YASKAWA Cockpit
INSTRUCTIONS

Upon receipt of the product and prior to initial operation, read these instructions thoroughly, and retain for future reference.

Please have the following information available when contacting Yaskawa Customer Support:
- System
- Primary Application
- Software Version (Located on Programming Pendant by selecting: {Main Menu} - {System Info} - {Version})
- Robot Serial Number (Located on robot data plate)
- Robot Sales Order Number (Located on controller data plate)

Part Number: 186803-1CD
Revision: 3
DANGER

• This manual describes details on the functions of YASKAWA Cockpit including settings for the controller to use YASKAWA Cockpit. Read this manual carefully and be sure to understand its contents before handling the controller. Any matter, including operation, usage, measures, and an item to use, not described in this manual must be regarded as "prohibited" or "improper".

• General information related to safety are described in “Chapter 1. Safety” of the YRC1000micro/YRC1000/DX200/DX100/RM100 INSTRUCTIONS. To ensure correct and safe operation, carefully read “Chapter 1. Safety” of the YRC1000micro/YRC1000/DX200/DX100/RM100 INSTRUCTIONS.

CAUTION

• In some drawings in this manual, protective covers or shields are removed to show details. Make sure that all the covers or shields are installed in place before operating this product.

• YASKAWA is not responsible for incidents arising from unauthorized modification of its products. Unauthorized modification voids the product warranty.

• Software described in this manual is supplied against licensee only, with permission to use or copy under the conditions stated in the license. No part of this manual may be copied or reproduced in any form without written consent of YASKAWA.

NOTICE

• The drawings and photos in this manual are representative examples and differences may exist between them and the delivered product.

• YASKAWA may modify this model without notice when necessary due to product improvements, modifications, or changes in specifications. If such modification is made, the manual number will also be revised.

• If your copy of the manual is damaged or lost, contact a YASKAWA representative to order a new copy. The representatives are listed on the back cover. Be sure to tell the representative the manual number listed on the front cover.
Notes for Safe Operation

Read this manual carefully before using the software.

In this manual, the Notes for Safe Operation are classified as “DANGER”, “WARNING”, “CAUTION”, or “NOTICE”.

**DANGER**
Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. Safety Signs identified by the signal word DANGER should be used sparingly and only for those situations presenting the most serious hazards.

**WARNING**
Indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury. Hazards identified by the signal word WARNING present a lesser degree of risk of injury or death than those identified by the signal word DANGER.

**CAUTION**
Indicates a hazardous situation, which if not avoided, could result in minor or moderate injury. It may also be used without the safety alert symbol as an alternative to “NOTICE”.

**NOTICE**
NOTICE is the preferred signal word to address practices not related to personal injury. The safety alert symbol should not be used with this signal word. As an alternative to “NOTICE”, the word “CAUTION” without the safety alert symbol may be used to indicate a message not related to personal injury.

Even items described as “CAUTION” may result in a serious accident in some situations. At any rate, be sure to follow these important items.

**NOTE**
To ensure safe and efficient operation at all times, be sure to follow all instructions, even if not designated as “DANGER”, “WARNING” and “CAUTION”.

Description of the Operation Procedure

In the explanation of the operation procedure, the expression “Select • • •” means that the cursor is moved to the object item and [SELECT] is pressed, or that the item is directly selected by touching the screen.

Registered Trademark

In this manual, names of companies, corporations, or products are trademarks, registered trademarks, or brand names for each company or corporation. The indications of (R) and TM are omitted.
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1 Introduction

1.1 Overview of YASKAWA Cockpit

YASKAWA Cockpit (hereinafter referred to as YCP) is software for collecting data from the YRC1000micro, YRC1000, DX200, DX100 (controller for YASKAWA’s industrial robot MOTOMAN), Robot module RM100, and the machine controller MP3300 and MP3200 to monitor the status and operations of the manipulator, create backup data, send alarm notification, and so on. YCP is a web server which runs on a personal computer, and data can be viewed and manipulated from the web browser of devices connected to the same network, such as other computers. Communication between YCP and the controller (YRC1000micro, YRC1000, DX200, DX100, MP3300, or MP3200) becomes available by connecting the personal computer with the controller by using an Ethernet cable. One personal computer in which YCP installed can be connected to several controllers.

NOTE: The number of the connectable controller varies depending on the data sampling period to collect, the number of data types. Contact YASKAWA representatives for details.

When YCP collects data from a robot controller (YRC1000micro, YRC1000, DX200, or DX100), it uses a portion of the Ethernet function on the robot controller. When YCP is enabled according to chapter 2.5.2 “Settings for Cockpit Function”, only a portion of the function is usable. This does not mean all of the Ethernet function can be used.

To use all of the Ethernet function, first enable the Ethernet function. The Ethernet function is an optional function available for an additional fee.
1 Introduction
1.1 Overview of YASKAWA Cockpit

1.1.1 List of Supported Robot Controllers

The following tables give the models and versions of robot controllers that are supported by YCP.

Table 1-1: Models and Versions of Robot Controllers Supported by YCP (YRC1000micro, YRC1000)

Legend  ○: Supported  △: Supported (with partial limitations)
×: Unsupported  *: Option (license must be purchased.)

<table>
<thead>
<tr>
<th>Function</th>
<th>Supported Version of Robot Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YRC1000micro</td>
</tr>
<tr>
<td></td>
<td>YRC1000</td>
</tr>
<tr>
<td></td>
<td>YBS2.21.00A-00 or Later</td>
</tr>
<tr>
<td></td>
<td>YAS2.80.00A-00 or Later</td>
</tr>
<tr>
<td>Basic Information</td>
<td></td>
</tr>
<tr>
<td>System Structure</td>
<td>○</td>
</tr>
<tr>
<td>Controller Information</td>
<td>○</td>
</tr>
<tr>
<td>System Monitoring Time</td>
<td>○</td>
</tr>
<tr>
<td>Version Information</td>
<td>○</td>
</tr>
<tr>
<td>Operating Status</td>
<td></td>
</tr>
<tr>
<td>Current Status</td>
<td>○</td>
</tr>
<tr>
<td>Operating Rate</td>
<td>○</td>
</tr>
<tr>
<td>Production Volume</td>
<td>○</td>
</tr>
<tr>
<td>Alarm &amp; Log</td>
<td></td>
</tr>
<tr>
<td>Alarm History</td>
<td>○</td>
</tr>
<tr>
<td>Logging History</td>
<td>○</td>
</tr>
<tr>
<td>Latest Alarm</td>
<td>○</td>
</tr>
<tr>
<td>Latest Alarm History</td>
<td>○</td>
</tr>
<tr>
<td>Backup</td>
<td>○</td>
</tr>
<tr>
<td>Robot Maintenance Function</td>
<td>○</td>
</tr>
<tr>
<td>Robot Oscilloscope Function</td>
<td>○</td>
</tr>
<tr>
<td>*Option</td>
<td>*Only when the pendant oscilloscope function has been enabled.</td>
</tr>
<tr>
<td>Arc Monitor Function</td>
<td>×</td>
</tr>
<tr>
<td>*Option</td>
<td>*Only when the graphical arc monitor function has been enabled.</td>
</tr>
<tr>
<td>Robot Data Collection Function</td>
<td>○</td>
</tr>
</tbody>
</table>
### Table 1-2: Models and Versions of Robot Controllers Supported by YCP (DX200, DX100)

<table>
<thead>
<tr>
<th>Function</th>
<th>Supported Version of Robot Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DX200</td>
</tr>
<tr>
<td></td>
<td>DN2.81.00A-00 or Later</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Robot Visualization Function</td>
<td></td>
</tr>
<tr>
<td>Basic Information</td>
<td></td>
</tr>
<tr>
<td>System Structure</td>
<td>O</td>
</tr>
<tr>
<td>Controller Information</td>
<td>O</td>
</tr>
<tr>
<td>System Monitoring Time</td>
<td>O</td>
</tr>
<tr>
<td>*Accumulated energy-saving time cannot be retrieved.</td>
<td></td>
</tr>
<tr>
<td>Version Information</td>
<td>O</td>
</tr>
<tr>
<td>*Language information cannot be retrieved.</td>
<td></td>
</tr>
<tr>
<td>Operating Status</td>
<td></td>
</tr>
<tr>
<td>Current Status</td>
<td>O</td>
</tr>
<tr>
<td>Operating Rate</td>
<td>O</td>
</tr>
<tr>
<td>Production Volume</td>
<td>O</td>
</tr>
<tr>
<td>*Only when the number of times to execute the job has been set in a variable.</td>
<td></td>
</tr>
<tr>
<td>Alarm &amp; Log</td>
<td></td>
</tr>
<tr>
<td>Alarm History</td>
<td>O</td>
</tr>
<tr>
<td>*The job execution status cannot be retrieved.</td>
<td></td>
</tr>
<tr>
<td>Logging History</td>
<td>O</td>
</tr>
<tr>
<td>*Logging function is required.</td>
<td></td>
</tr>
<tr>
<td>*Controller interface board: JANCD-YIF01-2E (memory capacity 4M) is required.</td>
<td></td>
</tr>
<tr>
<td>Latest Alarm</td>
<td>O</td>
</tr>
<tr>
<td>Latest Alarm History</td>
<td>O</td>
</tr>
<tr>
<td>Backup</td>
<td>O</td>
</tr>
<tr>
<td>*CMOS file DS3.00-00 or later only.</td>
<td></td>
</tr>
<tr>
<td>Robot Maintenance Function</td>
<td>O</td>
</tr>
<tr>
<td>*Only when the optional R/C speed reducer service life diagnostic function has been enabled.</td>
<td></td>
</tr>
<tr>
<td>*The speed reducer service life cannot be retrieved.</td>
<td></td>
</tr>
<tr>
<td>*Hardware preventative maintenance cannot be retrieved.</td>
<td></td>
</tr>
</tbody>
</table>
# Introduction

## 1.1 Overview of YASKAWA Cockpit

<table>
<thead>
<tr>
<th>Function</th>
<th>Supported Version of Robot Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DX200</td>
</tr>
<tr>
<td></td>
<td>DN2.70.00A-00 or Later</td>
</tr>
<tr>
<td>Robot Oscilloscope Function</td>
<td>○</td>
</tr>
<tr>
<td>*Option</td>
<td>*Only when the pendant oscilloscope function has been enabled.</td>
</tr>
<tr>
<td>Arc Monitor Function</td>
<td>○</td>
</tr>
<tr>
<td>*Option</td>
<td>*Only when the graphical arc monitor function has been enabled.</td>
</tr>
<tr>
<td>Robot Data Collection Function</td>
<td>○</td>
</tr>
</tbody>
</table>

**Legend**  
○: Supported  
△: Supported (with partial limitations)  
×: Unsupported  
*: Option (license must be purchased.)
1 Introduction
1.1 Overview of YASKAWA Cockpit

Table 1-3: Models and Versions of Robot Controllers Supported by YCP (RM100)

Legend  ○: Supported  △: Supported (with partial limitations)
×: Unsupported  *: Option (license must be purchased.)

<table>
<thead>
<tr>
<th>Function</th>
<th>Supported Version of Robot Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RM100</td>
</tr>
<tr>
<td></td>
<td>RMX1.20.00A-00 or Later</td>
</tr>
<tr>
<td>Robot Visualization</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td></td>
</tr>
<tr>
<td>Basic Information</td>
<td></td>
</tr>
<tr>
<td>System Structure</td>
<td></td>
</tr>
<tr>
<td>△</td>
<td></td>
</tr>
<tr>
<td>*Base name/station name cannot be retrieved.</td>
<td></td>
</tr>
<tr>
<td>Controller Information</td>
<td>○</td>
</tr>
<tr>
<td>System Monitoring Time</td>
<td>×</td>
</tr>
<tr>
<td>Version Information</td>
<td>○</td>
</tr>
<tr>
<td>Operating Status</td>
<td></td>
</tr>
<tr>
<td>Current Status</td>
<td>○</td>
</tr>
<tr>
<td>Operating Rate</td>
<td>○</td>
</tr>
<tr>
<td>Production Volume</td>
<td>×</td>
</tr>
<tr>
<td>Alarm &amp; Log</td>
<td></td>
</tr>
<tr>
<td>Alarm History</td>
<td>△</td>
</tr>
<tr>
<td>*Job name, job line number, job step number, and job execution status cannot be retrieved.</td>
<td></td>
</tr>
<tr>
<td>Logging History</td>
<td>○</td>
</tr>
<tr>
<td>Latest Alarm</td>
<td>○</td>
</tr>
<tr>
<td>Latest Alarm History</td>
<td>○</td>
</tr>
<tr>
<td>Backup</td>
<td>○</td>
</tr>
<tr>
<td>Robot Maintenance Function</td>
<td>×</td>
</tr>
<tr>
<td>Robot Oscilloscope Function</td>
<td>○</td>
</tr>
<tr>
<td>*Option</td>
<td></td>
</tr>
<tr>
<td>Arc Monitor Function</td>
<td>×</td>
</tr>
<tr>
<td>*Option</td>
<td></td>
</tr>
<tr>
<td>Robot Data Collection Function</td>
<td>○</td>
</tr>
</tbody>
</table>
1.1.2 List of Supported Machine Controllers

The following table gives the models and versions of machine controllers that are supported by YCP.

*Table 1-4: Models and Versions of Machine Controllers Supported by YCP*

<table>
<thead>
<tr>
<th>Function</th>
<th>Supported Version of Machine Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MP3300</td>
</tr>
<tr>
<td></td>
<td>CPU301</td>
</tr>
<tr>
<td>Data Collection Function for Controller</td>
<td>Ver.1.44 or later</td>
</tr>
<tr>
<td>Data Collection Function for SERVOPACK</td>
<td>Ver.1.46 or later</td>
</tr>
</tbody>
</table>

Note: Data collection of logging files cannot be performed with the optional Ethernet Communications Module. Always make the connection to an Ethernet port built into the CPU.

1.1.3 List of Supported SERVOPACKs

The following table gives the models and versions of SERVOPACKs that are supported by YCP. SERVOPACKs from which data can be collected are those connected to the Machine Controllers listed in *Table 1-4 “Models and Versions of Machine Controllers Supported by YCP”*. 

*Table 1-5: Models and Versions of SERVOPACKs Supported by YCP*

<table>
<thead>
<tr>
<th>Function</th>
<th>Supported Version of SERVOPACK</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Σ-7S</td>
</tr>
<tr>
<td>For Analog Voltage/Pulse Train References For MECHATROLINK-II Communication References</td>
<td>For MECHATROLINK-III Communication References</td>
</tr>
<tr>
<td>Data Collection Function for SERVOPACK Unsupported</td>
<td>Unsupported</td>
</tr>
</tbody>
</table>
1.2 System Requirements to Use YASKAWA Cockpit

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS</td>
<td>Microsoft Windows 10 Pro (64 bit) 1)</td>
</tr>
<tr>
<td>Memory</td>
<td>Minimum 16 GB</td>
</tr>
<tr>
<td>Hard disk</td>
<td>Minimum 500 GB (5 TB recommended)</td>
</tr>
<tr>
<td>CPU</td>
<td>Core i7 4Core</td>
</tr>
<tr>
<td>Display</td>
<td>Display supported by MS-Windows (minimum 256 colors)</td>
</tr>
<tr>
<td>Controller</td>
<td>YRC1000micro, YRC1000, DX200, DX100, Robot module RM100, MP3300, MP3200</td>
</tr>
<tr>
<td>Transmission cable</td>
<td>Ethernet cable</td>
</tr>
</tbody>
</table>

1. MS Windows 10 is the registered trademark of Microsoft Corporation in the USA and other countries.

This package does not include transmission cable, personal computer, or OS.

1.3 Supported Web Browser

- Internet Explorer
- Google Chrome

• The latest version is recommended.
• This package does not include a browser.
2 Installing the YASKAWA Cockpit

2.1 Installation of the YCP Software

The YCP software can be installed on a computer that satisfies the following conditions.

• Microsoft Windows 10 Pro 64bit
• .Net Framework 4.6 or later

2.1.1 Installation of the YASKAWA Cockpit

1. Close all applications.

Make sure to log on as an administrator. If not, the DLL files related to the Windows system may not be updated.

2. Download the YCP installer (setup.exe) from the DVD of the YCP. Double-click the downloaded setup.exe.

3. Proceed by following the descriptions on the window, and the file will be expanded.

4. When setup.exe is executed, the user account control window appears. Click “Yes”.

User Account Control

Do you want to allow this app from an unknown publisher to make changes to your device?

setup.exe

Publisher: Unknown
File origin: Network drive

Show more details

Yes No
2 Installing the YASKAWA Cockpit
2.1 Installation of the YCP Software

5. Language selection window appears. Select the language, and click “OK”.

![Language selection window](image)

6. When the Visual Studio C++ 2008 Runtime Library is not installed, the following window appears.
   Click “Install” to start installing this software.
   For the procedures to install the Visual Studio C++ 2008 Runtime Library, refer to chapter 2.1.2 “When the Visual Studio C++ 2008 Runtime Library is not Installed”.

![Installation window](image)
2 Installing the YASKAWA Cockpit
2.1 Installation of the YCP Software

7. As shown in the following window, the YASKAWA Cockpit install will start. Click “Next”.

8. License Agreement appears, and confirm the content of the agreement. Select “I accept the terms in the license agreement”, and click “Next”.

![License Agreement Window]
2 Installing the YASKAWA Cockpit

2.1 Installation of the YCP Software

9. Install summary will be displayed. Confirm the contents, and click "Install".

10. When the MotionDC is not installed, the following window appears. Click "OK" to start installing this software. For the procedures to install the MotionDC, refer to chapter 2.1.3 "When MotionDC Is Not Installed".

11. The installation of the YASKAWA Cockpit starts, and the following window appears.
12. After a while, the window asking for the database destination appears. Click "...", and then select the destination folder from the folder selection dialog.
13. Input the database destination, and then click “OK”.

![Database folder]

14. If the database already exists in the specified folder, the overwrite confirmation message appears as shown below. When the initial data of the database is replaced with, click “Yes”. Otherwise, click “No” to leave the data in the current database. When redoing the specification of the database destination, click “Cancel”.

![Confirmation dialog]

15. If a folder already exists other than DBData in C:\Program Files\YASKAWA\YASKAWA Cockpit\APData, the overwrite confirmation message appears as shown below. To replace the files with the initial data, click "Yes". Otherwise, click "No" to leave the current files and not overwrite them.

![Confirmation dialog]
2 Installing the YASKAWA Cockpit

2.1 Installation of the YCP Software

16. If "Yes" was clicked, the confirmation message appears as shown below. To replace the files with the initial data, click "Yes". Otherwise, click "No" to leave the current files and not overwrite them.

![Confirmation Message]

17. YASKAWA Cockpit installation is completed. When the window below appears, the installation is completed. Click “Finish”.

![Installation Completion Window]
2.1.2 When the Visual Studio C++ 2008 Runtime Library is not Installed

1. The installation of the Visual Studio C++ 2008 Runtime Library starts, and the window as shown below appears.

![Image of YASKAWA Cockpit installation window]

2. The installation of the Visual Studio C++ 2008 Runtime Library will be completed.
   The installation completed window does not appear. When the window as shown in step 1 disappears, the installation is completed.

2.1.3 When MotionDC Is Not Installed

1. The following dialog box appears.

![Image of MotionDC installation window]
2 Installing the YASKAWA Cockpit

2.1 Installation of the YCP Software

2. If YASKAWA MPScope is not installed, the YASKAWA MPScope installer starts.

3. When the installation of YASKAWA MPScope is finished, click "Finish".

4. Click "Next".
2 Installing the YASKAWA Cockpit
2.1 Installation of the YCP Software

5. Click "Install".

6. The installation of MotionDC starts, and the following window appears.

7. When the window below appears, the installation of MotionDC is completed. Click "Finish".
2.2 Uninstallation of the YCP Software

There are two methods to uninstall the YCP software. One method uses the installer, and the other method uninstalls the software from the Control Panel.

2.2.1 Uninstallation Using the Installer

1. When setup.exe is executed, the user account control window appears. Click "Yes".

2. The installer starts. Click "Next".

3. Select "Remove", and then click "Next".
2 Installing the YASKAWA Cockpit

2.2 Uninstallation of the YCP Software

4. Click "Remove".

5. The uninstallation of YASKAWA Cockpit starts, and the following window appears.

6. The database deletion confirmation dialog box appears. Click "Yes" to delete the database data. Click "No" to keep the database data.

7. The application data deletion confirmation dialog box appears. Click "Yes" and another confirmation dialog box appears. Click "No" to keep the application data.
2 Installing the YASKAWA Cockpit

2.2 Uninstallation of the YCP Software

8. Another application data deletion confirmation dialog box appears. Click "Yes" to delete the application data. Click "No" to keep the application data.

9. The uninstall MotionDC confirmation dialog box appears. Click "OK", and then proceed to the next step.

10. The uninstallation of YASKAWA Cockpit is completed. When the window below appears, the uninstallation is completed. Click "Finish".

11. The MotionDC installer starts, and the following confirmation dialog box appears. Click "Yes" to uninstall MotionDC.
2 Installing the YASKAWA Cockpit

2.2 Uninstallation of the YCP Software

12. The YASKAWA MPScope installer starts, and the following confirmation dialog box appears. Click "Yes" to uninstall YASKAWA MPScope.

![Uninstallation Confirmation Dialog]

13. When the uninstallation of YASKAWA MPScope is completed, the following window appears. Click "Finish".

![Uninstallation Completion Window]

2.2.2 Uninstallation Using the Control Panel

1. From the Windows Control Panel, select "Uninstall a program" under "Programs".
2 Installing the YASKAWA Cockpit

2.2 Uninstallation of the YCP Software

2. Select "YASKAWA Cockpit" and then right-click and select "Uninstall" or double-click "YASKAWA Cockpit".

3. When the confirmation message below appears, click "Yes".

4. The user account control confirmation window appears. Click "Yes".

5. The uninstallation of YASKAWA Cockpit starts, and the following window appears.
2 Installing the YASKAWA Cockpit
2.2 Uninstallation of the YCP Software

6. The database deletion confirmation dialog box appears. Click "Yes" to delete the database data. Click "No" to keep the database data.

7. The application data deletion confirmation dialog box appears. Click "Yes" and another confirmation dialog box appears. Click "No" to keep the application data.

8. Another application data deletion confirmation dialog box appears. Click "Yes" to delete the application data. Click "No" to keep the application data.

9. The uninstall MotionDC confirmation dialog box appears. Click "OK", and then proceed to the next step.

10. The MotionDC installer starts, and the following confirmation dialog box appears. When the software is uninstalled using the Control Panel, the uninstallation completed window does not appear. When the window in step 9 disappears, the uninstallation is completed.
2.2 Uninstallation of the YCP Software

11. After uninstallation of MotionDC is finished, the YASKAWA MPScope installer starts, and the following confirmation dialog box appears. Click "Yes" to uninstall YASKAWA MPScope.

![Confirmation Dialog Box]

12. When the uninstallation of YASKAWA MPScope is completed, the following window appears. Click "Finish".

![Uninstall Complete Window]
2.3 Repair of the YCP Software

This section describes the procedure to repair the YCP software.

The user will be asked to repair the installation if the YCP installation folder is accidentally deleted. (Example: If the database folder and application folder are accidentally deleted.)

1. When setup.exe is executed, the user account control window appears. Click "Yes".

2. The installer starts. Click "Next".

3. Select "Repair", and then click "Next".
4. Click "Install".

5. The installation of YASKAWA Cockpit starts, and the following window appears.

6. The installation (repair) of YASKAWA Cockpit is finished. When the window below appears, the installation is completed. Click "Finish".
2.4 Connecting the Controller and the Personal Computer for YCP

To use YCP, connect the controller and the personal computer for YCP via Ethernet.

2.4.1 Ethernet Cable Connections

Connect the Ethernet cable to the controller.

For further information of the connection destinations for each controller, refer to the following descriptions.

- For YRC1000micro

Connect the Ethernet cable (shielded cable: category 5 or more) to the LAN connector, which is located on the front panel of the YRC1000micro. For the details of the recommended Ethernet cable and the switching hub, refer to chapter 11.4” Recommended Cable and Switching Hub” in “YRC1000micro OPTIONS INSTRUCTIONS FOR ETHERNET FUNCTION (HW1484452)”.

To the enabled LAN interface, the YRC1000micro confirms the presence or the type of the connected cable when starting. To avoid performing an unnecessary check process, enable the interface only when an Ethernet cable is actually connected.

Fig. 2-1: Front View of the YRC1000micro (LAN Connector Part)
2 Installing the YASKAWA Cockpit

2.4 Connecting the Controller and the Personal Computer for YCP

For YRC1000

Connect the Ethernet cable (shielded cable: category 5 or more) to the LAN connector, CN106 (LAN2) or CN107 (LAN3) which are located on the front panel of the ACP01 board inside the CPU rack.

- There are three LAN connectors (RJ45) in front of the ACP01 board, and CN106 (LAN2) or CN107 (LAN3) are the connectors for the Ethernet communication function. Do not connect the connector to or disconnect the connector from CN105 (LAN1) since it is exclusively used for the programming pendant.

- To the enabled interface (LAN2 or LAN3), the YRC1000 confirms the presence or the type of the connected cable when starting. To avoid performing an unnecessary check process, enable only the interface that is actually connected over an Ethernet cable. Note that LAN3 cannot be enabled by itself. To enable LAN3, make sure that LAN2 is also enabled.

NOTE

Fig. 2-2: Front View of CPU Rack (without Cover)
2 Installing the YASKAWA Cockpit
2.4 Connecting the Controller and the Personal Computer for YCP

For DX200

Connect the Ethernet cable (shielded cable; category 5 or more) to the CN104 RJ-45 LAN connector which is located on the front face of the YCP21 board inside the CPU rack.

**NOTE**
There are two RJ-45 connectors at the front face of the YCP21 board, and CN104 on the bottom side is the one for the Ethernet function. Do not touch CN105 on the upper side since it is exclusively used for the programming pendant.

Fig. 2-3: Front View of CPU Rack (without Cover)
For DX100

Connect the Ethernet cable (shielded cable; category 5 or more) to the CN104 RJ-45 LAN connector which is located on the front face of the YCP01 board inside the CPU rack.

There are two RJ-45 connectors at the front face of the YCP01 board, and CN104 on the bottom side is the one for the Ethernet function. Do not touch CN105 on the upper side since it is exclusively used for the programming pendant.

Fig. 2-4: Front View of CPU Rack (without Cover)
2.4.2 Windows Network Settings for Personal Computer for YCP

To communicate via the Ethernet, set the settings related to the Windows network for personal computer for YCP. Set the IP address for the personal computer for YCP.

1. Click the “Start” in the task bar, select “Setting” and click “Control Panel”. If the “Control Panel” is “Category View”, double-click the “Network and Internet Connections” category, and double-click the “Network Connections”. If the “Control Panel” is “Classic View”, double-click the “Network Connections”.

2. Select the network connection to use for data transmission, and select the “Properties” from the right click menu.
3. Select “Internet Protocol Version 4 (TCP/IPv4)” from the list and click the “Properties”.

![Ethernet Properties window](image)
4. Input the value for the [IP address] and [Subnet mask] of the personal computer. For details of the settings of Default gateway and DNS server, refer to a Windows manual, to make proper settings for the application. The IP address for the personal computer for YCP must be different from the IP address for the controller.

The above values are examples only. When setting the IP address and subnet mask, input the correct numbers as advised by the network manager. An incorrect setting such as assigning the same IP address to different personal computers may cause problems in communication.
2 Installing the YASKAWA Cockpit

2.5 Settings for the Robot Controller

2.5.1 LAN Interface Setting

Settings for the LAN interface are necessary only when using the YRC1000 or YRC1000micro.

2.5.1.1 Setting Procedure for YRC1000

For performing the data communication by using the Ethernet, first perform the LAN interface settings. These settings are required for using the data communication described in this manual.

- Perform the settings in the management mode.
- In the operation mode or the edit mode, only reference to the settings is available.

1. Turn ON the power supply while pressing {Main Menu}. Maintenance mode starts.

2. Set the security mode to the “MANAGEMENT MODE”.

2 Installing the YASKAWA Cockpit
2.5 Settings for the Robot Controller

3. Select {SYSTEM} under the Main Menu. Sub menu appears.

4. Select {SETUP}. The SETUP window appears.

5. Select “OPTION FUNCTION”. The OPTION FUNCTION window appears.
6. Select “DETAIL” of the “LAN INTERFACE SETTING”. The LAN INTERFACE SETTING window appears.

7. Select “IP ADDRESS SETTING(LAN2)”. The pull-down menu appears, and then select either “MANUAL SETTING” or “DHCP SETTING”.

8. Select the communication parameter which requires changing. After “IP ADDRESS SETTING(LAN2)” is enabled, select other communication parameters that require changing. If using the pull-down menu, the parameters can be selected. For direct input, the virtual keyboard can be used.

10. Select {YES}. Select {YES} to return to the OPTION FUNCTION window.

11. Turn OFF/ON the power supply again. Turn OFF/ON the power supply again to start the normal operation mode.
2.5.1.2 Setting Items for LAN Interface of YRC1000

In the LAN interface settings, perform the following settings.

