FS100 OPTIONS INSTRUCTIONS
FOR FTP FUNCTION

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

MOTOMAN INSTRUCTIONS
MOTOMAN--□□□ INSTRUCTIONS
FS100 INSTRUCTIONS
FS100 OPERATOR’S MANUAL
FS100 MAINTENANCE MANUAL

Part Number: 159646-1CD
Revision: 0
MANDATORY

- This manual explains the FTP function of the FS100 system. Read this manual carefully and be sure to understand its contents before handling the FS100.
- General items related to safety are listed in Chapter 1: Safety of the FS100 Instructions. To ensure correct and safe operation, carefully read the FS100 Instructions before reading this manual.

CAUTION

- Some drawings in this manual are shown with the protective covers or shields removed for clarity. Be sure all covers and shields are replaced before operating this product.
- 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.
- YASKAWA is not responsible for incidents arising from unauthorized modification of its products. Unauthorized modification voids your product's warranty.
Notes for Safe Operation

Read this manual carefully before installation, operation, maintenance, or inspection of the FS100.

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

![WARNING]
Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to personnel.

![CAUTION]
Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury to personnel and damage to equipment. It may also be used to alert against unsafe practices.

![MANDATORY]
Always be sure to follow explicitly the items listed under this heading.

![PROHIBITED]
Must never be performed.

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 “CAUTION” and “WARNING”.

WARNING

- Before operating the manipulator, check that servo power is turned OFF when the emergency stop button on the programming pendant is pressed. When the servo power is turned OFF, the SERVO ON LED on the programming pendant is turned OFF.

Injury or damage to machinery may result if the emergency stop circuit cannot stop the manipulator during an emergency. The manipulator should not be used if the emergency stop button does not function.

*Fig. : Emergency Stop Button*

- In the case of not using the programming pendant, be sure to supply the emergency stop button on the equipment. Then before operating the manipulator, check to be sure that the servo power is turned OFF by pressing the emergency stop button. Connect the external emergency stop button to the 5-6 pin and 16-17 pin of the robot system signal connector (CN2).

- Upon shipment of the FS100, this signal is connected by a jumper cable in the dummy connector. To use the signal, make sure to supply a new connector, and then input it. If the signal is input with the jumper cable connected, it does not function, which may result in personal injury or equipment damage.

- Once the emergency stop button is released, clear the cell of all items which could interfere with the operation of the manipulator. Then turn the servo power ON.

Injury may result from unintentional or unexpected manipulator motion.

*Fig. : Release of Emergency Stop Button*

- Observe the following precautions when performing teaching operations within the manipulator’s operating range:
  - View the manipulator from the front whenever possible.
  - Always follow the predetermined operating procedure.
  - Ensure that you have a safe place to retreat in case of emergency.

Improper or unintended manipulator operation may result in injury.
**WARNING**

- Confirm that no person is present in the manipulator’s operating range and that you are in a safe location before:
  - Turning ON the power for the FS100.
  - Moving the manipulator with the programming pendant.
  - Running the system in the check mode.
  - Performing automatic operations.
- Injury may result if anyone enters the manipulator’s operating range during operation. Always press an emergency stop button immediately if there are problems.
  The emergency stop button is located on the programming pendant.

**CAUTION**

- Perform the following inspection procedures prior to teaching the manipulator. If problems are found, correct them immediately, and be sure that all other necessary tasks have been performed.
  - Check for problems in manipulator movement.
  - Check for damage to the insulation and sheathing of external wires.
- Return the programming pendant to a safe place after use.
  If the programming pendant is inadvertently left on the manipulator, on a fixture, or on the floor, the manipulator or a tool may collide with the programming pendant during manipulator movement, which may result in personal injury or equipment damage.
- Read and understand the Explanation of Warning Labels in the FS100 Instructions before operating the manipulator.

**Definition of Terms Used Often in This Manual**

The MOTOMAN is the YASKAWA industrial robot product.

The MOTOMAN usually consists of the manipulator, the FS100 controller, manipulator cables, the FS100 programming pendant (optional), and the FS100 programming pendant dummy connector (optional).

