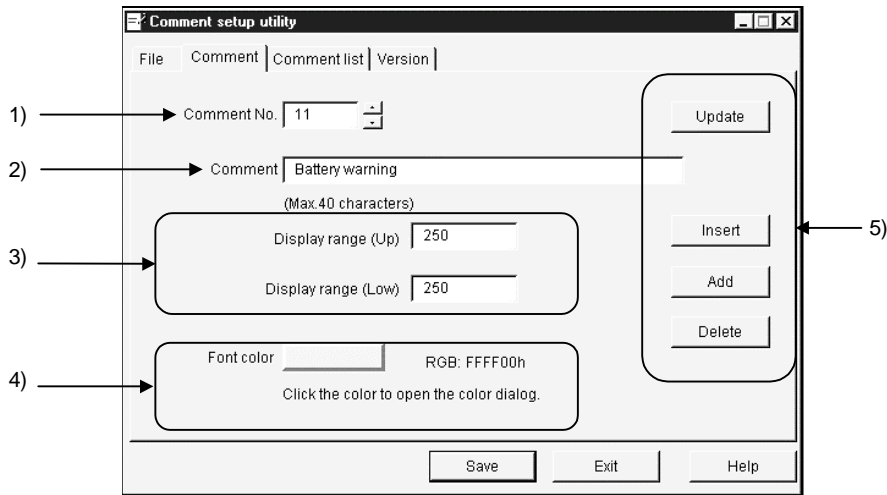
1) Comment No.

Set the comment number where the comment definition, display range, character color and so on are saved. (Up to No. 1000)
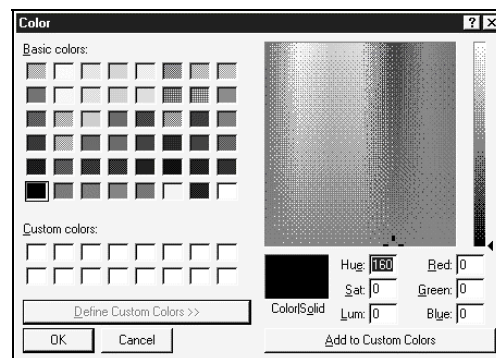
2) Comment

Describe the comment definition relative to the comment number. (Up to 40 characters)

3) Comment range

Set the upper and lower limits of the device value for displaying the comment. The comment is displayed when the device value is within the setting range. When specifying one point, set the same value to the upper and lower limits.

4) Font color

Clicking the color display area opens the following dialog box. Set the character color of the comment in this dialog box.

5) Buttons

"Update" ....Used to update the definition of the comment currently being selected.
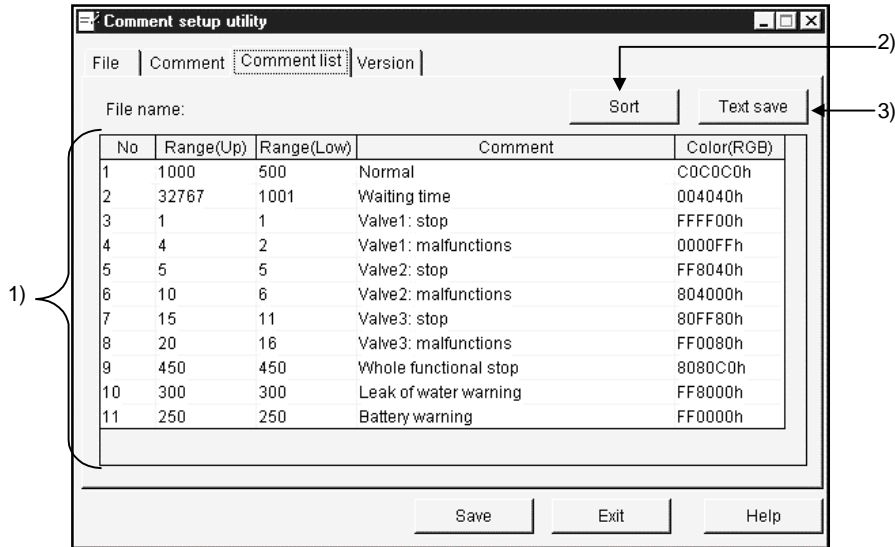
"Insert".......Used to add a new comment in a place preceding the comment currently being selected.

"Add" ....Used to add a new comment in a place next to the last comment number.

"Delete" .....Used to delete the comment currently being selected.

8.3.4 Operations on the Comment List Screen

Show the set comments as a list.

1) Setting display screen
   Shows the comments registered to the comment file as a list.
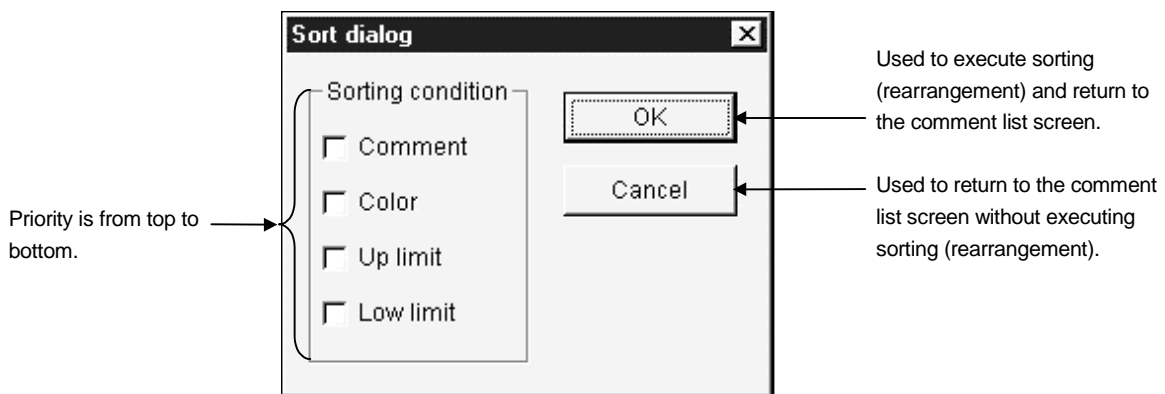
2) "Sort" button
   As the following dialog box opens, set the sort conditions
   (Two or more conditions may be set.)
   Note that priority is from top to bottom.
   Items not checked return to the initial states.

POINTS

(1) Sorting of character strings, such as comments, are made in character code
    order. (Not in alphabetical order.)
(2) Data in the sorted status cannot be saved in the comment file.

3) "Text save" button
   Used to save the currently displayed data in the specified text file.
   When sorting has been executed, data is saved as a text in the sorted status.

8.3.5 Comment File Format

The comment file is saved in a text file in the following format.

(Example) ∗. CMT

CMT 00A
1, 1, 2, Waiting time, 0[Enter]
2, -32000, -30000, Battery warning, FFFFFF[Enter]
3, 100000, 200000, Line 1: stop, FF00[Enter]
4, 201, 201, Line 1: start, FF0000[Enter]

1) 2) 3)   4)   5)   [Enter] ... Line feed

1) Comment number
2) Lower limit
3) Upper limit
4) Comment character string
5) Color code (RGB code)

POINTS

(1) Settings should be separated by a comma (,).
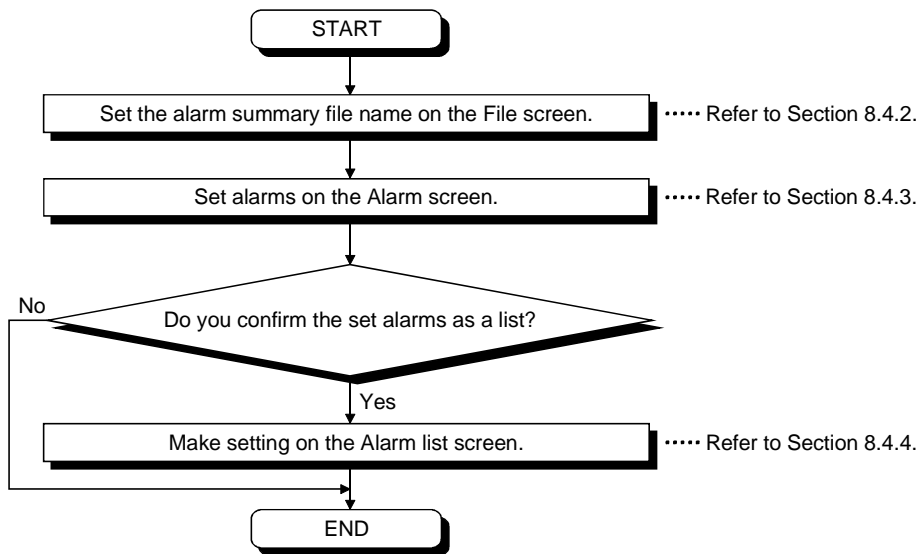
(2) The line starting with "//" is handled as a comment.

8.4 Alarm Summary Setup Utility

This section describes the operation and setting procedures of the Alarm summary setup utility.

8.4.1 Operation Procedure

The following flowchart provides the operation procedure of the Alarm summary setup utility.

```
                    ┌─────────────────┐
                    │     START       │
                    └────────┬────────┘
                             │
    ┌────────────────────────────────────────────────┐
    │ Set the alarm summary file name on the File     │ ····· Refer to Section 8.4.2.
    │ screen.                                          │
    └────────────────────────┬────────────────────────┘
                             │
    ┌────────────────────────────────────────────────┐
    │ Set alarms on the Alarm screen.                 │ ····· Refer to Section 8.4.3.
    └────────────────────────┬────────────────────────┘
                             │
  No        ┌────────────────────────────────────────┐
◄───────────┤ Do you confirm the set alarms as a list?│
            └────────────────────┬───────────────────┘
                                 │ Yes
    ┌────────────────────────────────────────────────┐
    │ Make setting on the Alarm list screen.          │ ····· Refer to Section 8.4.4.
    └────────────────────────┬────────────────────────┘
                             │
                    ┌────────────────┐
                    │      END        │
                    └─────────────────┘
```

8.4.2 Operations on the File Screen

Set the file where alarm summary information will be saved.
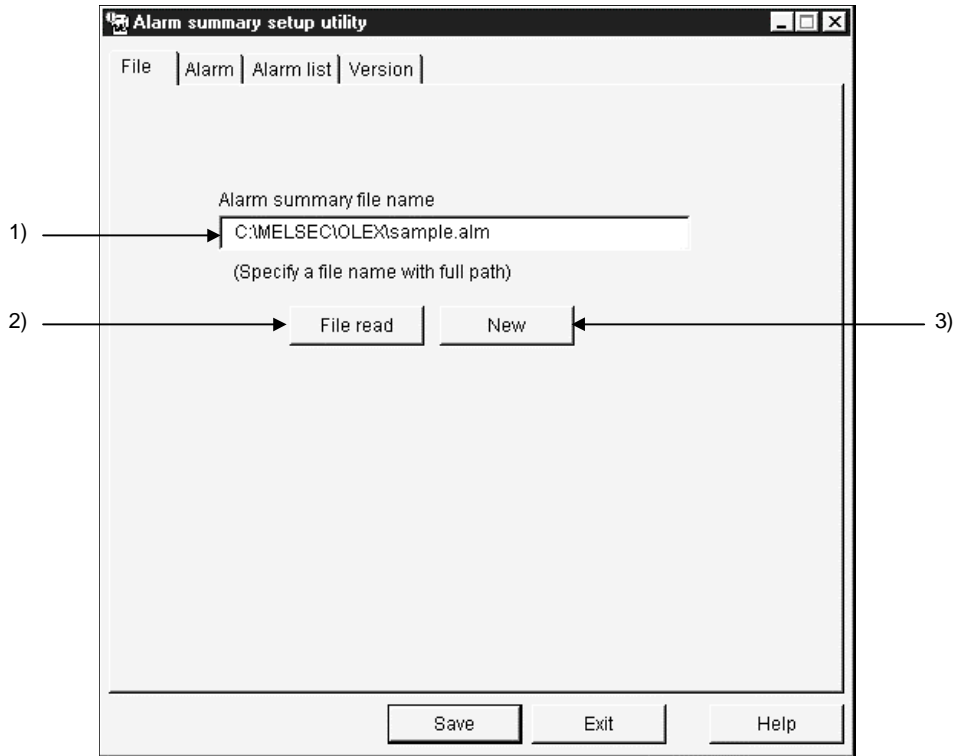
1) Alarm summary file name

Specify the file name where the data set with this utility will be saved.

2) "File read" button

Used to find the alarm summary file to be set in 1).

As the file setting dialog box opens, set the alarm summary file.

3) "New" button

Used to create a new alarm summary file.

As the file setting dialog box opens, set a new alarm summary file name.

8.4.3 Operations on the Alarm Screen

Set the definition, classification character strings and character colors of an alarm.
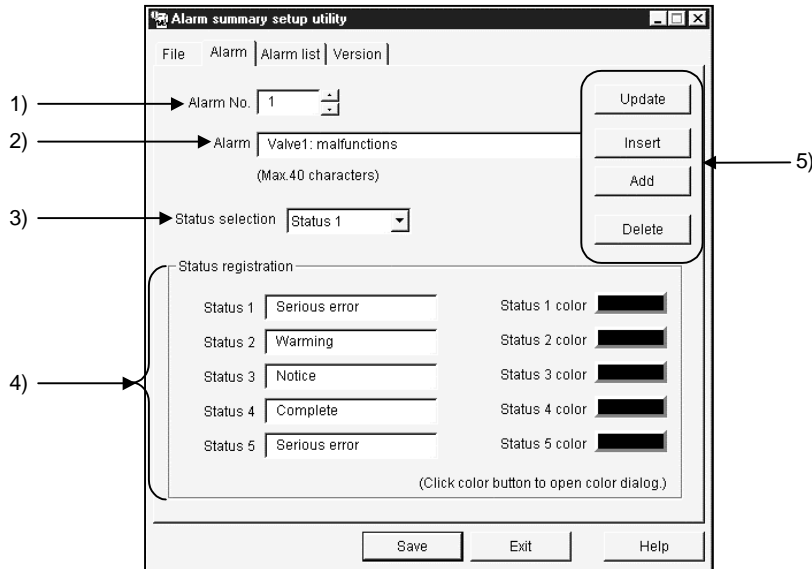
1) Alarm No.

Set the file name where the data set with this utility will be saved. (Up to No. 300)

2) Alarm

Describe the definition of the alarm message relative to the alarm number. (Up to 40 characters)

3) Status selection

Select the status which will be displayed simultaneously with the alarm definition. Set the data to be selected in Set Status.

4) Status registration

Set the character strings and colors of the classifications to be displayed.