- **Host Setting**
  Select the host name setting method of the YRC1000 from the pull-down menu.
  
  **MANUAL SETTING**: The character string set in the following item is used as the host name.
  
  **DHCP SETTING (LAN2)**: The host name is acquired from the LAN2 DHCP server.
  
  **DHCP SETTING (LAN3)**: The host name is acquired from the LAN3 DHCP server.
  
  **HOST NAME**
  If “MANUAL SETTING” is set for host setting method, enter the host name by using the character string.
  
  Characters which can be used for the host name are half-width alphanumeric characters, hyphens (-) and underscores (_).
  
  Include one or more alphabetic character, and set the name to within 32 characters.

- **Setting the Domain**
  Select the domain name of the YRC1000 setting method from the pull-down menu.
  
  **MANUAL SETTING**: The character string set in the following item is used as the domain name.
  
  **DHCP SETTING (LAN2)**: The domain name is acquired from the LAN2 DHCP server.
  
  **DHCP SETTING (LAN3)**: The domain name is acquired from the LAN3 DHCP server.
  
  **DOMAIN NAME**
  If “MANUAL SETTING” is set for domain setting method, enter the domain name by using the character string.
  
  Characters which can be used for the domain name are half-width alphanumeric characters, hyphens (-) and underscores (_).
  
  Include one or more alphabetic character, and set the name to within 32 characters.
2 Installing the YASKAWA Cockpit
2.5 Settings for the Robot Controller

- **IP Address (LAN2)**

Select the LAN2 IP address setting method from the pull-down menu.

- **NOT USED**: LAN2 is not used. Thus, LAN3 cannot be used either.
- **MANUAL SETTING**: The value set in the following item is used as the LAN2 IP address/subnet mask.
- **DHCP SETTING**: The IP address (LAN2) is acquired from the DHCP server.

  - **IP ADDRESS**

    If “MANUAL SETTING” is set for IP address (LAN2) setting method, set the LAN2 IP address to this item. Use half-width numbers and periods (.) for the IP address, and set “xx.xx.xx.xx” using the following format: xx is decimal number from 0 to 255.

    (Example) 192.168.255.1

  - **SUBNET MASK**

    If “MANUAL SETTING” is set for IP address (LAN2) setting method, set the LAN2 subnet mask to this item. Use half-width numbers and periods (.) for the subnet mask, and set “xx.xx.xx.xx” using the following format: xx is decimal number from 0 to 255.

    (Example) 255.255.255.0

- **NOTE**

  YRC1000 supports only IPv4 and does not support IPv6.

  “10.0.0.xx” (xx: 0 to 255) cannot be used for the IP address of LAN2.

  Enable LAN2 before using LAN3.

  LAN3 cannot be used without using LAN2.

- **IP Address (LAN3)**

Select the LAN3 IP address setting method from the pull-down menu.

- **NOT USED**: LAN3 is not used.
- **MANUAL SETTING**: The value set in the following item is used as the LAN3 IP address/subnet mask.
- **DHCP SETTING**: The IP address (LAN3) is acquired from the DHCP server.

  - **IP ADDRESS**

    If “MANUAL SETTING” is set for IP address (LAN3) setting method, set the LAN3 IP address to this item. Use half-width numbers and periods (.) for the IP address, and set “xx.xx.xx.xx” using the following format: xx is decimal number from 0 to 255.

    (Example) 172.16.0.1

  - **NOTE**

    YRC1000 supports only IPv4, does not support IPv6.

    “10.0.0.xx” (xx: 0 to 255) and the address of the same network as LAN2 cannot be used for the IP address of LAN3.
2 Installing the YASKAWA Cockpit
2.5 Settings for the Robot Controller

• SUBNET MASK
If “MANUAL SETTING” is set for IP address (LAN3) setting method, set the LAN3 subnet mask to this item. Use half-width numbers and periods (.) for the subnet mask, and set "xx.xx.xx.xx" using the following format: xx is decimal number from 0 to 255.
(Example) 255.255.255.0

Default Gateway
Select the default gateway of the YRC1000 setting method from the pull-down menu.

NOT USED : The default gateway is not used.
MANUAL SETTING : The value set in the following item is used as the default gateway.
DHCP SETTING (LAN2) : The default gateway is acquired from the LAN2 DHCP server.
DHCP SETTING (LAN3) : The default gateway is acquired from the LAN3 DHCP server.

• DEFAULT GATEWAY
If “MANUAL SETTING” is set for default gateway setting method, set the default gateway to this item. Use half-width numbers and periods (.) for the default gateway, and set "xx.xx.xx.xx" using the following format: xx is decimal number from 0 to 255.
(Example) 192.168.255.200

Static Route (LAN2)
Select whether to perform the static route control via LAN2 from the pull-down menu.

NOT USED : The static route control via LAN2 is not performed.
MANUAL SETTING : Perform the static route control using the value set in the following item.

• NETWORK DESTINATION
If “MANUAL SETTING” is set for static route (LAN2) setting method, set the network destination to perform static route control via LAN2 to this item. Use half-width numbers and periods (.) for the network destination, and set “xx.xx.xx.xx” using the following format: xx is decimal number from 0 to 255.

• SUBNET MASK
If “MANUAL SETTING” is set for static route (LAN2) setting method, set the subnet mask to perform static route control via LAN2 to this item. Use half-width numbers and periods (.) for the subnet mask, and set “xx.xx.xx.xx” using the following format: xx is decimal number from 0 to 255.

• GATEWAY
If “MANUAL SETTING” is set for static route (LAN2) setting method, set the gateway to perform static route control via LAN2 to this item. Use half-width numbers and periods (.) for the gateway, and set “xx.xx.xx.xx” using the following format: xx is decimal number from 0 to 255.
## Static Route (LAN3)

Select whether to perform the static route control via LAN3 from the pull-down menu.

- **NOT USED** : The static route control via LAN3 is not performed.
- **MANUAL SETTING** : Perform the static route control using the value set in the following item.

**NETWORK DESTINATION**

If “MANUAL SETTING” is set for static route (LAN3) setting method, set the network destination to perform static route control via LAN3 to this item. Use half-width numbers and periods (.) for the network destination, and set “xx.xx.xx.xx” using the following format: xx is decimal number from 0 to 255.

**SUBNET MASK**

If “MANUAL SETTING” is set for static route (LAN3) setting method, set the subnet mask to perform static route control via LAN3 to this item. Use half-width numbers and periods (.) for the subnet mask, and set “xx.xx.xx.xx” using the following format: xx is decimal number from 0 to 255.

**GATEWAY**

If “MANUAL SETTING” is set for static route (LAN3) setting method, set the gateway to perform static route control via LAN3 to this item. Use half-width numbers and periods (.) for the gateway, and set “xx.xx.xx.xx” using the following format: xx is decimal number from 0 to 255.

## DNS Setting

For using the DNS (Domain Name System) client function, and for the setting method of DNS server when using the DNS client function, select from the pull-down menu.

- **NOT USED** : The DNS is not used.
- **MANUAL SETTING** : The value set in the following item is used as the DNS server.
- **DHCP SETTING (LAN2)** : The DNS Server is acquired from the LAN2 DHCP server.
- **DHCP SETTING (LAN3)** : The DNS Server is acquired from the LAN3 DHCP server.

**DNS SERVER**

If “MANUAL SETTING” is set for DNS setting method, set the IP address of the DNS server to this item. Use half-width numbers and periods (.) for the IP address of the DNS server, and set “xx.xx.xx.xx” using the following format: xx is decimal number from 0 to 255.
SNTP Setting

For using the SNTP (Simple Network Time Protocol) client function, and for the setting method of SNTP server when using the SNTP client function, select from the pull-down menu.

NOT USED  : The SNTP is not used.
MANUAL SETTING  : The value set in the following item is used as the SNTP server.
DHCP SETTING (LAN2)  : The SNTP Server is acquired from the LAN2 DHCP server.
DHCP SETTING (LAN3)  : The SNTP Server is acquired from the LAN3 DHCP server.

- SNTP SERVER
  
  If “MANUAL SETTING” is set for SNTP setting method, set the SNTP setting to this item. Use half-width numbers and periods (.) for the SNTP server IP address, and set “xx.xx.xx.xx” using the following format: xx is decimal number from 0 to 255.

  Note that if the DNS client function is enabled, the FQDN (Fully Qualified Domain Name: “Hostname@domainname” name format) can also be set. Characters which can be used for the FQDN are half-width alphanumeric characters, hyphens (-), underscores (_) and the at-sign (@) which is the character boundary between the host name and the domain name. Set it within 128 characters or less.

- TIME DIFFERENCE FROM UTC
  
  The time that can be acquired by using SNTP is UTC (Coordinated Universal Time). To calculate the local time from UTC, enter the time difference between UTC and the local time.

  Every time a symbol is selected, “+” and “-” switches. Enter half-width numeric characters for each hour and minute. The settable range is from -12:00 to +14:00.

- INQUIRY INTERVAL (H)
  
  Enter a time interval for making an inquiry to the SNTP server. Enter the hour (H) using half-width numeric characters. The settable range is 10 to 99.
2.5.1.3 Setting Procedure for YRC1000micro

For performing the data communication by using the Ethernet, first perform the LAN interface settings. These settings are required for using the data communication described in this manual.

- Perform the settings in the management mode.
- For the operation mode or the editing mode, the only reference for the settings status is available.

1. Turn ON the power supply while pressing (Main Menu). Maintenance mode starts.

2. Set the security mode to the "MANAGEMENT MODE".
3. Select {SYSTEM} under the Main Menu. Sub menu appears.

4. Select {SETUP}. The SETUP window appears.

5. Select “OPTION FUNCTION”. The OPTION FUNCTION window appears.
6. Select “DETAIL” of the “LAN INTERFACE SETTING”. The LAN INTERFACE SETTING window appears.

<table>
<thead>
<tr>
<th>SYSTEM</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IP ADDRESS</td>
<td>NOT USED</td>
<td>IP ADDRESS</td>
<td>192.168.255.1</td>
<td>SUBNET MASK</td>
<td>255.255.255.0</td>
<td>DEFAULT GATEWAY</td>
<td>NOT USED</td>
</tr>
<tr>
<td>DNS SETTING</td>
<td>NOT USED</td>
<td>ONE SERVER</td>
<td>0.0.0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. Select “IP ADDRESS”. The pull-down menu appears, and then select either “MANUAL SETTING” or “DHCP SETTING”.

<table>
<thead>
<tr>
<th>SYSTEM</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IP ADDRESS</td>
<td>NOT USED</td>
<td>IP ADDRESS</td>
<td>192.168.255.1</td>
<td>SUBNET MASK</td>
<td>255.255.255.0</td>
<td>DEFAULT GATEWAY</td>
<td>NOT USED</td>
</tr>
<tr>
<td>DNS SETTING</td>
<td>NOT USED</td>
<td>ONE SERVER</td>
<td>0.0.0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. Select the communication parameter which requires changing. After “IP ADDRESS” is enabled, select other communication parameters that require changing. If using the pull-down menu, the parameters can be selected. For direct input, the virtual keyboard can be used.

![Virtual Keyboard](image-url)
9. Press [Enter].
   The confirmation dialog box appears.

10. Select {YES}.
    Select {YES} to return to the OPTION FUNCTION window.

11. Turn OFF/ON the power supply again.
    Turn OFF/ON the power supply again to start the normal operation mode.
2.5.1.4 Setting Items for LAN Interface of YRC1000micro

In the LAN interface settings, perform the following settings.

- **Host Setting**
  Select the host name setting method of the YRC1000micro/YRC1100micro from the pull-down menu.

  **MANUAL SETTING:** The character string set in the following item is used as the host name.

  **DHCP SETTING:** The host name is acquired from the DHCP server.

  - **HOST NAME**
    If "MANUAL SETTING" is set for host setting method, enter the host name by using the character string.

    Characters which can be used for the host name are half-width alphanumeric characters, hyphens (-) and underscores (_).

    Include one or more alphabetic character, and set the name to within 32 characters.

- **Setting the Domain**
  Select the domain name of the YRC1000micro/YRC1100micro setting method from the pull-down menu.

  **MANUAL SETTING:** The character string set in the following item is used as the domain name.

  **DHCP SETTING:** The domain name is acquired from the DHCP server.

  - **DOMAIN NAME**
    If "MANUAL SETTING" is set for domain setting method, enter the domain name by using the character string.

    Characters which can be used for the domain name are half-width alphanumeric characters, hyphens (-) and underscores (_).

    Include one or more alphabetic character, and set the name to within 32 characters.
2 Installing the YASKAWA Cockpit
2.5 Settings for the Robot Controller

- **IP Address**
  Select the IP address setting method from the pull-down menu.

  **NOT USED:** LAN is not used.
  **MANUAL SETTING:** The value set in the following item is used as the IP address/subnet mask.
  **DHCP SETTING:** The IP address is acquired from the DHCP server.

  - **IP ADDRESS**
    If “MANUAL SETTING” is set for IP address setting method, set the IP address to this item. Use half-width numbers and periods (.) for the IP address, and set “xx.xx.xx.xx” using the following format: xx is decimal number from 0 to 255.
    (Example) 192.168.255.1

  - **SUBNET MASK**
    If “MANUAL SETTING” is set for IP address setting method, set the subnet mask to this item. Use half-width numbers and periods (.) for the subnet mask, and set “xx.xx.xx.xx” using the following format: xx is decimal number from 0 to 255.
    (Example) 255.255.255.0

- **Default Gateway**
  Select the default gateway of the YRC1000micro setting method from the pull-down menu.

  **NOT USED:** The default gateway is not used.
  **MANUAL SETTING:** The value set in the following item is used as the default gateway.
  **DHCP SETTING:** The default gateway is acquired from the DHCP server.

  - **DEFAULT GATEWAY**
    If “MANUAL SETTING” is set for default gateway setting method, set the default gateway to this item. Use half-width numbers and periods (.) for the default gateway, and set “xx.xx.xx.xx” using the following format: xx is decimal number from 0 to 255.
    (Example) 192.168.255.200

- **DNS Setting**
  For using the DNS (Domain Name System) client function, and for the setting method of DNS server when using the DNS client function, select from the pull-down menu.

  **NOT USED:** The DNS is not used.
  **MANUAL SETTING:** The value set in the following item is used as the DNS server.
  **DHCP SETTING:** The DNS Server is acquired from the DHCP server.

---

**NOTE**

YRC1000micro supports only IPv4 and does not support IPv6.

[10.0.0.xx] (xx: 0 to 255) cannot be used for the IP address.
2 Installing the YASKAWA Cockpit
2.5 Settings for the Robot Controller

- **DNS SERVER**
  
  If "MANUAL SETTING" is set for DNS setting method, set the IP address of the DNS server to this item. Use half-width numbers and periods (.) for the IP address of the DNS server, and set "xx.xx.xx.xx" using the following format: xx is decimal number from 0 to 255.

- **SNTP Setting**

  For using the SNTP (Simple Network Time Protocol) client function, and for the setting method of SNTP server when using the SNTP client function, select from the pull-down menu.

  - **NOT USED:** The SNTP is not used.
  - **MANUAL SETTING:** The value set in the following item is used as the SNTP server.
  - **DHCP SETTING:** The SNTP Server is acquired from the DHCP server.

- **SNTP SERVER**

  If "MANUAL SETTING" is set for SNTP setting method, set the SNTP setting to this item. Use half-width numbers and periods (.) for the SNTP server IP address, and set "xx.xx.xx.xx" using the following format: xx is decimal number from 0 to 255.

  Note that if the DNS client function is enabled, the FQDN (Fully Qualified Domain Name: "Hostname@domainname" name format) can also be set. Characters which can be used for the FQDN are half-width alphanumeric characters, hyphens (-), underscores (_) and the at-sign (@) which is the character boundary between the host name and the domain name. Set it within 128 characters or less.

- **TIME DIFFERENCE FROM UTC**

  The time that can be acquired by using SNTP is UTC (Coordinated Universal Time). To calculate the local time from UTC, enter the time difference between UTC and the local time.

  Every time a symbol is selected, "+" and "-" switches. Enter half-width numeric characters for each hour and minute. The settable range is from -12:00 to +14:00.

- **INQUIRY INTERVAL (H)**

  Enter a time interval for making an inquiry to the SNTP server. Enter the hour (H) using half-width numeric characters. The settable range is 10 to 99.
2.5 Settings for the Robot Controller

2.5.2 Settings for Cockpit Function

Perform settings for Cockpit function by using the controller.

For further information of the settings for each controller, refer to the following descriptions.

- **For YRC1000 and YRC1000micro**
  1. Under the Main Menu, select (SYSTEM), and then select (SETUP).
  2. The SETUP window appears. Move the cursor to “OPTION FUNCTION”, and press [SELECT].
3. The OPTION FUNCTION window appears. Move the cursor to “MOTOMAN Cockpit”, and press [SELECT].

4. The selection list appears. Move the cursor to “USED”, and press [SELECT].

5. Press [ENTER], and then select {Yes}.

It is necessary to set the times for all controllers which are connected to the personal computer for YCP. For details on time setting for the controller’s clock, refer to the followings:

For the YRC1000: Chapter 8.13 " Setting the Controller Clock" in “YRC1000 INSTRUCTIONS (RE-CTO-A221)”.  
For the YRC1000micro: Chapter 8.13 " Setting the Controller Clock" in “YRC1000micro INSTRUCTIONS (RE-CTO-A222)”.

SUPPLEMENT
For DX100 and DX200

1. Under the Main Menu, select {SYSTEM}, and then select {SETUP}.

2. The SETUP window appears. Move the cursor to “OPTION FUNCTION”, and press [SELECT].

3. The OPTION FUNCTION window appears. Move the cursor to “DETAIL” of “MOTOMAN Cockpit”, and press [SELECT].
4. The MOTOMAN Cockpit window appears. Move the cursor to “USED”, and press [SELECT].

IP ADDRESS:
By using half-width numbers and periods (.), enter the IP address for the DX200 as “xx.xx.xx.xx” (xx is decimal number from 0 to 255).

SUBNET MASK:
By using half-width numbers and periods (.), enter the subnet mask for the DX200 as “xx.xx.xx.xx” (xx is decimal number from 0 to 255).

DEFAULT GATEWAY:
For the TCP/IP communication with the terminal under another network or another subnet, settings for the default gateway are necessary. In this case, by using half-width numbers and periods (.), enter the default gateway for the DX200 as “xx.xx.xx.xx” (xx is decimal number from 0 to 255).

5. Press [ENTER], and then select {Yes}.

6. The settings for YASKAWA Cockpit are enabled.

It is necessary to set the times for all controllers which are connected to the personal computer for YCP. For details on time setting for the controller’s clock, refer to the followings:

For the DX100: Chapter 8.13 “Setting the Controller Clock” in “DX100 INSTRUCTIONS (RE-CTO-A215)”.

For the DX200: Chapter 8.13 "Setting the Controller Clock” in “DX200 INSTRUCTIONS (RE-CTO-A220)".
2.5.3 Remote Function Setting

Set the remote function on the controller. To enable the remote function, set "CMD REMOTE SEL" for the pseudo input signal to "●: ON". For how to configure the setting, refer to the following instruction manuals.

- **For the YRC1000micro:**
  YRC1000micro OPTIONS INSTRUCTIONS FOR CONCURRENT I/O (RE-CKI-A469)
  Chapter 13.3 “Pseudo Input Signal Window”

- **For the YRC1000:**
  YRC1000 OPTIONS INSTRUCTIONS FOR CONCURRENT I/O (RE-CKI-A467)
  Chapter 13.3 “Pseudo Input Signal Window”

- **For the DX200:**
  DX200 OPTIONS INSTRUCTIONS FOR CONCURRENT I/O (RE-CKI-A465)
  Chapter 13.3 “Pseudo Input Signal Window”

- **For the DX100:**
  DX100 OPTIONS INSTRUCTIONS FOR CONCURRENT I/O (RE-CKI-A453)
  Chapter 13.3 “Pseudo Input Signal Window”

2.5.4 Settings for Backup

To execute backups from the YCP client window, configure the following settings on the robot controller.

1. Set the security mode to the management mode.
2. Select {SETUP}, and then select {AUTO BACK SET}.
   - The AUTO BACKUP SET window appears.
3. Set the “DEVICE” to “RAMDISK”.

![AUTO BACKUP SET window](image)
• When an alarm occurs, the device cannot be changed on the AUTO BACKUP SET window. Reset the alarm, and then change the device.

• When the Cockpit function is not set to “USED”, “RAMDISK” is not shown as the device on the AUTO BACKUP SET window. In this case, perform settings by referring to chapter 2.5.2 “Settings for Cockpit Function”.

• For details on the automatic backup function, refer to the following instruction manuals:
  • For the YRC1000: “YRC1000 INSTRUCTIONS (RE-CTO-A221) 9.3 Automatic Backup Function”
  • For the YRC1000micro: “YRC1000micro INSTRUCTIONS (RE-CTO-A222) 9.6 Automatic Backup Function”
  • For the DX200: “DX200 INSTRUCTIONS (RE-CTO-A220) 9.3 Automatic Backup Function”
  • For the DX100: “DX100 INSTRUCTIONS (RE-CTO-A215) 9.3 Automatic Backup Function”

• To use the file backed up in the YASKAWA Cockpit for system restoration, refer to the following instruction manuals:
  • For the YRC1000: “YRC1000 INSTRUCTIONS (RE-CTO-A221) 9.4 Loading the Backup Data from the SD Card”
  • For the YRC1000micro: “YRC1000micro INSTRUCTIONS (RE-CTO-A222) 9.7 Loading the Backup Data from the SD Card”
  • For the DX200: “DX200 INSTRUCTIONS (RE-CTO-A220) 9.4 Loading the Backup Data from the Compact-Flash”
  • For the DX100: “DX100 INSTRUCTIONS (RE-CTO-A215) 9.4 Loading the Backup Data from the Compact-Flash”
2.6 Connecting to YCP Computer to an MP

2.6.1 Ethernet Cable Connection

- **For the MP3300:**
  Connect the Ethernet cable to the built-in Ethernet connector on CPU-301 or CPU-302.
  
  For details, refer to the following instruction manual.
  
  - Machine Controller MP3000 Series MP3300 Product Manual (Manual No.: SIEP C880725 21)
    
    Chapter 2.1.1 “Appearance and Part Names”

- **For the MP3200:**
  Connect the Ethernet cable to the built-in Ethernet connector on CPU-201 or CPU-202.
  
  For details, refer to the following instruction manual.
  
  - Machine Controller MP3000 Series MP3200 Product Manual (Manual No.: SIEP C880725 10)
    
    Chapter 2.2 “Appearance and Part Names CPU Unit”

2.6.1.1 Connection through a Gateway Device (Router)

A connection can be made through a gateway device (router) to connect a controller located on a different network segment. In this case, the IP address of the gateway must be set.

For details, refer to the following chapter in this manual.

*chapter 2.7.1 “IP Address Setting”*

If a connection is made through a gateway device, MotionDC cannot search for the list of IP addresses of connected controllers. For this reason, IP addresses will not be displayed in the pull-down list in the MotionDC system configuration settings. Instead, the IP addresses are entered manually.

For details, refer to the following section in this manual.

*chapter 6.2.5.3 “System Configuration Settings”*

2.6.1.2 Connection Precautions

- Data collection of logging files cannot be performed with the optional Ethernet Communications Module. Always make the connection to an Ethernet port built into the CPU.

- The MPE720 Ver.7 and MotionDC can be connected simultaneously using a hub or other device, but MPE720 Ver.7 operations/monitoring and MotionDC data collection may be delayed. If the MPE720 Ver.7 is started and connected during MotionDC data collection, the communications load may result in missing data in data collection.

- Connecting to controllers and SERVOPACKs may fail if another engineering tool is used on the computer to which MotionDC has been installed.

  If connecting to a controller or SERVOPACK has failed, execute the other engineering tool as an administrator. If the other engineering tool cannot be executed as an administrator, exit the Communication Platform when all MotionDC tasks have been stopped, and then execute the Communication Platform again as a standard user (do not execute the Communication Platform as an administrator).
2 Installing the YASKAWA Cockpit

2.7 MP Settings

• If a Schneider Electric (formerly Digital Electronics Corporation) HMI and MotionDC are connected simultaneously using a hub or other device, HMI operations/monitoring and MotionDC data collection may be delayed. In this case, "MP Series (Extension) Driver" may be used in the HMI communications settings. The HMI and MotionDC data update cycles may be improved by changing the HMI communications settings to "MEMOBUS Ethernet".

2.6.2 Windows Network Settings

For details, refer to the following chapter in this manual.

• chapter 2.4.2 "Windows Network Settings for Personal Computer for YCP"

2.7 MP Settings

2.7.1 IP Address Setting

Configure the setting in the 218FD transmission parameter settings. If using a connection through a gateway device (router), set the IP address of the gateway.

For details, refer to the following instruction manual.

• Machine Controller MP3000 Series Communications User’s Manual (Manual No.: SIEP C880725 12) Chapter 2.2 “Detail Definition Setting Procedures”

2.7.2 MECHATROLINK Settings

To perform data collection from a SERVOPACK, use MPE720 Ver. 7 and set Number of retry to slaves to 1 or more in the MECHATROLINK settings for the SVC Function Module to which the SERVOPACK for data collection is connected.

For details, refer to the following instruction manual.

• Machine Controller MP3000 Series Motion Control User's Manual SVC/SVR, SVC32/SVR32 (Manual No.: SIEP C880725 11) Chapter 7.2.2 “MACHATROLINK Detail Definition Dialog Box Details”

2.7.3 FTP Server Settings

Configure the FTP server settings. The user name, password, and privileges of the FTP account will be required when configuring MotionDC. Select both read and write for the FTP privileges.

- For the MP3300:
  For details, refer to the following instruction manual.
  
  • Machine Controller MP3300 Series MP3300 Product Manual (Manual No.: SIEP C880725 21) Chapter 3.2.7 “Function Modules File Transfer”

- For the MP3200:
  For details, refer to the following instruction manual.
  
  • Machine Controller MP3000 Series MP3200 Product Manual (Manual No.: SIEP C880725 10) Chapter 3.2 “Function Modules File Transfer”
2.7.4 Calendar Settings

For Ver. 1.43 or earlier controllers, the calendar information on the controller is registered with YCP as the timestamp for data. For this reason, the calendar time on the MP may require correction.

Note: For Ver. 1.44 or later controllers, the calendar information of the computer is registered with YCP as the timestamp for data. Therefore, these settings are not necessary. For details, refer to chapter 6.2.1.3 “Timestamps for Data Registered in YCP”.

For details, refer to the following instruction manuals.

  (Manual No.: SIEP C880725 21)
  Chapter 3.2.7 “Function Modules Calendar”

- Machine Controller MP3000 Series MP3200 Product Manual
  (Manual No.: SIEP C880725 10)
  Chapter 3.2 “Function Modules File Transfer”
3 Starting the YASKAWA Cockpit

3.1 Starting the YASKAWA Cockpit Server

3.1.1 Starting the YASKAWA Cockpit Server

3.1.1.1 Batch Startup

1. Start "YRCStartup" from the shortcut menu.

2. When the user account control confirmation window appears, click "Yes".

3. When the following window appears, click "START".
4. Startup is completed if the circle that indicates the startup status turns blue as shown below.
Note: If the circle turns yellow, some of the applications did not start.
The applications that have been started can be checked by pressing Ctrl+Alt+P.

![YCP Startup](image)

The following table gives the components that can be batch started. Each component can also be started individually. For how to start components individually, refer to chapter 3.1.1.3 “Individually Starting Components”.

<table>
<thead>
<tr>
<th>Component Name</th>
<th>Outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>MongoDB</td>
<td>-</td>
</tr>
<tr>
<td>ActiveMQ</td>
<td>-</td>
</tr>
<tr>
<td>Tomcat</td>
<td>-</td>
</tr>
<tr>
<td>YCP OPCUA Server</td>
<td>The OPCUA server that allows OPCUA clients to access data stored in YCP.</td>
</tr>
<tr>
<td>RMS</td>
<td>The application that monitors the operating status of controllers.</td>
</tr>
<tr>
<td>RobotDC</td>
<td>The application that collects data from YASKAWA robot controllers.</td>
</tr>
<tr>
<td>MotionDC</td>
<td>The application that collects data from YASKAWA Machine Controllers.</td>
</tr>
<tr>
<td>YCP Resource Monitor</td>
<td>The application that monitors YCP application resources and alarms.</td>
</tr>
</tbody>
</table>
3.1.2 Batch Stop

1. Start “YRCStartup” from the shortcut menu.

2. When the user account control confirmation window appears, click “Yes”.

3. When the following window appears, click “STOP”.

4. When the following stop application confirmation dialog box appears, click “YES”.
3 Starting the YASKAWA Cockpit
3.1 Starting the YASKAWA Cockpit Server

5. Stopping is completed if the circle that indicates the startup status turns red as shown below.

3.1.1.3 Individually Starting Components

- **Individually Starting MongoDB**
  1. Start "MongoDB" from the shortcut menu.
  2. When the user account control confirmation window appears, click "Yes".
  3. The startup console window appears, and MongoDB starts. When MongoDB starts, the console window closes.