In this manual, the equipment is designated as follows:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Manual Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>FS100 controller</td>
<td>FS100</td>
</tr>
<tr>
<td>FS100 programming pendant</td>
<td>Programming pendant</td>
</tr>
<tr>
<td>Cable between the manipulator and the controller</td>
<td>Manipulator Cable</td>
</tr>
<tr>
<td>FS100 programming pendant dummy connector</td>
<td>Programming pendant dummy connector</td>
</tr>
</tbody>
</table>
Descriptions of the programming pendant, buttons, and displays are shown as follows:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Manual Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programming Pendant</td>
<td></td>
</tr>
<tr>
<td>Character Keys</td>
<td>The keys which have characters printed on them are denoted with [ ]. ex. [ENTER]</td>
</tr>
<tr>
<td>Symbol Keys</td>
<td>The keys which have a symbol printed on them are not denoted with [ ] but depicted</td>
</tr>
<tr>
<td></td>
<td>with a small picture. ex. PAGE key</td>
</tr>
<tr>
<td></td>
<td>The Cursor is an exception, and a picture is not shown.</td>
</tr>
<tr>
<td>Axis Keys</td>
<td>“Axis Keys” and “Numeric Keys” are generic names for the keys for axis operation</td>
</tr>
<tr>
<td>Numeric Keys</td>
<td>and number input.</td>
</tr>
<tr>
<td>Keys pressed simultaneously</td>
<td>When two keys are to be pressed simultaneously, the keys are shown with a &quot;+&quot;</td>
</tr>
<tr>
<td></td>
<td>sign between them, ex. SHIFT key +COORD key</td>
</tr>
<tr>
<td>Mode Key</td>
<td>Three kinds of modes that can be selected by the mode key are denoted as follows:</td>
</tr>
<tr>
<td></td>
<td>REMOTE, PLAY, or TEACH</td>
</tr>
<tr>
<td>Button</td>
<td>Three buttons on the upper side of the programming pendant are denoted as follows:</td>
</tr>
<tr>
<td></td>
<td>HOLD button</td>
</tr>
<tr>
<td></td>
<td>START button</td>
</tr>
<tr>
<td></td>
<td>EMERGENCY STOP button</td>
</tr>
<tr>
<td>Displays</td>
<td>The menu displayed in the programming pendant is denoted with { }. ex. {JOB}</td>
</tr>
<tr>
<td>PC Keyboard</td>
<td>The name of the key is denoted ex. Ctrl key on the keyboard</td>
</tr>
</tbody>
</table>

**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 the SELECT key is pressed, or that the item is directly selected by touching the screen.

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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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<th>Description</th>
</tr>
</thead>
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<td>3.3.4.2</td>
<td>Loading Files</td>
</tr>
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<td>3.3.5</td>
<td>Verify</td>
</tr>
<tr>
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<td>Verifying Jobs</td>
</tr>
<tr>
<td>3.3.5.2</td>
<td>Verifying Files</td>
</tr>
<tr>
<td>3.3.6</td>
<td>Selection Mode</td>
</tr>
<tr>
<td>3.3.6.1</td>
<td>Individual Selection Mode</td>
</tr>
<tr>
<td>3.3.6.2</td>
<td>Batch Selection Mode</td>
</tr>
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<td>4</td>
<td>FTP Settings</td>
</tr>
<tr>
<td>4.1</td>
<td>Ethernet Function Setting</td>
</tr>
<tr>
<td>4.2</td>
<td>Parameters for the FTP Function</td>
</tr>
<tr>
<td>4.3</td>
<td>Transmission Parameter Setting</td>
</tr>
</tbody>
</table>
1 Outline

The FS100 provides the FTP function, an extended application of the data transmission function (Ethernet), as a server or a client.

This manual explains the operation methods and relevant information of FTP.

1.1 System Features

1.1.1 FTP Function

FTP (File Transfer Protocol) is a widely used protocol in transferring files over the Internet or Intranet. This protocol enables the FTP function in the FS100, allowing the transfers of the following files:

- Job data
- Condition data/General data
- System information

1.1.2 Files Transferred by FTP Function

Details on the files which are transferred by FTP function are explained in the following table.

| Data Category              | Procedure | Subject File
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Job</td>
<td>Load</td>
<td>Jobs</td>
</tr>
<tr>
<td></td>
<td>Save</td>
<td>(Can be transferred in either of the SINGLE JOB mode or RELATED JOB mode.)</td>
</tr>
<tr>
<td>Condition Data/General Data</td>
<td>Load</td>
<td>Tool data</td>
</tr>
<tr>
<td></td>
<td>Save</td>
<td>Weaving data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>User coordinate data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Welding data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Variable data</td>
</tr>
<tr>
<td>System Information</td>
<td>Save</td>
<td>System information</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alarm history</td>
</tr>
</tbody>
</table>
2 FTP Server Function

2.1 Outline

The FS100 FTP server function is a function which saves FS100 files in the host computer (an operation of the command "get" in FTP) or loads files of the host computer to the FS100 (an operation of the command "put" in FTP) via Ethernet, enabled by operating the host computer such as a personal computer.