Status .... Set the character string of the classification to be displayed. (Up to 16 characters)

Status (1 to 5) Color ...... Set the character color of the classification to be displayed. Clicking the color display area opens the color setting dialog box. Set the character color of the comment.

5) Buttons

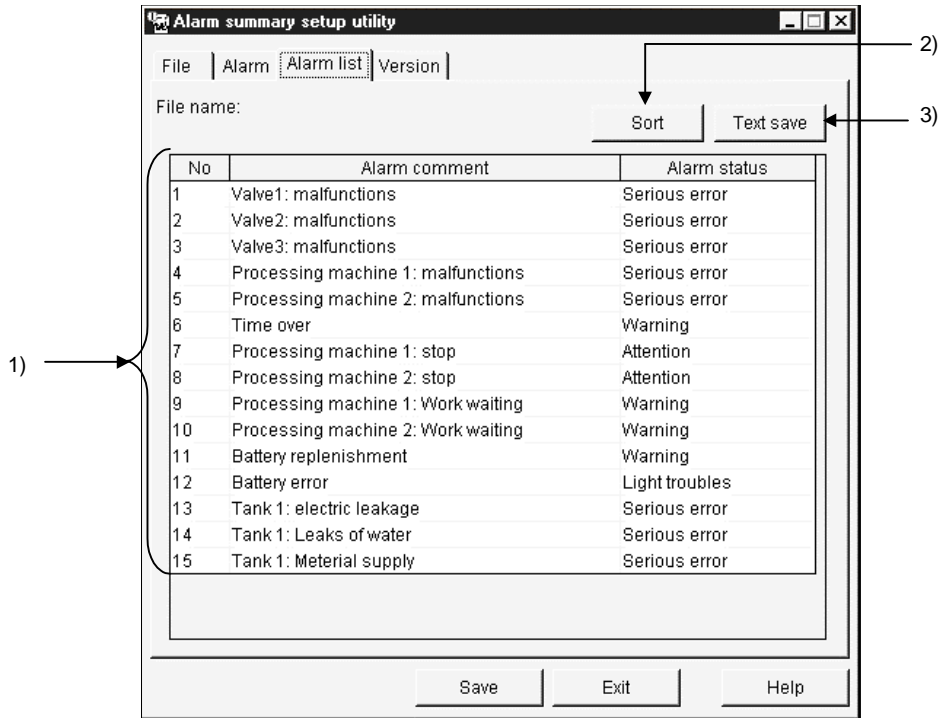"Update" ....Used to update the data currently being selected.

"Insert".......Used to insert a new alarm in a place preceding the alarm currently being selected.

"Add" ....Used to add a new alarm in a place next to the last alarm number.

"Delete" .....Used to delete the alarm summary currently being set.

8.4.4 Operations on the Alarm List Screen

Show the set alarms as a list.
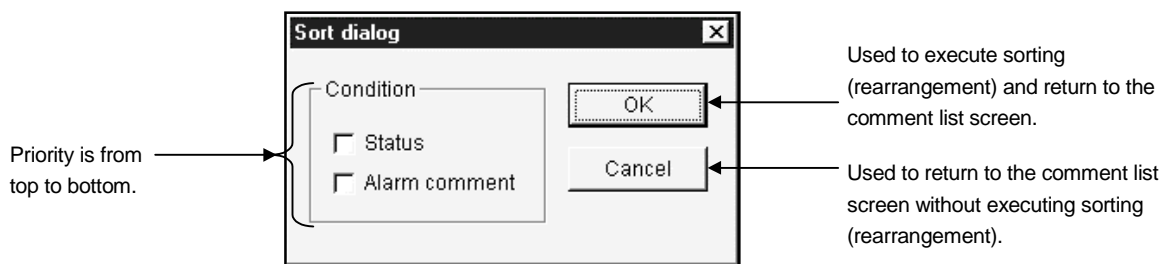

1) Setting display screen

Shows the set alarm comments and alarm states as a list.

2) "Sort" button

As the following dialog box opens, set the sort conditions (Two or more conditions may be set.)

Note that priority is from top to bottom.

Items not checked return to the initial states.

Used to execute sorting (rearrangement) and return to the comment list screen.

Priority is from top to bottom.

Used to return to the comment list screen without executing sorting (rearrangement).

POINTS

(1) Sorting of character strings, such as comments, are made in ASCII code order. (Not in alphabetical order.)

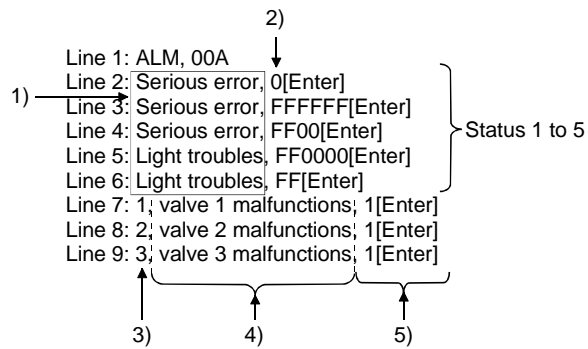(2) Data in the sorted status cannot be saved in the alarm summary file.

3) "Text save" button

Used to save the currently displayed data in the specified text file.

8.4.5 Alarm Summary File Format

The alarm summary file is saved in a text file in the following format.

(Example)

```
                                   2)
      Line 1: ALM, 00A          ↓
      Line 2: Serious error, 0[Enter]          ⎫
 1) → Line 3: Serious error, FFFFFF[Enter]     ⎪
      Line 4: Serious error, FF00[Enter]       ⎬ Status 1 to 5
      Line 5: Light troubles, FF0000[Enter]    ⎪
      Line 6: Light troubles, FF[Enter]        ⎭
      Line 7: 1, valve 1 malfunctions, 1[Enter]
      Line 8: 2, valve 2 malfunctions, 1[Enter]
      Line 9: 3, valve 3 malfunctions, 1[Enter]

               ↑         ↑              ↑
               3)        4)             5)
```

1) Status
2) Color code for status (RGB code)
3) Alarm number
4) Alarm comment character string
5) Status number

┌──┐
│ ┌─────────────┐   │
│ │ POINT   │   │
│ └─────────────┘   │
│ Settings should be separated by a comma (,).   │
└──┘

9. ABOUT THE XMOP CUSTOM CONTROLS

9.1 Properties

(1) OCX-standard properties

Among the properties that may be set, the OCX-standard properties can also be set to the custom controls of XMOP.

Setting these properties determines the attributes and so on of the characters and frames displayed.

Property	Description	Details	Initial Value	Change during Execution
Alignment	Set the arrangement of a numeric value or character string displayed in a text.	0: Left alignment 1: Right alignment 2: Center alignment	—	Not allowed
Appearance	Set a 3D effect on the drawing style.	True : With 3D effect False : Flat (Without 3D effect)	True	Allowed
BackColor	Set the background color of a control.	Set in RGB code.	—	Allowed
ForeColor	Set the foreground color of a control.			Allowed
BorderStyle	Set the style of a border line of a control.	True : With border line False : Without border line	True	Allowed
Enabled	Set whether a control is forced to recognize the event caused by user operation.	True : Recognizes False : Does not recognize	True	Allowed
Font	Set the font.	—	System	

POINT
Do not set the DragMode property to Automatic. XMOP does not support DragDrop.

9

(2) XMOP-common properties

Properties which can be set in common to any custom controls of XMOP.

Property	Variable Type	Description	Details	Initial Value	Change during Execution
MErrorID	SHORT	Error identifier	0 : Communication error 1 : Tag management process error 2, 3 : XMOP-specific error	0	Not allowed
MErrorNo	SHORT	Detailed error information	Error code		
MMonSTOP	BOOL	Monitoring stop flag	True : Monitoring stop False : Monitoring execution	Flase	Allowed
MTagName	STRING	Tag name	Choose the tag name registered in the tag file.	First tag name in tag file	Not allowed
MFieldNo	SHORT	Field number	Field number of the tag name read	1	

```
┌─────────────────────────────────────────────────────────────────┐
│  POINTS                                                           │
│ • The MMonStop property does not exist in XMWRWORD (word write), XMWRBIT │
│   (bit write), XMCLOCK (clock display) and XMERROR (error).       │
│ • The MFieldNo property does not exist in XMHSTTRD (historical trend graph), │
│   XMCLOCK (clock display) and XMERROR (error).                    │
│ • Even during execution of the MMonStop property, a change can be made to any │
│   custom controls (with the exception of those which do not monitor devices and │
│   which must ordinarily collect data).                            │
│ • The MfieldNo property is valid for not only for random-specified tags but also for │
│   batch-specified tags. For batch-specified tags, specify which device will be │
│   monitored.                                                      │
└─────────────────────────────────────────────────────────────────┘
```

(3) Properties specific to the custom controls of XMOP

Refer to the description of the custom controls in Chapters 10 to 15 and later.

9.2 Property Page

This page appears when you choose the pasted XMOP custom control and click [Properties...] in the right-click menu.
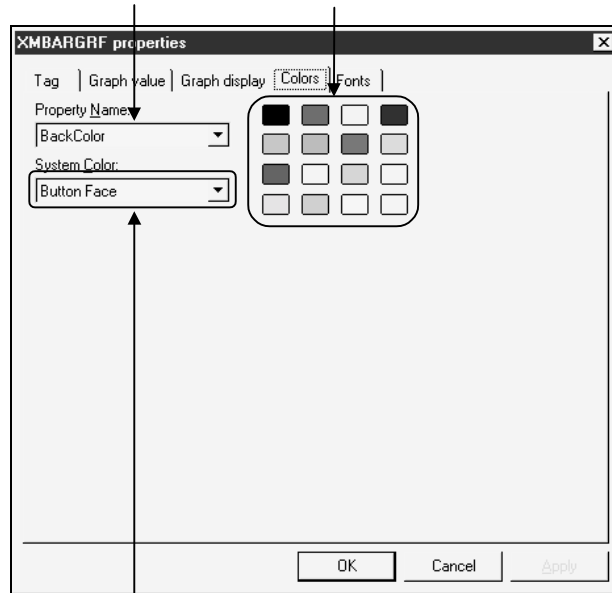
(1) Tag

Set the tag used.

Start the Tag setup utility.

XMBARGRF properties

Tag | Graph value | Graph display | Colors | Fonts |

Tag name tag006

Field No. 1   Tag registration

☐ Monitor stop

Set the field number of the specified tag in Tag name.

OK   Cancel   Apply

Check to stop the monitor function.

(2) Fonts

Specify the character style such as highlight or italic.

Choose the property name to which the front will be set.

XMBARGRF properties

Tag | Graph value | Graph display | Colors | Fonts |

Property Name: Font

Font:
Arial

Font Style:
Regular

Size:
9

Set the character size.

Effects
☐ Strikeout   ☐ Underline

Check to produce strikeout and underline effects on characters.

Shows the font name currently set.

Abadi MT Condens
Arial
Arial Black
Arial Narrow
Bookman Old Style
Courier

Sample
AaBbYyZz

Shows the current setting.

OK   Cancel   Apply

Choose the font name used.

9 - 3

(3) Colors

Choose the property name to
which the color will be set.

Choose the color used.
When the required color is not found, double-click the property
name in the Properties window and select the color.

```
XMBARGRF properties                                    ×
 Tag  | Graph value | Graph display | Colors | Fonts |
 Property Name
 [BackColor                    ▼]
 System Color:
 [Button Face                  ▼]



                                    [  OK  ] [ Cancel ] [ Apply ]
```

Specify the place where the color will be set.

9.3 Methods

This section explains various methods used with the custom controls.

Method Name	Returned Value	Argument	Description
DoClick	None	None	When this method is executed by VB, the "Click" event is generated by the specified control.
Refresh	None	None	When this method is executed by VB, redrawing is performed by the specified control.
SetPlcValue	LONG	None	Supported only by the word write and bit write custom controls. When this method is executed by VB, the data specified by the property is written. If an error occurs, it is returned as a returned value.

GetPlcValue	SHORT LONG STRING	None	When this method is executed by VB, the corresponding XMOP custom controls return the monitored device values of the PLC CPU. Note that the forms of the values returned by the custom controls used are as follows.
			
			SHORT type
			  Bit device operation custom control
			  Event occurrence custom control
			  Snap shot custom control
			  Blink display custom control
			LONG type
			  Level display custom control
			  Comment display custom control
			  Graphic display custom control
			  Alarm display custom control
			  Alarm sound output custom control
			  Numeric data display/input custom control
			  Line graph display custom control
			  Trend graph display custom control
			  Bar graph display custom control
			  Pareto chart display custom control
			  Numeric block data display/input custom control
			STRING type
			  Character string data display/input custom control
			  Character string block data display custom control

POINT

The GetPlcValue method cannot be used with the historical trend graph, alarm summary and clock display custom controls to acquire values.
In addition, the GetPlcValue method cannot be used with the controls which do not perform device monitoring.

9.4 Monitoring Start and Stop Timings

Monitoring can be started and stopped in any of the following three patterns.

(1) Start
   1) Monitoring starts when the form to which the custom control has been set appears.
   2) Monitoring resumes when the "hidden (Hide)" form is "displayed".
   3) Monitoring resumes when the MMonStop property of the custom control turns from True to False.

(2) Stop
   1) Monitoring stops when the form to which the custom control has been set is closed (UNLOAD).
   2) Monitoring stops when the form is "hidden (Hide)".
   3) Monitoring stops when the MMonStop property of the custom control turns to True.
      (Data collection continues.)

Also note the following.

• When the form is unloaded
  It is erased from memory and reloaded when it is displayed next time.

• When the form is hidden (Hide)
  The form resides on memory but the XMOP custom control other than the following stops drawing.

  Ordinary collection of Trend graph display   Historical trend graph
  Alarm summary   Event occurrence

• Monitoring stopped by the MMonStop property
  Monitoring is stopped per custom control and the stop/resume command can be given from the VB program.

POINTS

• Since monitoring does not stop at other than the points noted above, the processing speed may be reduced under the influence of hidden windows if one window has a small number of monitoring points.
  In that case, exercise display window hiding, closing or other control in the VB program.
• Data collection is not made when memory is not loaded with the form to which trend graph ordinary collection, alarm summary, event occurrence or other setting has been made.
  Also, to hide the form when ordinary collection is required, do not set Unload but set Hide.

9.5 Events

Like the VB controls, the XMOP custom controls allow you to describe procedures executed by events.
Create these processing procedures in the code window.
The procedure name of each event is fixed.
Generated events change with the custom controls.
The XMOP custom controls have the following event generating functions.