The MongoDB console window appears in the task bar.
3 Starting the YASKAWA Cockpit
3.1 Starting the YASKAWA Cockpit Server

- **Individually Starting ActiveMQ**
  1. Start “ActiveMQ” from the shortcut menu.
  2. When the user account control confirmation window appears, click “Yes”.
  3. The startup console window appears, and ActiveMQ starts. When ActiveMQ starts, the console window closes.

The ActiveMQ console window appears in the task bar.
3 Starting the YASKAWA Cockpit

3.1 Starting the YASKAWA Cockpit Server

- **Individually Starting Tomcat**
  1. Start "Tomcat" from the shortcut menu.

2. When the user account control confirmation window appears, click "Yes".

3. The startup console window appears, and Tomcat starts. When Tomcat starts, the console window closes.

The Tomcat console window appears in the task bar.
3 Starting the YASKAWA Cockpit
3.1 Starting the YASKAWA Cockpit Server

- Individually Starting the YCP OPCUA Server
  1. Start “YCPOPCUAServer” from the shortcut menu.

  2. When the user account control confirmation window appears, click “Yes”.

  3. The startup console window appears, and the YCP OPCUA Server starts.
     When the YCP OPCUA Server starts, the console window closes.

The YCP OPCUA Server console window appears in the task bar.
3 Starting the YASKAWA Cockpit

3.1 Starting the YASKAWA Cockpit Server

- **Individually Starting RMS**
  1. Start "RMS" from the shortcut menu.

  ![Shortcut Menu]

  2. When the user account control confirmation window appears, click "Yes".

  3. The startup console window appears, and RMS starts. When RMS starts, the console window closes.

  ![Startup Console]

  RMS appears as shown below.
3 Starting the YASKAWA Cockpit
3.1 Starting the YASKAWA Cockpit Server

- Individually Starting RobotDC
  1. Start “RobotDC” from the shortcut menu.

  2. When the user account control confirmation window appears, click "Yes".

  3. The startup console window appears, and RobotDC starts. When RobotDC starts, the console window closes.

RobotDC appears as shown below.
Individually Starting Motion DC
1. Start "MotionDC" from the shortcut menu.

2. When the user account control confirmation window appears, click "Yes".

3. MotionDC will start.
   MotionDC appears as shown below.
Individually Starting YCP Resource Monitor

1. Start "YCPResourceMonitor" from the shortcut menu.

2. When the user account control confirmation window appears, click "Yes".

3. The following startup console window appears, and YCP Resource Monitor starts.
   When YCP Resource Monitor starts, the startup console window closes.

YCP Resource Monitor appears as shown below.
3.1.2 Individually Stopping Components

- **Individually Stopping YCP Resource Monitor**
  This component can be stopped with either of the following methods.

<table>
<thead>
<tr>
<th>Method 1</th>
<th>Method 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Click the &quot;×&quot; button at the top right of the YCP Resource Monitor window.</td>
<td>Right-click the YCP Resource Monitor icon on the task bar, and then select &quot;× Close window&quot;.</td>
</tr>
</tbody>
</table>

- **Individually Stopping MotionDC**
  This component can be stopped with either of the following methods.

<table>
<thead>
<tr>
<th>Method 1</th>
<th>Method 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Click the &quot;×&quot; button at the top right of the MotionDC window.</td>
<td>Right-click the MotionDC icon on the task bar, and then select &quot;× Close window&quot;.</td>
</tr>
</tbody>
</table>
3 Starting the YASKAWA Cockpit
3.1 Starting the YASKAWA Cockpit Server

- Individually Stopping RobotDC
  This component can be stopped with either of the following methods.

  Click the "×" button at the top right of the RobotDC window.

  Right-click the RobotDC icon on the task bar, and then select "× Close window".

- Individually Stopping RMS
  This component can be stopped with either of the following methods.

  Click the "×" button at the top right of the RMS window.

  Right-click the RMS icon on the task bar, and then select "× Close window".
3 Starting the YASKAWA Cockpit
3.1 Starting the YASKAWA Cockpit Server

- **Individually Stopping the YCP OPCUA Server**
  This component can be stopped with either of the following methods.

<table>
<thead>
<tr>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Click the &quot;×&quot; button at the top right of the console window to stop the YCP OPCUA Server.</strong></td>
</tr>
<tr>
<td><strong>Right-click the YCP OPCUA Server icon on the task bar, and then select &quot;× Close window&quot;.</strong></td>
</tr>
</tbody>
</table>

- **Individually Stopping Tomcat**
  This component can be stopped with either of the following methods.

<table>
<thead>
<tr>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Click the &quot;×&quot; button at the top right of the Tomcat console window.</strong></td>
</tr>
<tr>
<td><strong>Right-click the Tomcat icon on the task bar, and then select &quot;× Close window&quot;.</strong></td>
</tr>
</tbody>
</table>

- **Individually Stopping ActiveMQ**
  1. If the ActiveMQ console window is not displayed, display the console window from the command prompt on the task bar.

<table>
<thead>
<tr>
<th>Diagram of ActiveMQ console window</th>
</tr>
</thead>
</table>

  2. When the ActiveMQ console window appears, click the "×" button at the top right.

<table>
<thead>
<tr>
<th>Diagram of ActiveMQ console window</th>
</tr>
</thead>
</table>
3 Starting the YASKAWA Cockpit
3.1 Starting the YASKAWA Cockpit Server

- Individually Stopping MongoDB
  1. If the MongoDB console window is not displayed, display the console window from the command prompt on the task bar.

  ![MongoDB Console Window]

  2. When the MongoDB console window appears, click the "x" button at the top right.

3.1.3 Setting the Equipment Information

After the YCP Server has started, the equipment information (factory - line - cell - controller) for the controllers that have been installed can be configured from the YPC client.

For how to start the YCP client, refer to chapter 3.2 "Starting the YASKAWA Cockpit Client". For how to set each item, refer to chapter 4 "Setting Up the YASKAWA Cockpit". Make a note of the factory name (database name) at that time.
3.2 Starting the YASKAWA Cockpit Client

Start a web browser on a computer connected to the same network as the YCP computer. Connection to the Internet is not necessary.

Specify “http://IP address of the YASKAWA Cockpit server:8080/YCPApp” as the link destination address.

Use the IP address specified in chapter 2.4.2 “Windows Network Settings for Personal Computer for YCP”. For example, when “192.168.255.2” is specified as the IP address of the YASKAWA Cockpit server, use the address “http://192.168.255.2:8080/YCPApp” to access from the browser.

Note: The address "http://localhost:8080/YCPApp" can be used to start the YCP client from the YCP computer.

NOTE

YCP will not run properly if the YCP computer goes to sleep. Turn OFF the sleep settings in the power options on the YCP computer.

3.3 Login

After starting YCP Client, the following window appears.

Enter the user name and password, and click “Login”.

<table>
<thead>
<tr>
<th>Default account</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Name</td>
</tr>
<tr>
<td>Password</td>
</tr>
</tbody>
</table>

The language can be selected at the top of the login window. "English" and "Japanese" can be selected as the default setting.
3 Starting the YASKAWA Cockpit

3.4 Logout

Select “LOGOUT” shown in the window.

After logging out, the window returns to the login window.
4 Setting Up the YASKAWA Cockpit

Select “SETTINGS”. The following items are shown:

- Initial Settings
- License Manager
- Robot Controller Settings
4.1 Initial Settings

Select “Initial Settings”, and then the Initial Settings window appears.

Factory, Line, Cell, and Controller are hierarchically structured as shown below.

4.1.1 “Factory” Settings

Press “Factory”, and then the information of registered factory appears. If no factory is registered, press ① "Add" to add a factory to be registered. Only one factory can be registered.
4 Setting Up the YASKAWA Cockpit

4.1 Initial Settings

① “Add”
The following window appears, and a new factory can be added.

- Factory Name (Display Name)
  Specify the factory name to be displayed.

- Factory Name (Database Name)
  Specify the name of the database for internal use. Data of the lines, cells, and controllers under the factory are stored in this database.

② “Edit”
The registered information of the factory can be modified.

③ “Delete”
The registration of the factory can be deleted.

1. The restrictions on factory name (display name) input are as follows:
   - Character length: 1 to 16
   - The following characters cannot be used.
     \ / : * ? < > | = &

2. The restrictions on factory name (database name) input are as follows:
   - Character length: 1 to 16
   - Only single-byte alphanumeric characters (a to z, A to Z, and 0 to 9) can be used.

4.1.2 “Line” Settings

The information of the registered line is shown.

1. The restrictions on factory name (display name) input are as follows:
   - Character length: 1 to 16
   - The following characters cannot be used.
     \ / : * ? < > | = &

2. The restrictions on factory name (database name) input are as follows:
   - Character length: 1 to 16
   - Only single-byte alphanumeric characters (a to z, A to Z, and 0 to 9) can be used.
4 Setting Up the YASKAWA Cockpit
4.1 Initial Settings

① “Add”
The following window appears, and a new line can be added.

- Factory name (Database Name)
  Select the database name of the factory.
- Line Name (Display Name)
  Specify the display name of the line.
- Line Name (Database Name)
  Specify the name of the database for internal use. Data of the cells and controllers under the line are stored in this database.

② “Edit”
The registered information of the line can be modified.

③ “Delete”
The line can be deleted.

1. The restrictions on line name (display name) input are as follows:
   - Character length: 1 to 16
   - The following characters cannot be used. `/ : * ? < > | = &

2. The restrictions on line name (database name) input are as follows:
   - Character length: 1 to 16
   - Only single-byte alphanumeric characters (a to z, A to Z, and 0 to 9) can be used.
4.1.3 “Cell” Settings

The information of the registered cell is shown.

1. **“Add”**
   The following window appears, and a new cell can be added.

   - **Factory Name (Database Name)**
     Select the database name of the factory.
   - **Line Name (Database Name)**
     Select the database name of the line.
   - **Cell Name (Display Name)**
     Specify the display name of the cell.
   - **Cell Name (Database Name)**
     Specify the name of the database for internal use. Data of the controllers under the cell are stored in this database.

2. **“Refer”**
   Contents in the uploaded DC property file of the cell can be referred to.

3. **“Delete”**
   The cell can be deleted.
4 Setting Up the YASKAWA Cockpit
4.1 Initial Settings

1. The restrictions on cell name (display name) input are as follows:
   - Character length: 1 to 16
   - The following characters cannot be used.
     \ / : * ? < > | = &

2. The restrictions on cell name (database name) input are as follows:
   - Character length: 1 to 16
   - Only single-byte alphanumeric characters (a to z, A to Z, and 0 to 9) can be used.
4.1.4 “Controller” Settings

The information of the registered controller is shown.

① “Add”
The following window appears, and a new controller can be added. When adding a new controller, create and register a configuration file. The method for creating the configuration file will depend on the controller. (Refer to chapter 4.1.4.1 “Creating the Configuration File” and chapter 4.1.4.2 “Adding the Controller”.)

② “Edit”
The registered information of the controller can be modified.

③ “Delete”
The registration of the controller can be deleted.

When a controller is newly added or when the IP address of a registered controller is changed, restart the YCP server and configure the connection to the controller. (Refer to chapter 3.1.1 “Starting the YASKAWA Cockpit Server” and chapter 4.4 “YCP Server and Robot Controller Connection Settings”.)
4.1.4.1 Creating the Configuration File

The method for creating the configuration file will depend on the controller.

- **For YASKAWA robot controllers**
  Use RobotDC to create the configuration file for a YASKAWA robot controller.
  Create a configuration file from the robot controller with the following procedure.
  For the method to register the created file, refer to chapter 4.1.4.2 “Adding the Controller”.
  1. Select "RobotDC".
  2. Select "SETTINGS".
  3. Select "CONFIGURATION".
4. Setting Up the YASKAWA Cockpit

4.1 Initial Settings

4. Enter "Controller name", "Controller key", and "IP Address". "Controller name" and "Controller key" can be given the same name. Enter the IP address of the controller in "IP Address". Up to 50 controllers can be set.

5. Select the check box under the "Reload" column.

6. Click the "Reload". The following window appears if reloading is successful.

The following window appears if reloading has failed. The following items are possible causes. Review the settings, and then click "Reload" again.

- The Ethernet cable has been disconnected.
- The robot controller is not set to remote mode.
- The IP address is wrong.
7. If reloading is successful, the configuration file is created in the following folder.
C:\Program Files\YASKAWA\YASKAWA Cockpit\DcApp\RobotDC\Configuration
The configuration file name is "controller name_IP address.xml". Example: RobotController1_192.168.255.1.xml

- For other robot controllers
For controllers that are not YASKAWA robot controllers (e.g., YASKAWA Machine Controllers and robot controllers manufactured by other companies), create an XML file as the configuration file.

An example configuration file is given next.

Example: To register a YASKAWA Machine Controller

```xml
<?xml version="1.0"?>
<Configuration version="2.0">
  <Controller name="MP" type="MP" key="MP"></Controller>
</Configuration>
```

<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>name</td>
<td>The controller name (display name)</td>
</tr>
<tr>
<td></td>
<td>Specify the display name of the controller.</td>
</tr>
<tr>
<td>type</td>
<td>The controller type</td>
</tr>
<tr>
<td></td>
<td>•YASKAWA Machine Controller: &quot;MP&quot;</td>
</tr>
<tr>
<td></td>
<td>•Other controller: &quot;OTHER&quot;</td>
</tr>
<tr>
<td>key</td>
<td>The controller name (database name)</td>
</tr>
<tr>
<td></td>
<td>Specify the database name of the controller.</td>
</tr>
</tbody>
</table>
4.1.4.2 Adding the Controller

Use the following procedure to register the configuration file created in chapter 4.1.4.1 “Creating the Configuration File”.

1. Set the following items on the controller settings window.

<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory Name (Database Name)</td>
<td>Select the factory of the controller.</td>
</tr>
<tr>
<td>Line Name (Database Name)</td>
<td>Select the line of the controller.</td>
</tr>
<tr>
<td>Cell Name (Database Name)</td>
<td>Select the cell of the controller. The cell does not need to be selected if not required. In this case, the controller will be located under the line.</td>
</tr>
</tbody>
</table>

2. Select "Configuration File".

![Controller Settings Window](image-url)
4 Setting Up the YASKAWA Cockpit
4.1 Initial Settings

3. Click "Select File", and select the created file. The controller is registered.

4. Click "Edit" for the registered controller name.

5. Set the following items.

<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
<th>Restrictions on Name Input</th>
</tr>
</thead>
</table>
| Serial No.                       | Specify the serial number of the controller.                          | Character length: 8 to 20 The following characters cannot be used.
|                                  |                                                                        | / : * ? < > | = &                                                                 |

When adding a YASKAWA robot controller, set the following items as well.

<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
<th>Restrictions on Name Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP Address¹</td>
<td>Specify the IP address of the controller.</td>
<td>Format: <em><strong>.</strong></em>.<em><strong>.</strong></em> Note: Setting range of ***: 000 to 255</td>
</tr>
<tr>
<td>Counter Variable For Production Amount (D variable)¹</td>
<td>For the DX200 and DX100, setting this item is necessary for the graph of production volume in the Status window. Specify the variable number of the D variable that holds the value of the production amount between 0 and 1999.²</td>
<td>Setting range: 0 to 1999</td>
</tr>
</tbody>
</table>

¹ This item is not used with the YRC1000 or YRC1000micro.
² For the graph display results, refer to chapter 5.3.1.2 “Status”. For how to configure the settings to display the graph, refer to chapter 4.3.1.2 “Status Settings”. 
For robot controllers manufactured by companies other than YASKAWA
Set the following items on the controller settings window.

<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
<th>Restrictions on Name Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory Name</td>
<td>Select the factory of the controller.</td>
<td></td>
</tr>
<tr>
<td>Line Name</td>
<td>Select the line of the controller.</td>
<td></td>
</tr>
<tr>
<td>Cell Name</td>
<td>Select the cell of the controller. The cell does not need to be selected if not required. In this case, the controller will be located under the line.</td>
<td></td>
</tr>
<tr>
<td>Controller Name</td>
<td>Specify the display name of the controller.</td>
<td>Character length: 1 to 16 The following characters cannot be used. \ / : * ? &lt; &gt;</td>
</tr>
</tbody>
</table>
4 Setting Up the YASKAWA Cockpit
4.1 Initial Settings

4.1.5 “User” Settings

The information of the registered user is shown.

The following window appears, and a new user can be added.

- **First Name**
  Enter the first name (given name) of the user.

- **Last Name**
  Enter the last name (family name) of the user.

- **Login Name**
  Enter the login name of the user.

- **Password**
  Enter the password of the user.

- **Email**
  Enter the e-mail address of the user. Alarm notification will be sent to this e-mail address.

- **Tel. No.**
  Enter the phone number of the user. (Enter only numbers. No hyphens needed.)

- **Factory Name**
  Select the factory of the user.
4 Setting Up the YASKAWA Cockpit

4.1 Initial Settings

- Security mode
  Select the user’s authority from the following:
  - Management mode
    All the operations can be performed.
  - Edit mode
    Operations can be performed except for operations using the SETUP window.
  - Operation mode
    In addition to the same restrictions as the Edit mode, “Create Backup Now” and “Download To PC” in the Backup window cannot be used.

② “Edit”
  The registered information of the user can be modified.

③ “Delete”
  The registration of the user can be deleted.

The “Login Name” of the registered user cannot be changed. To change the login name, delete the registered user, and then add the user again as a new user.
4. Setting Up the YASKAWA Cockpit

4.1 Initial Settings

4.1.6 “Email” Settings

The mail server to which alarm notification is sent can be specified.

1. **Host Name**
   Enter the host name or IP address of the mail server.

2. **Port**
   Enter the port which the mail server uses.

3. **Perform SMTP authentication.**
   When the mail server uses the SMTP authentication, check the box “Perform SMTP authentication.” and specify the user name and password.

4. **Username**
   Specify the user name of the account on the mail server.

5. **Password**
   Specify the password of the account on the mail server.

6. **Number of retries**
   Specify the number of retries when an e-mail could not be sent.

7. **Retry interval [s]**
   Specify the retry interval when an e-mail could not be sent.
4 Setting Up the YASKAWA Cockpit
4.1 Initial Settings

When using Gmail, change the account information of Gmail. (Details are shown in the figure below.)

Turn OFF “2-Step Verification”.

Turn ON “Allow less secure apps”.

![Image of Gmail account settings showing 2-Step Verification and Allow less secure apps options]
4.1.7 “Alarm” Settings

Settings for sending alarm notification to the logged-in user can be performed.

1. **Factory Name (Database Name)**
   Select the factory for which alarm notification will be specified.

2. **“Enable Notification” check box**
   Specify whether to send e-mail notification for an alarm occurred in the factory. If this box is unchecked, alarm notification will not be sent even if an alarm occurs in the factory.

3. **“Email Notification” check box for each controller**
   This function is supported by robot controllers only. Specify whether to send e-mail notification for an alarm occurred in the controller. To enable this notification, the “Enable Notification” box for the factory must also be checked.

4. **“Update”**
   The settings above will be updated.

Example of settings
4.1.8 “Config” Settings

Settings of the ActiveMQ can be modified.

- **ActiveMQ Port**
  Specify the port number for the ActiveMQ. As default, 61616 is used.

Modify settings of the ActiveMQ as follows:

1. Modify the port number in the above window.
2. Close the window of the ActiveMQ and exit.
3. Open "C:\Program Files\YASKAWA\YASKAWA Cockpit\ActiveMQ\conf\activemq.xml", and modify the part shown below.

4. Restart YCP.
   - For details on restarting YCP, refer to chapter 3.1.1 “Starting the YASKAWA Cockpit Server” and chapter 3.1.2 “Individually Stopping Components”.
4 Setting Up the YASKAWA Cockpit
4.1 Initial Settings

4.1.9 “Add On” Settings

“Add On” settings are necessary to use an optional function (purchased) of the YASKAWA Cockpit. If no optional function is purchased, no optional function can be used even if the following “Add On” settings are performed.

The information of the registered add-on is shown.

1 “Add”

The following window appears, and a new add-on can be added.

- UI Name
  Specify the name of the add-on.

- Description
  Enter comments for the add-on.

- Zip File/Bin File
  The add-on module can be uploaded. Add-on modules are provided as ZIP files or BIN files.

- Register UI to
  Select the destination where the add-on is displayed.
4 Setting Up the YASKAWA Cockpit
4.1 Initial Settings

1. The restrictions on UI name input are as follows:
   - Character length: 1 to 64
   - Only single-byte alphanumeric characters (a to z, A to Z, and 0 to 9) can be used.

2. The restrictions on description input are as follows:
   - Character length: 0 to 64
   - Only single-byte alphanumeric characters (a to z, A to Z, and 0 to 9) can be used.

② “Edit”
The registered contents of the add-on can be modified.

③ “Delete”
The add-on can be deleted.
4.2 License Manager

Settings of the License Manager are necessary to use an optional function (purchased) of the YASKAWA Cockpit. If no optional function is purchased, the following settings are not necessary.

The license to enable the optional function can be specified. Also, the list of the specified licenses can be displayed.

Use the following procedure to register the license.

1. Select the license file issued by YASKAWA Electric Corporation.
2. Click "Update".

The license file selected in step 1 is registered, and the license becomes valid.
4.3 Robot Controller Settings

The following items are shown:

- Display settings
- Backup settings
- Backup

4.3.1 Display Settings

Select “Display Settings”, and then the Display Settings window appears. The following 3 buttons are shown in the lower right corner of the window.

- Restore: Restores settings to the initial values.
- Apply: Applies the modifications in settings.
- Cancel: Cancels the modifications and restores to the previous settings.

4.3.1.1 “Basic Information” Settings

The time for YASKAWA Cockpit to acquire data can be specified.

The time to acquire the entire data is in accordance with the time set in the server PC, which may be different from the times set in the controller and the accessed client device.
4 Setting Up the YASKAWA Cockpit
4.3 Robot Controller Settings

4.3.1.2 “Status” Settings

The history numbers and the threshold values can be specified in the Status window. For details on the Status window, refer to chapter 5.3.1 “Information View for YASKAWA Robot Controllers”.

Operating Rate

① History
Specify for how many past days the operating rates are shown in the graph of the daily operating rate.

② Upper Threshold
Specify the upper threshold for the graph of the daily operating rate.

③ Lower Threshold
Specify the lower threshold for the graph of the daily operating rate.

As the upper threshold, specify a value larger than the lower threshold. If a value smaller than the lower threshold is specified as the upper threshold, the operating rate may not be measured correctly.

Production Volume

④ History
Specify for how many past days the production volumes are shown in the graph of the daily operating rate.

⑤ Current Threshold
Specify the threshold for the graph of the daily production volume.

• After clicking “Apply”, threshold levels are immediately reflected in the graph, but it may take up to 1 hour before the color of the label indicating the measured results is reflected.

• To display the graph of the daily production volume, perform settings on the controller.
4 Setting Up the YASKAWA Cockpit
4.3 Robot Controller Settings

- For YRC1000micro and YRC1000
  Register the job by using the job monitor function. For details on the procedures, refer to “YRC1000 INSTRUCTIONS (RE-CTO-A221) 8.23 Job Monitor Function”. The number of executions of the first-registered job is recorded as the production volume in the database and shown in the graph.

- For DX200 and DX100
  The production volume is counted from the job, etc., and written in the D variable. For details on setting the variable number, refer to chapter 4.1.4 “Controller” Settings”.

Example
Call “PROD-CNT.JBI” at the beginning of the job whose production volume is to be counted.
D99 is used here.

```
PROD-CNT.JBI
  0001  NOP
  0002  WAIT IN#(4096)=OFF
  0003  INC D99
  0004  END
```

The value of the variable number (D variable) for counting the production volume is cleared when the date changes. However, the variable is not cleared during a playback operation.

For DX100, set S2C541 to 0.

The S2C541 parameter is a variable during play mode. Set the variable to permit or prohibit I/O writing. (0: Permit writing, 1: Prohibit writing)
4.3.1.3 “Alarm & Log” Settings

The history numbers of alarms and logs shown in the Alarm & Log window can be specified.

**Alarm History**

1. **History**
   - Specify the maximum number of the alarm history to be shown.

**Logging History**

2. **History**
   - Specify the maximum number of the operation log history to be shown.
### 4.3.2 Backup Settings

When a new controller is added, the automatic backup schedule specified in the following window will be automatically specified.

The automatic backup schedule can be specified as one of the following:

- **Daily**: hour
- **Weekly**: hour + day of the week
- **Monthly**: hour + date

To specify the automatic backup schedule for each controller, refer to chapter 4.3.3 “Backup”.

The date and time for backup are in accordance with the time set in the server PC, which may be different from the times set in the controller and the accessed client device.
4.3.3 Backup

The time for automatic backup for each controller can be specified. When a new controller is added, the time specified in the Settings window in chapter 4.3.2 “Backup Settings” is set as the initial value.

1. Specify the cycle and time for automatic backup.
   - To back up once a day: Select “Daily”, and select the time for backup.
   - To back up once a week: Select “Weekly”, and select the day of the week and the time for backup.
   - To back up once a month: Select “Monthly”, and select the date and the time for backup.

2. Select the file to be backed up automatically.
   - CMOS.BIN: acquires CMOS
   - All File: acquires individual files

3. Click “Save”, and the changes will be applied.

   – For details on the results of backup, refer to chapter 5.3.1 “Information View for YASKAWA Robot Controllers”.

---

**Edit**

The following window appears, and the time for automatic backup for the controller can be changed as described below.

---

1. Specify the cycle and time for automatic backup.
   - To back up once a day: Select “Daily”, and select the time for backup.
   - To back up once a week: Select “Weekly”, and select the day of the week and the time for backup.
   - To back up once a month: Select “Monthly”, and select the date and the time for backup.

2. Click “Save”, and the changes will be applied.

   – For details on the results of backup, refer to chapter 5.3.1 “Information View for YASKAWA Robot Controllers”.

---

**Edit**

The following window appears, and the time for automatic backup for the controller can be changed as described below.
4.4 YCP Server and Robot Controller Connection Settings

This section describes the procedure for connecting the YASKAWA Cockpit Server and a controller.

1. Switch the key switches on the pedants for all controllers to "Remote".

2. Select "RMS" on the task bar, open the RMS window, and perform the following operations.

   (1) Click the  button.
   – The button changes to "Connect".

   (2) In , enter the "Factory Name (Database Name)" registered in chapter 4.1.1 “Factory” Settings”, and click "Verify".

   (3) Click  "Scan".
   – The controller list appears in the below area.

   (4) Click  "Reload" for each controller.

   – Data collection starts. It may take several minutes per controller until the controller's information is reflected in the database.

The YASKAWA Cockpit Server periodically collects data from the controllers. Data cannot be collected from the controller if command remote is enabled and the key switch on the pendant is not set to "Remote".
5 Description of the YASKAWA Cockpit Function

5.1 “Line Group” Window

The list of the registered lines are shown.

In the example below, Line A, Line B, and Line C are registered.
5 Description of the YASKAWA Cockpit Function

5.2 “Line” View

When a line is selected in the line list, all the controllers registered in the selected line can be viewed. The information on model, version, application, status, operating rate, and production volume in the entire line can be monitored simultaneously. Because the current condition of each item is indicated by color, it is easy to check visually if there is an alarm or error occurred.

- Cell Name
  The cell name specified in the “Cell” setting window is shown. If no cell is registered in the controller, this column is not shown.

- Controller
  The name of the controller specified in the “Controller” window is shown.

- Model
  The model name of R1 (the first manipulator) specified in the controller is shown.

- Version
  The version of the software in the controller is shown.

- Application
  The application of R1 specified in the controller is shown.

- Status
  The operating status of the manipulator is shown. For details, refer to chapter 5.3.1 “Information View for YASKAWA Robot Controllers”.

- Operating Rate
  The operating rate of the manipulator is shown.

<table>
<thead>
<tr>
<th>Operating Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 70%</td>
<td>Operating rate is under 70%.</td>
</tr>
<tr>
<td>70% - 80%</td>
<td>Operating rate is between 70% and 80%.</td>
</tr>
<tr>
<td>&gt; 80%</td>
<td>Operating rate is over 80%.</td>
</tr>
</tbody>
</table>

* The above value will be between the upper threshold and the lower threshold specified in chapter 4.3.1.2 “Status” Settings.
5 Description of the YASKAWA Cockpit Function

5.2 “Line” View

- **Production Volume**
  The production volume of the manipulator is shown.

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 80%</td>
<td>Production volume is under 80% of the threshold.</td>
</tr>
<tr>
<td>80% - 100%</td>
<td>Production volume is between 80% and 100% of the threshold.</td>
</tr>
<tr>
<td>&gt; 100%</td>
<td>Production volume is over the threshold.</td>
</tr>
</tbody>
</table>

* Specify the threshold in chapter 4.3.1.2 “Status” Settings.*
5.3 Information View for Each Controller

When a controller to be monitored is selected in the line view, the information of the selected controller is shown. The displayed content will depend on the controller.

5.3.1 Information View for YASKAWA Robot Controllers

5.3.1.1 Basic Information

The basic information of the controller is shown.

- **Image of Manipulator**
  The image of the manipulator model specified in the controller is shown. When multiple manipulators are specified, the images of the manipulators are shown in turns. To manually change the images, click the circle in the lower center of the image.