This function can handle the processing equivalent to the file data transmission function of the host control function in an FS100 data transmission.

2.2 Settings

2.2.1 Setting up FTP

Perform the operations described in chapter 4 “FTP Settings”.

2.2.2 Command Remote Setting

Perform the following procedures to enable the command remote selection.

1. Select {IN/OUT} under the {Main Menu}.
2. Select {PSEUDO INPUT SIGNAL}.
3. Move the cursor to “CMD REMOTE SEL”, and press INTERLOCK key + [SELECT].

– The command remote selection is enabled when the status is switched to “●”. The FTP function is disabled when the “CMD REMOTE SEL” status is “○”.

**NOTE** Set the command remote selection status in the management mode.
2.2.3 REMOTE Mode Setting

Set the mode switch on the programming pendant to [REMOTE].

2.2.4 Checking the Command Remote Setting

Check that the indication of “Command mode” or “I/O and Command mode” appears on the display of the remote mode.

1. Select {IN/OUT} under the {Main Menu}.
2. Select {REMOTE}.

– The current mode status appears.

– The FTP server function is disabled when "Remote mode not specified" or "I/O mode" is indicated on the window.
2.3 Host Computer Operations

Refer to the example below showing the process of receiving jobs in case of using Windows 2000 command prompt. Note that the underlined parts are the input items: enter the commands with the host computer, and press [Enter] after typing each command.

*1. Command to connect to the FS100 (FTP server) for FTP transmissions.

*2. Enter a user name to login to the FS100.

*3. Enter a password corresponding to the user name.

*4. Command to fetch the file list of the FS100.

*5. Command to fetch the jobs from the FS100.


```
C:\>ftp 10.0.0.2
Connected to 10.0.0.2
220 DX FTP server (1.00) ready.
User (10.0.0.10:(none)): ftp
331 Password required for ftp.
Password: _____________
230 User ftp logged in.
ftp> ls
200 PORT command successful.
150 Opening ASCII mode data connection. (10.0.0.10,1233)
AA35.JBI
AA4.JBI
AA8.JBI
N.JBI
AA36.JBI
AA5.JBI
AA9.JBI
N1.JBI
AA37.JBI
AA7.JBI
AA6.JBI
226 Transfer complete.
ftp: 99 bytes received in 0.11 Seconds 0.91 Kbytes/sec.
ftp> get AA35.JBI
200 PORT command successful.
150 Opening ASCII mode data connection. (10.0.0.10,1234)
226 Transfer complete.
ftp: 121 bytes received in 0.01 Seconds 8.07 Kbytes/sec.
ftp> bye
221 Goodbye.
C:\>
```
2.4 FTP Accounts

Use the following user names and passwords to access the FS100 with FTP server function.

<table>
<thead>
<tr>
<th>User Name</th>
<th>Password</th>
<th>Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>rcmaster</td>
<td>Password for management mode</td>
<td>Loading/saving jobs, Loading/saving condition file, /general data, Saving system information, Saving parameters</td>
</tr>
<tr>
<td>ftp</td>
<td>Arbitrary password</td>
<td>Loading/saving jobs, Loading/saving condition file, /general data, Saving system information</td>
</tr>
<tr>
<td>anonymous</td>
<td>Arbitrary password</td>
<td>Saving jobs, Saving condition file /general data</td>
</tr>
</tbody>
</table>

**NOTE**

When the password protection function (separate paid option) is enabled, only the user name and password defined by the password protection function can be used. In such a case, the user name and login name above cannot be used.
### 2.5 FTP Commands

The following commands can be used with FTP server function.

