Applicable Product

- Range-free Multi-controller FA-M3

Model Number and Model Names:
- F3LC11-1F Personal computer Link Module
- F3LC11-1N Personal computer Link Module
- F3LC11-2N Personal computer Link Module
- F3LC12-1F Personal computer Link Module
- F3LE01-5T Ethernet Interface Module
- F3SP05-0P Sequence CPU Module
- F3SP21-0N Sequence CPU Module
- F3SP25-2N Sequence CPU Module
- F3SP28-3N Sequence CPU Module
- F3SP35-5N Sequence CPU Module
- F3SP38-6N Sequence CPU Module
- F3SP53-4H Sequence CPU Module
- F3SP58-6H Sequence CPU Module
- F3GB01-0N GB-IB Communication Module

The document number and document model code for this manual are given below:

Refer to the document number in all communications; also refer to the document number or the document model code when purchasing additional copies of this manual.

Document No. : IM 34M6P41-01E
Document Model Code : DOCIM
Important

■ About This Manual

- This Manual should be passed on to the end user.
- Before using the controller, read this manual thoroughly to have a clear understanding of the controller.
- This manual explains the functions of this product, but there is no guarantee that they will suit the particular purpose of the user.
- Under absolutely no circumstances may the contents of this manual be transcribed or copied, in part or in whole, without permission.
- The contents of this manual are subject to change without prior notice.
- Every effort has been made to ensure accuracy in the preparation of this manual. However, should any errors or omissions come to the attention of the user, please contact the nearest Yokogawa Electric representative or sales office.

■ Safety Precautions when Using/Maintaining the Product

- The following safety symbols are used on the product as well as in this manual.

⚠️

Danger. This symbol on the product indicates that the operator must follow the instructions laid out in this instruction manual to avoid the risk of personnel injuries, fatalities, or damage to the instrument. The manual describes what special care the operator must exercise to prevent electrical shock or other dangers that may result in injury or the loss of life.

👋

Protective Ground Terminal. Before using the instrument, be sure to ground this terminal.

└

Function Ground Terminal. Before using the instrument, be sure to ground this terminal.

~

Alternating current. Indicates alternating current.

←

Direct current. Indicates direct current.
The following symbols are used only in the instruction manual.

⚠️ **WARNING**
Indicates a “Warning”.
Draws attention to information essential to prevent hardware damage, software damage or system failure.

⚠️ **CAUTION**
Indicates a “Caution”
Draws attention to information essential to the understanding of operation and functions.

**TIP**
Indicates a “TIP”
Gives information that complements the present topic.

**SEE ALSO**
Indicates a SEE ALSO reference.
Identifies a source to which to refer.

- For the protection and safe use of the product and the system controlled by it, be sure to follow the instructions and precautions on safety stated in this manual whenever handling the product. Take special note that if you handle the product in a manner other than prescribed in these instructions, the protection feature of the product may be damaged or impaired. In such cases, Yokogawa cannot guarantee the quality, performance, function and safety of the product.

- When installing protection and/or safety circuits such as thunderbolt protection devices and equipment for the product and control system as well as designing or installing separate protection and/or safety circuits for fool-proof design and fail-safe design of processes and lines using the product and the system controlled by it, the user should implement it using devices and equipment, additional to this product.

- If component parts or consumable are to be replaced, be sure to use parts specified by the company.

- This product is not designed or manufactured to be used in critical applications which directly affect or threaten human lives and safety — such as nuclear power equipment, devices using radioactivity, railway facilities, aviation equipment, air navigation facilities, aviation facilities or medical equipment. If so used, it is the user's responsibility to include in the system additional equipment and devices that ensure personnel safety.

- Do not attempt to modify the product.

### Exemption from Responsibility

- Yokogawa Electric Corporation (hereinafter simply referred to as Yokogawa Electric) makes no warranties regarding the product except those stated in the WARRANTY that is provided separately.