  - If no image is available for the manipulator model, the following illustration is shown.

    - A dual-arm robot is regarded as having two manipulators, and two images of the manipulators are shown.

- **System Structure**
  For the DX100, FS100, and NX100, the names of bases and stations are not shown.

- **Controller Information**
  The information specified in the controller registration window is shown. For details on settings, refer to chapter 4.1.4 “Controller” Settings.”
5 Description of the YASKAWA Cockpit Function
5.3 Information View for Each Controller

④ System Monitoring Time
For the DX100, “Accumulated Energy-Saving Time” is not shown.

⑤ Version Information
For the DX100, “Language” is not shown.

- The information in this window is updated once a day, when the date changes.
- The date and time shown in the System Monitoring Time are the date and time set in the controller, which may be different from the dates and times set in the server PC and the client device.
- The Version Information is shown in the language specified in the controller when the information is retrieved.
5.3.1.2 Status

The operating status of the manipulator is shown. In this window, the following information can be monitored:

- **Current Status**: current operating status
- **Operating Rate**: today's operating rate/operating rate per hour/operating rate per day
- **Production Volume**: today's production volume/production volume per hour/production volume per day

![Manipulator Status Window](image)

**1. Current Status**

The current status of the controller is shown.

**2. Operating Rate**

**Status of Operating Rate**

Today's operating rate is indicated by color.

<table>
<thead>
<tr>
<th>Color of Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Status of &quot;Running (blue)&quot; is under the lower threshold.</td>
</tr>
<tr>
<td>Yellow</td>
<td>Status of &quot;Running (blue)&quot; is between the lower threshold and the upper threshold.</td>
</tr>
<tr>
<td>Blue</td>
<td>Status of &quot;Running (blue)&quot; is over the upper threshold.</td>
</tr>
</tbody>
</table>

*For details on settings of the thresholds, refer to chapter 4.3.1 “Display Settings”.*
5 Description of the YASKAWA Cockpit Function
5.3 Information View for Each Controller

③ Today’s Operating Rate
Today’s operating rate is shown in percentage. The status is indicated by color.

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running (blue)</td>
<td>The manipulator is in operation.</td>
</tr>
<tr>
<td>Energy Saving (green)</td>
<td>The servo is turned OFF by the energy-saving function.</td>
</tr>
<tr>
<td>Alarm (red)</td>
<td>An alarm occurred.</td>
</tr>
<tr>
<td>Idle (yellow)</td>
<td>The manipulator is in the idle status.</td>
</tr>
<tr>
<td>Disconnect (gray)</td>
<td>YCP and the manipulator cannot communicate.</td>
</tr>
<tr>
<td>Servo OFF (black)</td>
<td>Status other than the above.</td>
</tr>
</tbody>
</table>

④ Today’s Operating Rate (per Hour)
Today’s operating rate is shown by the hour.

⑤ Operating Rate (per Day)
The past operating rate is shown by the day. For details on the number of days to be shown, refer to chapter 4.3.1 “Display Settings”.

Production Volume

⑥ Status of Production Volume
Today’s production volume is indicated by color.

<table>
<thead>
<tr>
<th>Color of Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Today’s production volume is under 80% of the threshold.</td>
</tr>
<tr>
<td>Yellow</td>
<td>Today’s production volume is between 80% and 100% of the threshold.</td>
</tr>
<tr>
<td>Blue</td>
<td>Today’s production volume is over the threshold.</td>
</tr>
</tbody>
</table>

*For details on settings of the threshold, refer to chapter 4.3.1.

⑦ Today’s Production Volume
The total of today’s production volume is shown.

⑧ Today’s Production Volume (per Hour)
Today’s production volume is shown by the hour.

⑨ Production Volume (per Day)
The past production volume is shown by the day. For details on the number of days to be shown, refer to chapter 4.3.1.
• The Status window is refreshed every 3 seconds. However, depending on the connection condition, it may take more than 5 seconds.

• When using Internet Explorer, the Status window is not refreshed with the default settings of the browser. Perform the following settings:
  1. From the menu of Internet Explorer, select “Tools”, and then select “Internet Options”.
  2. Select the “General” tab, and then click “Settings” in the “Browsing history”.
  3. Check the box of “Check for newer versions of stored pages: Every time I visit the webpage”.

• The statuses and graphs of the operating rate and the production volume are updated every hour.

• To display the graph of the production volume, specific settings are necessary. For details, refer to chapter 4.3.1 “Display Settings”.

• The graphs are based on the date and time set in the server PC, which may be different from the dates and times set in the controller and the client PC.
5.3.1.3 Alarm & Log

The alarm history and the operation log of the manipulator and the controller are shown.

The dates and times of alarms and logs are based on the date and time set in the controller, which may be different from the dates and times set in the server PC and the client PC.

- **“Alarm History” Window**

  The history lists of Major Alarm, Minor Alarm, User Alarm, and Offline Alarm are shown.

  Select an alarm from the list to view the details of the selected alarm in the lower part of the window.

  When the “Latest Alarm History” button is selected, the list of recent alarms is shown. The “Latest Alarm” section shows the last alarm that occurred. The date and time shown here are based on the date and time set in the controller. For the DX100, when using the data transmission function, these date and time are not shown.
“Logging History” Window

The history lists of edit and operation are shown. Select a log from the list to view the details of the selected log in the lower part of the window.

- The alarms and logs are updated every other day. To view today’s latest alarm, click “Latest Alarm History”.
- The Alarm History and the Logging History are shown in the language specified in the controller when the data are retrieved.
- To view the Logging History of the DX100, the logging function (optional) of the controller must be enabled.
5 Description of the YASKAWA Cockpit Function

5.3 Information View for Each Controller

5.3.1.4 Backup

The statuses of the automatic backup and the manual backup of the controller are shown. If the backup data are required, files can be selected and downloaded from the database to the PC.

1. **“Auto Backup” List**
   The list of dates and times when the automatic backup was performed is shown. Select a date and time to view the list of the backup files on the right pane. To set up the automatic backup, refer to chapter 4.1.8 ““Config” Settings”.

2. **“Manual Backup” List**
   The list of dates and times when the manual backup was performed is shown. Select a date and time to view the list of the backup files on the right pane.

3. **“Create Backup Now” and Check Boxes**
   To perform the manual backup, click “Create Backup Now”. The files selected by the check box (CMOS File or ALL File) are backed up from the displayed controller to the server PC. It takes a few minutes to complete the backup. Also, settings for the controller are necessary. For details, refer to chapter 4.1.8.

4. **File List**
   The list of files backed up on the date and time selected on the left pane is shown.

5. **“Download To PC”**
   The files checked in the file list are compressed in a ZIP file and downloaded to the device opening this window. The file name will be “Backup_[Line name]_[Controller name]_YYYY-MM-DD.zip”.

- The dates and times shown in the list are based on the date and time set in the server PC, which may be different from the dates and times set in the controller and the client device.
5.3.2 Information View for Other Controllers

Only controller information is shown for controllers that are not YASKAWA robot controllers (e.g., YASKAWA MP Series Machine Controllers and controllers manufactured by other companies).
# Timing of Updating the Information on the Window

The timing of updating the information viewed by YCP differs depending on the window. The following table lists the timing when information of each item in each window is updated. The updating process is executed at the timing marked with  or described in the “Others” column.

<table>
<thead>
<tr>
<th>Window</th>
<th>Item</th>
<th>Timing of updating the information</th>
<th>Reload</th>
<th>As needed</th>
<th>1H</th>
<th>1D</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line</td>
<td>Cell Name</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Controller</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Model</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Version</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Application</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Status</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operating Rate</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Production Volume</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic Info</td>
<td>System Structure</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Servo Power Time</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>System Monitoring Time</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(other items)</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Version Information</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Controller Information</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Status</td>
<td>Current Status</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operating Rate label</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operating Rate graph (upper)</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operating Rate graph (mid)</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operating Rate graph (lower)</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Production Volume label</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Production Volume graph (upper)</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Production Volume graph (mid)</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Production Volume graph (lower)</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alarm &amp; Log</td>
<td>Latest Alarm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alarm History</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Logging History</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latest Alarm History</td>
<td>List</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Auto Backup</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Manual Backup</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Click “Reload” on the RMS window to update the data. For the RMS window, refer to chapter 4.4 “YCP Server and Robot Controller Connection Settings”.
2 Updated every hour, at XX:00.
3 Updated every day, at the time specified in chapter 4.3.1 “Display Settings”.

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5-13
6 Data Collection Settings

6.1 Robot Controller Data Collection Settings

There are two methods available for robot controller data collection: the buffering method and polling method. Use the buffering method to collect data with a fast cycle and use the polling method to collect data with a slow cycle.

6.1.1 Buffering Method

With the buffering method, data is buffered on the controller with a sampling time as short as 8 ms and the buffered data is collected by YCP at a cycle as short as 120 seconds.

There are two collection methods: a method to collect data using playback as the trigger and a method to collect data using the rise in a general-purpose output signal as the trigger.

6.1.1.1 Playback Method

- **Start Conditions for Data Collection**
  The rise in playback is detected, and data collection is performed using this as the trigger. Data collection starts within the collection time described in [chapter 6.1.1.3 “Configuring Data Collection Settings”](#) and when the job is played back.

- **End Conditions for Data Collection**
  YCP collects the data from the controller in a 120-second cycle and stores the collected data in the database. The cycle at which YCP collects data from the controller is different from the sampling time described in [chapter 6.1.1.3 “Configuring Data Collection Settings”](#). The following table gives the sampling time of data and the cycle at which YCP collects data from the controller.

<table>
<thead>
<tr>
<th>Sampling Time (ms)</th>
<th>Cycle at which YCP Collects Data from the Controller (sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>120</td>
</tr>
<tr>
<td>16</td>
<td>240</td>
</tr>
<tr>
<td>32</td>
<td>360</td>
</tr>
<tr>
<td>64</td>
<td>720</td>
</tr>
</tbody>
</table>

Data collection ends when playback falls and the time has elapsed in the amount of an integer multiple of 120 seconds from the start time (when the sampling time is 4 ms). Data is also not collected when outside the collection time.

The following chart shows the relationship between collection time, playback, and data collection.
6.1.2 General-Purpose Output Signal Method

The rise in a general-purpose output signal is detected, and data collection is performed using this as the trigger. The general-purpose outputs for the start and end of data collection are set as parameters.

- **S4C1050**: Data collection start request (general-purpose output signal number)
- **S4C1052**: Data collection end request (general-purpose output signal number)

For example, to use OUT1 for the data collection start request and OUT2 for the data collection end request, set the parameters using the programming pendant of the robot controller as given below.

\[
\begin{align*}
S4C1050 &= 1 \\
S4C1052 &= 2
\end{align*}
\]

**Start Conditions for Data Collection**

The rise in the general-purpose output signal set for S4C1050 is detected, and data collection is performed using this as the trigger. Data collection starts within the collection time described in *chapter 6.1.1.3 “Configuring Data Collection Settings”* and when the job detects the rise in the general-purpose signal set for S4C1050.

**End Conditions for Data Collection**

YCP collects the data from the controller in a 120-second cycle and stores the collected data in the database. The cycle at which YCP collects data from the controller is different from the sampling time described in *chapter 6.1.1.3 “Configuring Data Collection Settings”*. The following table gives the sampling time of data and the cycle at which YCP collects data from the controller.

<table>
<thead>
<tr>
<th>Sampling Time (ms)</th>
<th>Cycle at which YCP Collects Data from the Controller (sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>120</td>
</tr>
<tr>
<td>16</td>
<td>240</td>
</tr>
<tr>
<td>32</td>
<td>360</td>
</tr>
<tr>
<td>64</td>
<td>720</td>
</tr>
</tbody>
</table>

Data collection ends when the general-purpose output signal set for S4C1052 rises and the time has elapsed in the amount of an integer multiple of 120 seconds from the start time (when the sampling time is 4 ms). Data is also not collected when outside the collection time.
6 Data Collection Settings
6.1 Robot Controller Data Collection Settings

The following chart shows the relationship between collection time, measurement start request, measurement end request, and data collection.

<table>
<thead>
<tr>
<th>Collection time</th>
<th>Measurement start request (S4C1050)</th>
<th>Measurement end request (S4C1052)</th>
</tr>
</thead>
<tbody>
<tr>
<td>120sec</td>
<td>Data is collected continuously.</td>
<td>Data is not collected during this period.</td>
</tr>
</tbody>
</table>

6.1.1.3 Configuring Data Collection Settings

1. Select "Home" > "Settings" > "Robot Controller Setting" > "Data Collection". The Data Collection window appears.
2. Click "Add".

A confirmation dialog box appears when changing the method selection.
6 Data Collection Settings
6.1 Robot Controller Data Collection Settings

4. Select "Yes".

The following table gives a description of each item.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>Setting Name</td>
<td>Set the name for the data collection settings. Set the value with a maximum length of 16 alphanumeric characters. The same name cannot be registered more than once.</td>
</tr>
<tr>
<td>②</td>
<td>Sampling Time</td>
<td>Set the sampling time for the data to collect. You can select 8.0, 16.0, 32.0, and 64.0 [ms]. These values correspond to a sampling frequency of 125, 62.5, 31.25, and 15.625 [Hz].</td>
</tr>
<tr>
<td>③</td>
<td>Collection Time</td>
<td>Set the times to start and end data collection. Example: 07:15 to 20:15 If the above values are set, 7:15 to 20:15 is the data collection time. Set the data collection time as follows to set it to 24 hours. 00:00 to 24:00</td>
</tr>
<tr>
<td>④</td>
<td>Target</td>
<td>This value is set per channel. Set the type of signal to output. SERVO: A servo CPU signal can be selected with the signal selector. I/O signal: A concurrent I/O signal can be input with the signal selector. Register: A register number can be input with the signal selector. Quadrature: A signal that carries the orthogonal position of the robot can be selected with the signal selector. B variable: A B variable number can be input with the signal selector. I variable: An I variable number can be input with the signal selector. D variable: A D variable number can be input with the signal selector. Other: A signal other than those listed above can be selected.</td>
</tr>
</tbody>
</table>
## Data Collection Settings

### 6.1 Robot Controller Data Collection Settings

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
</table>
| 5   | Signal          | This value is set per channel.  
  - If "Servo", "Other", or "Quadrature" is selected in 4:  
    Select the signal from the pull-down menu.  
  - If "I/O signal" is selected in 4:  
    A concurrent I/O signal can be input.  
    For details on concurrent I/O, refer to "Concurrent I/O Manual".  
  - If "Register" is selected in 4:  
    A register number can be input.  
    Enter a numeric value between M000 and M999.  
  - If "B variable", "I variable", or "D variable" is selected in 4:  
    A variable can be input.  
    Enter a numeric value between 0 and 99. |
| 6   | Database Name   | Set the name to use when storing data to the database per channel.  
  - If "Servo", "Other", or "Quadrature" is selected in 4:  
    This value is set automatically.  
  - If "I/O signal", "Register", "B variable", "I variable", or "D variable" is selected in 4:  
    Set the value with a maximum length of 16 alphanumeric characters. Give this value a unique name. |
| 7   | Group           | Specify the target group from which to retrieve data.  
  (This value is set only when "SERVO" or "Quadrature" is selected in 4.)  
  Select R1 to R8, B1 to B8, or S1 to S24 from the pull-down menu. |
## 6 Data Collection Settings
### 6.1 Robot Controller Data Collection Settings

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
</table>
| ⑧  | Axis   | Specify the target axis from which to retrieve data.  
|     |        | If "SERVO" is selected in ④:  
|     |        | Set the axis number.  
|     |        | For a robot:  
|     |        | S-axis: Set 1.  
|     |        | L-axis: Set 2.  
|     |        | U-axis: Set 3.  
|     |        | R-axis: Set 4.  
|     |        | B-axis: Set 5.  
|     |        | For a base:  
|     |        | Axis 1: Set 1.  
|     |        | Axis 2: Set 2.  
|     |        | For a station:  
|     |        | Axis 1: Set 1.  
|     |        | Axis 2: Set 2.  
|     |        | :  
|     |        | If "Other" is selected in ④:  
|     |        | If "Job Name" or "Step Number" is selected for the signal:  
|     |        | Specify the control group number. For the control group, specify the numbers in robot (R), base (B), and station (S) order.  
|     |        | Example: For R1+R2+B1+B2+S1:  
|     |        | R1: Set 1.  
|     |        | R2: Set 2.  
|     |        | B1: Set 3.  
|     |        | S1: Set 5.  
|     |        | If "Welding Condition Number or "Welding Completion Signal" is set for the signal:  
|     |        | Specify the welding machine number. |
| ⑨  | Unit   | Displays the unit of the data. |
| ⑩  | Magnification | Set the multiplication factor of the data.  
|     |        | (Only when "SERVO" is selected in ④.)  
|     |        | Use 1 normally.  
|     |        | When pulse, torque, encoder temperature, or error count is set, the value set for this item is not applied. |
| ⑪  | OPCUA  | Select this check box to allow the data to be retrieved by OPCUA clients. |
| ⑫  | CH Add | Click this button to increase the channels that can be set. |
| ⑬  | CH Delete | Click this button to delete the last channel. |
| ⑭  | Export | Click this button to output the settings to file. |
| ⑮  | Import | Click this button to import a file that was exported. |
| ⑯  | Register | Click this button to register the settings. |
| ⑰  | Close | Click this button to close the settings window. |
5. Click the "Register".

If one of the following messages was displayed when the "Register" was clicked, the settings cannot be registered. Refer to the following table and review the data collection settings.

<table>
<thead>
<tr>
<th>Displayed Message</th>
<th>Details on Settings to Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is a problem with the number of channel settings. (#1)</td>
<td>The total of category 1 and 2 in the table is 37 or more channels. Review the settings so there are 36 or fewer channels.</td>
</tr>
<tr>
<td>There is a problem with the number of channel settings. (#2)</td>
<td>The total number of category 3 channels is 19 or more channels. Review the settings so there are 18 or fewer channels in the same collection time.</td>
</tr>
<tr>
<td>There is a problem with the number of channel settings. (#3)</td>
<td>The total of category 2 is 10 or more channels. Review the settings so there are 9 or fewer channels in the same collection time.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Signal</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse</td>
<td>1</td>
</tr>
<tr>
<td>Torque</td>
<td>1</td>
</tr>
<tr>
<td>Alarm code</td>
<td>1</td>
</tr>
<tr>
<td>Job name</td>
<td>1</td>
</tr>
<tr>
<td>Step number</td>
<td>1</td>
</tr>
<tr>
<td>Line number</td>
<td>1</td>
</tr>
<tr>
<td>Tool number</td>
<td>1</td>
</tr>
<tr>
<td>Welding conditions number</td>
<td>1</td>
</tr>
<tr>
<td>Welding conditions number</td>
<td>1</td>
</tr>
<tr>
<td>Robot in operation</td>
<td>1</td>
</tr>
<tr>
<td>SVSPOT executing</td>
<td>1</td>
</tr>
<tr>
<td>I/O Signal</td>
<td>1</td>
</tr>
<tr>
<td>Register</td>
<td>1</td>
</tr>
<tr>
<td>B variable</td>
<td>1</td>
</tr>
<tr>
<td>I variable</td>
<td>1</td>
</tr>
<tr>
<td>D variable</td>
<td>1</td>
</tr>
<tr>
<td>Quadrature</td>
<td>1</td>
</tr>
<tr>
<td>Speed feedback</td>
<td>2</td>
</tr>
<tr>
<td>Torque (concerning direction)</td>
<td>2</td>
</tr>
<tr>
<td>Manufacturer 1</td>
<td>2</td>
</tr>
<tr>
<td>External force value</td>
<td>2</td>
</tr>
<tr>
<td>Position deviation</td>
<td>2</td>
</tr>
<tr>
<td>Encoder temperature</td>
<td>3</td>
</tr>
<tr>
<td>Encoder count</td>
<td>3</td>
</tr>
</tbody>
</table>
6 Data Collection Settings
6.1 Robot Controller Data Collection Settings

6. Click ② "Edit".
The registered settings can be edited.

7. Click ③ "Delete".
The registered settings can be deleted.

6.1.2 Polling Method

With the polling method, YCP can collect the data from the controller at a cycle of a number of seconds.

Data can also be collected using an I/O signal on the controller as a trigger.

6.1.2.1 Configuring Data Collection Settings

1. Select "Home" > "Settings" > "Robot Controller Setting" > "Data Collection".
The Data Collection window appears.

2. Click ① "Add".


A confirmation dialog box appears when changing the method selection.
6 Data Collection Settings
6.1 Robot Controller Data Collection Settings

4. Select "Yes".

The following table gives a description of each item.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Setting Name</td>
<td>Set the name for the data collection settings. Set the value with a maximum length of 16 alphanumeric characters. The same name cannot be registered more than once.</td>
</tr>
<tr>
<td>2</td>
<td>Sampling Time</td>
<td>Set the sampling time for the data to collect. You can select from 1 to 60 [sec].</td>
</tr>
<tr>
<td>3</td>
<td>Collection Time</td>
<td>Set the times to start and end data collection. Example: 07:15 to 20:15 If the above values are set, 7:15 to 20:15 is the data collection time. Set the data collection time as follows to set it to 24 hours. 00:00 to 24:00</td>
</tr>
<tr>
<td>4</td>
<td>Trigger</td>
<td>Select the trigger signal (I/O) to use for data collection. The trigger is enabled when the check box is selected. Example: To use general-purpose output signal #10010, select the check box and set 10010.</td>
</tr>
<tr>
<td>5</td>
<td>Target</td>
<td>This value is set per channel. Set the type of signal to output. SERVO: A servo CPU signal can be selected with the signal selector. I/O signal: A concurrent I/O signal can be input with the signal selector. Register: A register number can be input with the signal selector. B variable: A B variable number can be input. I variable: An I variable number can be input. D variable: A D variable number can be input.</td>
</tr>
</tbody>
</table>
## 6 Data Collection Settings
### 6.1 Robot Controller Data Collection Settings

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td><strong>Signal</strong></td>
<td>This value is set per channel. This value is set per channel.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If &quot;Servo&quot; is selected in 5: Select the signal from the pull-down menu.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If &quot;I/O signal&quot; is selected in 5: A concurrent I/O signal can be input.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For details on concurrent I/O, refer to &quot;Concurrent I/O Manual&quot;.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If &quot;Register&quot; is selected in 5: A register number can be input.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Enter a numeric value between M000 and M999.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If &quot;B variable&quot;, &quot;I variable&quot;, or &quot;D variable&quot; is selected in 5: A variable can be input.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Enter a numeric value between 0 and 99.</td>
</tr>
<tr>
<td>7</td>
<td><strong>Database Name</strong></td>
<td>Set the name to use when storing data to the database per channel.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If &quot;Servo&quot; is selected in 5: This value is set automatically.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If &quot;I/O signal&quot;, &quot;Register&quot;, &quot;B variable&quot;, &quot;I variable&quot;, or &quot;D variable&quot; is selected in 5:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Set the value with a maximum length of 16 alphanumeric characters. Give this value a unique</td>
</tr>
<tr>
<td></td>
<td></td>
<td>name.</td>
</tr>
<tr>
<td>8</td>
<td><strong>Group</strong></td>
<td>Specify the target group from which to retrieve data.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(This value is set only when &quot;SERVO&quot; is selected in 5:)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Select R1 to R8, B1 to B8, or S1 to S24 from the pull-down menu.</td>
</tr>
<tr>
<td>9</td>
<td><strong>Axis</strong></td>
<td>Specify the target axis from which to retrieve data.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If &quot;SERVO&quot; is selected in 5:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Set the axis number.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For a robot:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S-axis: Set 1.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>L-axis: Set 2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>U-axis: Set 3.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>R-axis: Set 4.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B-axis: Set 5.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For a base:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Axis 1: Set 1.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Axis 2: Set 2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For a station:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Axis 1: Set 1.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Axis 2: Set 2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>:</td>
</tr>
<tr>
<td>10</td>
<td><strong>Unit</strong></td>
<td>Displays the unit of the data.</td>
</tr>
<tr>
<td>11</td>
<td><strong>OPCUA</strong></td>
<td>Select this check box to allow the data to be retrieved by OPCUA clients.</td>
</tr>
<tr>
<td>12</td>
<td><strong>CH Add</strong></td>
<td>Click this button to increase the channels that can be set.</td>
</tr>
<tr>
<td>13</td>
<td><strong>CH Delete</strong></td>
<td>Click this button to delete the last channel.</td>
</tr>
<tr>
<td>14</td>
<td><strong>Export</strong></td>
<td>Click this button to output the settings to file.</td>
</tr>
</tbody>
</table>
6 Data Collection Settings
6.1 Robot Controller Data Collection Settings

5. Click the "Register".

If one of the following messages was displayed when the "Register" was clicked, the settings cannot be registered. Refer to the following table and review the data collection settings.

<table>
<thead>
<tr>
<th>Displayed Message</th>
<th>Details on Settings to Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is a problem with the number of channel settings. (#4)</td>
<td>The total number of bytes has exceeded 479 bytes. Refer to the following table and review the settings so the total number of bytes is 479 or fewer.</td>
</tr>
<tr>
<td>There is a problem with the number of channel settings. (#5)</td>
<td>The number of &quot;Torque&quot; and &quot;Pulse&quot; groups in the signals exceeds 4. Review the settings so the number of &quot;Torque&quot; and &quot;Pulse&quot; groups is 4 or fewer.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Classification</th>
<th>Number of Bytes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I/O signal</td>
<td>1 byte</td>
</tr>
<tr>
<td>2</td>
<td>B variable</td>
<td>1 byte</td>
</tr>
<tr>
<td>3</td>
<td>I variable</td>
<td>2 bytes</td>
</tr>
<tr>
<td>4</td>
<td>D variable</td>
<td>4 bytes</td>
</tr>
</tbody>
</table>

6. Click ② "Edit".
The registered settings can be edited.

7. Click ③ "Delete".
The registered settings can be deleted.
6.1.3 Selecting the Controller for Data Collection

1. Select "Home" > "Settings > "Initial Settings" > "Controller".
2. Select the "Edit" of the controller for data collection.
   The following window appears. All setting names that have been registered for data collection can be checked.

3. For example, to collect the data for Setting1, Setting2, and Setting3, select these.
   The selected items are highlighted.

4. Click the "Update".
   The registration is complete. The settings for the setting names registered to the controller can no longer be edited or deleted. To edit the settings, clear the setting name from the robot data collection settings for all controllers.
   If one of the following messages was displayed when the "Edit" was clicked, the settings cannot be registered. If one of the following messages was displayed, refer to the following table and review the data collection settings.
6 Data Collection Settings
6.1 Robot Controller Data Collection Settings

<table>
<thead>
<tr>
<th>Displayed Message</th>
<th>Details on Settings to Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is a problem with the number of channel settings. (#1)</td>
<td>The total of category 1 and 2 in the table is 37 or more channels in the same collection time. Review the settings so there are 36 or fewer channels in the same collection time. Review the settings if &quot;Buffering method&quot; is selected for the method.</td>
</tr>
<tr>
<td>There is a problem with the number of channel settings. (#2)</td>
<td>The total number of category 3 channels is 19 or more channels in the same collection time. Review the settings so there are 18 or fewer channels in the same collection time. Review the settings if &quot;Buffering method&quot; is selected for the method.</td>
</tr>
<tr>
<td>There is a problem with the number of channel settings. (#3)</td>
<td>The total of category 2 in the table is 10 or more channels in the same collection time. Review the settings so there are 9 or fewer channels in the same collection time. Review the settings if &quot;Buffering method&quot; is selected for the method.</td>
</tr>
<tr>
<td>Collection time is overlapped</td>
<td>The collection times overlap. Review the settings so the collection times do not overlap. Review the settings if &quot;Polling method&quot; is selected for the method.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Signal</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse</td>
<td>1</td>
</tr>
<tr>
<td>Torque</td>
<td>1</td>
</tr>
<tr>
<td>Alarm code</td>
<td>1</td>
</tr>
<tr>
<td>Job name</td>
<td>1</td>
</tr>
<tr>
<td>Step number</td>
<td>1</td>
</tr>
<tr>
<td>Line number</td>
<td>1</td>
</tr>
<tr>
<td>Tool number</td>
<td>1</td>
</tr>
<tr>
<td>Welding conditions number</td>
<td>1</td>
</tr>
<tr>
<td>Welding conditions number</td>
<td>1</td>
</tr>
<tr>
<td>Robot in operation</td>
<td>1</td>
</tr>
<tr>
<td>SVSPOT executing</td>
<td>1</td>
</tr>
<tr>
<td>I/O Signal</td>
<td>1</td>
</tr>
<tr>
<td>Register</td>
<td>1</td>
</tr>
<tr>
<td>B variable</td>
<td>1</td>
</tr>
<tr>
<td>I variable</td>
<td>1</td>
</tr>
<tr>
<td>D variable</td>
<td>1</td>
</tr>
<tr>
<td>Quadrature</td>
<td>1</td>
</tr>
<tr>
<td>Speed feedback</td>
<td>2</td>
</tr>
<tr>
<td>Torque (concerning direction)</td>
<td>2</td>
</tr>
<tr>
<td>Manufacturer 1</td>
<td>2</td>
</tr>
</tbody>
</table>
### 6 Data Collection Settings

#### 6.1 Robot Controller Data Collection Settings

<table>
<thead>
<tr>
<th>Signal</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>External force value</td>
<td>2</td>
</tr>
<tr>
<td>Position deviation</td>
<td>2</td>
</tr>
<tr>
<td>Encoder temperature</td>
<td>3</td>
</tr>
<tr>
<td>Encoder count</td>
<td>3</td>
</tr>
</tbody>
</table>
6.1.4 Starting Data Collection

1. Select RobotDC.
2. Click "SETTINGS", and then click the "INIT SETTING" menu.
4. Enter "Factory Name", and then click "Connection Test". "Status" becomes "OK".
5. Click "Save Settings".
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6. Click the "CONTROLLER SETTING" menu, and then click "Scan". The controller list appears.