<table>
<thead>
<tr>
<th>Classification</th>
<th>User Command</th>
<th>FTP Command</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CONNECTION</strong></td>
<td>open IP address</td>
<td>-</td>
<td>Connects to a remote FS100.</td>
</tr>
<tr>
<td></td>
<td>user <strong>username</strong></td>
<td>USER <strong>username</strong></td>
<td>Enter a user name to access the FS100.</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>PASS <strong>password</strong></td>
<td>Enter a password corresponding to the user name. (Usually the client will automatically request for a password entry after an user name entry.)</td>
</tr>
<tr>
<td></td>
<td>quit</td>
<td>QUIT</td>
<td>Terminates an FTP transmissions.</td>
</tr>
<tr>
<td></td>
<td>bye</td>
<td>QUIT</td>
<td>Terminates an FTP transmissions.</td>
</tr>
<tr>
<td><strong>FILE TRANSMISSION</strong></td>
<td>-</td>
<td>PORT</td>
<td>Specifies a control connection port. (The client will automatically send to the FS100.)</td>
</tr>
<tr>
<td></td>
<td>get <strong>filename</strong></td>
<td>RETR <strong>filename</strong></td>
<td>Receives a file from a remote FS100.</td>
</tr>
<tr>
<td></td>
<td>put <strong>filename</strong></td>
<td>STOR <strong>filename</strong></td>
<td>Sends a file to a remote FS100.</td>
</tr>
<tr>
<td><strong>FILE LIST</strong></td>
<td>ls (<strong>filename</strong>)</td>
<td>NLST (<strong>filename</strong>)</td>
<td>Fetches a file list of the FS100. When no extension is specified, the file list of jobs will be displayed. When an extension such as &quot;.dat&quot; or &quot;.cnd&quot; is specified, the corresponding file list will be displayed.</td>
</tr>
</tbody>
</table>
2.6 Precautions on the “ls” Command

2.6.1 Inhibition of Using the Command Option

Use the "ls" command with no options.

The information on the time stamp, attributes, and size of the file output by the command "ls -l" ("NLST -l" for FTP command) or "dir" ("LIST" for FTP command) is provided only for the compatibility of the output format, and is not correct.

In order to prevent any mistake, be sure to use the "ls" for the list command.

2.7 Restrictions on File Transfer

2.7.1 Inhibition of Transferring the Files Size “0”

Do not transfer a file of which size is "0".

If the file is transferred (PUT), the alarm “TRANSMISSION SYSTEM ERROR” occurs, resulting in an FTP disconnection.

2.7.2 Interruption of Transmission

Do not interrupt the transmission with an operation [Ctrl] + [C].

The transmission interruption executed with [Ctrl] + [C] operation may result in a failure to maintain the correct transmission.

2.8 Exclusion of other communication processing

2.8.1 Access restriction by exclusion of other communication processing

Other transmission processing may not be performed during an FTP communication processing.

The communication functions of FS100 (Ethernet function, FTP function, Ethernet server function, etc.) cannot perform simultaneous parallel processing. Although pseudo multiplex communication can normally be performed by time division, the FTP function often occupies the communication band and, therefore, other communication processing may be forced to wait for a long time or communication time-out may occur. When building your system, design it to allow for occurrence of waiting for other communication processing due to the FTP function.
3 FTP Client Function

3.1 Outline

The FS100 FTP client function is a function which saves FS100 files in the host computer (an operation of the command "put" in FTP) or loads files of the host computer to the FS100 (an operation of the command "get" in FTP) via Ethernet, enabled by operating the FS100. It allows to load/save files which correspond to security mode.

The function executes the processing equivalent to the stand-alone function of an FS100 data transmissions.

Since the data transmission function of FS100 does not support binary format files, "BATCH USER MEMORY" "BATCH CMOS" and "ALL CMOS AREA" cannot be handled. Therefore, the operation screen for the FTP client function is as follows.

Since this screen is a function in the external memory menu, refer to "7. External Memory Devices" of "FS100 Operation Manual" for more information on individual files.

3.2 Settings

3.2.1 Setting up FTP

Perform the operations described in chapter 4 "FTP Settings".

3.2.2 Cancelling the Remote Mode

Set the parameter RS005 to "0".

Set the mode switch on the programming pendant to [REMOTE] once, then set it to [TEACH].
3.3 Operations

3.3.1 Setting the FTP Profile

Perform the following procedures to set up the FTP profile, such as an IP address, etc. of an FTP server.

1. Select {EX.MEMORY} under the {Main Menu}.
2. Select {FTP PROFILE}.

– The FTP PROFILE window appears.