(1) Generated event list classified by custom controls

Custom Control Name (OCX)	Click	Drag drop	Drag over	Lost focus	Get focus	Numeric change	Write	Error	Upper limit excess	Lower limit excess	Alarm	Bit monitor	Scroll	Snap shot	Clock
Graphic display	○	○	○	○	○	○		○							
Blink display	○	○	○	○	○	○		○							
Comment display	○	○	○	○	○	○		○							
Level display	○	○	○	○	○	○		○	○	○	○				
Line graph display	○	○	○	○	○	○		○	○	○					
Trend graph display	○	○	○	○	○	○		○	○	○					
Bar graph display	○	○	○	○	○	○		○	○	○					
Pareto chart display	○	○	○	○	○	○		○							
Historical trend graph display								○							
Numeric block data display/input	○	○	○	○	○	○	○	○	○	○				○	
Character string block data display/input	○	○	○	○	○	○	○	○						○	
Numeric data display/input	○	○	○	○	○	○	○	○	○	○					
Character string data display/input	○	○	○	○	○	○	○	○							
Bit device operation (bit input)	○	○	○	○	○	○	○	○							
Word write							○	○							
Bit write							○	○							
Event occurrence								○					○		
Snap shot		○	○	○	○			○						○	
Alarm display	○	○	○	○	○	○		○							
Alarm sound output						○		○							
Alarm summary display		○	○	○	○			○							
Error								○							
Clock display		○	○	○	○			○							○

(2) Event details

Event Name	Procedure	Event Occurrence Timing
Click	Click	When a control is clicked.
Drag drop	DragDrop	Must not be used.
Drag over	DragOver	Must not be used.
Get focus	GotForcus	When an object acquired a focus.
Lost focus	LostForcus	When an object lost a focus.
Numeric change	MPIcChange	When the device set to any custom control has changed from the value read just before.
Write	MWrite	When the custom control data having the write function is written. (Occurs after write is over.)
Error	MError	When any custom control has detected an error.
Upper limit excess	MUpper	When the device value has risen above the upper limit setting.
Lower limit excess	MLower	When the device value has fallen below the lower limit setting.
Alarm	MEmergency	The level displayed has risen above the upper limit alarm level or fallen below the lower limit alarm level.
Scroll (vertical)	MVscroll	When the scroll bar (vertical) is moved in block data display.
Scroll (horizontal)	MHscroll	When the scroll bar (horizontal) is moved in block data display.
Bit monitor	MBitAction	When the device changed in bit monitoring.
Snap shot	MSnapShot	When snap shot is made.
Clock	MClock	Per unit (second) set by the user in the clock display custom control.

```
POINT
```
The DragDrop and DragOver events are not supported by the XMOP custom controls.
In addition, the DragMode property cannot be run in the automatic mode (1-Automatic).

Example: Displaying Form2 if the device value exceeds 30000 in numeric data display

```
Sub XMNumdat1_MPIcChange( )
    If XMNumdat1.GetPlcValue > 30000 Then      'Current value comparison
        Form2. Show 1                          'Form2 display
    End If
End Sub
```

XMNumdat1   : Object name of numeric display/input OCX
XMNumdat1.GetPlcValue : Method which acquires the current value of numeric display

9.6 Examples of Using the Custom Controls

The custom controls provided by XMOP may be used in the following applications.

Graphic display custom control
 • Represents on the screen the image of a product sequence in an FA line.
 • Represents machining processes using figures.
 • Shows alarm information using figures.

Blink display custom control
 • Represents machine and other faults in an FA line.

Comment display custom control
 • Shows the comments of operating states.
 • Shows the comments of alarm information.

Level display custom control
 • Indicates remaining amounts in factory tanks.

Line graph display custom control
 • Shows productions in the whole line as a line graph.
 • Shows the numbers of malfunctions in the whole line as a line graph.
 • Shows productions product-by-product as a line graph.
 • Shows the numbers of malfunctions product-by-product as a line graph.

Trend graph display custom control
 • Shows laboratory temperature transitions as a trend graph.
 • Shows productions product-by-product as a trend graph.
 • Shows productions in the whole line as a trend graph.
 • Shows the numbers of malfunctions product-by-product as a trend graph.
 • Shows the numbers of malfunctions in the whole line with a trend graph.

Bar graph display custom control
 • Shows remaining amounts in factory tanks in batches.
 • Shows production quantities product-by-product.

Pareto chart display custom control
 • Shows fault causes as a Pareto chart.
 • Shows production results as a Pareto chart.

Historical trend graph display custom control
 • Shows the past production quantities.
 • Shows a malfunction history on a daily basis.
 • Shows a production quantity history on a daily basis.

Numeric block data display/input custom control
 • Shows real-time productions in batches.
 • Shows/enters various parameter data in batches.

Character string block data display/input custom control
• Shows manufactured product names line-by-line in batches.
• Shows/enters character string parameters in batches.

Numeric data display/input custom control
• Shows a real-time production.
• Production command
• Shows/enters parameter data.

Character string data display/input custom control
• Shows/enters a character string parameter.

Bit operation custom control
• Production command
• Button control using a switch

Word write custom control
• Writes a numeric value to the word device which uses VB (e.g.
  production command, batch parameter write).

Bit write custom control
• ON/OFF control of the bit device which uses VB (e.g. operation
  start/stop processing).

Event occurrence custom control
• Starting of a remedy due to trouble occurrence
• Screen switching by bit device

Snap shot custom control
• Saving/printing of fault condition
• Saving/printing of final production condition

Alarm display custom control
• Shows the operating status, etc. of an FA line.
• Alerts the operator to a fault by indication and sound using the voice
  function.

Alarm sound output custom control
• Alerts the operator to a fault using the voice function.

Alarm summary display custom control
• Shows FA line fault conditions in batches.

Error custom control
• Alerts the operator to all errors that occurred in the tag management
  process.

Clock display custom control
• Shows the system clock data of a personal computer on the control.
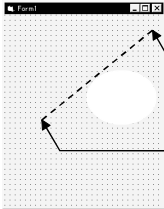• Shows/writes the clock data of the specified PLC.

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. Specify the starting point. (MStartLeft, MStartTop) Specify the end point. (MEndLeft, MEndTop)
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).			
MPicMove	Select whether the displayed figure is moved or not. 0: No move 1: Move	—	0: No move	Not allowed
MMovTagName	Set the tag name for movement.		First tag name in tag file	
MMovFieldNo	Set the field of the tag for movement.		1	
MStartLeft	Starting point X-coordinate of the moved figure (Twip unit)	0 to 32767	0	
MStartTop	Starting point Y-coordinate of the moved figure (Twip unit)			
MEndLeft	End point X-coordinate of the moved figure (Twip unit)			
MEndTop	End point Y-coordinate of the moved figure (Twip unit)			
MMoveUpper	Value at the starting point of the moved figure	-2147483648 to 2147483647	32767	
MMoveLower	Value at the end point of the moved figure		-32768	
MDefPicture	Set the default displayed figure. Displayed when any value not set is reached.	—	No setting	

10

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.

Clears the set picture.

Choose the data number. (1 to 30)

Locates the figure file.

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

Shows a preview.

Set the outlook style.

Set the frame style.

Blinks 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.

Set the name of the tag used.

Set the field number of the tag.

Set the values at the starting and end points of the moved figure. (-2147483648 to 2147483647)

May be set only when the figure is moved.

Set the movement setting coordinates in TWIP values. (0 to 32767)

```
XMPICTURE properties                                    ×

Tag  | Picture  Move | Colors |

              Move  1 - Move                           ▼
           Tag name  tag006                             ▼
           Field No.  1            ▼
    Original point value  32767
       End point value  -32768
   Coordinates

   Original point X  0        Original point Y  0
      End point X  0             End point Y  0

                        OK      Cancel      Apply
```

(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, GetPlcValue: Returned value is a LONG value.
GetPlcValue 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.

Locates the figure file.

Shows a preview.

Set the outlook style.

Set the frame style.

Clears the set picture.

Set the blinking interval. (1 to 60)

(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 MDefPictur property then appears for 1 seconds.
   If nothing has been registered to the MDefPicture property, the background appears.

MPicture registered figure	←——→	MDefPicture registered figure
Appears 1 second.		Appears 1 second.
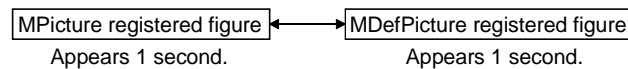
   • The control pasted to a form during designing is painted white.
   • During designing, the figure of MDefPicture is displayed normally but the figure of MPicture appears when,
      1. A figure has been registered to MPicture.
      2. MPicture has been selected in the Properties window.
   • Unlike 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

Set the comment file. →

Set the comment display format. →

Starts the Comment setup utility with the specified comment file name.

Set the outlook style.

Set the frame style.

(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	 • 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	If the MProtect value is set to True, the alarm levels can be changed as follows. (Can be changed also during run) • 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	For vertical display (level direction: Top/bottom is selected) For horizontal display (level direction: Left/right is selected)
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			
MBackColor	Setting of background color for level display		White	
MDefPicture	Set the figure used as a background for graphic level display.		None	Not allowed
MPicture	Set the figure used to move the level for graphic level display.			
MDirection	Painting direction (top → bottom, bottom → top, left → right, right → left)		Left → right	Allowed
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		0	
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

XMLEVEL properties

Tag | Level value | Level display | Colors | Fonts | Picture |

Up limit | 32767

Low limit | -32768

Alarm level(Up) | 32766
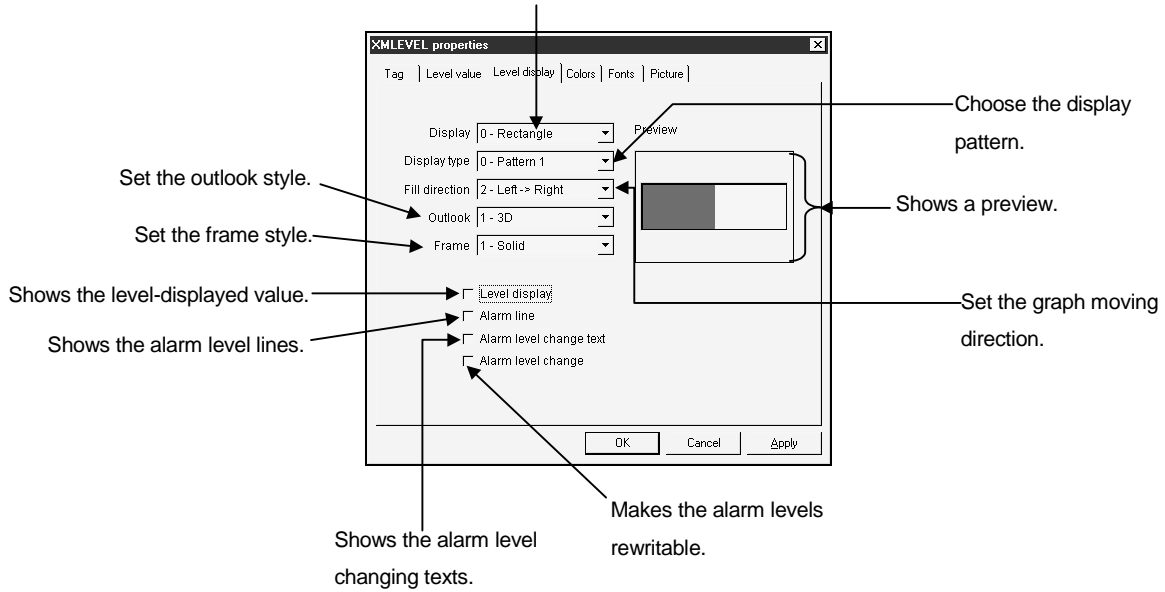
Alarm level(Low) | -32767

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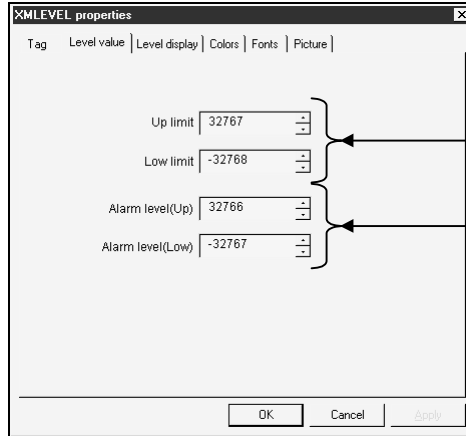
Set the upper and lower limits.
(-2147483648 to 2147483647)

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

(b) Level display

Choose rectangular or graphic display.

XMLEVEL properties

Tag | Level value | Level display | Colors | Fonts | Picture |

Display | 0 - Rectangle

Display type | 0 - Pattern 1

Fill direction | 2 - Left -> Right

Outlook | 1 - 3D

Frame | 1 - Solid

☐ Level display
☐ Alarm line
☐ Alarm level change text
☐ Alarm level change

Preview

OK   Cancel   Apply

Set the outlook style.

Set the frame style.

Shows the level-displayed value.

Shows the alarm level lines.

Choose the display
pattern.

Shows a preview.

Set the graph moving
direction.

Shows the alarm level
changing texts.

Makes the alarm levels
rewritable.

(c) Picture

Set the property name relative to the figure.

XMLEVEL properties

Tag | Level value | Level display | Colors | Fonts | Picture |

Picture property name

MDefPicture

Browse   Clear

Preview

OK   Cancel   Apply
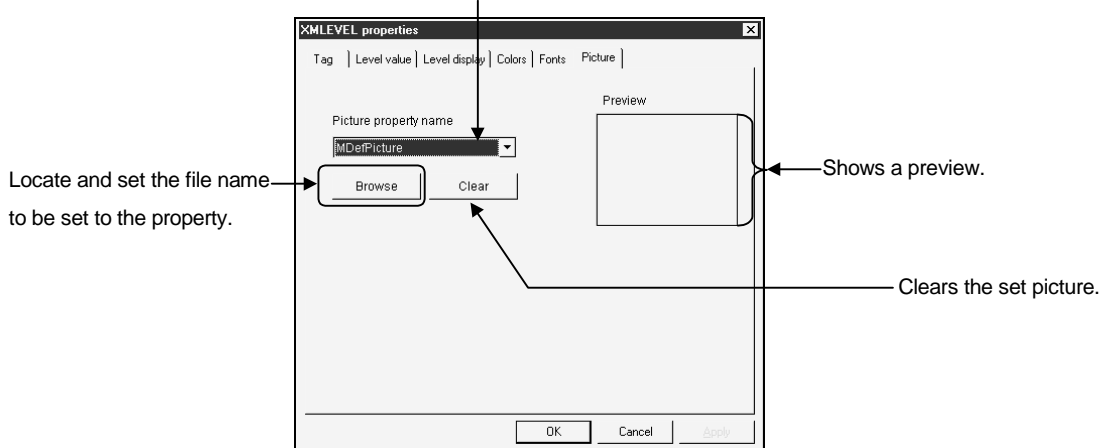
Locate and set the file name
to be set to the property.