7. Select the check box in the "Select" column for the robot controller from which to collect data, and then click "Save Settings".

8. Click "HOME". The following window appears.

9. Click "Start Measurement". Confirm that "Status" has become "Connect". Data collection will start when the data collection time is reached. During data collection, "Setting" becomes "SendOK", and data collection starts.
6.1.5 Precautions

- Set the mode of the controller to remote mode. Data may not be collected if the mode is switched during data collection.

- If for some reason YCP cannot communicate with the controller, it will retry communications for 9 seconds. If YCP cannot reconnect by retrying communications, data collection is stopped. "Status" in RobotDC will become "Disconnected". To start data collection again, select "RobotDC" and click the "Start Measurement".

## Buffering Method Precautions

- When changing the data collection conditions during data collection (e.g., changing the signal to collect), data cannot be collected for a brief period of time longer than 10 ms.

For example, when collecting data with the following settings, the data to collect changes at 11:00, so data cannot be collected for a brief period of time longer than 10 ms when data collection is switched.

<table>
<thead>
<tr>
<th>Item</th>
<th>Setting1</th>
<th>Setting2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collection time</td>
<td>10:00-12:00</td>
<td>11:00-12:00</td>
</tr>
<tr>
<td>Sampling</td>
<td>8 ms</td>
<td>8 ms</td>
</tr>
<tr>
<td>CH1</td>
<td>R1, axis 1 torque</td>
<td>R1, axis 3 torque</td>
</tr>
<tr>
<td>CH2</td>
<td>R1, axis 2 torque</td>
<td>R1, axis 4 torque</td>
</tr>
</tbody>
</table>

- To simultaneously collect the data for a job name, step number, and line number, specify the same axis numbers for all.
6.2 Machine Controller Data Collection Settings

6.2.1 Overview and Features

To collect data from the desired devices with YASKAWA Cockpit, the Data Collector software module must be executed. This section describes MotionDC which is included with YASKAWA Cockpit to collect data from MP3000 Series Machine Controllers (hereinafter referred to as the MP).

6.2.1.1 Tasks and Commands

Up to 10 tasks can be registered for the data collection function in MotionDC, and up to 40 commands can be registered for each task.

For tasks, set the expiration date and date/time of execution of commands registered in the task. A command execution schedule can be set from a start time to an end time in intervals of months, weeks, and days.

Commands, which are the most basic unit, configure the data collection settings for one controller or one SERVOPACK. Set the data collection method (register designation or trace), sampling period, trigger, target register address, and data label. To perform data collection for multiple controllers or SERVOPACKs, the commands must be split up.

6.2.1.2 Data Collection Methods

- **For Controllers**
  
  There are two methods to collect data of the controller with MotionDC: register designation and trace. The following usage of the data collection methods is recommended: Use register designation for data to collect that changes at a slow rate (e.g., temperature) because there will be no problem using a long sampling period. Use trace for data that changes at a fast rate (e.g., torque) because it must be collected using a short sampling period.

  - **Register Designation**
    
    This method collects data by creating the period on the computer and specifying the addresses of registers on the controller. Because the sampling period is created on the computer, the sampling period for data collection is 200 ms or longer, so use this method for data that does not require a strictly regulated sampling period. Data can be collected by specifying a many addresses because the data does not need to be held on the controller.

    - Depending on the amount of data that is collected, it may not be possible to collect the data in the specified sampling period.
    - When collecting data with register designation, the collection timing of each register may not be uniform, depending on the following elements.
      
      - The amount of spare time in the scan time of the controller.
      - The communications load between the controller and MotionDC.
• **Trace**
  This method collects data using the logging function, which is one of the functions on MP3000 Series Machine Controllers. Data is collected from the controller in the following manner: First, data is retrieved from the controller synchronized to its scanning period, and then the computer extracts the data from the created log file. Use this method for data that requires a high-speed sampling period (200 ms or lower) or for data that requires a strictly regulated sampling period since data can be retrieved from the controller at its scanning period. However, the data is held on the controller, so there are restrictions on the amount of data that can be held, restrictions on the number of registers that can be specified, and an impact on the scan time of the controller.

**NOTE**

- When collecting data using trace, the logging settings must be configured in advance with MPE720 Ver. 7. For details, refer to the following chapter in this manual. *chapter 6.2.12 “MPE720 Ver. 7 Logging Settings”*
- For the impact to scan time on the controller and other information, refer to the following manual. Machine Controller MP3000 Series MP3200 Product Manual (Manual No.: SIEP C880725 10) Chapter 2.2 “Appearance and Part Names CPU Unit”
6 Data Collection Settings
6.2 Machine Controller Data Collection Settings

For SERVOPACKs
SERVOPACK data collection with MotionDC uses tracing.

The operating status and signals inside the SERVOPACK are specified as trace objects for data collection.

When tracing is used, data is collected inside the SERVOPACK.

For this reason, the time in which data can be collected is restricted to a short time, but data can be collected with higher precision than using the logging function on the controller.

- While tracing is being executed with MotionDC, alarm tracing on the SERVOPACK is not executed.
- While tracing is being executed with MotionDC, there may be an impact on machine operation and data collection if the power supply to the MP is turned ON or the following MP registers are changed to 1 (ON) and the following commands are executed. For this reason, configure the schedule settings of the task so that the commands are not executed simultaneously.
  
  To turn ON the power supply to the MP, to change the following registers, or to execute the following commands while tracing is being executed, always stop the task first.

- **Registers**
  - Reset Network (OW□□□00 Bit C)
  - Reset Communications (OW□□□00 Bit E)
  - Clear Alarms (OW□□□00 Bit F)

- **Commands**
  - Reset Absolute Encoder (ABS_RST)
  - Multiturn Limit Setting (MLTTRN_SET)
  - Write Non-volatile Memory (PMEM_WR)
  - Executing adjustment operation with Write Memory (MEM_WR)

Refer to the following manual for details on adjustment operation.

- Σ-7-Series AC Servo Drive MECHATROLINK-III Communications Standard Servo Profile Command Manual (Manual No: SIEP S800001 31) Chapter 3.1.10 "Write Memory Command (MEM_WR: 1Eh)"

- If another tool (e.g., SigmaWin+ or MPE720 Ver. 7) operates the SERVOPACK for data collection or its host MP while the task is starting, MotionDC may not be able to perform data collection normally. To operate the SERVOPACK or MP with another tool, always stop the MotionDC task first.
6.2.1.3 Timestamps for Data Registered in YCP

For Ver. 1.43 or earlier controllers, the calendar information on the controller is registered with YCP as the timestamp for data.

For Ver. 1.44 or later controllers, the timestamp is a time calculated from the system operating time of the MP. This allows for a more accurate time to be registered as the timestamp.

The system operating time indicates an accurate time in the MP, but it is a simple counter and not a calendar format. For this reason, MotionDC corrects the system operating time to be the normal time based on the time of the computer, and it uses that time as the timestamp.

MotionDC performs timestamp correction processing once a day at the specified time1), and it reconciles the system operating time of the MP with the time of the computer on which MotionDC has been installed. When collecting data, MotionDC retrieves the system operating time of the MP at the same time. Next, MotionDC calculates the time when the data was retrieved from the difference from the system operating time that was retrieved with correction processing.

1) Refer to the following chapter in this manual.

   *chapter 6.2.10.2 “Timestamp Correction Time Setting”*
6.2.2 Starting MotionDC

Use the following procedure to start MotionDC.

1. From the Start menu, select "All Programs" > "YASKAWA" > "MotionDC".

When startup is completed, the following window appears.
6.2.3 MotionDC Setting Flow

Configure the settings according to the following flow. Select the data collection method according to the characteristics of the data.

Start of MotionDC Settings

Communication Platform Settings

YCP Communications Settings

Controller Communications Settings

System Configuration Settings

Task Settings

Target to Collect Data

Controller

Sampling Cycle > 200 ms?

No

SERVOPACK

Command Settings (Trace)

Command Settings (Register Designation)

Logging Settings with MPE720 Ver.7

Yes

Command Settings (Trace)

End of MotionDC Settings
6.2.4 Communication Platform Settings

1. From the Start menu, select "Programs" > "YE_Applications" > "Communication Platform".

The Communication Platform icon appears at the bottom right of the computer screen.

2. Double-click the Communication Platform icon.

The Communication Platform window appears.
6. Data Collection Settings

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3. Assign "ETHERNET" of the port to which the MP is connected to any logical port.

6.2.5 Configuring Basic Settings

Click "Basic Settings" on the left menu to open the Basic Settings window where the settings related to YCP communications, controller communications, and system configuration can be checked.

When "Edit" for each item is clicked, the Edit Settings window appears.
6 Data Collection Settings

6.2 Machine Controller Data Collection Settings

6.2.5.1 YCP Communications Settings

Click "Edit" for the YCP communications settings on the Basic Settings window, and then configure the connection settings for MotionDC and the YCP to which collected data will be registered using MotionDC.

Use the following procedure to configure the settings.

1. Enter the YCP communications settings in the following items according to the table below.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IP Address</td>
<td>IP address of the Ethernet port connected to the MP Machine Controller on the computer to which YCP has been installed. Refer to the figure below.</td>
</tr>
<tr>
<td>2</td>
<td>Port</td>
<td>YCP port.</td>
</tr>
<tr>
<td>3</td>
<td>User Name</td>
<td>The user name registered in YCP. The user must be registered in YCP in advance.</td>
</tr>
<tr>
<td>4</td>
<td>Password</td>
<td>The password registered in YCP.</td>
</tr>
</tbody>
</table>

2. Click "Authenticate".
   The following window appears if authentication is successful.
   If authentication fails, check the settings in ① and check if YCP is running.

3. Click "OK" to save the settings and return to the Basic Settings window.
6.2.5.2 Controller Communications Settings

Click "Edit" for the controller communications settings on the Basic Settings window, and then configure the communications settings for the target controllers for data collection.

Note that even if the data collection settings have been completed, data collection cannot be performed unless the controller settings have been configured.

Use the following procedure to configure the settings. Ensure that the computer to which MotionDC has been installed and all target controllers for data collection are connected via Ethernet before using this procedure.

1. Select the communications port that is connected to the controllers.
2. Click "Search".
3. Confirm that all connected controllers appear in the controller search results list.
4. Click "OK" to save the settings and return to the Basic Settings window.

Check the following items if connected controllers are missing from the controller search results list in step 3.

- Is the LINK/ACT indicator on the Ethernet connector of the controller lit or flashing?
- Is the communications port correct in the controller communications settings?
- Is the power supply to the controller turned ON?

For details, refer to the following instruction manual. Machine Controller MP3000 Series Machine Controller System Troubleshooting Manual (Manual No.: SIEP C880725 01) Chapter 6 "Troubleshooting Connections with the MPE720"
6.2.5.3 System Configuration Settings

When the settings in chapter 6.2.5.1 "YCP Communications Settings" and chapter 6.2.5.2 "Controller Communications Settings" have been completed, click "Edit" for the configuration settings on the Basic Settings window, and then set the device configuration.

Use the following procedure to configure the settings.

1. Click "Read" in the controller area to load the controller device configuration from YCP.
2. Check if the device configuration registered in YCP is loaded.
3. Check and set the setting items in the following table.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IP Address</td>
<td>The IP address of the controller set in chapter 6.2.5.2 &quot;Controller Communications Settings&quot; (Data cannot be collected if the IP address is not assigned. Select the IP address from the list or enter it directly.)</td>
</tr>
<tr>
<td>2</td>
<td>Time-out [ms]</td>
<td>The length of the communications timeout between MotionDC and the controller.</td>
</tr>
<tr>
<td>3</td>
<td>FTP User</td>
<td>The user name for the FTP account set on the controller. (The default setting of the controller is the initial value.)</td>
</tr>
<tr>
<td>4</td>
<td>FTP Password</td>
<td>The FTP password for the FTP account set on the controller. (The default setting of the controller is the initial value.)</td>
</tr>
</tbody>
</table>
Click "Import" to load the controller version.
If the controller version is not loaded, the settings are restricted as an offline controller. (The controller is identified as a Ver. 1.43 or earlier controller.)
If the data in SERVOPACK will be collected, proceed to step 5.
If the data in SERVOPACK will not be collected, proceed to step 7.

Select a controller in the controller area, and then click "Read" in the SERVOPACK area.
The SERVOPACKs assigned on the Module Configuration Definition tab page in MPE720 Ver. 7 are displayed (only those models that are compatible with MotionDC).
Check the items in the following table.

<table>
<thead>
<tr>
<th>No.</th>
<th>Items</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Axis Name</td>
<td>A number is displayed that combines the circuit number and station number. Example) If the circuit number is 1 and the station number is 1: 0101</td>
</tr>
<tr>
<td>2</td>
<td>Circuit No.</td>
<td>Information is displayed that corresponds to the Module Configuration Definition tab page in MPE720 Ver. 7.</td>
</tr>
<tr>
<td>3</td>
<td>Station No.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Station Address</td>
<td></td>
</tr>
</tbody>
</table>
6 Data Collection Settings
6.2 Machine Controller Data Collection Settings

⑦ Click "Batch" to load the versions of the SERVOPACKs.

When "Batch" is clicked, the versions of all SERVOPACKs will be loaded in batch. If an error occurs, the following message will be displayed and the versions will not be displayed for SERVOPACKs from which the information could not be loaded.

![Error Message]

After the problem is resolved, click "Import" for each individual SERVOPACK and the version of the relevant SERVOPACK will be displayed.

⑧ Click "OK" to save the settings and return to the Basic Settings window.

The set content is displayed in the configuration settings area on the Basic Settings window.
6.2.6 Task Settings

6.2.6.1 Checking the Tasks List

The list of data collection tasks currently registered in MotionDC can be checked on the Tasks List window.

Open the Tasks List window.

The following table gives a description of each item.
## 6 Data Collection Settings
### 6.2 Machine Controller Data Collection Settings

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Add</td>
<td>This button is used to register a new data collection task. The data collection schedule can be set for each task.</td>
</tr>
<tr>
<td>2</td>
<td>Start/Stop</td>
<td>Click “Start” to start data collection according to the schedule settings. <em>Start</em> changes to “Stop” during data collection. Click “Stop” to stop data collection. *Saving to MP flash is executed when “Start” is clicked, so do not perform MP operations with MPE720 Ver. 7 immediately after starting data collection. *If data fails to be retrieved with each command, the command is retried up to five times. If an error response is received, the command is retried immediately. If there is no response, the command is retried after waiting for the length of the timeout. *The logging files in the RAM of the MP are all collected by YCP at the start of data collection. If the previous files are not necessary, first delete the files, and then start data collection. For details, refer to the following instruction manuals. Machine Controller MP3000 Series MP3300 Product Manual (Manual No.: SIEP C880725 21) Chapter 3.2.7 “Function Modules File Transfer” Machine Controller MP3000 Series MP3200 Product Manual (Manual No.: SIEP C880725 10) Chapter 3.2 “Function Modules File Transfer” *While tracing is being executed with MotionDC, alarm tracing on the SERVOPACK is not executed.</td>
</tr>
<tr>
<td>3</td>
<td>Operating State</td>
<td>Displays the data collection state.</td>
</tr>
<tr>
<td>4</td>
<td>Start Date</td>
<td>Displays the schedule settings. For details, refer to chapter 6.2.6.2 “Schedule Settings”.</td>
</tr>
<tr>
<td>5</td>
<td>Start Time</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>End Time</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Expiration Date</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Edit/Browse</td>
<td>This button is used to edit the task schedule settings and command settings. This button changes to “Browse” while the task is started. The settings can no longer be edited. They can only be viewed.</td>
</tr>
<tr>
<td>9</td>
<td>Delete</td>
<td>This button is used to delete the task. The task can be deleted only when the operating status is stopped.</td>
</tr>
<tr>
<td>10</td>
<td>Verification</td>
<td>This button is used to verify if the data collection settings will work as configured before performing data collection. Verification can be executed only when the operating status is stopped. For the procedures for verification, refer to chapter 6.2.9 “Verifying Tasks”.</td>
</tr>
</tbody>
</table>
6 Data Collection Settings

6.2 Machine Controller Data Collection Settings

6.2.6.2 Schedule Settings

The Edit Task window appears when "Add" is clicked or "Edit" for an existing task is clicked on the Tasks Lists window.

The data collection period for each task can be set with the schedule settings.

The following table gives the setting items.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>Task Name</td>
<td>Set the name of the task.</td>
</tr>
<tr>
<td>②</td>
<td>Start Date</td>
<td>The date on which to start data collection.</td>
</tr>
<tr>
<td>③</td>
<td>Start Time</td>
<td>The time at which to start data collection for each day. Data collection will be started at the next start time if the time at which “Start” was clicked has already passed the start time.</td>
</tr>
<tr>
<td>④</td>
<td>End Time</td>
<td>The time at which to end data collection for each day.</td>
</tr>
<tr>
<td>⑤</td>
<td>Expiration Date</td>
<td>The date on which to end data collection.</td>
</tr>
<tr>
<td>⑥</td>
<td>Execution Intervals</td>
<td>Constantly: Regardless of the date and time, data collection starts immediately after &quot;Start&quot; is clicked on the Tasks List window. However, if a trigger is set in the command settings, data is collected according to the trigger condition. Daily: The execution interval for data collection can be set in increments of a day. Set one day and data collection will be executed only from the start time to the end time each day. Weekly: The execution interval for data collection can be set in increments of a week. Set Monday and Friday and data collection will be executed only from the start time to the end time on each Monday and Friday. Monthly: The execution interval for data collection can be set in increments of a month. With month designation, data collection is executed on all set months. With day designation, data collection is executed on all set dates. When January and October are set with the month designation and the 10th and 20th are set with the day designation, data collection will be executed only from the start time to the end time on January 10, January 20, October 10, and October 20.</td>
</tr>
</tbody>
</table>
6 Data Collection Settings
6.2 Machine Controller Data Collection Settings

6.2.7 Advance Setup for Logging (When Using Controller Trace Only)

To retrieve data with a short sampling cycle, use trace that collects data by using the logging function on the controller. There are two methods for using trace:

1. Configure the Logging Target Settings with MPE720 Ver. 7
   - Configure the logging target with MPE720 Ver. 7 and start logging from MPE720 Ver. 7. MotionDC collects the logging data during execution.

2. Configure the Logging Target Settings with MotionDC
   - Configure the logging target with MotionDC and start logging from MotionDC.
   - Set the maximum number of logging target registers with MPE720 Ver. 7 in advance and the logging settings can be changed from MotionDC without affecting the motion application on the machine.

Use the following procedure to configure the logging settings with MPE720 Ver. 7 and load those settings with MotionDC.

**NOTE**
For both methods, the logging settings must be configured in advance with MPE720 Ver. 7. These methods can be used with MPE720 Ver.7.46 or later. Complete the logging settings before implementing the MP application because these logging settings affect the MP scan cycle.
6.2.7.1 Configure the Logging Target Settings with MPE720 Ver. 7

① Configure the logging settings with MPE720 Ver. 7. For how to configure the settings, refer to chapter 6.2.12.1 “When Configuring the Logging Target Settings with MPE720 Ver. 7”.

② Return to MotionDC, and then open the Task Settings window for data collection.

③ Select the name of the controller to trace from “Target Device”.

④ Click “Import”.

⑤ Check if the logging settings have been reflected in Commands List and “Trace” is displayed for “Collection Method”.

NOTE
Note that if the logging settings have already been loaded, loading them again will overwrite the settings.

If loading fails, check the following items.

• The target device matches the controller name and IP address set in the YCP device configuration.

• The power supply to the selected target device is turned ON.
Configure the Logging Target Settings with MotionDC

1. Configure the logging settings with MPE720 Ver.7. For how to configure the settings, refer to chapter 6.2.12.2 “When Configuring the Logging Target Settings with MotionDC”.

2. Return to MotionDC, and then open the Task Settings window for data collection.

3. Select the target device.

4. Load the logging settings.

5. Confirm that the logging settings have been reflected.

Select the name of the controller to trace from “Target Device”.

Click "Import".

Check if the logging settings have been reflected in Commands List and "Trace [Editable]" is displayed for "Collection Method".

- Note that if the logging settings have already been loaded, loading them again will overwrite the settings.

- After the logging settings are changed with MPE720 Ver. 7, always reload the logging settings in step 4. Note that data cannot be collected if the settings are not loaded after being changed.

When the settings are reloaded, the logging settings are overwritten. For this reason, copying the target registers list to Excel or other software is recommended.

If loading fails, check the following items.

- The target device matches the controller name and IP address set in the YCP device configuration.

- The power supply to the selected target device is turned ON.

- The controller information could be loaded in "Basic Settings" > "Configuration Settings" (for details, refer to chapter 6.2.5.3 “System Configuration Settings”).
6.2.8 Command Settings

To create a new command, click "Add" under Commands List on the Edit Tasks window and the Command Settings for Register Designation window appears. To edit a new command, click "Edit" for a created command and the Command Settings for Register Designation window appears.

To delete a created command, click "Delete".

The setting items on the Command Settings window will differ between controllers and SERVOPACKs.

For details on the setting items, refer to the following sections.

- *chapter 6.2.8.1 “Controller Settings”*
- *chapter 6.2.8.2 “SERVOPACK Settings”*
6.2 Machine Controller Data Collection Settings

6.2.8.1 Controller Settings

- **Basic Command Settings**
  The following table gives the basic setting items.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Device Type</td>
<td>Select &quot;Controller&quot;.</td>
</tr>
<tr>
<td>2</td>
<td>Controller</td>
<td>Select the name of the controller for data collection.</td>
</tr>
</tbody>
</table>
| 3   | Collection Method     | One of the following is displayed:  
  - Register Specification: When "Add" was clicked on the Edit Tasks window.
  - Trace: When the logging settings were loaded on the Edit Tasks window and "Edit" was clicked afterward. |
| 4   | Condition             | Once: Performs data collection only once at the start time in the schedule settings. Periodic Execution: Performs data collection from the start time to the end time in the schedule settings with the set sampling period and trigger condition. |
| 5   | Execution Cycle       | Displays the execution cycle for tracing. This item is not displayed when the collection method is "Register Specification".               |
| 6   | Sampling Cycle        | Set the interval to collect data.                                                                                                             |

- **Trigger Condition Settings**
  Configure the trigger settings to perform data collection only when a certain condition is satisfied in the period specified by the schedule settings.

  The following table gives the setting items. Multiple items can be enabled at the same time.

  ② "Specify the stop timing" has the highest priority. Even if the ① or ③ start trigger conditions are satisfied, data collection will not start while the stop condition is satisfied.

  For the data collection start conditions, data collection is performed when both ① and ③ start trigger conditions are satisfied while the stop trigger condition is not satisfied.
### 6.2 Machine Controller Data Collection Settings

The following table gives the detailed setting items for conditions.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>Specify the start timing</td>
<td>Select this check box to enable the start trigger.</td>
</tr>
<tr>
<td>②</td>
<td>Specify the stop timing</td>
<td>Select this check box to enable the stop trigger.</td>
</tr>
<tr>
<td>③</td>
<td>Add detailed data output conditions</td>
<td>Select this check box to perform data collection only when the specified condition is satisfied.</td>
</tr>
</tbody>
</table>

#### Start trigger
- **For the input field to the left**, enter a register (only S, M, G, I, or O registers can be registered).
- **For the input field to the right**, enter a numeric value or ON/OFF.
- The start condition is rising-edge triggered (detected when the condition is satisfied from the condition not satisfied state).

#### Stop trigger
- The stop condition is level triggered (always detected while the condition is satisfied).

#### Condition A
- **For the input field to the left**, enter a register (only S, M, G, I, or O registers can be registered).
- **For the input field to the right**, enter a numeric value.
- When both Condition A and Condition B have been entered, select the check box for "AND" or "OR".
- If "No compound conditions" is selected, only Condition A is valid.

#### Satisfy condition
- Select one of the following options.

<table>
<thead>
<tr>
<th>Selection</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;</td>
<td>The condition is satisfied if the value of the register on the left side is greater than the value of the register on the right side.</td>
</tr>
<tr>
<td>&lt;</td>
<td>The condition is satisfied if the value of the register on the left side is less than the value of the register on the right side.</td>
</tr>
<tr>
<td>=</td>
<td>The condition is satisfied if the values of the registers on the left and right sides are equal.</td>
</tr>
<tr>
<td>&lt;&gt;</td>
<td>The condition is satisfied if the values of the registers on the left and right sides are not equal.</td>
</tr>
<tr>
<td>&gt;=</td>
<td>The condition is satisfied if the value of the register on the left side is greater than or equal to the value of the register on the right side.</td>
</tr>
<tr>
<td>&lt;=</td>
<td>The condition is satisfied if the value of the register on the left side is less than or equal to the value of the register on the right side.</td>
</tr>
</tbody>
</table>

#### Satisfy compound condition
- Select one of the following options when both Condition A and Condition B are entered.

<table>
<thead>
<tr>
<th>Selection</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>No compound condition</td>
<td>The compound condition is satisfied if condition A is satisfied. Condition B is ignored if registered.</td>
</tr>
<tr>
<td>AND</td>
<td>The compound condition is satisfied if condition A and condition B are satisfied.</td>
</tr>
<tr>
<td>OR</td>
<td>The compound condition is satisfied if either condition A or condition B is satisfied.</td>
</tr>
</tbody>
</table>
6 Data Collection Settings
6.2 Machine Controller Data Collection Settings

For details on trigger settings, refer to the following instruction manual.
Machine Controller MP3000 Series MP3300 Product Manual (Manual No.: SIEP C880725 21)
Chapter 3.2.5 “Data Logging”

### Registers List Settings (When Collection Method Is Register Designation)
Input the registers list in the following table.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Target Register</td>
<td>Enter the address of the target register for data collection. The following registers can be used with data collection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Register type: S, M, G, I, and O</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: B, W, L, Q, F, and D</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Register Number= Range (The number of digits differs depending on the data types and register types.)</td>
</tr>
<tr>
<td>2</td>
<td>Label</td>
<td>The label name used when registering the data to YCP. When the target register is entered, the same name as the target register is entered automatically.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The same label cannot be set with an identical target device. The target device must be different because the device configuration registered in YCP is different.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Characters that can be entered: [a-z, A-Z, 0-9, ., -], 1 to 16 characters. Input restrictions: Strings that begin with the following characters cannot be used: “YE”, “ye”, “YCP”, “ycl”, “RMS”, “rms”, “ALL”, “all”, and “_”.</td>
</tr>
<tr>
<td>3</td>
<td>Comment</td>
<td>The desired comment can be entered. The number of characters that can be entered is a maximum of 255 bytes.</td>
</tr>
</tbody>
</table>
6 Data Collection Settings
6.2 Machine Controller Data Collection Settings

**Registers List Settings (When Collection Method Is Trace)**

Input the registers list in the following table.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Target registers, labels, and comments can be copied and pasted from Excel (tab delimited). A single column by itself can also be copied and pasted. Select the target cells on the registers list and paste to overwrite the selected range of data. Using Excel is a convenient way to manage registers.
### 6.2 Machine Controller Data Collection Settings

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1   | Target Register | • When the logging targets were set with MPE720 Ver. 7: The address of the target register for data collection is automatically entered.   
• When the logging targets were set with MotionDC: Enter the registers for data collection directly. You can enter the registers up to the maximum number of logging registers set with MPE720 Ver. 7. |
| 2   | Label           | The variable name to use when selecting data with DW or DA. The same name as the variable name set in MPE720 Ver. 7 or the same name as the target register is entered automatically, but the same label cannot be set with an identical target device. If the target device is different, the same label can be set because the device configuration registered in YCP is different (because the path is different). Characters that can be entered: [a-z, A-Z, 0-9, _, -], 1 to 16 characters. Input restrictions: Strings that begin with the following characters cannot be used: "YE", "ye", "YCP", "ycp", "RMS", "rms", "ALL", "all", and ".". Note: When configuring logging target settings with MotionDC, D registers and S registers of data type D cannot be used. S registers other than those which are data type D can be used. |
| 3   | Program         | The program number of the drawing that uses the target register is entered only when the target register is a D register. Note: When configuring logging target settings with MotionDC, the program column is not displayed because D registers cannot be set. |
| 4   | Comment         | The desired comment can be entered. The number of characters that can be entered is a maximum of 255 bytes. |

The registers list content can be copied and pasted from Excel (tab delimited). A single column by itself can also be copied and pasted. Select the target cells on the registers list and paste to overwrite the selected range of data. Using Excel is a convenient way to manage registers.