HOST ADDRESS
IP address of the FTP server to be connected.

USER ID
User ID to login to the FTP server.

PASSWORD
Password corresponding to the user ID.

DIRECTORY
Default directory to login to the FTP server.

3. Select an item to be changed.

– The selected box is in an input status.
4. Enter new information for FTP connection.
   – New condition for FTP connection has been specified.

3.3.2 Selecting FTP as a Transmission Device

Perform the following procedures to select an FTP client as an external memory device.

1. Select {EX.MEMORY} under the {Main Menu}.
2. Select {DEVICE}.
   – The DEVICE selection window appears.
3. Select “FTP” from the selection list.
   – The FTP client has been selected as an external memory device.
3.3.3 Save

Perform the following procedures to transfer data from the FS100 to the FTP server (the host computer).

If the job/file to be saved has the same name as a job/file already exists in the FTP server, the existing job/file will be overwritten with the new data. To keep the existing data in the FTP server as they are, take the necessary precautions such as changing the job/file name to prevent overwriting.

3.3.3.1 Saving Jobs

1. Select {EX.MEMORY} under the {Main Menu}.
2. Select (SAVE).
   - The FTP(SAVE) window appears.
3. Select “JOB”.
   - A job list appears.

   ![FTP(SAVE) window](image)

   ![Job list](image)
4. Select jobs to be saved.
   - Each selected job is marked with “★”.

5. Press [ENTER].
   - A confirmation dialog box appears.
6. Select {YES}.

– Saving of the selected jobs starts, and the transmission progress appears on the window.

– When the save is completed, the screen returns to the save screen.
3.3.3.2 Saving Files

1. Select {EX.MEMORY} under the {Main Menu}.
2. Select {SAVE}.
   - The FTP(SAVE) window appears.

3. Select "FILE/GENERAL DATA" or "SYSTEM DATA".
   - A selection window appears.
4. Select files to be saved.
   - Each selected file is marked with "★".

5. Press [ENTER].
   - A confirmation dialog box appears.
6. Select {YES}.

- Saving of the selected files starts, and the transmission progress appears on the window.

- When the save is completed, the screen returns to the save screen.
3.3.4 Load

Perform the following procedures to transfer data from the FTP server (the host computer) to the FS100.

The display windows in this procedures are omitted, as they are equivalent to the windows in the saving procedures.

3.3.4.1 Loading Jobs

1. Select {EX.MEMORY} under the {Main Menu}.
2. Select {LOAD}.
   – The FTP(LOAD) window appears.
3. Select "JOB".
   – A job list appears.
4. Select jobs to be loaded.
5. Each selected job is marked with "★".
6. Select {YES}.
   – Loading of the selected jobs starts, and the transmission progress appears on the window.
   – When the load is completed, the screen returns to the load screen.

3.3.4.2 Loading Files

1. Select {EX.MEMORY} under the {Main Menu}.
2. Select {LOAD}.
   – The FTP(LOAD) window appears.
3. Select "FILE/GENERAL DATA" or "SYSTEM DATA".
   – A selection window appears.
4. Select files to be loaded.
   – Each selected file is marked with "★".
5. Press [ENTER].
   – A confirmation dialog box appears.
6. Select {YES}.
   – Loading of the selected files starts, and the transmission progress appears on the window.
   – When the load is completed, the screen returns to the load screen.
3.3.5 Verify

Perform the following procedures to verify that the data in the FS100 and the data in the FTP server (the host computer) are the same. The unmatched data will be notified with a message.

The display windows in this procedures are omitted, as they are equivalent to the windows in the saving procedures.

3.3.5.1 Verifying Jobs

1. Select {EX.MEMORY} under the {Main Menu}.
2. Select {VERIFY}.
   – The FTP(VERIFY) window appears.
3. Select "JOB".
   – A job list appears.
4. Select jobs to be verified.
   – Each selected job is marked with "★".
5. Press [ENTER].
   – A confirmation dialog box appears.
6. Select {YES}.
   – Verification of the selected jobs starts, and the transmission progress appears on the window.
   – When the verify is completed, the screen returns to the load screen.