Shows a preview.

Clears the set picture.

(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
Event........Click, MplcChange, MError, MUpper, MLower, MEmergency
Method.....DoClick, 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 XMLevel1_MEmergency( )
        If XMLevel1.MupperEmer < XMLevel1.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	• Horizontal axis lines
	  Set the number of horizontal axis lines to be displayed.
	
	Example: Setting of 3 lines
	← Upper limit
	Horizontal lines are drawn in 25%, 50% and 75% positions.
	← Lower limit
		• 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.
		
		Example: 10 points are specified for the entire graph and 1 point increments are specified for the vertical lines.
		Vertical reference line

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	
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	

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.	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

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).
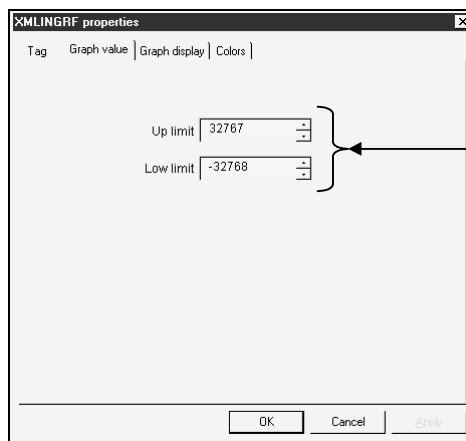
Choose the line number.

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)

Field 1 is W10.

W10 to W39
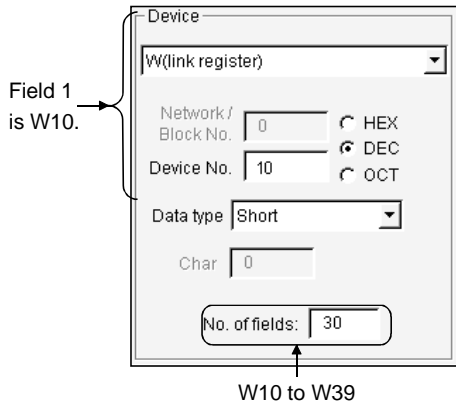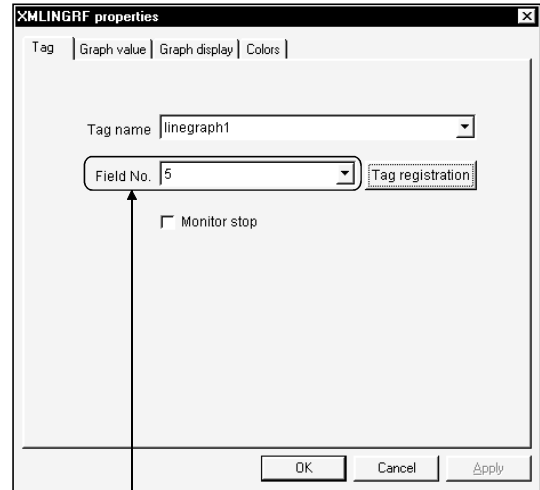
2. OCX data (tag)

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

3. OCX data (graph display)

No. of lines: 3
No. of points: 8
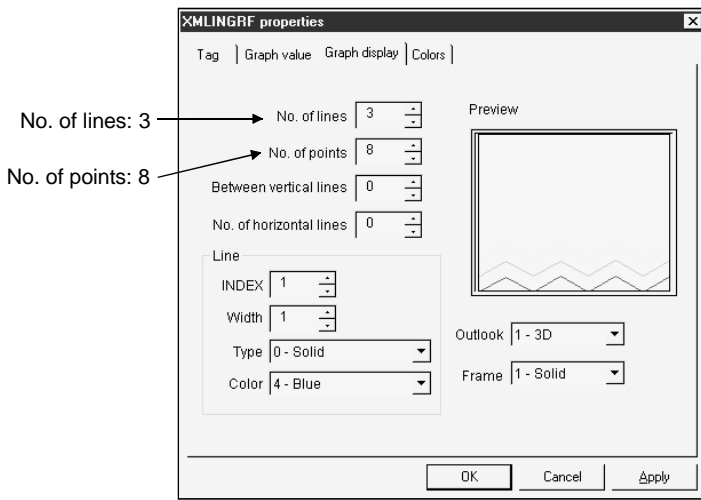
4. Data storage format

	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
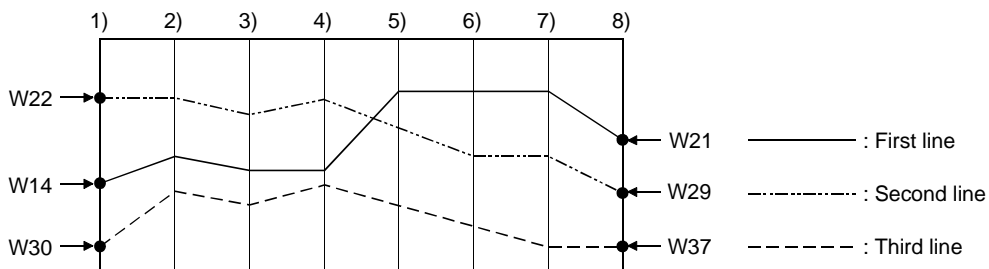
W22

W14

W30

W21

W29

W37

────── : First line
─·─·─·─ : Second line
─ ─ ─ ─ : Third line

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.
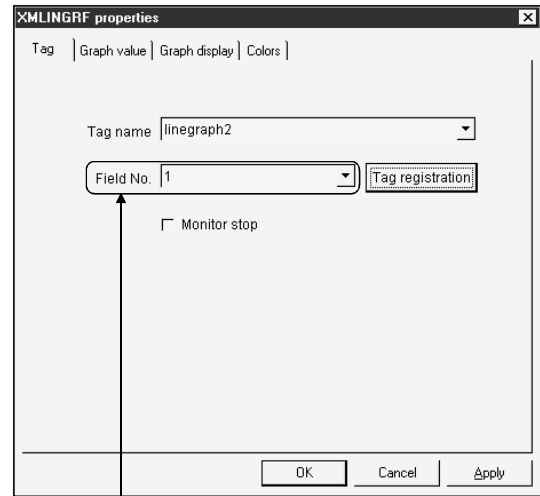
2. OCX data (tag)

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

3. OCX data (graph display)
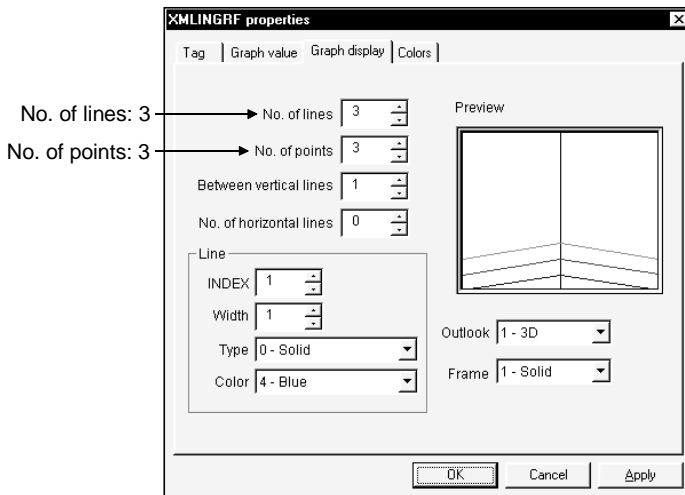
No. of lines: 3
No. of points: 3

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

1)   2)   3)

———————— : First line

– – – – – – : Second line

–·––·––·–· : Third line

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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.
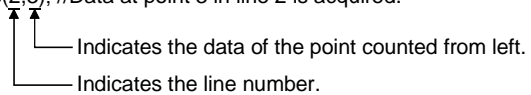
                     Indicates the data of the point counted from left.
                     Indicates the line number.

* 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
   Event ...... Click, MplcChange, MError, MUpper, MLower
   Method ... DoClick, Refresh, GetPlcValue: Returned value is a LONG value array.
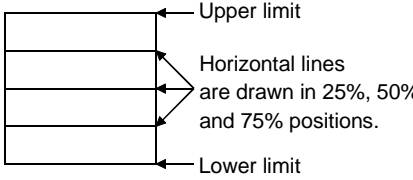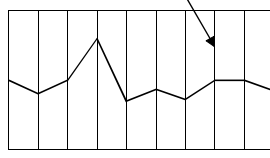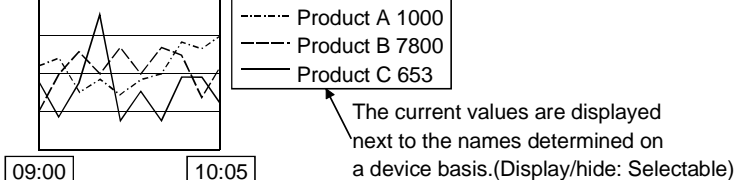
11.3 Trend Graph Display

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	• Horizontal axis lines Set the number of horizontal axis lines to be displayed. Example: Setting of 3 lines Upper limit Horizontal lines are drawn in 25%, 50% and 75% positions. Lower limit • Numeric, collection time display The user can make setting to show the numeric values and collection times. Product A 1000 Product B 7800 Product C 653 The current values are displayed next to the names determined on a device basis.(Display/hide: Selectable) 09:00 10:05 Shows the new and old data collection times of the graph. (Display/hide: Selectable)
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)

Note: In the "Display format" cell, the right column also contains:
• 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.

Example: 10 points are specified for the entire graph and 1 point increments are specified for the vertical lines.

Vertical reference line

(2) Properties

Property neme	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
MDspBack Color	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
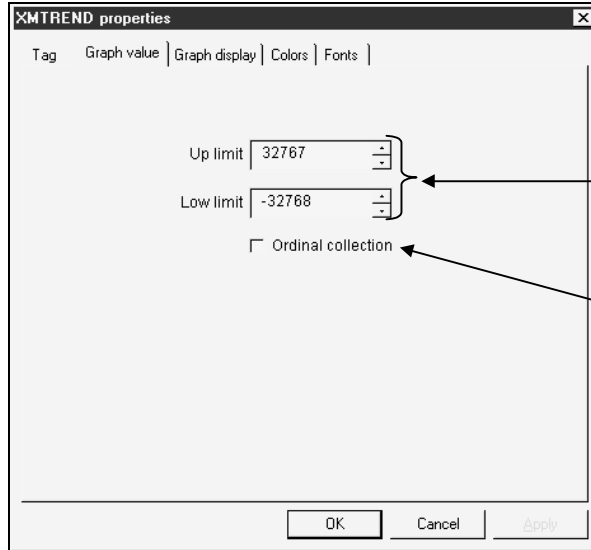
Set the upper and lower limits of the graph.
(-2147483648 to 2147483647)

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)

Field 1 is W0.

Device
W(link register)
Network / Block No. [0] HEX / DEC / OCT
Device No. [0]
Data type [Short]
Char [0]
No. of fields: [5]

W0 to W4

2. OCX data (tag)

XMTREND properties
Tag | Graph value | Graph display | Colors | Fonts
Tag name [trendgraph1]
Field No. [1] [Tag registration]
☐ Monitor stop

OK   Cancel   Apply

Set the first line as field 1 (W0).

3. OCX data (graph display)

XMTREND properties
Tag | Graph value | Graph display | Colors | Fonts

No. of lines: 5

No. of lines [5]
No. of points [10]
Between vertical lines [0]
No. of horizontal lines [0]

Line
INDEX [1]
Width [1]
Type [0 - Solid]
Color [4 - Blue]
Label [TREND1]

Preview

Data display [0 - No display]
Outlook [1 - 3D]
Frame [1 - Solid]
☐ Clock display

OK   Cancel   Apply

4. Graph display

First line (W0)
Fourth line (W3)
Second line (W1)
Fifth line (W4)
Third line (W2)

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.

2. OCX data (tag)

XMTREND properties

Tag | Graph value | Graph display | Colors | Fonts

Tag name trendgraph2

Field No. 3   Tag registration

☐ Monitor stop

OK   Cancel   Apply

Set the first line as field 3 (D20).

3. OCX data (graph display)

XMTREND properties

Tag | Graph value | Graph display | Colors | Fonts

Preview

No. of lines: 5 → No. of lines 5

No. of points 10

Between vertical lines 0

No. of horizontal lines 0

Line

INDEX 1

Width 1

Type 0 - Solid

Color 4 - Blue

Label TREND1

Data display 0 - No display

Outlook 1 - 3D

Frame 1 - Solid

☐ Clock display

OK   Cancel   Apply

4. Graph display

First line (D20)
Fourth line (QSB0)
Second line (R10)
Fifth line (L10)
Third line (ER1(0))

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	
5	ER1	0	Short	0
6	B	0	Bit	
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 GetPlcValue method is a LONG two-dimensional array.
     Example

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

                              Indicates the data of the point counted from left.
                              Indicates the line number.
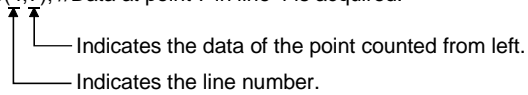
   • Since showing the clock or collected data makes clearances within the control
     frame, the clearances are painted with the color set to the BackColor property of
     the OCX-standard properties.
   • An event occurs if any of the set lines exceeds the upper limit (MUpper) or lower
     limit (MLower).
   • 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 (MPlcChange) 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.
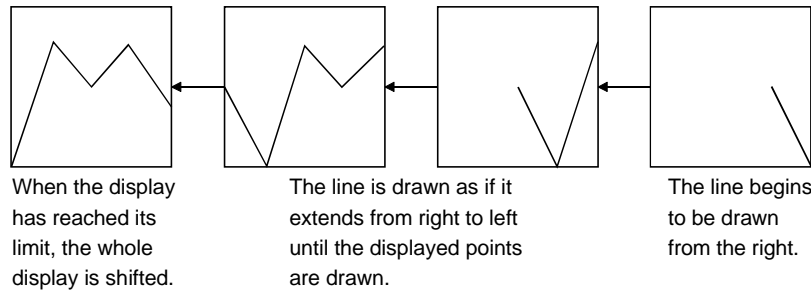
     <Graph display>

     When the display   The line is drawn as if it   The line begins
     has reached its   extends from right to left   to be drawn
     limit, the whole   until the displayed points   from the right.
     display is shifted.   are drawn.