The following content can be copied and pasted.

- Trace (not editable): Labels and comments
- Trace (editable): Target registers, labels and comments
### 6.2.8.2 SERVOPACK Settings

#### Basic Command Settings

The following table gives the basic setting items on the Command Settings window.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Device Type</td>
<td>Select &quot;SERVOPACK&quot;.</td>
</tr>
<tr>
<td>2</td>
<td>Controller</td>
<td>Select the name of the controller to which the SERVOPACK for data collection has been assigned.</td>
</tr>
<tr>
<td>3</td>
<td>Station Address</td>
<td>Select the station address of the SERVOPACK for data collection. The axis name is displayed in parentheses after the station address. For the Σ-7W, two axis names are displayed.</td>
</tr>
<tr>
<td>4</td>
<td>Collection Method</td>
<td>&quot;Trace&quot; is displayed.</td>
</tr>
<tr>
<td>5</td>
<td>Condition</td>
<td>Execution: Performs data collection for the set execution count from the start time in the schedule settings. Periodic Execution: Performs data collection from the start time to the end time in the schedule settings with the set cycle and trigger condition.</td>
</tr>
<tr>
<td>6</td>
<td>Execution/Execution Cycle</td>
<td>Execution: This is displayed when &quot;Execution&quot; is selected for the collection condition. Set the number of times to execute data collection (0 to 100). If set to &quot;0&quot;, unlimited data collection will be executed within the period in the schedule settings. Execution Cycle: This is displayed when &quot;Periodic Execution&quot; is selected for the collection condition. Set the cycle at which to execute data collection.</td>
</tr>
<tr>
<td>7</td>
<td>Sampling Cycle</td>
<td>Enter a numeric value that is a multiple of 125. If another value is entered, it is automatically adjusted to be a multiple of 125.</td>
</tr>
<tr>
<td>8</td>
<td>Sampling Points</td>
<td>Select from 8192 (2 types), 4096 (4 types), and 2048 (8 types). If the trace target (types) is set to a lower value, more data can be collected and the trace time can be increased. * If the High-Precision Trace check box is select, the value is halved. * For Σ-7W SERVOPACKs, the number of types is the combination of two axes. * If &quot;2048 (8 types)&quot; is selected, the signal selected as the I/O trace target on the eighth row cannot be set as the trigger condition. Set the signal to use as the trigger condition to a signal on the first through seventh rows.</td>
</tr>
<tr>
<td>9</td>
<td>Trace Time</td>
<td>This time is calculated from the Sampling Period and Number of Samples settings. Increase the sampling period to increase the trace time.</td>
</tr>
<tr>
<td>10</td>
<td>High-Precision Trace</td>
<td>Select this check box to obtain trace data at a higher precision. High-precision trace expands the size of register data to collect from 1 word to 2 words, but it halves the amount of data (number of samples) that can be collected at one time.</td>
</tr>
</tbody>
</table>
### Trigger Condition Settings

Configure the trigger settings to perform data collection only when a certain condition is satisfied in the period specified by the schedule settings.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>Trigger Conditions</td>
<td>Select the trigger condition from the list box.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Trigger Conditions</strong></td>
</tr>
<tr>
<td></td>
<td>Trigger A</td>
<td>When the trigger A condition is met</td>
</tr>
<tr>
<td></td>
<td>Trigger A AND Trigger B</td>
<td>When both the trigger A and trigger B conditions are met</td>
</tr>
<tr>
<td></td>
<td>Trigger A OR Trigger B</td>
<td>When either of the trigger A and trigger B conditions is met</td>
</tr>
<tr>
<td>②</td>
<td>Pre-Trigger</td>
<td>Enter a numeric value to save the data before the trigger condition is met.</td>
</tr>
<tr>
<td>③</td>
<td>Trigger Target</td>
<td>Select the object that is to serve as the trace trigger from the list box.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trace objects set with &quot;Analog Trace&quot; and &quot;I/O Trace&quot; are displayed as options.</td>
</tr>
<tr>
<td>④</td>
<td>Trigger Level</td>
<td>Enter the reference value for detecting the trigger.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The same unit as the selected trigger target is displayed for the unit of the setting value.</td>
</tr>
<tr>
<td>⑤</td>
<td>Trigger Type</td>
<td>Select the method for detecting the trigger from the list box.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Trigger Type</strong></td>
</tr>
<tr>
<td></td>
<td>Rising Edge</td>
<td>A trigger is detected when the trigger object changes from below the trigger level to above the trigger level.</td>
</tr>
<tr>
<td></td>
<td>Falling Edge</td>
<td>A trigger is detected when the trigger object changes from above the trigger level to below the trigger level.</td>
</tr>
<tr>
<td></td>
<td>Change Edge</td>
<td>A trigger is detected when the trigger object changes from below the trigger level to above the trigger level or from above the trigger level to below the trigger level.</td>
</tr>
<tr>
<td></td>
<td>Level Trigger (Above)</td>
<td>A trigger is detected if the trigger object is above the trigger level.</td>
</tr>
<tr>
<td></td>
<td>Level Trigger (Below)</td>
<td>A trigger is detected if the trigger object is below the trigger level.</td>
</tr>
</tbody>
</table>
### Trace Object Settings
Set the items for the trace objects.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Axis Name</td>
<td>The axis name of the SERVOPACK specified by &quot;Station Address&quot; is displayed. For the Σ-7W, two axis names are displayed, and the target axis can be selected from those two.</td>
</tr>
<tr>
<td>2</td>
<td>Analog Trace</td>
<td>Select the data to serve as the trace object.</td>
</tr>
<tr>
<td>3</td>
<td>I/O Trace</td>
<td>Select the signal to serve as the trace object.</td>
</tr>
<tr>
<td>4</td>
<td>Unit</td>
<td>The unit is displayed if analog trace is selected.</td>
</tr>
<tr>
<td>5</td>
<td>Label</td>
<td>The label name used when registering the data to YCP. Labels are saved in the YCP database with the following names. &quot;Axis name&quot;+&quot;Label name&quot; Example) If the axis name is &quot;0102&quot; and label name is &quot;Trq&quot;: 0102Trq Characters that can be entered: [a-z, A-Z, 0-9, _, -]. 1 to 11 characters</td>
</tr>
</tbody>
</table>
6.2.8.3 Checking the Command List

The content set on the Command Settings windows appears on the Command List.

![Excel screenshot]

The label content can be copied and pasted from Excel (tab delimited). Select the target cells on the label column and paste to overwrite the selected range of data. Using Excel is a convenient way to manage labels.
The following table gives the displayed items.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>Device Type</td>
<td>Displays the settings on the Command Settings window.</td>
</tr>
<tr>
<td>②</td>
<td>Collection Method</td>
<td></td>
</tr>
<tr>
<td>③</td>
<td>Device</td>
<td></td>
</tr>
<tr>
<td>④</td>
<td>Sampling Cycle</td>
<td></td>
</tr>
<tr>
<td>⑤</td>
<td>Execution Cycle</td>
<td></td>
</tr>
<tr>
<td>⑥</td>
<td>Collect Data</td>
<td>Displays the number of times data collected/set execution count when the SERVOPACK data collection condition is &quot;Execution&quot;.</td>
</tr>
<tr>
<td>⑦</td>
<td>Operating State</td>
<td>Displays the operating state of the command.</td>
</tr>
</tbody>
</table>

- **Stop**: The task is stopped.
- **Error**: Displayed only if a communications error occurs when "Start" is clicked or just after the start time in the schedule settings.
- **Waiting for collect start**: Waiting until the start time in the schedule settings after "Start" was clicked.
- **Command start wait**: Performing pre-processing for MotionDC to write the trace settings to the SERVOPACK after the start time in the schedule settings.
- **Configuring trace**: MotionDC is writing the trace settings to the SERVOPACK.
- **Trace start wait**: Making final preparations before tracing is executed.
- **Tracing**: Waiting for trigger or collecting data.
- **Reading data**: MotionDC is reading trace data.
- **Execution cycle wait**: Waiting for the next execution cycle when the collection condition is "Periodic Execution".
- **Command end wait**: Performing end processing after the set execution count has completed or after the final collection within the period in the schedule settings.
- **Completed**: The specified execution count was completed when the collection condition was "Execution".
6.2 Machine Controller Data Collection Settings

6.2.9 Verifying Tasks

After the data collection settings have been completed, check if data collection operates according to those settings by actually running the task and collecting data. The data used at this time is not registered in YCP.

6.2.9.1 Operation Method

Use the following operation method for verification.

1. On the Tasks List window, click "Verification".

2. Click "Start".
The following items are displayed on the Verification Results window.

<table>
<thead>
<tr>
<th>Command</th>
<th>Displays the device number. The number corresponds to the number on the command list.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controller</td>
<td>Displays the controller name.</td>
</tr>
<tr>
<td>Station Address</td>
<td>Displays the station address of the SERVOPACK when the device is a SERVOPACK.</td>
</tr>
<tr>
<td>Type</td>
<td>Displays the data collection method.</td>
</tr>
<tr>
<td>Collect Data</td>
<td>Displays the number of times data collected/set execution count when the device is a SERVOPACK and the collection condition is &quot;Execution&quot;.</td>
</tr>
<tr>
<td>Operating State</td>
<td>Displays the state of verification.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Controller: Register Specification</th>
<th>Successful</th>
<th>Data collection completed within the cycle on the Command Settings window.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delay</td>
<td>Delay</td>
<td>Data collection completed by exceeding the cycle on the Command Settings window. The delay time is displayed.</td>
</tr>
<tr>
<td>Communication error</td>
<td>A communications error occurred.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Controller: Trace</th>
<th>Successful</th>
<th>Data collection completed within the execution cycle in the logging settings.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delay</td>
<td>Delay</td>
<td>Data collection completed by exceeding the execution cycle in the logging settings. The delay time is displayed.</td>
</tr>
<tr>
<td>Authentication error</td>
<td>An authentication error occurred in FTP communications with the controller.</td>
<td></td>
</tr>
<tr>
<td>Communication error</td>
<td>A communications error occurred.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SERVOPACK</th>
<th>Successful</th>
<th>Data collection completed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delay</td>
<td>Delay</td>
<td>Data collection completed by exceeding the cycle on the Command Settings window. The delay time is displayed.</td>
</tr>
<tr>
<td>Communication error</td>
<td>A communications error occurred.</td>
<td></td>
</tr>
<tr>
<td>Configuring trace</td>
<td>Same operating states as the SERVOPACK operating states. For details, refer to chapter 6.2.8.3 “Checking the Command List”.</td>
<td></td>
</tr>
<tr>
<td>Trace start wait</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tracing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Execution cycle wait</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Command end wait</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sampling Cycle</th>
<th>Displays the settings on the Command Settings window.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Execution Cycle</td>
<td>Displays the delay time for the set execution cycle. A negative number is displayed if the collection time is less than the execution time.</td>
</tr>
<tr>
<td>Delay Time</td>
<td>•Controller (Register Specification) and SERVOPACK: Delay Time = Sampling Cycle - Collection Time</td>
</tr>
<tr>
<td></td>
<td>•Controller (Trace): Delay Time = (Sampling Cycle × Number of Output Data) - Collection Time</td>
</tr>
<tr>
<td>Maximum Delay Time</td>
<td>Displays the maximum delay time in the commands included on the same controller. A negative number is displayed if there was no delay.</td>
</tr>
</tbody>
</table>
6.2.9.2 Troubleshooting Delays

If a delay occurs in verification, perform troubleshooting and take action for the delay.

**Controller**

*[Causes]*

- The controller for data collection is busy and it takes time to read the data.

*[Actions]*

- Reduce the number of target registers for data collection.
- Increase the number of output data in the logging format settings in MPE720 Ver. 7.

**SERVOPACK**

*[Causes]*

- Too many axes for tracing.
- The trigger condition was not satisfied within the set execution cycle.

*[Actions]*

- Decrease the number of axes for tracing.
- Increase the execution cycle or review the trigger condition.
6.2.10 Other Functions and Settings

When "Function" on the left menu is clicked, the following window appears.

This section describes the settings and procedures for each item on this window.

6.2.10.1 Restore/Back Up Settings

This function restores (loads) and backs up (saves) settings.

The items set with MotionDC can be written to file and backed up. The settings can be transferred when replacing the computer or when upgrading MotionDC. The settings when the file was saved as the backup can be restored by loading the file from MotionDC. Note that the setting items that can be saved to file are only those handled by MotionDC. The settings for other applications cannot be saved with this function.
Data Collection Settings

6.2 Machine Controller Data Collection Settings

- Loading Settings from File
  1. Click "Restore".
  2. Check the warning on overwriting the settings, and then click "Yes".

  ![Warning dialog box]

  3. Select the file (extension: .config) from which the settings will be loaded from the Select File dialog box, and then click "Open".

  ![Select File dialog box]

  4. To immediately restart the application, click "Yes".
     If "No" is clicked, the settings will be applied the next time the application is started.
     Note that items set after the settings are restored will be deleted.

  ![Restart dialog box]

  5. Confirm that the task settings and basic settings were loaded.

  6. Load the logging settings from the MP.
     If the device configuration or other settings have been changed, review the settings again from chapter 6.2.5 “Configuring Basic Settings”.
6 Data Collection Settings
6.2 Machine Controller Data Collection Settings

- Writing Settings to File
  1. Click "Back up".
  2. Specify the save destination and filename from the Save File dialog box.
  3. Click "Save".
  4. Confirm that the file was created.

The following table gives the settings that are saved:

<table>
<thead>
<tr>
<th>No.</th>
<th>Saved Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>YCP communications settings</td>
</tr>
<tr>
<td>2</td>
<td>Controller communications settings</td>
</tr>
<tr>
<td>3</td>
<td>Configuration settings</td>
</tr>
<tr>
<td>4</td>
<td>Task settings</td>
</tr>
<tr>
<td>5</td>
<td>Device IP address settings</td>
</tr>
</tbody>
</table>
6.2.10.2 Timestamp Correction Time Setting

This function sets the time to perform timestamp correction.

For Ver. 1.44 or later controllers, the timestamp is a time calculated from the system operating time of the MP. This allows for a more accurate time to be registered as the timestamp. MotionDC performs timestamp correction processing once a day at the specified time, and it reconciles the system operating time of the MP with the time of the computer on which MotionDC has been installed. The offset between the time on the computer and the system operating time of the MP is corrected in this manner.

Use the following procedure to configure the settings.

1. Click "Edit".

2. Set the timestamp correction time setting.
   - If the set to 03:00, the time correction is performed every day at 3 AM.
   - When timestamp correction is performed, the timestamps before and after time correction may be offset by a few seconds, so set a time when data collection will not be performed.

*If communications with the target MP for data collection cannot be performed at the specified time (e.g., the power supply is turned OFF), communications are retried every 30 minutes until established.

3. Click "OK" to save the settings and return to the Functions window.
6.2.10.3 YCP Data Registration Cycle Setting

This function sets the cycles at which controller data retrieved by MotionDC is registered to the YCP database.

Decrease the cycles to update the database at a higher frequency. However, note that the load on the CPU of the computer may increase when the cycle is decreased.

Use the following procedure to configure the settings.

1. Click "Edit".
2. Set the cycle at which data is registered to YCP.
   The controller trace data cycle and the controller register specification data cycle can be set separately.
   Note: SERVOPACK data is registered after it is collected.
3. Click "OK" to save the settings and return to the Functions window.
6.2.10.4 Language Setting

This function sets the MotionDC display language.

Use the following procedure to configure the settings.

1. Click "Edit".
2. Select the display language.
   "English", "日本語" (Japanese), and "中文（简体）" (Simplified Chinese) can be selected.
3. Click "OK" to save the settings and return to the Functions window.

*The setting is applied after MotionDC is restarted.*
6.2.10.5 Device Connection Setting

This function sets the interval to retry the connection after the connection to the device has failed. A communications check with the device is performed at the set interval within the period in the schedule settings. Data collection is started when communications with the device can be confirmed.

Use the following procedure to configure the settings.

1. Click "Edit".
2. Set the retry interval.
3. Click "OK" to save the settings and return to the Functions window.
6.2.11 Exiting MotionDC

To exit MotionDC, click "×" at the top right of the window.

The following dialog box appears if tasks have been started.

Click "Yes" and all tasks will be stopped and the application will exit.

If the application was terminated due to a power loss or other problem when tasks were started, the following dialog box will appear at startup.

Click "Yes" to restart the tasks in the same state as when the application was terminated.
6.2.12 MPE720 Ver. 7 Logging Settings

Configure the logging settings with MPE720 Ver.7. This method can be used with MPE720 Ver.7.46 or later. For the impact to scan time on the controller and other information, refer to the following manual.

- Machine Controller MP3000 Series MP3300 Product Manual (Manual No.: SIEP C880725 21) Chapter 3.2.5 “Data Logging”

6.2.12.1 When Configuring the Logging Target Settings with MPE720 Ver. 7

1. Start MPE720 Ver. 7, and click “Logging”.

2. The Logging dialog box appears. Click "Format".
6.2 Machine Controller Data Collection Settings

3. The Format dialog box appears. Set the format as given in the following table, and then click "OK".

![Format dialog box with settings filled]

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Setting</th>
<th>Required/Recommended/Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>Saving destination</td>
<td>Select &quot;In the built-in RAM disc&quot;.</td>
<td>Required</td>
</tr>
<tr>
<td>②</td>
<td>File format</td>
<td>Select &quot;Binary&quot;.</td>
<td>Required</td>
</tr>
<tr>
<td>③</td>
<td>File details</td>
<td>Output information</td>
<td>Required</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Select all options except &quot;DATE/TIME(0.01us)&quot;.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Note: For Ver. 1.43 or earlier controllers,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;DATE/TIME(0.01us)&quot; and &quot;System operation time&quot; cannot be selected.</td>
<td></td>
</tr>
<tr>
<td>④</td>
<td>Number of output data</td>
<td>Set a value that satisfies the following two items:</td>
<td>Recommended</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Number of output data × Sampling period &gt; 1 minute</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Taking into consideration all logging channels, set to a value low enough so that no alarms occur.</td>
<td></td>
</tr>
<tr>
<td>⑤</td>
<td>File name</td>
<td>Desired file name</td>
<td>Optional (cannot be blank)</td>
</tr>
<tr>
<td>⑥</td>
<td>Folder name</td>
<td>Desired folder name</td>
<td>Optional (can be blank)</td>
</tr>
<tr>
<td>⑦</td>
<td>Add date information</td>
<td>Clear check box.</td>
<td>Required</td>
</tr>
</tbody>
</table>

Use caution with settings ①, ②, ③, and ⑦ because data collection cannot be performed if these are incorrect.

Set ④ according to the setting value for the sampling and trigger."
6.2 Machine Controller Data Collection Settings

If the setting value for the number of output data is too large, the total size of the logging files created by Logging1 to Logging4 will exceed the amount of built-in RAM, and an error will occur on the MP. Or the YCP data update cycle will increase as shown in the following example. In this case, decrease the number of output data.

Example 1: When the sampling period = 100 ms and number of output data = 30,000, the data that can be collected is:

\[ 0.1 \text{ s} \times 30,000 = 3000 \text{ s} = 50 \text{ min} \]

(30,000 points of data are saved to the YCP database in a 50-minute cycle.)

In other words, when referenced with DW/DA, this data is updated in a 50-minute cycle.

4. Close the Format dialog box and the Logging dialog box appears. Click "File output".
   The Format dialog box appears.

5. The File Output dialog box appears.
   Set the file output as given in the following table, and then click "OK".

![File Output dialog box](image-url)
For No. 1, adjusting the number of output files according to the size of the saving destination device specified in the previous section is recommended. Basically, setting this to create two or more files is recommended. MotionDC deletes the saving destination files while collecting the log files created by the MP as needed. However, if communications are lost between MotionDC and the MP, the MP will attempt to continue logging in excess of its capacity, and an alarm will occur.

For No. 2, set "Overwrite". Files are retrieved and deleted from the MP after a certain amount of time when logging is started by MotionDC, so this prevents files with the same name from remaining on the MP. However, only the MP side can maintain the status where it continues logging in cases where the time until the MotionDC side starts logging or communications are lost between MotionDC and the MP.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Selection</th>
<th>Required/Recommended/Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Number of output files</td>
<td>Set according to the amount of data</td>
<td>Recommended</td>
</tr>
<tr>
<td>2</td>
<td>File overwrite settings</td>
<td>Overwrite</td>
<td>Recommended</td>
</tr>
</tbody>
</table>

When the total number of log files exceeds the maximum, any new log file will overwrite the oldest log file. Set the number of output files to 4000 or less for the following saving destinations:
- Buff in RAM disk
- FTP server
- PC [MotionAP]

Specify the operation when a file with the same name exists.
- Overwrite
- Stop logging

OK
Cancel
6. Close the File Output dialog box and the Logging dialog box appears. Click "Logging target".

7. The Logging Target dialog box appears.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Required/Recommended/Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Logging target registers</td>
<td>Required</td>
</tr>
</tbody>
</table>
6 Data Collection Settings
6.2 Machine Controller Data Collection Settings

8. Close the Logging Target dialog box and the Logging dialog box appears. 
   Click “Sampling and trigger”.

9. The Sampling and Trigger dialog box appears. 
   Set the sampling and trigger as given in the following table, and then 
   click "OK".
### 6.2 Machine Controller Data Collection Settings

Set the number of output data in the format settings according to the setting value of 3. For details, refer to the section on the Format dialog box in this chapter. If a using a Ver. 1.43 or earlier controller, a sampling period that includes a fraction of one second cannot be used with a sampling period one second or longer (e.g., 1,200 ms).

For 4, "Asynchronous scanning" can also be selected, but some data may be lost. Select "Synchronous scanning" instead.

For 5, if a using a Ver. 1.43 or earlier controller, ensure that the start/stop trigger or "Add detailed output conditions of data" trigger conditions do not switch between ON and OFF in less than two seconds. The data will be handled as if it continues, and timestamps will continue being given to the data. For this reason, a duration of time error will accumulate while stopped.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Setting</th>
<th>Required/Recommended/Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Logging name</td>
<td>Enter the desired name (can be blank).</td>
<td>Optional</td>
</tr>
<tr>
<td>2</td>
<td>Sampling Setting</td>
<td>Data retrieval timing</td>
<td>Optional</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;High-speed Scan&quot; or &quot;Low-speed Scan&quot;.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Be aware that the duration of logging processing time uses the scan time.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Sampling period</td>
<td>Sampling period ≥ 1 ms?</td>
<td>Required</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of output data × Sampling period &gt; 1 minute</td>
<td>Recommended</td>
</tr>
<tr>
<td>4</td>
<td>Data output timing</td>
<td>Select &quot;Synchronous scanning&quot;</td>
<td>Required</td>
</tr>
<tr>
<td>5</td>
<td>Trigger conditions</td>
<td>Set logging output conditions (can be blank).</td>
<td>Optional</td>
</tr>
</tbody>
</table>
6 Data Collection Settings
6.2 Machine Controller Data Collection Settings

Logging is executed during the scan set by ② and ③.

If the logging processing does not complete within the scan time set by ② and ③, a Watch Dog Timer Error (E.001) may occur on the controller.

For details on logging settings, refer to the following instruction manual. Machine Controller MP3000 Series MP3300 Product Manual (Manual No.: SIEP C880725 21) Chapter 3.2.5 “Data Logging”

10. Start logging.

- Check that the settings in "Format", "File output", "Logging target", and "Sampling and trigger" are correct.
- Click "Start".

Note: While performing data collection with MotionDC, do not stop logging.
6.2.12.2 When Configuring the Logging Target Settings with MotionDC

Set the maximum number of logging target registers with MPE720 Ver. 7 in advance and the logging settings can be changed from MotionDC without affecting the motion application on the machine.

Logging settings can also be configured in an environment without MPE720 Ver. 7 if these settings are configured in advance. This function can only be used with a Ver. 1.44 or later controller.

1. Start MPE720 Ver. 7, and click “Logging”.

2. The Logging dialog box appears.
   Click the "Permit Settings from Tools Other Than MPE720" icon below.

3. The Permit Settings from Tools Other Than MPE720 dialog box appears.
   Select the check box for "Permit settings from tools other than MPE720", enter the number of log registers to permit under "Maximum Number of Registers to Log", and then click "OK".
6 Data Collection Settings
6.2 Machine Controller Data Collection Settings

4. A message dialog box appears. The current settings will be discarded because setting values are set for the format settings and logging target settings. If OK, click "Yes".

5. The message dialog box closes and the Logging dialog box appears. Click "Format".

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Setting</th>
<th>Required/Recommended/Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>Permit settings from tools other than MPE720</td>
<td>Select this check box to configure logging settings with MotionDC.</td>
<td>Required</td>
</tr>
<tr>
<td>②</td>
<td>Maximum Number of Registers to Log</td>
<td>CPU-201: 1 to 64 Other than CPU-201: 1 to 256</td>
<td>Required</td>
</tr>
</tbody>
</table>
6. The Format dialog box appears. 
Set the format as given in the following table, and then click "OK".

![Format dialog box](image)

### No. | Item | Setting | Required/Recommended/Optional
--- | --- | --- | ---
1 | Saving destination | Select "In the built-in RAM disc". | Required
2 | File format | This setting is locked to "Binary". | Required
3 | File details | Output information | Required
   - Select all options except "DATE/TIME(0.01us)".
   - Note: For Ver. 1.43 or earlier controllers, "DATE/TIME(0.01us)" and "System operation time" cannot be selected.
4 | Number of output data | Set a value that satisfies the following two items:
   1. Number of output data × Sampling period > 1 minute
   2. Taking into consideration all logging channels, set to a value low enough so that no alarms occur. | Recommended
5 | File name | Desired file name | Optional (cannot be blank)
6 | Folder name | Desired folder name | Optional (can be blank)
7 | Add date information | Clear check box. | Required

Use caution with settings 1, 2, 3, and 7 because data collection cannot be performed if these are incorrect.

Set 4 according to the setting value for the sampling period in "Sampling and trigger".
6 Data Collection Settings
6.2 Machine Controller Data Collection Settings

If the setting value for the number of output data is too large, the total size of the logging files created by Logging1 to Logging4 will exceed the amount of built-in RAM, and an error will occur on the MP. Or the YCP data update cycle will increase as shown in the following example. In this case, decrease the number of output data.

Example 2: When the sampling period = 100 ms and number of output data = 30,000, the data that can be collected is:

\[ 0.1 \times 30,000 = 3000 \text{ s} = 50 \text{ min} \]

(30,000 points of data are saved to the YCP database in a 50-minute cycle.)
In other words, when referenced with DW/DA, this data is updated in a 50-minute cycle.

7. Close the Format dialog box and the Logging dialog box appears. Click "File output". The Format dialog box appears.

8. The File Output dialog box appears. Set the file output as given in the following table, and then click "OK".
6 Data Collection Settings

6.2 Machine Controller Data Collection Settings

For ①, adjusting the number of output files according to the size of the saving destination device specified in the previous section is recommended. Basically, setting this to create two or more files is recommended. MotionDC deletes the saving destination files while collecting the log files created by the MP as needed. However, if communications are lost between MotionDC and the MP, the MP will attempt to continue logging in excess of its capacity, and an alarm will occur.

For ②, set "Overwrite". Files are retrieved and deleted from the MP after a certain amount of time when logging is started by MotionDC, so this prevents files with the same name from remaining on the MP. However, only the MP side can maintain the status where it continues logging in cases where the time until the MotionDC side starts logging or communications are lost between MotionDC and the MP.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Selection</th>
<th>Required/Recommended/Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>Number of output files</td>
<td>Set according to the amount of data</td>
<td>Recommended</td>
</tr>
<tr>
<td>②</td>
<td>File overwrite settings</td>
<td>Overwrite</td>
<td>Recommended</td>
</tr>
</tbody>
</table>
6 Data Collection Settings
6.2 Machine Controller Data Collection Settings

9. Close the File Output dialog box and the Logging dialog box appears. Click "Logging target".

10. The Logging Target dialog box appears. Dummy registers are set automatically in the amount of "Number of output data" set in step 3.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Required/ Recommended/ Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Logging target registers</td>
<td>Cannot be changed</td>
</tr>
</tbody>
</table>
Data Collection Settings
6.2 Machine Controller Data Collection Settings

Note: The registers cannot be changed on this window. Change the registers during actual logging from MotionDC after completing this setting.

11. Close the Logging Target dialog box and the Logging dialog box appears.
   Click “Sampling and trigger”.

12. The Sampling and Trigger dialog box appears.
    Set the sampling and trigger as given in the following table, and then click “OK”.

   ![Sampling and Trigger dialog box image]
6 Data Collection Settings
6.2 Machine Controller Data Collection Settings

Set the number of output data in the format settings according to the setting value of ③. For details, refer to the section on the Format dialog box in this chapter.

For ④, "Asynchronous scanning" can also be selected, but some data may be lost. Select "Synchronous scanning" instead.

Logging is executed during the scan set by ② and ③.

If the logging processing does not complete within the scan time set by ② and ③, a Watch Dog Timer Error (E.001) may occur on the controller.