- Yokogawa Electric assumes no liability to any party for any loss or damage, direct or indirect, caused by the user or any unpredictable defect of the product.
Software Supplied by the Company

- Yokogawa Electric makes no other warranties expressed or implied except as provided in its warranty clause for software supplied by the company.

- Use the software with one computer only. You must purchase another copy of the software for use with each additional computer.

- Copying the software for any purposes other than backup is strictly prohibited.

- Store the original media, such as floppy disks, that contain the software in a safe place.

- Reverse engineering, such as decompiling of the software, is strictly prohibited.

- No portion of the software supplied by Yokogawa Electric may be transferred, exchanged, or sublet or leased for use by any third party without prior permission by Yokogawa Electric.
General Requirements for Using the FA-M3

- Avoid installing the FA-M3 in the following locations:
  - Where the instrument will be exposed to direct sunlight, or where the operating temperature exceeds the range 0°C to 55°C (0°F to 131°F).
  - Where the relative humidity is outside the range 10 to 90%, or where sudden temperature changes may occur and cause condensation.
  - Where corrosive or flammable gases are present.
  - Where the instrument will be exposed to direct mechanical vibration or shock.
  - Where the instrument may be exposed to extreme levels of radioactivity.

- Use the correct types of wire for external wiring:
  - Use copper wire with temperature ratings greater than 75°C.

- Securely tighten screws:
  - Securely tighten module mounting screws and terminal screws to avoid problems such as faulty operation.
  - Tighten terminal block screws with the correct tightening torque as given in this manual.

- Securely lock connecting cables:
  - Securely lock the connectors of cables, and check them thoroughly before turning on the power.

- Interlock with emergency-stop circuitry using external relays:
  - Equipment incorporating the FA-M3 must be furnished with emergency-stop circuitry that uses external relays. This circuitry should be set up to interlock correctly with controller status (stop/run).

- Ground for low impedance:
  - For safety reasons, connect the [FG] grounding terminal to a Japanese Industrial Standards (JIS) Class 3 Ground. For compliance to CE Marking, use cables such as twisted cables which can ensure low impedance even at high frequencies for grounding.

- Configure and route cables with noise control considerations:
  - Perform installation and wiring that segregates system parts that may likely become noise sources and system parts that are susceptible to noise. Segregation can be achieved by measures such as segregating by distance, installing a filter or segregating the grounding system.

- Configure for CE Marking Conformance:
  - For compliance to CE Marking, perform installation and cable routing according to the description on compliance to CE Marking in the “Hardware Manual” (IM34M6C11-01E).
● Keep spare parts on hand:
  - Stock up on maintenance parts including spare modules, in advance.

● Discharge static electricity before operating the system:
  - Because static charge can accumulate in dry conditions, first touch grounded metal to discharge any static electricity before touching the system.

● Never use solvents such as paint thinner for cleaning:
  - Gently clean the surfaces of the FA-M3 with a cloth that has been soaked in water or a neutral detergent and wringed.
  - Do not use volatile solvents such as benzine or paint thinner or chemicals for cleaning, as they may cause deformity, discoloration, or malfunctioning.

● Avoid storing the FA-M3 in places with high temperature or humidity:
  - Since the CPU module has a built-in battery, avoid storage in places with high temperature or humidity.
  - Since the service life of the battery is drastically reduced by exposure to high temperatures, take special care (storage temperature should be from −20°C to 75°C).
  - There is a built-in lithium battery in a CPU module and temperature control module which serves as backup power supply for programs, device information and configuration information. The service life of this battery is more than 10 years in standby mode at room temperature. Take note that the service life of the battery may be shortened when installed or stored at locations of extreme low or high temperatures. Therefore, we recommend that modules with built-in batteries be stored at room temperature.

● Always turn off the power before installing or removing modules:
  - Failing to turn off the power supply when installing or removing modules, may result in damage.