(6) Compatible events and methods
     Event........Click, MplcChange, MError, MUpper, MLower
     Method.....DoClick, 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	You can set the number of horizontal axis lines. The following screen assumes the setting of 8 lines. Horizontal axis line Product A 483 Product B 653 Product C 502 Product D 750 Product E 363 Product F 788 Product G 764 Product H 431 The user can set the bar-to-bar distance. • 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
MDspBack Color	Set the background color of the current values and collection times.		White	
MIndex	Set the line number.	1to 8	1	

[shaded box] ... 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 bars (2 to 8).

Set the bar-to-bar distance. (0 to max. width)

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

Choose the bar number.

Set the color of the bar specified in INDEX.

Shows a preview.

Set the position of showing the current data.

Set the outlook style.

Set the frame style.

Set the label attached to data when data is displayed.

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)

Field 1 is D50. →
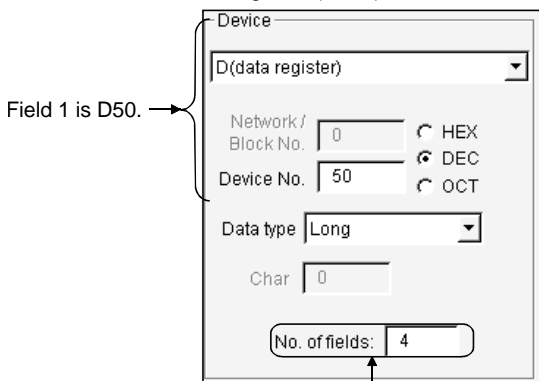
D50 to D57 (2 words for 1 field because of Long type)

2. OCX data (tag)
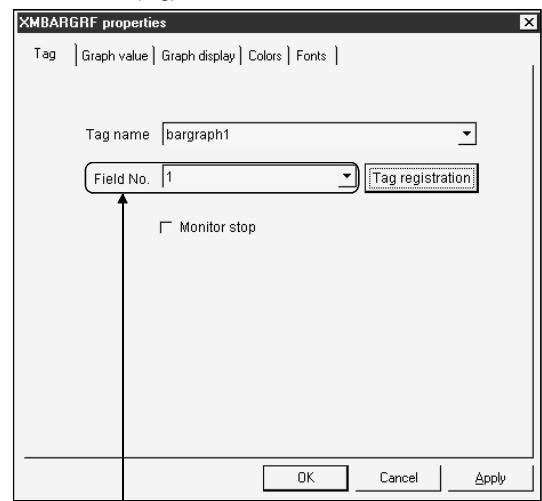
Set the first bar as field 1 (D50).

3. OCX data (graph display)

No. of bars: 4 →
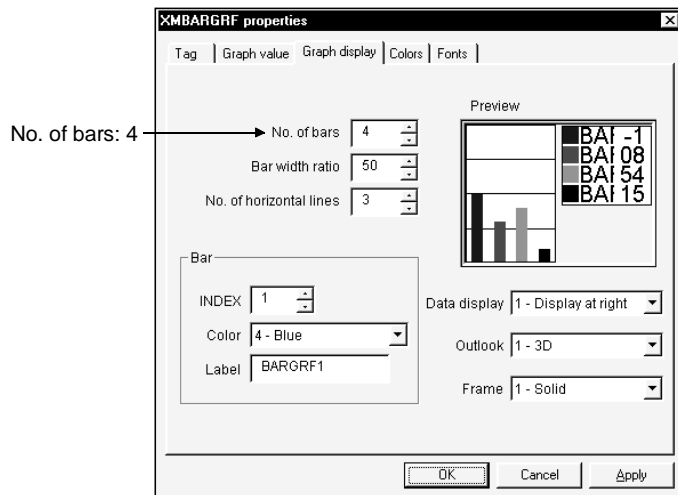
4. Graph display
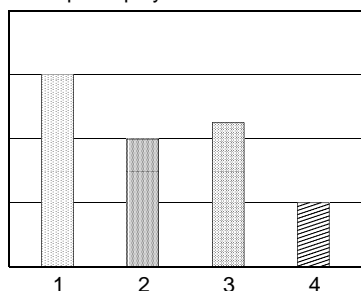
First line (D50, D51)

Second line (D52, D53)

Third line (D54, D55)

Fourth line (D56, D57)

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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)

XMBARGRF properties

Tag | Graph value | Graph display | Colors | Fonts

Tag name   bargraph2

Field No.   1   Tag registration

□ Monitor stop

OK   Cancel   Apply
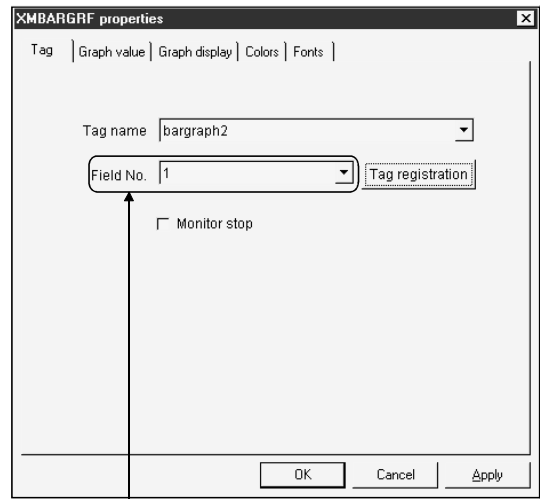
Set the first bar as field 1 (D10).

3. OCX data (graph display)

XMBARGRF properties

Tag | Graph value | Graph display | Colors | Fonts

No. of bars: 4 →

Preview

BAI -1
BAI 08
BAI 54
BAI 15

No. of bars   4
Bar width ratio   50
No. of horizontal lines   3

Bar

INDEX   1
Color   4 - Blue
Label   BARGRF1

Data display   1 - Display at right
Outlook   1 - 3D
Frame   1 - Solid

OK   Cancel   Apply

4. Graph display

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

1   2   3   4

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	
5	ER1	0	Short	0
6	B	0	Bit	
7	L	10	Short	0
8	W	48	Short	
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
    Event........Click, MplcChange, MError, MUpper, MLower
    Method.....DoClick, 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	A Pareto chart is shown as follows.
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
MLineType	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
MDspBack Color	Set the background color of the current values.		White	
MIndex	Set the line number.	1 to 8	1	

<div align="right">

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

</div>

(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).

Shows the vertical lines.

Set the line type for showing the line graph.

Choose the bar number.

Set the color of the bar 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.

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)

Device

R(file register)

Field 1 is R50.

Network / Block No.   0   ○ HEX
                            ● DEC
Device No.   100   ○ OCT

Data type Short

Char   0

No. of fields: 10

R100 to R109

2. OCX data (tag)

XMPALLET properties

Tag | Graph display | Colors | Fonts

Tag name pallet1

Field No. 5   Tag registration

□ Monitor stop

OK   Cancel   Apply

Set the first bar as field 5 (R104).

3. OCX data (graph display)

XMPALLET properties

Tag | Graph display | Colors | Fonts

No. of lines: 6

No. of lines   6

☑ Vertical line display

Line type 0 - Solid

Bar

INDEX   1

Color 4 - Blue

Label PALLET1

Preview

PAL 9
PAL 8
PAL 7
PAL 6
PAL 5
PAL 4

Data display 1 - Display at right

Outlook 1 - 3D

Frame 1 - Solid

OK   Cancel   Apply

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

	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

5   1   2   3   6   4

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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)

XMPALLET properties

Tag | Graph display | Colors | Fonts

Tag name: pallet2

Field No.: 2   Tag registration

☐ Monitor stop

OK   Cancel   Apply

Set the first bar as field 2 (W32).

3. OCX data (graph display)
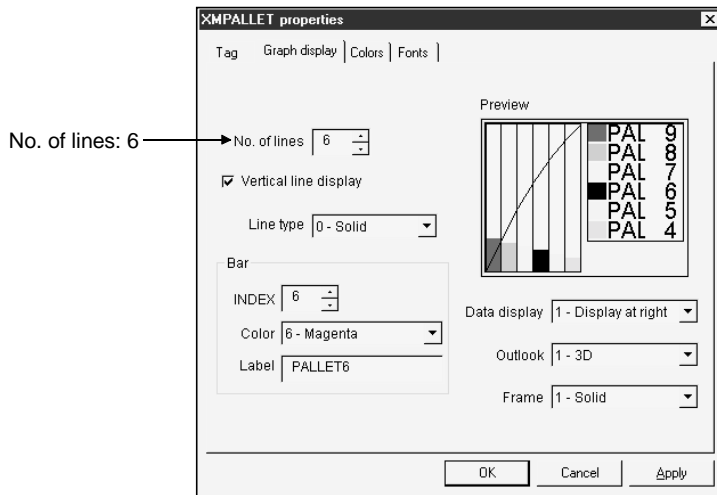
XMPALLET properties

Tag | Graph display | Colors | Fonts

No. of lines: 6 → No. of lines: 6

Preview

PAL 9
PAL 8
PAL 7
PAL 6
PAL 5
PAL 4

☑ Vertical line display

Line type: 0 - Solid

Bar
INDEX: 6
Color: 6 - Magenta
Label: PALLET6

Data display: 1 - Display at right
Outlook: 1 - 3D
Frame: 1 - Solid

OK   Cancel   Apply

4. Graph display(Rearranged in order of larger to smaller values)
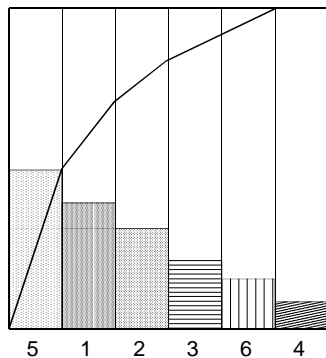
		Value
	First bar (D10)	25
	Second bar (W32)	15
	Third bar (SD20)	10
	Fourth bar (F10)	3
	Fifth bar (ER1)	40
	Sixth bar (QSB0)	7

5 1 2 3 6 4

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	
5	ER1	0	Short	0
6	B	0	Bit	
7	L	10	Short	0
8	W	48	Short	
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
Event........Click, MplcChange, MError
Method.....DoClick, Refresh, GetPlcValue: Returned value is a LONG value array.

Long GetPlcValue (MIndex)

Example

		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

GetPlcValue(4)
GetPlcValue(6)
GetPlcValue(3)
GetPlcValue(2)
GetPlcValue(1)
GetPlcValue(5)

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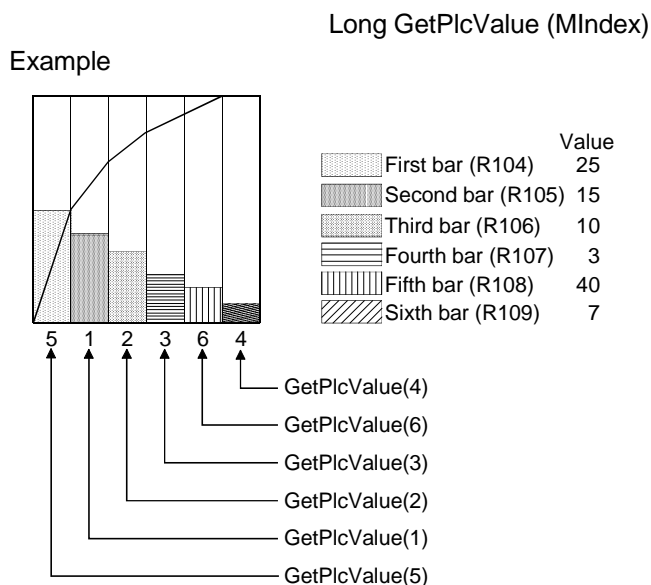
11. 6 Historical Trend Graph Display

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	You can set the number of horizontal axis lines. The following screen assumes the setting of 3 lines. • 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) Vertical reference line 1997-03-13 12:00:00 —·—·— Product A 1000 — — — Product B 780 Product C 653 Horizontal axis line Shows the next graph. Shows the previous graph. 03/25 09:00:15 03/26 10:15:15 • 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	

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	
MLineType	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	
MPoint	Set the number of points in the vertical axis.	2 to 100	10	Allowed
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	
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	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	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).

No. of graph [2]

Graph INDEX [1]

Tag name [hsttrdgraph]

Tag registration
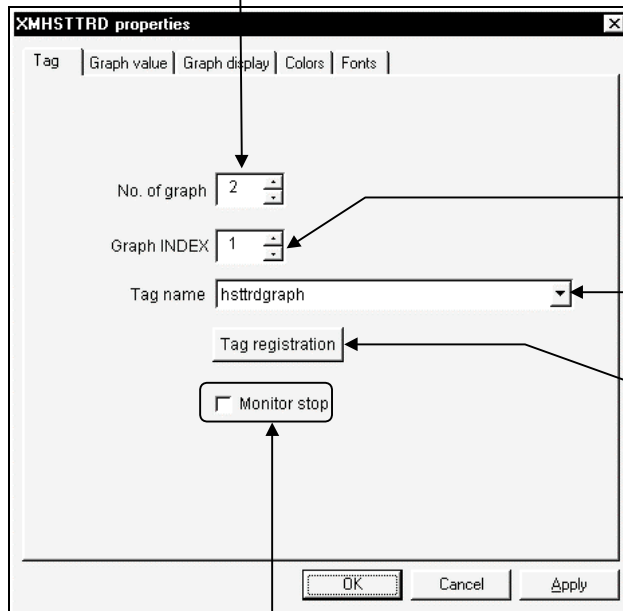
☐ Monitor stop

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.