For details on logging settings, refer to the following instruction manual.
Machine Controller MP3000 Series MP3300 Product Manual
(Manual No.: SIEP C880725 21)
Chapter 3.2.5 “Data Logging”

13. Save and write the set information to the controller.

*If the settings are changed after saving and writing them to the controller, save and write them again, and then load the logging settings from MotionDC again.
This completes the logging settings.

For how to check the scan time when logging is executed, refer to "Permitting Settings from Tools Other Than MPE720" in the help for the logging function.

Note: While performing data collection with MotionDC, start logging and do not stop it. Data collection cannot be performed if logging is stopped.
7 Backing Up and Importing the Database

7.1 Backing Up the Database

This section describes the operation procedure to back up the existing database in order to prevent the database which has accumulated collected and analyzed data from filling up the hard drive on the computer.

1. Select "Settings" > "Initial Settings".

2. Select "DBManager".

3. The DBManager window appears. Check the hard drive capacity of the YCP computer on the DBManager window.

The hard drive capacity appears only when monitored by YCP Resource Monitor.
4. If the hard drive capacity of the computer is getting low, perform a manual database backup.

5. Select the storage location with "Storage Location".
7.1 Backing Up the Database

6. Select the storage period with "Storage Period".

The data for the current day cannot be backed up. Select a period up to the previous day to execute the backup. (Example: If the backup execution date is 2018/09/22, set the end date of the period as YYYY/MM/DD to 2018/09/21.)
7. After the backup is executed, the data for the backed up period can be deleted.

(1) To delete the database immediately after the backup has completed executing, select the "Delete Data When Backup" check box, and then set "How many days later will you erase?" to "0 Days later".

(2) To delete the database a number of days after the backup is executed, select the "Delete Data When Backup" check box, and then set "How many days later will you erase?". If you select 1 to 7 days later, you can also specify the time to delete the database.
7 Backing Up and Importing the Database
7.1 Backing Up the Database

8. When you have completed all of the settings, click "DB Backup Execute" to execute the backup.

9. A confirmation dialog box appears. Select "Yes".

10. A progress bar appears while the backup is being executed.
11. A message appears when the backup has completed.

Backup data with the following format will also be created in the folder specified for "Storage Location".
YYYY-MM-DD_YYYY-MM-DD.zip (Data retrieval start date - Data retrieval end date.zip)

7.2 Automatic Backups

This section describes the procedure to set a backup cycle and automatically execute backups at that set cycle.

1. Select "Auto DB Backup".
7.2 Automatic Backups

2. Select "Storage Location".

3. Set the cycle at which to back up the database with "Rotation Setting".
   (1) To back up the database each day, select "Daily" and specify the
time to execute the backup.
7 Backing Up and Importing the Database
7.2 Automatic Backups

(2) To back up the database each month, select "Monthly" and specify the date and time to execute the backup.

If the 31st is specified, some backups will be not be executed because that date does not exist depending on the month. In this case, set a date that exists in all months, such as the 1st.

4. After the backup is executed, the data for the backed up period can be deleted.

(1) To delete the database immediately after the backup has completed executing, select the "Delete Data When Backup" check box, and then set "How many days later will you erase?" to "0 Days later".
7.2 Automatic Backups

(2) To delete the database a number of days after the backup is executed, select the "Delete Data When Backup" check box, and then set "How many days later will you erase?". If you select 1 to 7 days later, you can also specify the time to delete the database.

5. When you have completed all of the settings, click "Run" to start automatic backups.

6. A confirmation dialog box appears. Select "Yes".
7. A message appears when starting automatic backups has completed.

"Running" appears while automatic backups are started and the backup will be executed at the specified time.

8. When the backup has completed, the data with the following format will be created in the folder specified for "Storage Location". YYYY-MM-DD_YYYY-MM-DD.zip
   (Data retrieval start date - Data retrieval end date.zip)

9. To stop automatic backups, click "Stop" and the automatic backups will stop.
7 Backing Up and Importing the Database
7.2 Automatic Backups

10. A confirmation dialog box appears. Select "Yes".

"Stopped" appears while automatic backups are stopping.
7.3 Importing the Database

This section describes the operation procedure to import a backed up database.

1. Select "Settings" > "Initial Settings" > "DBManager" to open the DBManager window. For the operation method, refer to chapter 7.1 “Backing Up the Database”.

2. On the DBManager window, click "Import to DB".

"Import to DB" can be clicked for only the initial database after YCP has been installed. Data cannot be imported if the database has accumulated data.

3. Specify a file that was backed up with chapter 7.1 “Backing Up the Database”.

"Import to DB" can be clicked for only the initial database after YCP has been installed. Data cannot be imported if the database has accumulated data.
7. Backing Up and Importing the Database  
7.3 Importing the Database

4. Click the "Import" to import the backed up data.

5. A confirmation dialog box appears. Select "Yes".

- It may take 30 minutes or longer to import the data.
8 YCP Resource Monitor

8.1 Introduction to YCP Resource Monitor

When you install YCP on the computer, various other applications are also installed. Since each application individually uses resources on the computer, if a certain application uses all resources, it may negatively impact the operation of other applications. The YCP Resource Monitor features the Resource Monitor to solve these problems.

When applications output errors individually, it can be difficult to determine the cause when a failure has occurred. This results in increased downtime on the production line.

The Alarm Monitoring in YCP Resource Monitor solves this problem by monitoring alarms which have been unified between applications and outputting the details of those alarms.

8.2 Resource Monitor

You can check CPU, memory, and hard drive capacity used by each application. For details, refer to YASKAWA Cockpit MAINTENANCE MANUAL (Manual No.: HW1485840).
8.3 Alarm Monitoring

The Alarm Monitoring can be used to check information on alarms that have occurred in the various applications. For details, refer to YASKAWA Cockpit MAINTENANCE MANUAL (Manual No.: HW1485840).
9 License Request Tool

9.1 Overview

The license request tool is used for collecting necessary data to enable an optional function (purchased) in the YASKAWA Cockpit. To use the optional function, send the file created by the license request tool to your YASKAWA representative.

Run the license request tool on the PC in which the YASKAWA Cockpit is installed. If the license request tool is run on the PC in which the optional function of the YASKAWA Cockpit is not used, the license information will become invalid, thus the optional function cannot be enabled.

9.2 Installation

Install the license request tool as follows:
1. Run “LicenseRequest.msi”.
2. The following window appears. Click “Next”.

[Image of License Request Setup Wizard]
9 License Request Tool
9.2 Installation

3. The following window appears. Click "Next". (To modify the settings, first modify the settings, and then click "Next").

4. The following window appears. If it is OK to proceed to install the license request tool, click "Next".

![Select Installation Folder](image1)

![Confirm Installation](image2)
5. When the installation is completed, the following window appears. Click “Close”.

6. The installation is completed.
9.3 How to Use

9.3.1 Creating the License Request File

Create the license request file as follows:

1. Start the license request tool.
   – After installing the license request tool, the shortcut “License Request” is created on the desktop.

2. Fill in the Request Form as follows.

   Organization Name:
   Enter your company name. (up to 64 characters)

   Directory:
   Specify the location to save the license request file.

3. Click “Generate”.

   Organization Name: yaskawa
   Directory: C:\License
4. The license request file is created in the specified location.

9.3.2 Issuing the License

To use an optional function, send the file created by the license request tool to your YASKAWA representative. Based on the information in this file, YASKAWA will issue a license for the optional function.

The optional function can be used by registering the issued license in the YCP client.

For how to register the license, refer to chapter 4.2 "License Manager". Reissuance of the license may be charged additionally. For details on reissuance of the license, contact your YASKAWA representative.
10 Connecting to the YCP OPCUA Server

10.1 Description of the YCP OPCUA Server

The YCP OPCUA Server is software that was developed to make the data stored in YCP available to other systems. By accessing the YCP OPCUA Server, the data stored in YCP can be read without being aware of the structure of the database on the YCP side and the specifications of the web API (writing data is not supported). The following diagram shows the processing in the YCP OPCUA Server.

Fig. 10-1: YCP OPCUA Server Processing Diagram

10.2 YCP OPCUA Server Address Space

10.2.1 Structure of the Address Space

This section gives the structure of the YCP OPCUA Server address space.

Fig. 10-2: YCP OPCUA Server Address Space (Overview)
10 Connecting to the YCP OPCUA Server

10.2 YCP OPCUA Server Address Space

Fig. 10-3: YCP OPCUA Server Address Space (Objects and Server)
10 Connecting to the YCP OPCUA Server
10.2 YCP OPCUA Server Address Space

Fig. 10-4: YCP OPCUA Server Address Space (Controller, Mechanism, and Device)

The YCP OPCUA Server expands the database levels envisioned by YCP in the address space. In other words, it expands the factory, line, cell, controller, mechanism, and device nodes like a tree under Root-Objects.

The nodes shown in table 10-1 “Nodes Under Controllers, Mechanisms, and Devices” are created under the nodes for controllers, mechanisms, and devices. AnalogItemType nodes for accessing data expand under the RawData, Attribute, and Result nodes shown chapter Table 10-1: , and DataItemType nodes expand under File nodes. If there is no AnalogItemType or DataItemType node, the RawData, Attribute, Result, or File node above it will not be created.
10 Connecting to the YCP OPCUA Server

10.2 YCP OPCUA Server Address Space

Table 10-1: Nodes Under Controllers, Mechanisms, and Devices

<table>
<thead>
<tr>
<th>Node</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RawData</td>
<td>The AnalogItemType node for accessing DC data expands under this node.</td>
</tr>
<tr>
<td>Attribute</td>
<td>The AnalogItemType node for accessing the attribute expands under this node.</td>
</tr>
<tr>
<td>Result</td>
<td>The AnalogItemType node for accessing DA data expands under this node.</td>
</tr>
<tr>
<td>File</td>
<td>The DataItem node for accessing file data expands under this node.</td>
</tr>
</tbody>
</table>

10.2.2 Node Attributes

This section gives the attributes of nodes used in the YCP OPCUA Server.

10.2.2.1 FactoryType

The FactoryType node handles information about a factory in YCP. The FactoryType node is defined as a subclass of BaseObjectType (OPCUA standard). The following table gives the attributes of the FactoryType node.

Table 10-2: FactoryType Node Attributes

<table>
<thead>
<tr>
<th>Node Attribute</th>
<th>Setting Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>NodeId</td>
<td>NodeId that was created based on the factory name registered in YCP</td>
</tr>
<tr>
<td>NodeClass</td>
<td>Object</td>
</tr>
<tr>
<td>BrowseName</td>
<td>Name that was created based on the factory name registered in YCP</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Factory name registered in YCP</td>
</tr>
<tr>
<td>Description</td>
<td>None</td>
</tr>
<tr>
<td>WriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>UserWriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>EventNotifier</td>
<td>0(No Access)</td>
</tr>
</tbody>
</table>

10.2.2.2 LineType

The LineType node handles information about a line in YCP. The LineType node is defined as a subclass of BaseObjectType. The following table gives the attributes of the LineType node.

Table 10-3: LineType Node Attributes

<table>
<thead>
<tr>
<th>Node Attribute</th>
<th>Setting Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>NodeId</td>
<td>NodeId that was created based on the line name registered in YCP</td>
</tr>
<tr>
<td>NodeClass</td>
<td>Object</td>
</tr>
<tr>
<td>BrowseName</td>
<td>Name that was created based on the line name registered in YCP</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Line name registered in YCP</td>
</tr>
<tr>
<td>Description</td>
<td>None</td>
</tr>
<tr>
<td>WriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>UserWriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>EventNotifier</td>
<td>0(No Access)</td>
</tr>
</tbody>
</table>
10.2.3 CellType

The CellType node handles information about a cell in YCP. The CellType node is defined as a subclass of BaseObjectType. The following table gives the attributes of the CellType node.

Table 10-4: CellType Node Attributes

<table>
<thead>
<tr>
<th>Node Attribute</th>
<th>Setting Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>NodeId</td>
<td>NodeId that was created based on the cell name registered in YCP</td>
</tr>
<tr>
<td>NodeClass</td>
<td>Object</td>
</tr>
<tr>
<td>BrowseName</td>
<td>Name that was created based on the cell name registered in YCP</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Cell name registered in YCP</td>
</tr>
<tr>
<td>Description</td>
<td>None</td>
</tr>
<tr>
<td>WriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>UserWriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>EventNotifier</td>
<td>0(No Access)</td>
</tr>
<tr>
<td>ModelName</td>
<td>Value of the type attribute</td>
</tr>
</tbody>
</table>

10.2.4 ControllerType

The ControllerType node handles information about a controller in YCP. The ControllerType node is defined as a subclass of BaseObjectType. The following table gives the attributes of the ControllerType node.

Table 10-5: ControllerType Node Attributes

<table>
<thead>
<tr>
<th>Node Attribute</th>
<th>Setting Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>NodeId</td>
<td>NodeId created based on the value of the key attribute</td>
</tr>
<tr>
<td>NodeClass</td>
<td>Object</td>
</tr>
<tr>
<td>BrowseName</td>
<td>Name created based on the value of the key attribute</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Value of the key attribute</td>
</tr>
<tr>
<td>Description</td>
<td>Value of the name attribute</td>
</tr>
<tr>
<td>WriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>UserWriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>EventNotifier</td>
<td>1(SubscribeToEvents)</td>
</tr>
<tr>
<td>ModelName</td>
<td>Value of the type attribute</td>
</tr>
</tbody>
</table>

(PropertyType)
10.2.5 MechanismType

The MechanismType node handles information about a mechanism in YCP. The MechanismType node is defined as a subclass of BaseObjectType. The following table gives the attributes of the MechanismType node.

<table>
<thead>
<tr>
<th>Node Attribute</th>
<th>Setting Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>NodeId</td>
<td>NodeId created based on the value of the key attribute</td>
</tr>
<tr>
<td>NodeClass</td>
<td>Object</td>
</tr>
<tr>
<td>BrowseName</td>
<td>Name created based on the value of the key attribute</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Value of the key attribute</td>
</tr>
<tr>
<td>Description</td>
<td>Value of the name attribute</td>
</tr>
<tr>
<td>WriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>UserWriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>EventNotifier</td>
<td>1(SubscribeToEvents)</td>
</tr>
<tr>
<td>ModelName (PropertyType)</td>
<td>Value of the type attribute</td>
</tr>
</tbody>
</table>

10.2.6 DeviceType

The DeviceType node handles information about a device in YCP. The DeviceType node is defined as a subclass of BaseObjectType. The following table gives the attributes of the DeviceType node.

<table>
<thead>
<tr>
<th>Node Attribute</th>
<th>Setting Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>NodeId</td>
<td>NodeId created based on the value of the key attribute</td>
</tr>
<tr>
<td>NodeClass</td>
<td>Object</td>
</tr>
<tr>
<td>BrowseName</td>
<td>Name created based on the value of the key attribute</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Value of the key attribute</td>
</tr>
<tr>
<td>Description</td>
<td>Value of the name attribute</td>
</tr>
<tr>
<td>WriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>UserWriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>EventNotifier</td>
<td>1(SubscribeToEvents)</td>
</tr>
<tr>
<td>ModelName (PropertyType)</td>
<td>Value of the type attribute</td>
</tr>
</tbody>
</table>
10.2.2.7 FolderType (RawData/Attribute/Result/File)

The RawData/Attribute/Result/File nodes are FolderType (OPCUA standard) nodes. They are used as the level for allocating the AnalogItemType (OPCUA standard) and other FolderType nodes. The following list gives the nodes under which these nodes are stored.

- RawData node: AnalogItemType node for DC data
- Attribute node: FolderType node for AttributeGroup
- Result node: FolderType node for Application
- File node: FolderType node for FileGroup

The following table gives the attributes of the FolderType nodes (RawData/Attribute/Result/File).

Table 10-8: FolderType Node (RawData/Attribute/Result/File) Attributes

<table>
<thead>
<tr>
<th>Node Attribute</th>
<th>Setting Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>NodeId</td>
<td>RawData node NodeId created based on the string &quot;RawData&quot;</td>
</tr>
<tr>
<td></td>
<td>Attribute node NodeId created based on the string &quot;Attribute&quot;</td>
</tr>
<tr>
<td></td>
<td>Result node NodeId created based on the string &quot;Result&quot;</td>
</tr>
<tr>
<td></td>
<td>File node NodeId created based on the string &quot;File&quot;</td>
</tr>
<tr>
<td>NodeClass</td>
<td>Object</td>
</tr>
<tr>
<td>BrowseName</td>
<td>RawData node Name created based on the string &quot;RawData&quot;</td>
</tr>
<tr>
<td></td>
<td>Attribute node Name created based on the string &quot;Attribute&quot;</td>
</tr>
<tr>
<td></td>
<td>Result node Name created based on the string &quot;Result&quot;</td>
</tr>
<tr>
<td></td>
<td>File node Name created based on the string &quot;File&quot;</td>
</tr>
<tr>
<td>DisplayName</td>
<td>RawData node RawData</td>
</tr>
<tr>
<td></td>
<td>Attribute node Attribute</td>
</tr>
<tr>
<td></td>
<td>Result node Result</td>
</tr>
<tr>
<td></td>
<td>File node File</td>
</tr>
<tr>
<td>Description</td>
<td>None</td>
</tr>
<tr>
<td>WriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>UserWriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>EventNotifier</td>
<td>0(No Access)</td>
</tr>
</tbody>
</table>
10.2.8 FolderType (AttributeGroup)

The AttributeGroup node is a FolderType node. It is used as the level for allocating the AnalogItemType node for an attribute. The following table gives the attributes of the FolderType node (AttributeGroup).

Table 10-9: FolderType Node (AttributeGroup) Attributes

<table>
<thead>
<tr>
<th>Node Attribute</th>
<th>Setting Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>NodeId</td>
<td>NodeId that was created based on the name of the attribute group registered in YCP</td>
</tr>
<tr>
<td>NodeClass</td>
<td>Object</td>
</tr>
<tr>
<td>BrowseName</td>
<td>Name that was created based on the name of the attribute group registered in YCP</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Name of the attribute group registered in YCP</td>
</tr>
<tr>
<td>Description</td>
<td>None</td>
</tr>
<tr>
<td>WriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>UserWriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>EventNotifier</td>
<td>0(No Access)</td>
</tr>
</tbody>
</table>

10.2.9 FolderType (Application)

The Application node is a FolderType node. It is used as the level for allocating the AnalogItemType node for DA data. The following table gives the attributes of the FolderType node (Application).

Table 10-10: FolderType Node (Application) Attributes

<table>
<thead>
<tr>
<th>Node Attribute</th>
<th>Setting Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>NodeId</td>
<td>NodeId that was created based on the name of the DA App registered in YCP</td>
</tr>
<tr>
<td>NodeClass</td>
<td>Object</td>
</tr>
<tr>
<td>BrowseName</td>
<td>Name that was created based on the name of the DA App registered in YCP</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Name of the DA App registered in YCP</td>
</tr>
<tr>
<td>Description</td>
<td>None</td>
</tr>
<tr>
<td>WriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>UserWriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>EventNotifier</td>
<td>0(No Access)</td>
</tr>
</tbody>
</table>
10.2.10 FolderType (FileGroup)

The FileGroup node is a FolderType node. It is used as the level for allocating the DataItemType node for file data. The following table gives the attributes of the FolderType node (FileGroup).

<table>
<thead>
<tr>
<th>Node Attribute</th>
<th>Setting Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>NodeId</td>
<td>NodeId that was created based on the name of the file group registered in YCP</td>
</tr>
<tr>
<td>NodeClass</td>
<td>Object</td>
</tr>
<tr>
<td>BrowseName</td>
<td>Name that was created based on the name of the file group registered in YCP</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Name of the file group registered in YCP</td>
</tr>
<tr>
<td>Description</td>
<td>None</td>
</tr>
<tr>
<td>WriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>UserWriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>EventNotifier</td>
<td>0(No Access)</td>
</tr>
</tbody>
</table>

10.2.11 AnalogItemType (Under RawData/Result Nodes)

The AnalogItemType node under RawData/Result nodes handles information related to DC data and DA data stored in YCP.

The AnalogItemType node is a class derived from the DataItemType node. For DataItemType, the range of data that can be handled (EURange) and the unit of the data (EngineeringUnits) can be defined as NodeClass.

Information related to DC data and DA data is retrieved from item information registered in YCP. The AnalogItemType node for this DC data and DA data will not be created if the visible key of the item information is false. The following table gives the attributes of the AnalogItemType node under the RawData/Result node.

<table>
<thead>
<tr>
<th>Node Attribute</th>
<th>Setting Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>NodeId</td>
<td>NodeId created based on the value of the Key key</td>
</tr>
<tr>
<td>NodeClass</td>
<td>Variable</td>
</tr>
<tr>
<td>BrowseName</td>
<td>Name created based on the value of the Key key attribute</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Value of the Key key attribute</td>
</tr>
<tr>
<td>Description</td>
<td>Value of the Name key</td>
</tr>
<tr>
<td>WriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>UserWriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>Value</td>
<td>The value of the data stored in YCP</td>
</tr>
<tr>
<td>DataType</td>
<td>Integer, double, string, or boolean is set based on the value of the Type key.</td>
</tr>
<tr>
<td>ValueRank</td>
<td>&quot;OneDimension&quot; is set if the Type key attribute includes &quot;[]&quot; (array type). Otherwise, &quot;Scalar&quot; is set.</td>
</tr>
<tr>
<td>ArrayDimensions</td>
<td>null</td>
</tr>
<tr>
<td>AccessLevel</td>
<td>CurrentRead, HistoryRead</td>
</tr>
<tr>
<td>UserAccessLevel</td>
<td>CurrentRead, HistoryRead</td>
</tr>
<tr>
<td>MinimumSamplingInterval</td>
<td>0</td>
</tr>
</tbody>
</table>
10.2.2.12 AnalogItemType (Under Attribute Node)

The AnalogItemType node under the Attribute node handles information related to an attribute stored in YCP. The AnalogItemType node for this attribute will not be created if the visible key of the attribute is false. The following table gives the attributes of the AnalogItemType node under the Attribute node.

<table>
<thead>
<tr>
<th>Node Attribute</th>
<th>Setting Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historizing</td>
<td>false</td>
</tr>
<tr>
<td>EURange (PropertyType)</td>
<td>Range</td>
</tr>
<tr>
<td>Mandatory</td>
<td></td>
</tr>
<tr>
<td>EngineeringUnits</td>
<td>EU Information</td>
</tr>
<tr>
<td>(PropertyType) Option</td>
<td></td>
</tr>
</tbody>
</table>

Table 10-13: AnalogItemType (Under Attribute Node) Attributes

<table>
<thead>
<tr>
<th>Node Attribute</th>
<th>Setting Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>NodeId</td>
<td>NodeId created based on the value of the Key key</td>
</tr>
<tr>
<td>NodeClass</td>
<td>Variable</td>
</tr>
<tr>
<td>BrowseName</td>
<td>Name created based on the value of the Key key</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Value of the Name key</td>
</tr>
<tr>
<td>Description</td>
<td>Value of the Name key</td>
</tr>
<tr>
<td>WriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>UserWriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>Value</td>
<td>Value of the Value key</td>
</tr>
<tr>
<td>DataType</td>
<td>Integer, double, string, or boolean is set based on the value of the Type key.</td>
</tr>
<tr>
<td>ValueRank</td>
<td>&quot;OneDimension&quot; is set if the Type key includes &quot;[]&quot; (array type). Otherwise, &quot;Scalar&quot; is set.</td>
</tr>
<tr>
<td>ArrayDimensions</td>
<td>null</td>
</tr>
<tr>
<td>AccessLevel</td>
<td>CurrentRead</td>
</tr>
<tr>
<td>UserAccessLevel</td>
<td>CurrentRead</td>
</tr>
<tr>
<td>MinimumSamplingInterval</td>
<td>0</td>
</tr>
<tr>
<td>Historizing</td>
<td>false</td>
</tr>
<tr>
<td>EURange (PropertyType)</td>
<td>Range</td>
</tr>
<tr>
<td>Mandatory</td>
<td></td>
</tr>
<tr>
<td>EngineeringUnits</td>
<td>EU Information</td>
</tr>
<tr>
<td>(PropertyType) Option</td>
<td></td>
</tr>
</tbody>
</table>


10.2.2.13 DataItem (Under File Node)

The DataItem node under the File node handles information related to file data stored in YCP. The DataItem node for this file data will not be created if the visible key of the file information is false. The following table gives the attributes of the DataItem node under the File node.

**Table 10-14: DataItem (Under File Node) Attributes**

<table>
<thead>
<tr>
<th>Node Attribute</th>
<th>Setting Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>NodeId</td>
<td>NodeId that was created based on the FileName key in the file information registered in YCP</td>
</tr>
<tr>
<td>NodeClass</td>
<td>Variable</td>
</tr>
<tr>
<td>BrowseName</td>
<td>Name that was created based on the FileName key in the file information registered in YCP</td>
</tr>
<tr>
<td>DisplayName</td>
<td>FileName key in the file information registered in YCP</td>
</tr>
<tr>
<td>Description</td>
<td>None</td>
</tr>
<tr>
<td>WriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>UserWriteMask</td>
<td>0(NONE)</td>
</tr>
<tr>
<td>Value</td>
<td>Binary data for the file data stored in YCP</td>
</tr>
<tr>
<td>DataType</td>
<td>ByteString</td>
</tr>
<tr>
<td>ValueRank</td>
<td>Scalar</td>
</tr>
<tr>
<td>ArrayDimensions</td>
<td>null</td>
</tr>
<tr>
<td>AccessLevel</td>
<td>CurrentRead</td>
</tr>
<tr>
<td>UserAccessLevel</td>
<td>CurrentRead</td>
</tr>
<tr>
<td>MinimumSamplingInterval</td>
<td>0</td>
</tr>
<tr>
<td>Historizing</td>
<td>false</td>
</tr>
</tbody>
</table>

10.2.3 Timing of Building the Address Space

The YCP OPCUA Server address space is built when the server starts. Even if there is a change in the configuration on the YCP side (configuration of factory, lines, cells, controllers, mechanisms, and devices, and settings of DC data, DA data, attributes, and file data) when the YCP OPCUA Server is running, those changes are not applied to the address space. The YCP OPCUA Server must be restarted to apply changes on the YCP side to the YCP OPCUA Server.
### 10.3 Accessing the YCP OPCUA Server with the Sample OPCUA Client

Using the sample OPCUA client application, you can retrieve numeric values (e.g., torque data) and file data (e.g., robot job files) in the YCP database. The following files are included in the relevant ZIP file in the YCP package.

#### Table 10-15: ZIP File Contents in the YCP Package

<table>
<thead>
<tr>
<th>File/Folder</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPCUA Client.zip</td>
<td>Set of sample OPCUA client project files</td>
</tr>
<tr>
<td>OPCUA Client\bin\Release\OPCUA Client.exe</td>
<td>The executable file for the sample OPCUA client application</td>
</tr>
<tr>
<td>OPCUA Client.ini</td>
<td>Configuration file used by the sample OPCUA client project. For details, refer to chapter 10.3.1 “Starting the OPCUA Client”.</td>
</tr>
</tbody>
</table>

#### 10.3.1 Starting the OPCUA Client

The following window will be displayed when the sample OPCUA client application is started.

![Sample OPCUA Client Window](image)

The following table gives the commands that can be used with the sample application.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1</td>
<td>r2</td>
</tr>
<tr>
<td>r3</td>
<td>r4</td>
</tr>
<tr>
<td>r5</td>
<td>r6</td>
</tr>
</tbody>
</table>

Enter Commands:
### 10 Connecting to the YCP OPCUA Server

#### 10.3 Accessing the YCP OPCUA Server with the Sample OPCUA Client

<table>
<thead>
<tr>
<th>No.</th>
<th>Input</th>
<th>Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>c, C</td>
<td>Connect to the YCP OPCUA Server. The connection can be made by anonymous user or by using a username and password.</td>
</tr>
<tr>
<td>2</td>
<td>d, D</td>
<td>Disconnect from the YCP OPCUA Server.</td>
</tr>
<tr>
<td>3</td>
<td>e, E</td>
<td>Exit the sample application. If connected to the YCP OPCUA Server, the sample application will first disconnect from the server, and then exit.</td>
</tr>
<tr>
<td>4</td>
<td>j[number], J[number]</td>
<td>Retrieve the job file with the specified [number] from the YCP OPCUA Server. The retrieved job file is also output to file.1)</td>
</tr>
<tr>
<td>5</td>
<td>r[number], R[number]</td>
<td>Retrieve the object with the specified [number] from the YCP OPCUA Server.1) Example: Input r1 and the S-axis torque can be retrieved.</td>
</tr>
</tbody>
</table>

---

1) When executing the commands to retrieve/output job file data and to retrieve node information, the items are displayed according to the content set in the ini file.

---

The following table gives the data types of data nodes that can be retrieved by the sample application from the server.

Other data types cannot be displayed by the sample application.

Data nodes can be accessed with DataAccess and HistoricalAccess.