● Do not touch components in the module:
  - In some modules you can remove the right-side cover and install ROM packs or change switch settings. While doing this, do not touch any components on the printed-circuit board, otherwise components may be damaged and modules may fail to work.
Introduction

■ Overview of the Manual

The Range-free Multi-controller FA-M3 builds on new concepts developed by Yokogawa Electric Corporation, a company specializing in measurement, control, and information handling. This manual describes the commands and responses that are used by the FA-M3 personal computer link modules, sequence CPU modules (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58), Ethernet interface module and GP-IB communication modules to communicate with higher-level computers (such as personal computers) through a personal computer link.

■ Other Manuals

Depending on the type of the CPU module, you should refer to different instruction manuals.

F3SP28  F3SP53
F3SP38  F3SP58

● About Functions
  - Sequence CPU Modules – Functions (for F3SP28, F3SP38, F3SP53 and F3SP58) (IM34M6P13-01E)

● To create ladder programs
  - FA-M3 Programming Tool WideField (IM34M6Q14-01E)
  - FA-M3 Programming Tool WideField - Applications (IM34M6Q14-02E)

F3SP05  F3SP25
F3SP21  F3SP35

● About Functions
  - Sequence CPU Modules - Functions (for F3SP21, 25 and 35) (IM34M6P12-01E)

● To create ladder programs
  - FA-M3 Programming Tool WideField (IM34M6Q14-01E)
  - FA-M3 Programming Tool WideField - Applications (IM34M6Q14-02E)
  or
  - Ladder Diagram Support Program M3 (IM34M6Q13-01E)

F3FP36

● About Functions
  - Sequence CPU Modules (for F3FP36) (IM34M6P22-01E)

● To create programs using SFC
  - POPMUSCAT Sequence Programming Tool for Windows (IM34M6Q51-01E)
About Functions

- BASIC CPU Module and YM-BASIC/FA Programming Language (IM34M6Q22-01E)

To create BASIC programs

- BASIC Programming Tool M3 for Windows (IM34M6Q22-02E)

Refer to the following manuals, if required.

- For FA-M3 Specifications and Configuration*, Installation and Wiring, Test Run, Maintenance and Inspection or System-Wide Restrictions on Module Installation

  * For specification of products other than the power supply module, base module, input/output module, cable, terminal unit, refer to the respective product manuals.
  - Hardware Manual (IM34M6C11-01E) 5th edition or later.

- For module communication setting and protocol and sample programs, refer to the manuals of the respective modules.
  - Personal Computer Link Module (IM34M6H41-02E)
  - Ethernet Interface Module (IM34M6H24-01E)
  - GP-IB Communication Module (IM34M6H27-01E)

Trademarks

- Ethernet is a registered trademark of XEROX Corporation.
  - The trade and company names that are referred to in this document are either trademarks or registered trademarks of the respective companies.
# CONTENTS

Applicable Product ........................................................................................................ i

Important ......................................................................................................................... ii

Introduction ..................................................................................................................... vii

## 1 Overview

### 1.1 Command Summary

- Device bit accessing commands ........................................ 1-2
- Device word access commands ........................................... 1-2
- Special module accessing commands ................................ 1-2
- Program accessing commands ............................................. 1-3
- Test command ........................................................................ 1-3
- Miscellaneous commands ....................................................... 1-3

### 1.2 Precautions to be Observed When Assessing

- Reading 64 points (bits) from X00217 ........................................ 1-5
- Reading 16 words from X00217 .............................................. 1-6
- Writing 144 points (bits) starting at Y00317 ........................ 1-8

### 1.3 Device Accessing Commands for the BASIC CPU Module

- Word accessing on the common area ................................. 1-10
- Bit accessing on the common area ....................................... 1-10

## 2 ASCII Format Commands and Responses

### 2.1 Device Bit Accessing Commands

- Bit Read (BRD) ......................................................................... 2-4
- Bit Write (BWR) ......................................................................... 2-6
- Bit Flush (BFL) .......................................................................... 2-8
- Bit Random Read (BRR) .......................................................... 2-10
- Bit Random Write (BRW) ......................................................... 2-12
- Bit Relay Specify (BRS) .......................................................... 2-14
- Bit Relay Monitor (BRM) ......................................................... 2-16