3.3.5.2 Verifying Files

1. Select {EX.MEMORY} under the {Main Menu}.
2. Select {VERIFY}.
   – The FTP(VERIFY) window appears.
3. Select "FILE/GENERAL DATA" or "SYSTEM DATA".
   – A selection window appears.
4. Select files to be verified.
   – Each selected file is marked with "★".
5. Press [ENTER].
   – A confirmation dialog box appears.
6. Select {YES}.
   – Verification of the selected files starts, and the transmission progress appears on the window.
   – When the verify is completed, the screen returns to the load screen.
3.3.6 Selection Mode

The jobs and data files to be loaded, saved, or verified can be selected in either of the following modes:

- Individual Selection Mode
  Jobs or data files are selected one by one.

- Batch Selection Mode
  Jobs or data files are selected collectively at a time.

3.3.6.1 Individual Selection Mode

1. Select {EX.MEMORY} under the {Main Menu}, and select jobs/files for desired operation in a job list/selection window.
   - Jobs/files are selected.
   - Each selected job/file is marked with “★”.

3.3.6.2 Batch Selection Mode

1. Select {EX.MEMORY} under the {Main Menu}, and select {EDIT} when a job list/selection window in on the screen.
   - A pull-down menu appears.
2. Select {SELECT ALL}.
   
   – All the listed jobs/files are selected.

   – Select {EDIT}, then {CANCEL SELECT} to cancel all the selected jobs/files at a time.
4 FTP Settings

Perform the following settings for both the FTP server and the FTP client to enable the FTP function.

4.1 Ethernet Function Setting

The FTP function is designed as an extended application of the Ethernet function. Therefore, it is required to enable the Ethernet function before using the FTP function.

Refer to “3 Ethernet Function Setting” in "FS100 OPTIONS INSTRUCTIONS FOR ETHERNET FUNCTION" for the details.

4.2 Parameters for the FTP Function

Enable the FTP function parameters.

(Contact your Yaskawa representative in case of changing these parameters.)

4.3 Transmission Parameter Setting

The parameters related with transmissions are listed in the following tables.

Refer to the "FS100 OPTIONS INSTRUCTIONS FOR DATA TRANSMISSION FUNCTION" for the details.

Be sure to change the value of the following parameter:

<table>
<thead>
<tr>
<th>Parameter No.</th>
<th>Contents</th>
<th>Setting Value</th>
<th>Initial Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS000</td>
<td>Specifies the protocol for the standard port.</td>
<td>2 (BSC)</td>
<td>3 (FC1)</td>
</tr>
</tbody>
</table>

Set the following parameters to their initial values.

<table>
<thead>
<tr>
<th>Parameter No.</th>
<th>Contents</th>
<th>Initial Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS029</td>
<td>Loading of job/variable during playback</td>
<td>1: Enable</td>
</tr>
<tr>
<td>RS030</td>
<td>Specifies the data bits.</td>
<td>8: 8 bits</td>
</tr>
<tr>
<td>RS031</td>
<td>Specifies the stop bits.</td>
<td>0: 1 bit</td>
</tr>
<tr>
<td>RS032</td>
<td>Specifies the parity.</td>
<td>2: Even parity</td>
</tr>
<tr>
<td>RS033</td>
<td>Specifies the baud rate.</td>
<td>7: 9600 bauds</td>
</tr>
<tr>
<td>RS036</td>
<td>Specifies the enquiry character retry count for invalid responses or nonresponses.</td>
<td>10: 10 (counts)</td>
</tr>
<tr>
<td>RS037</td>
<td>Specifies the text data transmission retry count for block check error (NAK reception).</td>
<td>3: 3 (counts)</td>
</tr>
<tr>
<td>RS038</td>
<td>Specifies the block check method.</td>
<td>0: Checksum</td>
</tr>
</tbody>
</table>
Adjust the following parameters to stabilize the FTP transmissions as required.

<table>
<thead>
<tr>
<th>Parameter No.</th>
<th>Contents</th>
<th>Recommended Setting for FTP</th>
<th>Initial Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS034</td>
<td>TIMER A: Timer for monitoring the sequence. Controls the response waiting time for the invalid responses or nonresponses. Units: 0.1 sec (setting range: 0 to 100)</td>
<td>100</td>
<td>30</td>
</tr>
<tr>
<td>RS035</td>
<td>TIMER B: Timer for monitoring text reception. Controls the monitoring time to wait for the text termination character. Units: 0.1 sec (setting range: 0 to 255)</td>
<td>200</td>
<td>200</td>
</tr>
</tbody>
</table>
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for ongoing product modifications and improvements.