Historical trend graph outline

Number of lines (1 to 4)

Page 1
Page 2
Page 3
Page 4
Page 5

Total number of graphs (1 to 5)
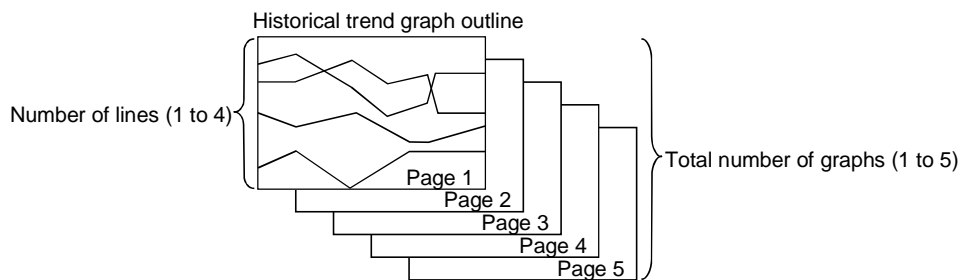
(b) Graph value

Set the graph number to which setting will be made (1 to 5).
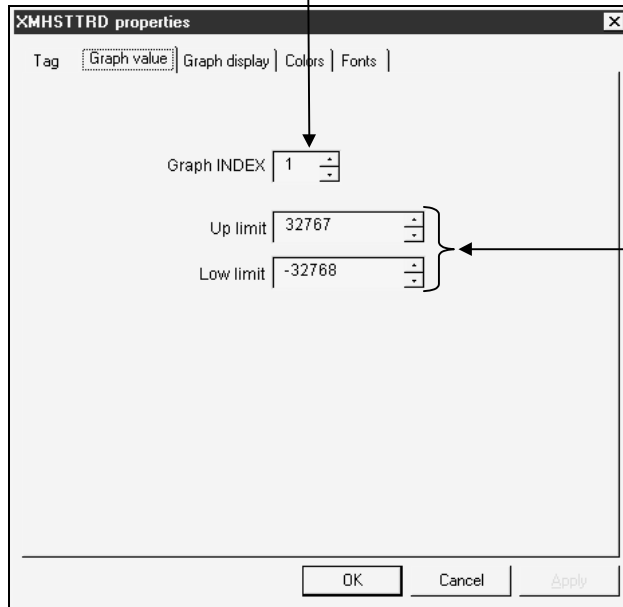
Set the upper and lower limits of the graph. (-2147483648 to 2147483647)

(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.
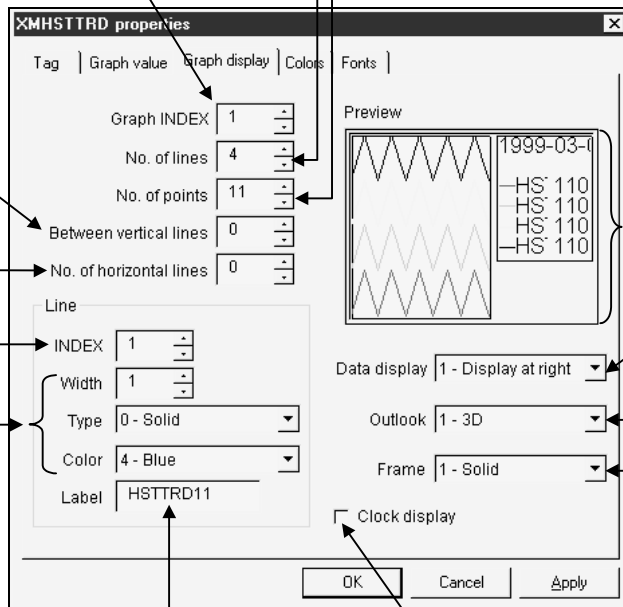
Shows a preview.

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.

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(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)

Field 1 is W20.

W20 to W23

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
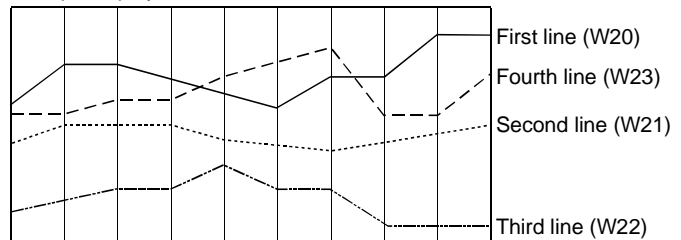
First line (W20)
Fourth line (W23)
Second line (W21)
Third line (W22)

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.
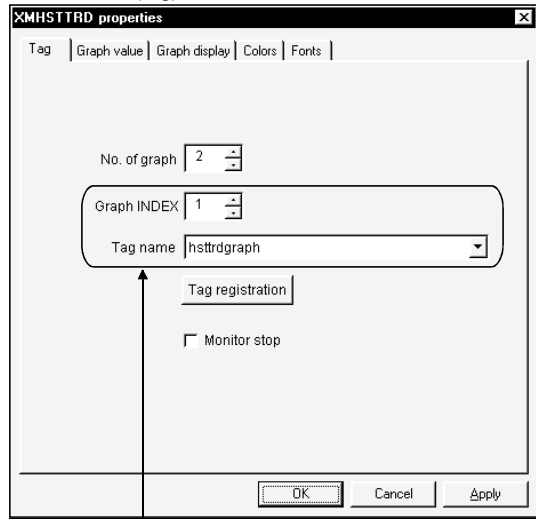
2. OCX data (tag)

Set tags corresponding to the number of graphs.

3. OCX data (graph display)
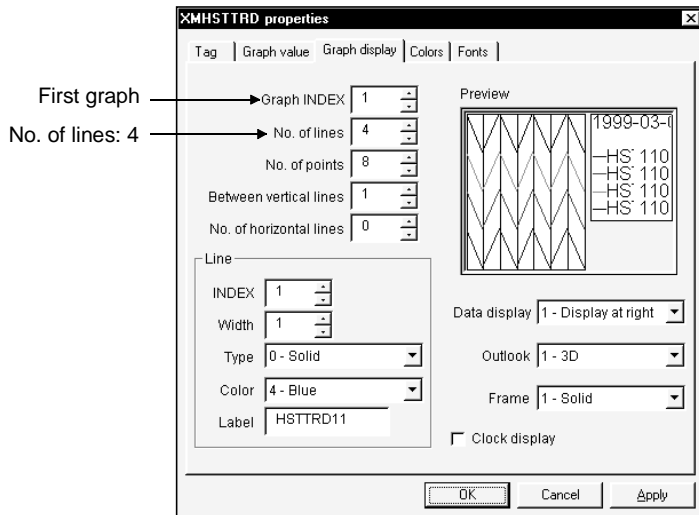
First graph

No. of lines: 4

4. Graph display

First line (D10)
Fourth line (F10)
Second line (W32)
Third line (SD20)

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 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>

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.
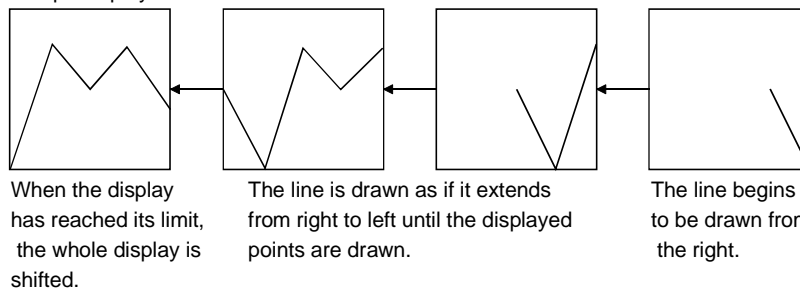
(6) Compatible event and method
   Event........MError ∗1
   Method.....Refresh

   ∗1 In the historical trend graph, an error event related to communication cannot be
       acquired for the MError event.
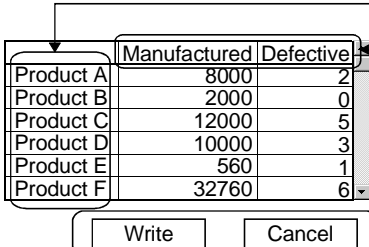
12. BLOCK DISPLAY/INPUT CUSTOM CONTROLS

12

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	+, -, ×, / -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	
Data direction	The user can set the data direction for block display.
Interlock	The following interlocking methods are available to write numeric values.
Write procedure	The writing procedure is as follows.

Display format

	Manufactured	Defective
Product A	8000	2
Product B	2000	0
Product C	12000	5
Product D	10000	3
Product E	560	1
Product F	32760	6

| Write | Cancel |

- 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

Column direction

| 1 | 3 | 5 | 7 |
| 2 | 4 | 6 | 8 |

Row direction

| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |

Interlock

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

START → Set MWriteFlag to True. → Double-click the cell where a value will be written, and enter the value. → 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).			
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: $\times$ 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
			1	

MYStr Alignment	Set the alignment of the column direction text.
	  0: Left alignment 1: Right alignment
	  2: Center alignment
		0 to 2	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 number of display digits. (1 to 18)

Set the weighting formula.

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 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.

Specify the tag
file name used.

Specify the field
number of the tag
file.

Starts the tag
setup utility.

XMNUMBLK properties

Tag | Value display | Text display | Write | Colors | Fonts |

☑ Write enable

Write

Interlock | 2 - Batch write(message box) |

Tag name | RANDOM_TAG |

Field No. | | Tag registration |

Message | Write data! Are you sure? |

OK | Cancel | Apply

Set the message in the message box displayed for interlock setting. (Up to 64 characters)

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:
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)

1. Tag data (batch)

Field 1 is D10.

D10 to D29

2. OCX data (tag)

Set the first block as field 1 (D10).

3. OCX data (value display)

4×5 = 20 blocks

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)

XMNUMBLK properties

Tag | Value display | Text display | Write | Colors | Fonts |

Tag name numblk2

Field No. 1   Tag registration

☐ Monitor stop

OK   Cancel   Apply

Set the first block as field 1 (D10).

3. OCX data (value display)

XMNUMBLK properties

Tag | Value display | Text display | Write | Colors | Fonts |

Display No. of digits 6

Decimal point position 0

Up limit 32767

Low limit -32768

No. of columns 4

No. of rows 5

Alignment 1 - Right alignment

Outlook 1 - 3D

Frame 1 - Solid

Factor

Factor formula 0 - None

Factor value 1

Block width

H.block No. 5

Block width 50

Display direction
● COL
○ ROW

Base
● DEC
○ HEX

OK   Cancel   Apply

4×5 = 20 blocks
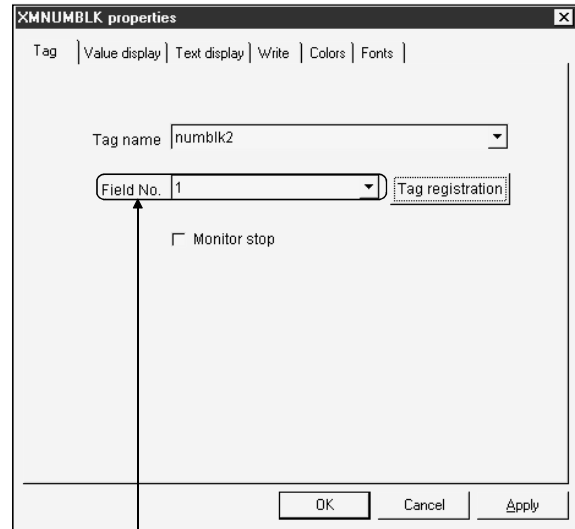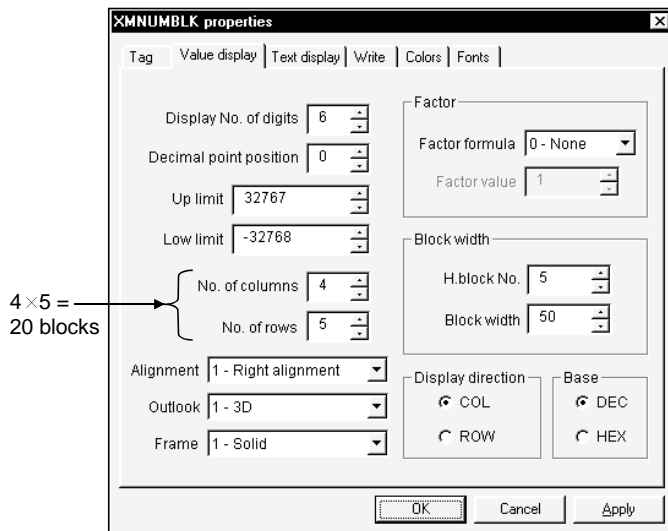
4. Block display (display direction: column)

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: ×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.

⬦ 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, 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	 • 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	The user can set the data direction for block display. Column direction 1 3 5 7 2 4 6 8 Row direction 1 2 3 4 5 6 7 8
Interlock	The following interlocking methods are available to write texts. <table><tr><th>Interlock Type</th><th>Write Timing</th></tr><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></table>
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).			
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

Set the number of
displayed characters.
(2 to 40)

Set the data display position in the
table.

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

Set the outlook
style.

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

Set the frame
style.

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

Specify the
alignment
methods of the
column and row
direction texts.

Choose the
display format of
the block text
display.

Specify the
display direction
of the table.

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.

(b) Write

Set the interlock for write.

Enables write
from the user
program.

Specify the tag
file name used.

Specify the field
number of
the tag file.

XMSTRBLK properties

Tag | Text display | Write | Colors | Fonts |

☑ Write enable

Write

Interlock | 2 - Batch write(message box) | ▼

Tag name | RANDOM_TAG | ▼

Field No. | | ▼ | Tag registration

Message | Write data! Are you sure? |

OK | Cancel | Apply

Starts the tag
setup utility.

Set the message in the message box displayed for interlock setting.
(Up to 64 characters)

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

(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)

1. Tag data (batch)

Field 1 is W10 to W14.

W10 to W99

2. OCX data (tag)
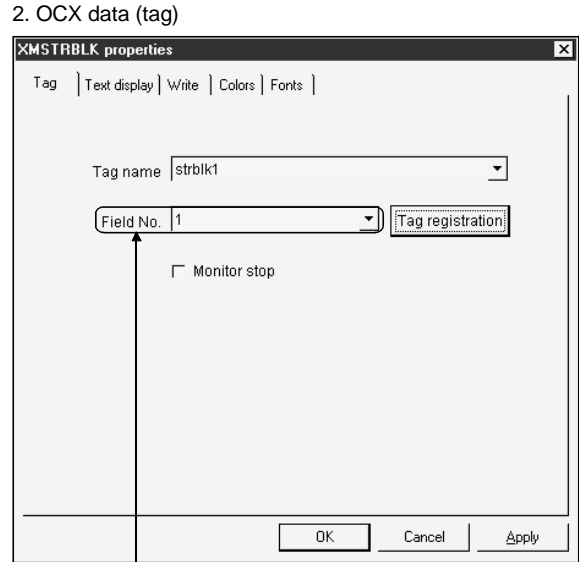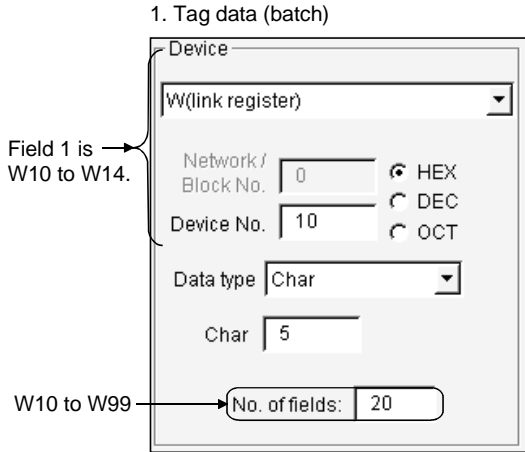
Set the first block as field 1 (W10 to W14).