### 2.2 Device Word Accessing Commands

- Word Read (WRD) ................................................................. 2-18
- Word Write (WWR) ............................................................... 2-20
- Word Flush (WFL) ................................................................. 2-22
- Word Random Read (WRR) .................................................. 2-24
- Word Write Random (WRW) ............................................... 2-26
- Word Relay Specify (WRS) .................................................... 2-28
- Word Relay Monitor (WRM) .................................................. 2-30

### 2.3 Special Module Accessing Commands

- Special Word Read (SWR) ...................................................... 2-32
- Special Word Write (SWW) ..................................................... 2-34
- Special Long Read (SLR) ....................................................... 2-36
- Special Long Write (SLW) ..................................................... 2-38
2.4 Program Accessing Commands .................................................... 2-40
   ■ Program Information (PRI) .......................................................... 2-40
   ■ Program Load/Save Cancel (PLC) .............................................. 2-42
   ■ Program Load (PLD) ................................................................. 2-43
   ■ Program Save (PSV) ................................................................. 2-45
   ■ Program Load Extended (PLX) ................................................. 2-48
   ■ Program Save Extended (PSX) ................................................. 2-50
   ■ Start (STA) .............................................................................. 2-52
   ■ Stop (STP) ................................................................................ 2-53

2.5 Test command .............................................................................. 2-54
   ■ Loopback Test (TST) .................................................................. 2-54

2.6 Miscellaneous Commands .......................................................... 2-56
   ■ Module Reset (MDR) ............................................................... 2-56
   ■ Information (INF) ....................................................................... 2-57
     (1) Reading CPU module or program (sequence or BASIC) status ... 2-58
     (2) Reading system ID, CPU type, and area size ......................... 2-59
     (3) Reading the name of installed modules ................................. 2-60
     (4) Reading the source of ERR or ALM LED lit on the CPU module .. 2-62
     (5) Erasing current alarm information from a CPU module ............ 2-67
   ■ Date Read (DTR) ......................................................................... 2-68
   ■ Date Write (DTW) ....................................................................... 2-69
   ■ Error History (ERH) .................................................................... 2-71
   ■ User Log Read (ULR) ................................................................. 2-76

3. Binary Format Commands and Responses .................................... 3-1

3.1 Device Bit Accessing Commands ................................................ 3-2
   ■ Bit Read ($01) ........................................................................... 3-2
   ■ Device Specification ................................................................... 3-3
   ■ Bit Write ($02) ......................................................................... 3-4
   ■ Bit Flush ($03) .......................................................................... 3-5
   ■ Bit Random Read ($04) ............................................................ 3-6
   ■ Bit Random Write ($05) ............................................................ 3-7
   ■ Bit Relay Specify ($06) ............................................................. 3-8
   ■ Bit Relay Monitor ($07) ............................................................. 3-9

3.2 Device Word Accessing Commands ............................................. 3-10
   ■ Word Read ($11) ....................................................................... 3-10
   ■ Word Write ($12) ...................................................................... 3-11
   ■ Word Flush ($13) ...................................................................... 3-12
   ■ Word Random Read ($14) ......................................................... 3-13
   ■ Word Relay Monitor ($17) ......................................................... 3-16

3.3 Special Module Accessing Commands ......................................... 3-17
   ■ Special Word Read ($31) .......................................................... 3-17
   ■ Special Word Write ($32) ......................................................... 3-18
   ■ Special Long Read ($33) ......................................................... 3-19
   ■ Special Long Write ($34) ......................................................... 3-20