<table>
<thead>
<tr>
<th>DataAccess</th>
<th>Reading method to retrieve the latest data</th>
</tr>
</thead>
<tbody>
<tr>
<td>HistoricalAccess</td>
<td>Reading method to retrieve data for a period specified by the start date/time and end date/time to retrieve</td>
</tr>
</tbody>
</table>
10.3 Accessing the YCP OPCUA Server with the Sample OPCUA Client

Table 10-17: Data Types of Data Nodes That Can Be Retrieved by the Sample Application from the Server

<table>
<thead>
<tr>
<th>No.</th>
<th>Type</th>
<th>Content</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Object</td>
<td>Reads and displays object type data.</td>
<td>fig. 10-6 “Results of Retrieving Object Data”</td>
</tr>
<tr>
<td>2</td>
<td>Variable</td>
<td>Reads and displays the following variable type data.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Array</td>
<td>Reads and displays array data.</td>
<td>fig. 10-7 “Results of Retrieving Array Data”</td>
</tr>
<tr>
<td></td>
<td>StructValue</td>
<td>Reads and displays structure data.</td>
<td>fig. 10-8 “Results of Retrieving StructValue Data”</td>
</tr>
<tr>
<td></td>
<td>EnumValue</td>
<td>Reads and displays enumeration data.</td>
<td>fig. 10-9 “Results of Retrieving EnumValue Data”</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>Reads and displays variable data.</td>
<td>fig. 10-10 “Results of Retrieving Other Data”</td>
</tr>
<tr>
<td>3</td>
<td>DataType</td>
<td>Cannot be displayed with the sample application.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Method</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>ObjectType</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>ReferenceType</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Unspecified</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>VariableType</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>View</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10.3.2 Connecting the Client to the YCP OPCUA Server

Type 'c' in the console window. The client will execute the connection to the YCP OPCUA Server. The connection to the server performs the following procedures in the listed order: 1. Create the session information, 2. Create authentication information, and 3. Connect to the server. The following tables give the content that is set in each procedure.

**Fig. 10-5: Connection Diagram**

Table 10-18: Content Set When Creating the Session Information

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Session name</td>
<td>Executable file name (excluding extension)</td>
</tr>
<tr>
<td>2</td>
<td>Authentication</td>
<td>Anonymous / username and password(^1)</td>
</tr>
<tr>
<td>3</td>
<td>Security policy</td>
<td>None</td>
</tr>
<tr>
<td>4</td>
<td>Message encoding</td>
<td>Binary</td>
</tr>
<tr>
<td>5</td>
<td>Message security</td>
<td>None</td>
</tr>
</tbody>
</table>

\(^1\) This setting value can be changed because it is retrieved from the ini file. Other setting values operate with the content (fixed values) in the above table.
### Table 10-19: Content Set When Creating the Authentication Information

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Application name</td>
<td>Executable file name (excluding extension)</td>
</tr>
<tr>
<td>2</td>
<td>Product URI (unique connection key)</td>
<td>Retrieve from configuration file (.ini)¹</td>
</tr>
<tr>
<td>3</td>
<td>Registration directory for application authentication information</td>
<td>pki\own²</td>
</tr>
<tr>
<td>4</td>
<td>Authentication object name (Application name)</td>
<td>Executable file name (excluding extension)</td>
</tr>
<tr>
<td>5</td>
<td>Registration directory for authentication information</td>
<td>pki\trusted²</td>
</tr>
<tr>
<td>6</td>
<td>Registration directory for authentication information (if problems occur)</td>
<td>pki\issuer²</td>
</tr>
<tr>
<td>7</td>
<td>Registration directory for authentication information (not subject to authentication)</td>
<td>pki\rejected²</td>
</tr>
<tr>
<td>8</td>
<td>Flag to decode data retrieved from the server</td>
<td>True</td>
</tr>
<tr>
<td>9</td>
<td>Log file path</td>
<td>Logs\executable file name.log²</td>
</tr>
<tr>
<td>10</td>
<td>Upper limit on log file size</td>
<td>10MB</td>
</tr>
<tr>
<td>11</td>
<td>Number of log files to retain</td>
<td>Retain up to five files</td>
</tr>
<tr>
<td>12</td>
<td>Trace level at which to store the log file</td>
<td>Warning and higher</td>
</tr>
<tr>
<td>13</td>
<td>Content to store in the log file</td>
<td>All (stack, client, API, etc.)</td>
</tr>
<tr>
<td>14</td>
<td>Trace level of received trace events</td>
<td>Warning and higher</td>
</tr>
<tr>
<td>15</td>
<td>Content to trace for received trace events</td>
<td>All (stack, client, API, etc.)</td>
</tr>
</tbody>
</table>

¹ This setting value can be changed because it is retrieved from the ini file. Other setting values operate with the content (fixed values) in the above table.

² The directory (file) is created at the same level as the server app. For this reason, be aware that execution is not possible under a directory for which you lack access authority.

### Table 10-20: Content to Set When Connecting to the Server

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Destination URI</td>
<td>Retrieve from configuration file (.ini)¹</td>
</tr>
</tbody>
</table>

¹ This setting value can be changed because it is retrieved from the ini file. Other setting values operate with the content (fixed values) in the above table.
10.4 Methods of Accessing the YCP OPCUA Server

10.4.1 DataAccess

Example: Type 'r1'. The following window will be displayed. Type '0'.

The results of retrieving each data type are given as follows:

1. Object type

Fig. 10-6: Results of Retrieving Object Data

```
データ取得結果

Read NodeID   = ns=2;s=1:yaskawa?Line-A/Cell1/FS100-1
DisplayName  = FS100-1
BrowseName   = 2:FS100-1
Description  =
NodeClass    = Object
EventNotifier = No Access
```

2. Variable type: Array

Fig. 10-7: Results of Retrieving Array Data

```
データ取得結果

Read NodeID   = ns=2;s=8:作業JOB-0944L-10B1R01.JBI
DisplayName  = 作業JOB-0944L-10B1R01.JBI
BrowseName   = 2:作業JOB-0944L-10B1R01.JBI
Description  =
NodeClass    = Variable
DataClass    = Array
Type         = Byte
StatusCode   = Good

Value[000]   = 47
Value[001]   = 74
Value[002]   = 79
Value[003]   = 88
Value[004]   = 13
Value[005]   = 10
Value[006]   = 47
```
10 Connecting to the YCP OPCUA Server
10.4 Methods of Accessing the YCP OPCUA Server

(3) Variable type: StructValue

*Fig. 10-8: Results of Retrieving StructValue Data*

<table>
<thead>
<tr>
<th>Data取扱結果</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read NodeID</td>
</tr>
<tr>
<td>DisplayName</td>
</tr>
<tr>
<td>BrowseName</td>
</tr>
<tr>
<td>Description</td>
</tr>
<tr>
<td>NodeClass</td>
</tr>
<tr>
<td>DataClass</td>
</tr>
<tr>
<td>StatusCode</td>
</tr>
<tr>
<td>FieldName</td>
</tr>
<tr>
<td>FieldType</td>
</tr>
<tr>
<td>Value</td>
</tr>
<tr>
<td>FieldName</td>
</tr>
<tr>
<td>FieldType</td>
</tr>
<tr>
<td>Value</td>
</tr>
</tbody>
</table>

(4) Variable type: EnumValue

*Fig. 10-9: Results of Retrieving EnumValue Data*

<table>
<thead>
<tr>
<th>Data取扱結果</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read NodeID</td>
</tr>
<tr>
<td>DisplayName</td>
</tr>
<tr>
<td>BrowseName</td>
</tr>
<tr>
<td>Description</td>
</tr>
<tr>
<td>NodeClass</td>
</tr>
<tr>
<td>DataClass</td>
</tr>
<tr>
<td>StatusCode</td>
</tr>
<tr>
<td>Value</td>
</tr>
</tbody>
</table>

0 (Stopped)  
1 (Running)  
2 (Fault)
10.4 Methods of Accessing the YCP OPCUA Server

(5) Variable type: Other

Note: Double type parameters are displayed as real numbers to the hundredths place.

Fig. 10-10: Results of Retrieving Other Data

### 10.4.2 HistoricalAccess

When accessing a data node with HistoricalAccess, you must specify the start date/time and end date/time to retrieve. The data that can be accessed with HistoricalAccess is the variable type (other).

Example: Type 'r1'. The following window will be displayed. Type '1', and specify the start date/time and end date/time to retrieve.

The data can be retrieved for the period specified by the start date/time and end date/time to retrieve.

The following window will be displayed.
## 10.4 Methods of Accessing the YCP OPCUA Server

### 10 Connecting to the YCP OPCUA Server

---

<table>
<thead>
<tr>
<th>Data No</th>
<th>Value</th>
<th>ServerTimestamp</th>
<th>SourceTimestamp</th>
<th>StatusCode</th>
<th>HistoryInfo</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>111</td>
<td>2016/03/04 4:27:54</td>
<td>2016/03/04 4:27:54</td>
<td>Good</td>
<td>Raw</td>
</tr>
<tr>
<td>2</td>
<td>112</td>
<td>2016/03/04 4:27:54</td>
<td>2016/03/04 4:27:54</td>
<td>Good</td>
<td>Raw</td>
</tr>
</tbody>
</table>
10.5 If Connection Problems Occur with OPCUA

The YCP OPCUA Server has the following limitations. Check the following limitations if the client cannot connect properly to the YCP OPCUA Server.

10.5.1 Limitation on Starting the YCP OPCUA Server

If another YCP OPCUA Server with the same “OPC_TCP_POST” setting item is started when the YCP OPCUA Server is started, an error will occur and starting the YCP OPCUA Server will fail. This is because the port number used by the YCP OPCUA Server is used by another application. Configure the computer so that the YCP OPCUA Server has a unique port number.

10.5.2 Limitation on the Number of Connected OPCUA Clients

The YCP OPCUA Server does not support simultaneous connections from multiple OPCUA clients.

10.5.3 Limitations on DataAccess Processing

When multiple OPCUA clients are connected from a single computer, the following processing cannot be performed simultaneously during the period that the request from one client is received and DataAccess processing is being performed.

- New connections to the YCP OPCUA Server
- Access to the address space of the YCP OPCUA Server
- Other DataAccess processing (same client or other clients)
- HistoricalAccess processing

The above limitation occurs when multiple OPCUA clients are connected from one computer. This limitation does not occur when OPCUA clients are connected from separate computers.

Unlike during DataAccess processing, OPCUA client requests can be received and the above processing can be performed simultaneously during HistoricalAccess processing.

10.5.4 Limitations on Controller, Mechanism, and Device Names

The YCP OPCUA Server will stop when building the address space if the following names are set for YCP OPCUA Server controller, mechanism, or device nodes. Do not use the following names for controllers, mechanisms, or devices.

- RawData
- Result
- Attribute
- File
- ModelName
11 Maintenance Function

11.1 Overview

11.1.1 Description of the YASKAWA Cockpit Maintenance Function

The YASKAWA Cockpit maintenance function (hereinafter referred to as the YCP maintenance function) includes the function to provide information for life assessment of the speed reducer of the robot, the function to indicate the timing of inspection of the manipulator, and the function to provide information on the timing of replacement of the robot controller’s components, which are all useful for maintenance of the robot. The image of the YCP maintenance function is shown in fig. 11-1 “Window of the YCP Maintenance Function”. The following functions are available:

- Maintenance function for speed reducer
- Inspection notification function
- Maintenance function for hardware
- Maintenance journal (log) function

Fig. 11-1: Window of the YCP Maintenance Function
11.2 Window Structure and Display Method

The YCP maintenance function has the Maintenance window and the Maintenance settings window. The status relating to maintenance is also shown in the robot controller list.

11.2.1 How to Display the Maintenance Window

1. Log in to the YCP.

2. The Line Group window appears. Select the line to display.
11 Maintenance Function

11.2 Window Structure and Display Method

3. Select the robot controller to display.

4. Select the “Maintenance” tab.
11.2 Line Window

The status of each robot controller registered on the selected line is shown. In addition to the model, version, and application, the status relating to maintenance is shown.

- **Speed Reducer**
  The status of the manipulator's speed reducers is shown.

<table>
<thead>
<tr>
<th>Color</th>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Warning (high)</td>
<td>The torque fluctuation value or the life of the speed reducer(s) of one or more axes exceeds the upper threshold.</td>
</tr>
<tr>
<td>Yellow</td>
<td>Warning (mid)</td>
<td>The torque fluctuation value or the life of the speed reducer(s) of one or more axes is between the lower threshold and the upper threshold.</td>
</tr>
<tr>
<td>Blue</td>
<td>Normal</td>
<td>The torque fluctuation values and the lives of the speed reducers of all axes are below the lower threshold.</td>
</tr>
</tbody>
</table>

**Note:** The upper threshold and the lower threshold are specified in chapter 11.2.4 “How to Display the Maintenance Settings Window” as the threshold values for the speed reducers.

- **Periodic Inspection**
  The period of time until the next inspection is shown.

<table>
<thead>
<tr>
<th>Color</th>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Past Inspection Period</td>
<td>The time of inspection has been exceeded.</td>
</tr>
<tr>
<td>Yellow</td>
<td>&lt; 500 Hours remaining</td>
<td>Less than 500 hours remain until the next periodic inspection.</td>
</tr>
<tr>
<td>Blue</td>
<td>&gt; 500 Hours Remaining</td>
<td>More than 500 hours remain until the next periodic inspection.</td>
</tr>
</tbody>
</table>

**Note:** The above-mentioned period of time is specified in chapter 11.2.4 as the threshold of the periodic inspection.
### 11 Maintenance Function

#### 11.2 Window Structure and Display Method

- **Hardware Life**
  
  For reference, the life of the robot controller’s components are classified into 4 levels.

<table>
<thead>
<tr>
<th>Color</th>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Replacement required.</td>
<td>Time to replace the components (for reference).</td>
</tr>
<tr>
<td>Yellow</td>
<td>Replacement Required Soon.</td>
<td>The components have been used for more than half of their lives and the time to replace them is approaching (for reference).</td>
</tr>
<tr>
<td>Green</td>
<td>Normal (&gt; 30%)</td>
<td>The components have been used for about half of their lives.</td>
</tr>
<tr>
<td>Blue</td>
<td>Normal (&gt; 50%)</td>
<td>The components are new or used for less than half of their lives.</td>
</tr>
</tbody>
</table>
11.2.3 Maintenance Window Structure

The Maintenance window is shown in fig. 11-2 “Maintenance Window” and described below.

Fig. 11-2: Maintenance Window

1. **Speed reducer maintenance window**
   The graphs of the speed reducer’s life and the torque indicating the speed reducer’s status are shown. For details, refer to chapter 11.3 “Maintenance Function for Speed Reducer”.

2. **Maintenance history/journal window**
   The inspection history and the maintenance journal (log) can be kept. For details, refer to chapter 11.5 “Record of Inspection/Replacement Date”.

3. **Periodic inspection window**
   The bar graph of remaining time for each inspection item is shown. For details, refer to chapter 11.4 “Inspection Notification Function”.

4. **Hardware maintenance window**
   The lives of the robot controller’s components are indicated by color. For details, refer to chapter 11.6 “Maintenance Function for Hardware”.
11.2.4 How to Display the Maintenance Settings Window

1. Log in to YCP.

2. The Line Group window appears. Select “SETTINGS”.

3. Select "R/C Setting".

4. Select “Maintenance”.

[Diagram showing the steps]
11.2.5 Maintenance Settings Window Structure

**Speed Reducer Fluctuation**

Specify the allowable rate of the torque fluctuation value of the speed reducer. If the measured value (the latest value minus the average value) is equal to or less than the value specified here, it is judged OK. If the measured value is greater than the value specified here, it is judged NG. Two levels, “Upper” and “Lower”, can be specified for the torque fluctuation. The “Upper Threshold” must be greater than the “Lower Threshold”. The default settings are shown below. For details, refer to chapter 11.3.1 “Diagnosis by Life Calculation”.

<table>
<thead>
<tr>
<th></th>
<th>Initial value (default)</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Threshold</td>
<td>30.0</td>
<td>%</td>
</tr>
<tr>
<td>Lower Threshold</td>
<td>20.0</td>
<td>%</td>
</tr>
</tbody>
</table>
11 Maintenance Function
11.2 Window Structure and Display Method

② Speed Reducer Life

Specify the thresholds of speed reducer life and the scale on the x-axis. Before the “time until replacement” which is calculated by the speed reducer’s life calculation becomes “0”, the replacement notice is indicated at the time specified here. If the “time until replacement” is greater than the threshold specified here, it is judged OK. If the life is shorter than the threshold specified here, it is judged NG. Two levels, “Upper” and “Lower”, can be specified for the speed reducer life. The “Lower Threshold” must be greater than the “Upper Threshold”. For details, refer to chapter 11.3.1 “Diagnosis by Life Calculation”.

<table>
<thead>
<tr>
<th></th>
<th>Initial value (default)</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Threshold</td>
<td>0.0</td>
<td>Hrs (hours)</td>
</tr>
<tr>
<td>Lower Threshold</td>
<td>1000.0</td>
<td>Hrs (hours)</td>
</tr>
<tr>
<td>Disp. Time MIN</td>
<td>0.0</td>
<td>Hrs (hours)</td>
</tr>
<tr>
<td>Disp. Time MAX</td>
<td>36000.0</td>
<td>Hrs (hours)</td>
</tr>
</tbody>
</table>

③ Scheduled Inspections

Specify the inspection schedule (interval) and the threshold of each inspection item. The threshold must be less than the inspection interval. The initial values (default settings) are shown below.

<table>
<thead>
<tr>
<th></th>
<th>Schedule (unit: Hrs)</th>
<th>Threshold (unit: Hrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspection</td>
<td>1000.0</td>
<td>500.0</td>
</tr>
<tr>
<td>Grease Supply</td>
<td>6000.0</td>
<td>1000.0</td>
</tr>
<tr>
<td>Grease Exchange</td>
<td>12000.0</td>
<td>1000.0</td>
</tr>
<tr>
<td>Cover/Connector/Lead</td>
<td>12000.0</td>
<td>1000.0</td>
</tr>
<tr>
<td>Lead Wire Exchange</td>
<td>24000.0</td>
<td>1000.0</td>
</tr>
<tr>
<td>Overhaul</td>
<td>36000.0</td>
<td>1000.0</td>
</tr>
<tr>
<td>Battery Exchange</td>
<td>36000.0</td>
<td>1000.0</td>
</tr>
</tbody>
</table>

④ “Restore”
Restores the settings to the initial values.

⑤ “Apply”
Applies the modified settings.

⑥ “Cancel”
Cancels the modification and restores the settings to the previous values.
11.3 Maintenance Function for Speed Reducer

With this function, the life of the speed reducer is estimated by using two methods, the life calculation and the torque average value.

The life estimation is performed by executing the job in the play mode. It is not necessary to prepare a specific job for this estimation.

- The accuracy of the life estimation is not guaranteed. Use this function as one of the methods to estimate the life of the speed reducer.
- If periodic grease replenishment/exchange is not performed or excessive force such as mechanical interference is applied, failure of the speed reducer may occur before reaching the estimated life.
- The life estimation is performed by executing the job in the play mode. When operating the manipulator in the teach mode (operation by [Axis Key], FWD operation, or test operation), the life estimation is not performed.

11.3.1 Diagnosis by Life Calculation

- **Functional Overview**

  With this function, the torque applied to each axis of the manipulator and the speed of each axis of the manipulator are measured when the job is executed, and the life of the speed reducer is calculated to estimate the time until replacement. By comparing the estimated time with the threshold, the diagnosis is indicated.

  The measurement is automatically performed by executing the job in the play mode.

  With this function, only the diagnosis for the manipulator axes can be performed. The diagnosis for the external axes cannot be performed.
11 Maintenance Function
11.3 Maintenance Function for Speed Reducer

Graph

The life calculation can be confirmed by the graph “Speed Reducer Life”. Use this graph as one of the methods to estimate the life of the speed reducer.

The vertical axis of the graph indicates the remaining time until replacement, and the horizontal axis indicates the operating time.

To modify the scale on the horizontal axis, modify the “Disp. Time MIN” and the “Disp. Time MAX” in chapter 11.2.4 “How to Display the Maintenance Settings Window”. To modify the threshold, modify the “Upper Threshold” or “Lower Threshold” in chapter 11.2.4.
11.3.2 Diagnosis by Torque Average Value

**Diagnosis Element**

The torque waveform during the job operation is monitored, and the waveform attributed to the speed reducer is extracted from the torque waveform, and the average value of the vibration amplitude is calculated. This data is called the torque average value, and this serves as the basic data to estimate the life of the speed reducer. The life curve graph of the operating time versus the torque average value is shown below.

When the condition of the speed reducer changes from “normal operation” to “deterioration”, the torque component arising from the speed reducer deterioration changes from “normal” to “increase”. Thus, if the torque component is increasing, the speed reducer is presumed to be in the deterioration period.

With this function, the torque component arising from the speed reducer deterioration is recorded in the database on a daily basis, and the life of the speed reducer is estimated by monitoring the change of the torque component.
11 Maintenance Function
11.3 Maintenance Function for Speed Reducer

By operating a job in the play mode, the data (the torque component arising from the speed reducer deterioration) for each axis is automatically recorded in the database on a daily basis, and the data is accumulated. If the gap between the latest value (the average value of the measured results of 5 days including today (default)) and the average value (the average value of the measured results of 30 days (default) from 90 days prior to today (default) to 60 days prior to today (default)) becomes greater than the threshold value, it is diagnosed that the speed reducer will fail shortly, and the color of the label beside the graph is changed. The average value is measured in percentage, and 100% is the rated torque.

Graph

The measured value (Measurement) and the variation value (Variation) can be confirmed by the graph “Speed Reducer”. This graph is automatically updated every 24 hours. Use this graph as one of the methods to estimate the life of the speed reducer.
11.3 Maintenance Function for Speed Reducer

1. Label of the diagnosis result of the speed reducer

The status of the speed reducer is shown by color. The color of this label is the same as the color of the “Speed Reducer” in the “Line” window. Refer to chapter 11.2.1 “How to Display the Maintenance Window”.

2. Option buttons of “Measurement” and “Variation”

- When “Variation” is selected

The variation (the latest value minus the average value) is shown on the graph. The horizontal lines of “Upper Threshold” and “Lower Threshold” are shown.

The “Upper Threshold” and “Lower Threshold” of the “Speed Reducer Fluctuation” in chapter 11.2.4 “How to Display the Maintenance Settings Window” correspond respectively to the “Upper Threshold” and “Lower Threshold” here.

In the graph above, the “Variation” of the L-axis is greater than the “Upper Threshold”, thus the label of the diagnosis result of the speed reducer is red.
• When “Measurement” is selected

The measured value is shown on the graph.

Pull-down menu

The desired group can be selected and displayed.
11.4 Inspection Notification Function

With this function, the color of the inspection notification label is changed when it is time for inspection of the manipulator.

If the inspection notification label turns red, contact your YASKAWA representative for inspection by a qualified personnel.

**Periodic inspection label**

The necessity of the periodic inspection is indicated by color. If the remaining time until the next periodic inspection for one of the items falls below the threshold, the label turns red.

**Inspection items**

The inspection items are shown. For details on the inspection, refer to the instruction manual for the manipulator.

**Remaining, Threshold, Consume**

The remaining time until the next periodic inspection for each item is shown. The threshold is indicated by the red line. “Consume” means the time elapsed from the previous inspection. The Schedule and Threshold specified in the Periodic Inspection window described in chapter 11.2.3 “Maintenance Window Structure” are reflected in this graph. The remaining time is calculated every hour based on the servo operating time of the robot controller.
11.5 Record of Inspection/Replacement Date

11.5.1 Inspection History

The dates of inspection and replacement can be recorded and confirmed as follows:

1. Select “History” in the Maintenance window.
   – The history of inspection appears below.
2. Select a date of inspection to see the comment recorded then in the “Details” field below.

3. After performing an inspection or replacement, click “Add”.

![Diagram showing an example of an inspection history with a selected date and details field.]

All tests pass. (Tom)

Add
11 Maintenance Function
11.5 Record of Inspection/Replacement Date

4. An entry window appears.

![Maintenance History Window]

By clicking “Add”, “Consume” of the inspection item specified in the window is reset to 0, and the remaining time until the next inspection becomes the same as the Schedule.
11.5.2 Maintenance Journal

The maintenance journal (log) can be created as follows:

   - The record of maintenance appears below.

2. An entry window appears.

   Maintenance Journal

<table>
<thead>
<tr>
<th>Title</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel Dust Meter Result</td>
<td>Reducer Gear</td>
</tr>
</tbody>
</table>

   Contents:
   - 0.006% (Total)

   Problem:

   Add  Close
11.6 Maintenance Function for Hardware

With this function, the life of each component of the robot controller is estimated by calculating the wearing of the component based on the usage environment and the load on the component, and the diagnosis for the component is indicated as a reference for the timing of replacement.

The functional overview is described in the following.

11.6.1 Diagnosed Components

The wearing is calculated and the diagnosis as a reference for the timing of replacement is indicated for the following components:

- Cooling fan
- Capacitor
- Amplifier IGBT
- Contactor

Note that for the manipulator fan, regardless of whether the manipulator has a fan or not, the diagnosis is indicated. For details on whether the manipulator has a fan or not, refer to the instruction manual for the manipulator.

11.6.2 Replacement Timing Indication

For the components to be replaced, diagnosis is categorized into 4 levels and can be used as a reference for the timing of replacement.

<table>
<thead>
<tr>
<th>Indication (color)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>The component is new or used for less than half of its life.</td>
</tr>
<tr>
<td>Green</td>
<td>The component has been used for about half of its life.</td>
</tr>
<tr>
<td>Yellow</td>
<td>The component has been used for more than half of its life and the time to replace it is approaching (for reference).</td>
</tr>
<tr>
<td>Red</td>
<td>Time to replace the component (for reference).</td>
</tr>
</tbody>
</table>
11.6.3 Window Structure

The window of the maintenance function for the hardware is shown in fig. 11-3 “Window of the Maintenance Function for Hardware” and described below.

Fig. 11-3: Window of the Maintenance Function for Hardware

1. **Overall diagnosis of the maintenance for the hardware**
   Among all the components subject to the maintenance function for the hardware, the worst diagnosis result (closest to the replacement) is indicated.

2. **Unit tab**
   The component (unit) shown in the window can be switched by using these tabs. The color of the tab indicates the status of the subcomponent with the worst diagnosis result (closest to the replacement) in the unit. When two or more servo boards are used, all the subcomponents of the servo boards are subject to the maintenance function for the hardware.

3. **Indication of diagnosis for each subcomponent**
   Diagnosis for each subcomponent of the selected unit is indicated. Indications for the selected servo board are shown.

4. **Servo Board**
   When two or more servo boards are inserted in the robot controller, the desired servo board can be selected.
11.6 Maintenance Function for Hardware

- **Cooling Fan**

- **Capacitor**

![Diagram of Cooling Fan and Capacitor](image-url)
11. Maintenance Function
11.6 Maintenance Function for Hardware

- **Amplifier IGBT**

- **Contactor**
11.7 Timing of Updating the Information on the Window

The timing of updating the information viewed by YCP differs depending on the window. The following table lists the timing when information of each item related to the YCP maintenance function is updated. The updating process is executed at the timing marked with ◯ or described in the “Others” column.

<table>
<thead>
<tr>
<th>Window</th>
<th>Item</th>
<th>Timing of updating the information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line</td>
<td>Speed Reducer</td>
<td>1H 1) ● 1D 2) ○ Others 3) △</td>
</tr>
<tr>
<td></td>
<td>Periodic Inspection</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>Hardware Life</td>
<td>○</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Speed reducer label</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Speed reducer graph (torque)</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>Speed reducer graph (variation)</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>Speed reducer graph (life)</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>Periodic inspection label</td>
<td>○ “Add” in inspection history</td>
</tr>
<tr>
<td></td>
<td>Periodic inspection graph</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>Hardware preventive maintenance</td>
<td>○</td>
</tr>
</tbody>
</table>

1. Updated every hour, at XX:00.
2. Updated every day, at the time specified in chapter 4.3.1.1 “Basic Information” Settings”.
3. The data of the speed reducer is updated at “1D”, but the diagnosis result by using the threshold is updated at “1H”.
For inquiries or after-sales service on this product, contact your local YASKAWA representative as shown below.

YASKAWA ELECTRIC CORPORATION
2-1 Kurosakishirushi, Yahatanishi-ku, Kitakyushu, 806-0004, Japan
Phone: +81-93-645-7703  Fax: +81-93-645-7802
http://www.yaskawa.co.jp

YASKAWA AMERICA, INC. (MOTOMAN ROBOTICS DIVISION)
100 Automation Way, Miamisburg, OH 45342, U.S.A.
Phone: +1-937-847-6200  Fax: +1-937-847-6277
http://www.motoman.com

YASKAWA EUROPE GmbH (ROBOTICS DIVISION)
Yaskawastrasse 1, 85391, Allershausen, Germany
Phone: +49-8166-90-100  Fax: +49-8166-90-103
http://www.yaskawa.eu.com

YASKAWA NORDIC AB
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Phone: +46-480-417-800  Fax: +46-486-414-10
http://www.yaskawa.se

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http://www.yaskawa.co.kr

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YASKAWA ELECTRIC (THAILAND) CO., LTD.
59, 1st-5th Floor, Flourish Building, Soi Rachadapisek 18, Rachadapisek Road, Huaykwang, Bangkok 10310, Thailand
Phone: +66-2-017-0099  Fax: +66-2-017-0199
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