3. OCX data (text display)

3×4 = 12 blocks
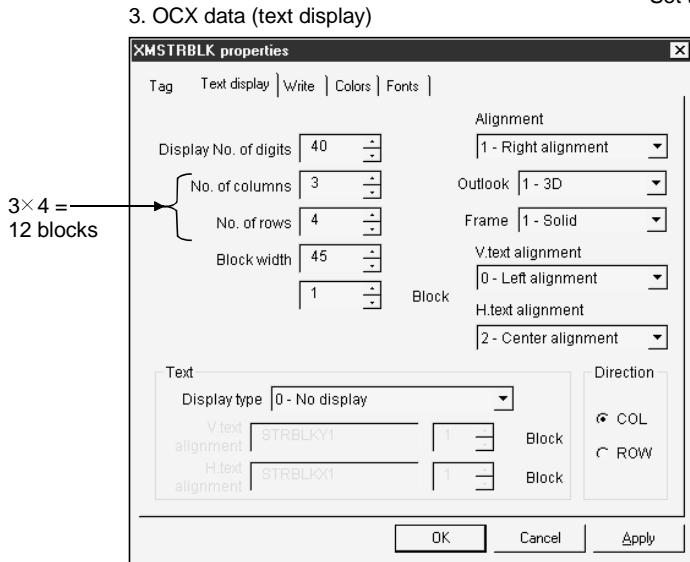
4. Block display (5 characters in one cell) (display direction: column)

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)

XMSTRBLK properties

Tag | Text display | Write | Colors | Fonts |

Tag name strblk2

Field No. 1   Tag registration

☐ Monitor stop

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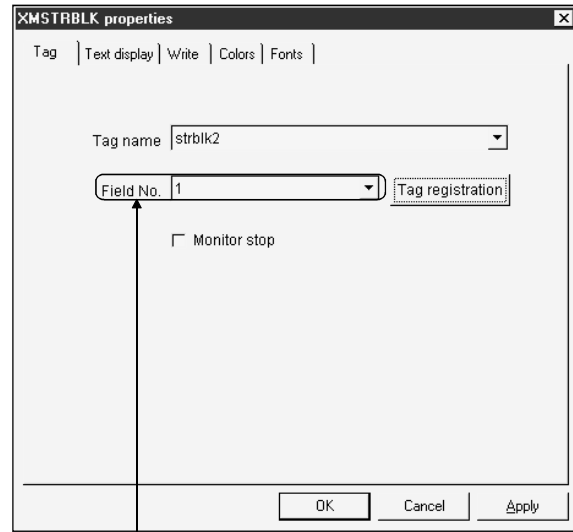
Set the first block as field 1 (D10 to D14).

3. OCX data (text display)

XMSTRBLK properties

Tag   Text display | Write | Colors | Fonts |

Display No. of digits 40

3×2 =
6 blocks

No. of columns 3

No. of rows 2

Block width 100

1   Block

Alignment
1 - Right alignment

Outlook 1 - 3D

Frame 1 - Solid

V.text alignment
0 - Left alignment

H.text alignment
2 - Center alignment

Text

Display type 0 - No display

V.text alignment STRBLKY1   1 Block

H.text alignment STRBLKX1   1 Block

Direction
◉ COL
○ ROW

OK   Cancel   Apply
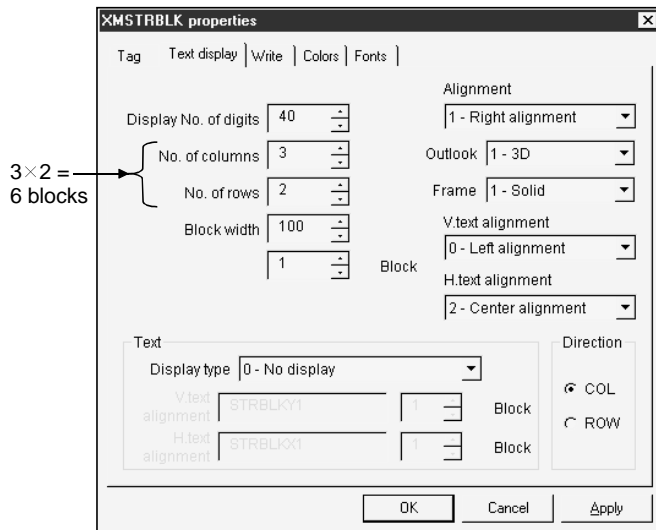
4. Block display (display direction: column)

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.

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

String GetPlcValue (column block, row block)

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	+, -, $\times$, / -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.

START → Set MWriteFlag to True. → Double-click the cell where a value will be written, and enter the value. → Perform interlock processing. → END

13

(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: $\times$ 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

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

Set the display position of the decimal point.

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

Set the data display position.

Set the outlook style.

Set the frame style.

Choose the numeric display format.

Set the weighting formula.

Set the weighting value. (-2147483648 to 2147483647)

(b) Write

Enables write from the user program.

Specify the tag file name used.

Specify the field number of the tag file.

Set the interlock for write.

Starts the tag setup utility.

Set the message in the message box displayed for interlock setting. (Up to 64 characters)

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: ×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.
  • 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.

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(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	
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
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

Set the number of displayed characters. (2 to 40)

Set the outlook style.

Set the data display position.

Set the frame style.

(b) Write

Enables write from the user program.

Specify the tag file name used.

Specify the field number of the tag file.

Set the interlock for write.

Starts the tag setup utility.

Set the message in the message box displayed for interlock setting. (Up to 64 characters)

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

Choose the button figure.

Figure .... Use the figure prepared by the user. (Set in Picture)

Character string ...... Use the available figure.

Set the operation type of the switch.

Set the text shown on the button. (Up to 32 characters)

Set the frame style.

(b) Write

Set the interlock type.

Specify the tag file name used.

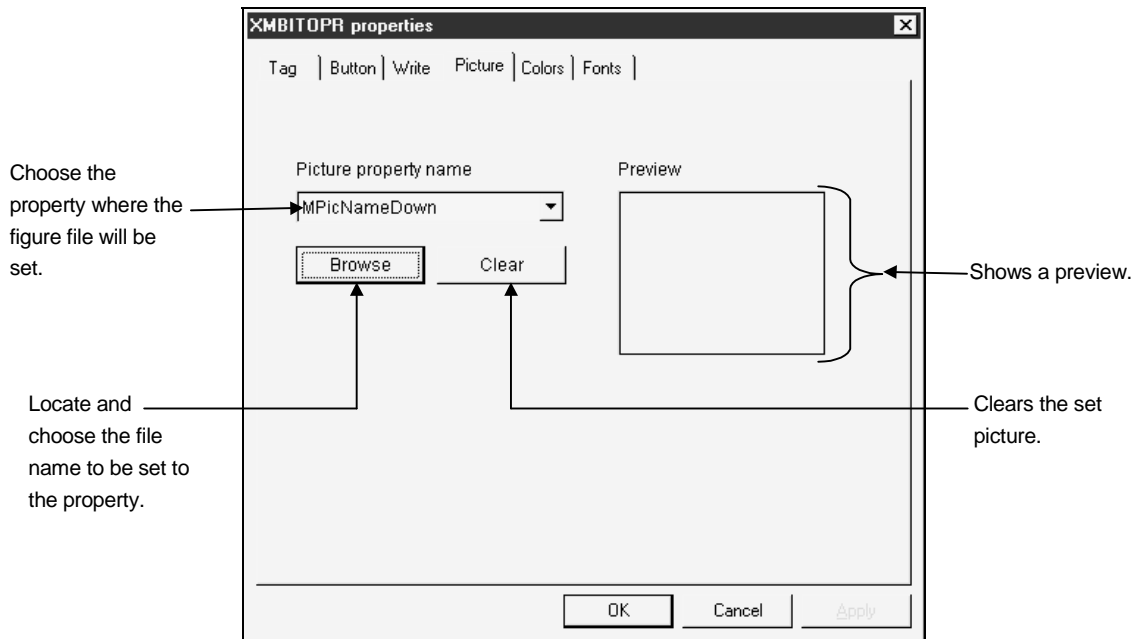Specify the field number of the tag file.

Starts the tag setup utility.

Set the text displayed on the button when lock is placed by clicking. (Up to 32 characters)

Specify in seconds the time to return the unlock status to the lock status when click lock is selected.

POINT

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

(c) Picture

Choose the property where the figure file will be set.

Locate and choose the file name to be set to the property.

Shows a preview.

Clears the set 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 ∗1, GetPlcValue: Returned value is SHORT.

    ∗1: The DoClick method only calls Click event processing and does not perform bit device ON/OFF.

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.	

Write procedure flow: START → Set MPmtFlag to True. → Execute SetPlcValue. → Perform interlock processing. → Set MPmtFlag to False. → END

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(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

Set the data written. (-2147483648 to 2147483647)

Set the interlock for write.

Specify the tag file name used.

Specify the field number of the tag file.

XMWRWORD properties

Tag | Write

Write data | 12

Write

Interlock | 2 - Only at bit ON

Tag name | tag001

Field No. | 2 | Tag registration

Message | Write data! Are you sure?

OK | Cancel | Apply

Starts the Tag setup utility.

Set the message in the message box displayed for interlock setting. (Up to 64 characters)

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 ○○○○○○_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

File name	XMWRBIT.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 bit device. <table><tr><td>Interlock Type</td><td>Write Timing</td></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>
Write procedure	The writing procedure is as follows. START → Set MPmtFlag to True. → Execute SetPlcValue. → Perform interlock processing. → Set MPmtFlag to False. → 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).			
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

Set the data written. (-2147483648 to 2147483647)

Set the interlock for write.

Specify the tag file name used.

Specify the field number of the tag file.

Starts the Tag setup utility.

Set the message in the message box displayed for interlock setting. (Up to 64 characters)

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 ○○○○○○_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
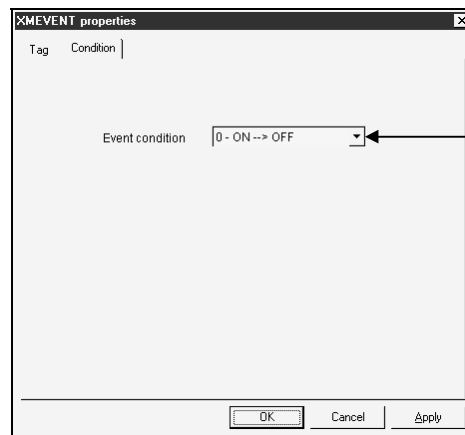
Set the event occurrence condition. (MBitAction)

(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

Choose the snap shot form.

Set the file name for file output.

Output to the printer.
(Output to file when Print is not set)

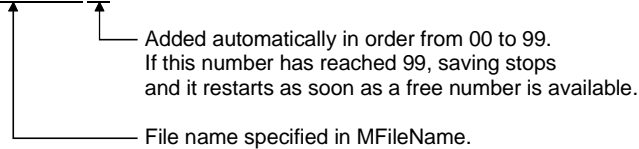Set the text to be displayed on the snap shot button. (Up to 32 characters)

15 - 2

(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.

   "******00.BMP"

   ┌─────────────── Added automatically in order from 00 to 99.
   │   If this number has reached 99, saving stops
   │   and it restarts as soon as a free number is available.
   │
   └─────────────── File name specified in MFileName.

(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 Normal operation Rectangle 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

Use the default setting for display.

Specify the alarm display number. (1 to 30)

Set the outlook style.

Set the frame style.

Select the displayed figure.

Set the displayed characters. (Max. 32 characters)

Set the figure color.

Set the character color.

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

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

Set the text No. to which display setting will be made.

Outputs the sound and display together.

Set the timing of stopping the sound given.

Set the sound file. (*.WAV)

Set the sound output time. (1 to 36000)

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

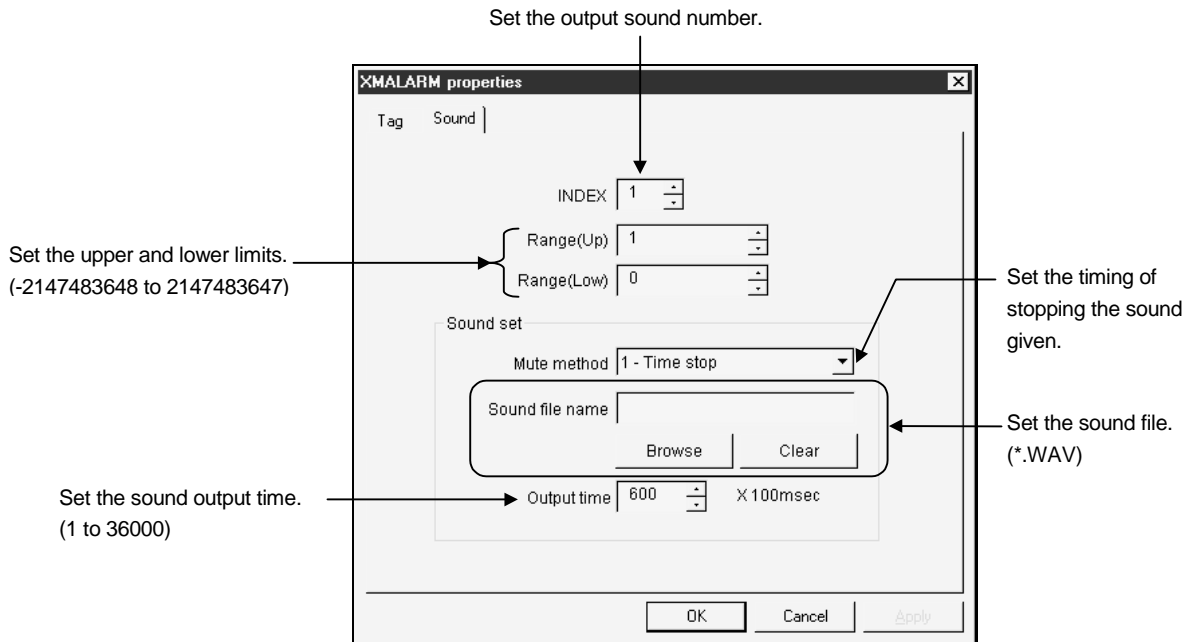| File name	XMALARM.OCX
Setting quantity	30 pcs.
Display format	An icon appears during setting but nothing is shown for execution.
Registered sound designation	Assign one sound to the specified device value range.
Registered sound	Specify the WAV file.
End timing	The sound output end timing can be selected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

Set the output sound number.

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

Set the timing of
stopping the sound
given.

Set the sound file.
(*.WAV)

Set the sound output time.
(1 to 36000)


```
XMALARM properties                                  ×
  Tag  Sound |

                    INDEX  1   ÷
                  Range(Up)  1        ÷
                  Range(Low)  0       ÷
        Sound set
          Mute method  1 - Time stop      ▼
          Sound file name
                       Browse      Clear
          Output time  600   ÷  X 100msec

                         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) 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

File name	XMALMSMR.OCX
Number of monitoring points	Max. 300 pcs.
Display format	• 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. | Confirm	Occurred time	Restored time	Alarm message	Class | | 1 | ***** | ***** | Valve1: malfunction | Serious error | | 2 | ***** | ***** | Machine1: malfunction | Light trouble | | 3 | ***** | ***** | Valve 2: malfunction | Serious error | Deletes the confirmed message → Confirm delete Restore delete All data delete from the alarm summary. Deletes the message of restored failure from the alarm summary. Deletes all data from the alarm summary.
Alarm information registration	According to the alarm summary setup utility
Slave function	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.

(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

Set the tag used.

Check to save the collected data to the file.
(Ignored when the slave function is selected)

Check to stop the monitor function.

Starts the Tag setup utility.

Set the field number of the tag specified in Tag name.

Set the file where collected data will be saved.

(b) Function

Choose either of the functions (alarm summary, salve)

Set the file name created with the alarm summary setup utility.

Set the max. number of alarms collected.

Set the width of the block displayed.

Starts the Alarm summary setup utility.

Set the processing to be made when the maximum number of collected alarms is exceeded.

Specify the block where the block width will be set.

```
XMALMSMR properties                                        ×

  Tag   Function | Colors | Fonts |

                  Function | 0 - Alarm summary          ▼ |

             ┌ Alarm summary file name ───────────┐
             |  C:\MELSEC\XMOP\ALMFILE.ALM          |      File edit ◄
             |                                      |
             |  Browse                              |
             └──────────────────────────────────────┘

             Max alarm points  | 1000    | ÷ |

             Process at data full | 1 - Delete undo data   ▼ |

             Block width | 100    |    | 0  | ÷ |   Block

             Outlook | 1 - 3D    ▼ |

                                        OK      Cancel    Apply
```

Set the outlook style.

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

POINTS

(1) If the Tag management process is reloaded while a user application is running, this function may not accept an error code after it is reloaded.
    To reload correctly, restart the user application.
(2) If the same error continuously occurs, this function will not cause an error event.

15.7 Clock Display

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

(1) Specifications

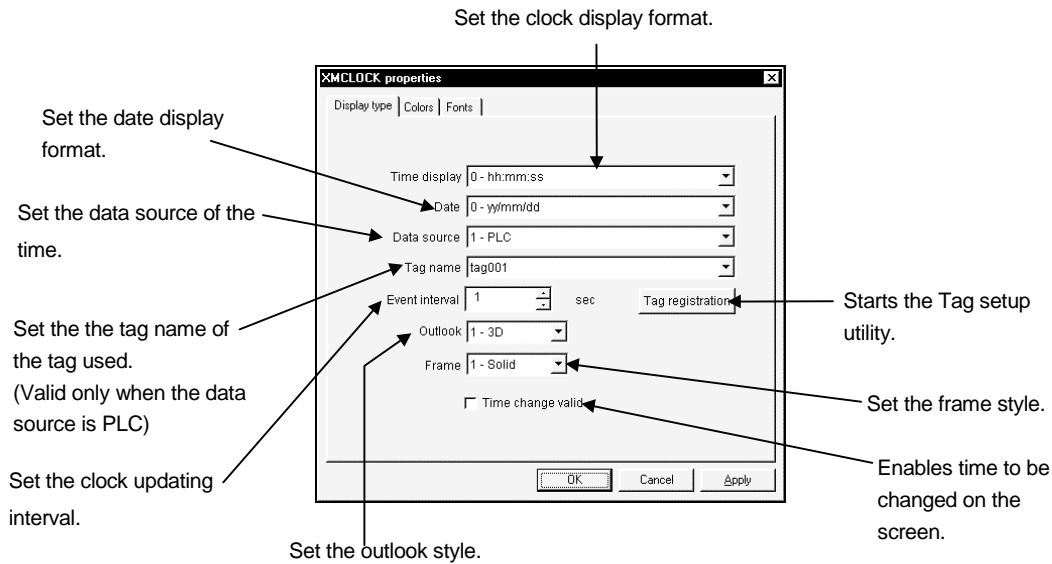| File name	XMCLOCK.OCX
Display format	The information of "year/month/day hour:minute:second" is shown as follows. 1997/03/25　11:15:02
Font	According to the OS specifications

(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(s)	
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

Set the clock display format.

Set the date display
format.

Set the data source of the
time.

Set the the tag name of
the tag used.
(Valid only when the data
source is PLC)

Set the clock updating
interval.

Set the outlook style.

XMCLOCK properties

Display type | Colors | Fonts |

Time display [0 - hh:mm:ss]
Date [0 - yy/mm/dd]
Data source [1 - PLC]
Tag name [tag001]
Event interval [1] sec   [Tag registration]
Outlook [1 - 3D]
Frame [1 - Solid]
[ ] Time change valid

[OK] [Cancel] [Apply]

Starts the Tag setup
utility.

Set the frame style.

Enables time to be
changed on the
screen.

(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)

[4/22 13:10:00]
MTimeStyle (hour:minute:second)
MDayStyle (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.
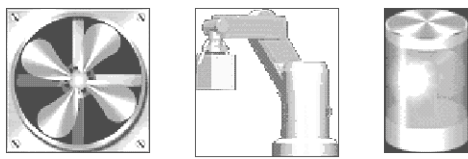
(7) Compatible events and methods
Event..........MClock, MError
Method.......Refresh

16. PARTS COLLECTION

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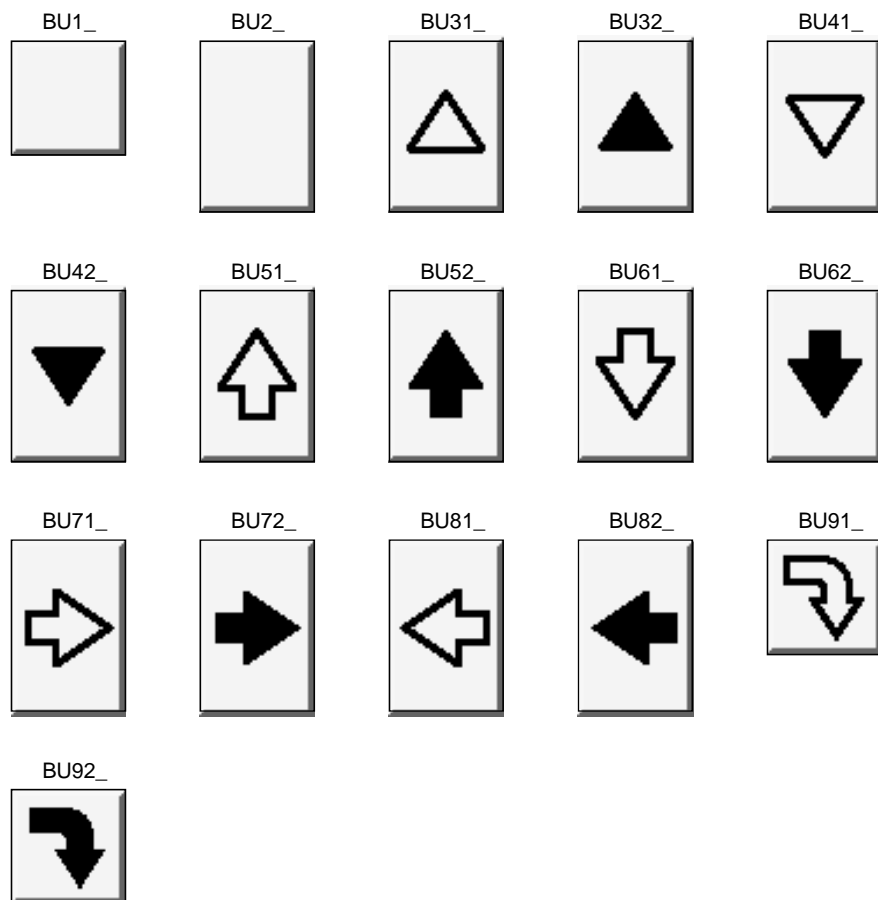The last alphabet in a file name indicates the color of the part.

○○○○○○＿ .BMP(WMF)

⎯⎯⎯⎯⎯⎯ Indicates the color of the part.

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

```
  POINT
 By using SW0D5C-PIC-B (perchased separately), the parts such as the followings
 can be used.
```


(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_ |

16

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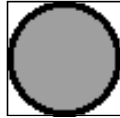Stored in [Install folder]-[XMOP]-[BMP(WMF)]-[FAN].

FAN1_
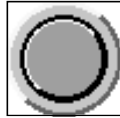

(3) Lamps
Stored in [Install folder]-[XMOP]-[BMP(WMF)]-[LAMP].

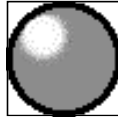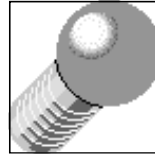LA1_   LA2_   LA3_   LA4_   LA5_

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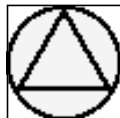Stored in [Install folder]-[XMOP]-[BMP(WMF)]-[POINT].

P01_   P02_   P03_

(5) Pumps
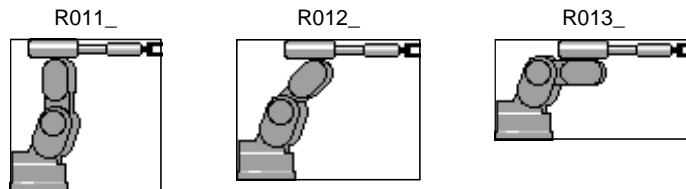Stored in [Install folder]-[XMOP]-[BMP(WMF)]-[POMP].
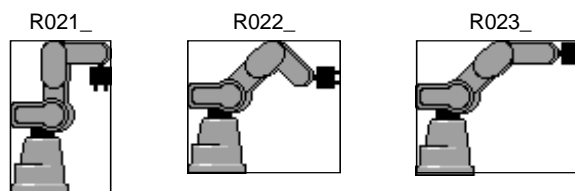
POM11_   POM12_

(6) Arm robots
  (a) Arm robots 1
      Stored in [Install folder]-[XMOP]-[BMP(WMF)]-[ROBO1].

R011_   R012_   R013_

  (b) Arm robots 2
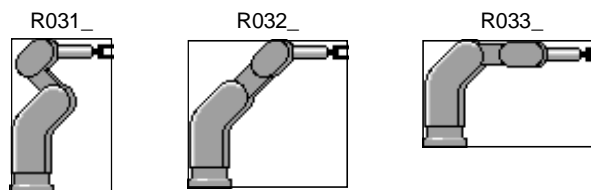   Stored in [Install folder]-[XMOP]-[BMP(WMF)]-[ROBO2].

R021_   R022_   R023_

  (c) Arm robots 3
      Stored in [Install folder]-[XMOP]-[BMP(WMF)]-[ROBO3].

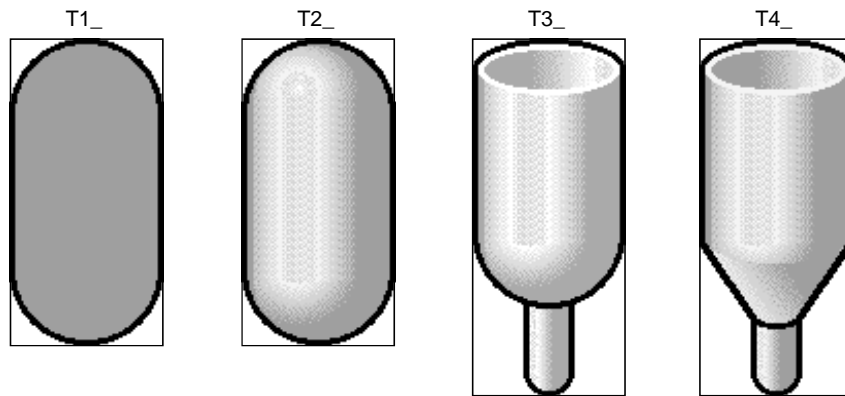R031_   R032_   R033_

(7) Switches
Stored in [Install folder]-[XMOP]-[BMP(WMF)]-[SWITCH].

LSW1_   SSW1_
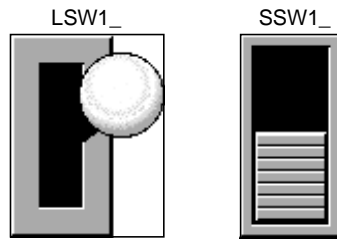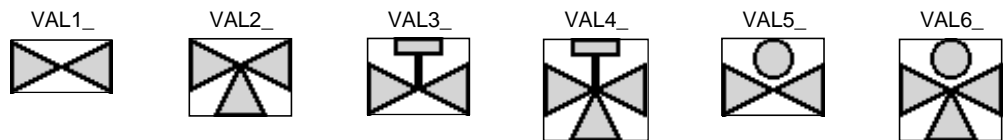
(8) Tanks
Stored in [Install folder]-[XMOP]-[BMP(WMF)]-[TANK].

T1_   T2_   T3_   T4_

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

VAL1_   VAL2_   VAL3_   VAL4_   VAL5_   VAL6_

APPENDICES

MELSEC

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.	

App.

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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) $\times$ 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	Re-execute after closing other running applications, if any.
3	-3	Memory acquirement failed.	
3	-5	Resource acquirement error	
3	-6	Resource acquirement failed.	
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	Choose the correct bit map file.
3	-31	Specified file is not a bit map file.	
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.	

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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	-28	The effective time is not set.	There is no effective time though logging is set according to the operating time belt. Please set the effective time in one.
1	-30	Request device is not set.	For handshake read, set the request device.

MEMO

Type SW3D5F-XMOP-E Monitoring Tool Operating Manual

MODEL	SW3D5F-XMOP-E-O-E
MODEL CODE	1LMS53
IB(NA)-0800017-F(0312)MEE	

MITSUBISHI ELECTRIC CORPORATION

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