3.4 Program Accessing Commands ................................................... 3-21
   ■ Program Information ($41) ....................................................... 3-21
   ■ Program Load Cancel ($42) ....................................................... 3-22
   ■ Program Load ($43) ................................................................. 3-23
   ■ Programming notes to be observed when programs are controlled separately according to their type or block ........................................... 3-24
   ■ Program Save ($44) ................................................................. 3-25
   ■ Start ($45) ................................................................................ 3-27
   ■ Stop ($46) ................................................................................ 3-27
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5</td>
<td>Test command</td>
<td>3-28</td>
</tr>
<tr>
<td></td>
<td>Loopback Test ($51)</td>
<td>3-28</td>
</tr>
<tr>
<td>3.6</td>
<td>Miscellaneous Commands</td>
<td>3-29</td>
</tr>
<tr>
<td></td>
<td>Module Reset ($61)</td>
<td>3-29</td>
</tr>
<tr>
<td></td>
<td>Information ($62)</td>
<td>3-30</td>
</tr>
<tr>
<td></td>
<td>Date Read ($63)</td>
<td>3-37</td>
</tr>
<tr>
<td></td>
<td>Date Write ($64)</td>
<td>3-38</td>
</tr>
<tr>
<td></td>
<td>Error History ($65)</td>
<td>3-39</td>
</tr>
<tr>
<td></td>
<td>User Log Read ($66)</td>
<td>3-43</td>
</tr>
</tbody>
</table>

**Appendix 1. Communication Control** ................. Appx.1-1
- Format overview of commands and responses ................. Appx.1-3
- Command Format and its Elements .............................. Appx.1-4
- Response Format and its Elements ............................... Appx.1-7
- Devices that can be Specified .................................... Appx.1-8
- Precautions for communication .................................. Appx.1-10

**Appendix 2. Error Code in Response** .................. Appx.2-1

**Revision Information** ......................................... i
1 Overview

The commands and responses that are explained in this document are used by the following modules to communicate with higher-level links (personal computers, etc.):

- Personal computer link module
- Sequence CPU modules (Personal computer link functions of F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)
- Ethernet interface module (higher-level link service)
- GP-IB communication module

The programming tool connector of a BASIC CPU module (F3BP20, F3BP30) and sequence CPU module (F3FP36) does not have a personal computer link function I/F. Therefore, RS communication of a BASIC CPU module and sequence CPU module to a higher-level computer (personal computer, etc.) has to be via a personal computer link module (F3LC11).

**Differences between the Ethernet interface module and the other modules**

Whereas all modules can handle ASCII commands and responses, only the Ethernet interface module can handle binary commands and responses. The format of the header and terminator fields of the ASCII commands and responses for the Ethernet interface module differs from that for the other modules. Consequently, the following conventions are used in this manual to describe the commands and responses:

- ASCII and binary coded versions of commands and responses are described in separate chapters.
- The ASCII version of commands and responses are detailed in two formats: one for the Ethernet interface module and the other for the rest of the communication link modules.
1.1 Command Summary

The binary coded commands can be handled only by the Ethernet interface module.

### Device bit accessing commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
<th>Number of points processed in one transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;BRD&quot;</td>
<td>Reads bits.</td>
<td>1 to 256 bits</td>
</tr>
<tr>
<td>&quot;BWR&quot;</td>
<td>Writes bits.</td>
<td>1 to 256 bits</td>
</tr>
<tr>
<td>&quot;BFL&quot;</td>
<td>Writes bits of the same data.</td>
<td>1 to 256 bits</td>
</tr>
<tr>
<td>&quot;BRR&quot;</td>
<td>Reads bits randomly.</td>
<td>1 to 32 bits</td>
</tr>
<tr>
<td>&quot;BRW&quot;</td>
<td>Writes bits randomly.</td>
<td>1 to 32 bits</td>
</tr>
<tr>
<td>&quot;BRS&quot;</td>
<td>Specifies the monitoring devices on a bit basis.</td>
<td>1 to 32 bits</td>
</tr>
<tr>
<td>&quot;BRM&quot;</td>
<td>Monitors bits.</td>
<td>1 to 32 bits</td>
</tr>
</tbody>
</table>

### Device word access commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
<th>Number of points processed in one transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;WRD&quot;</td>
<td>Reads words.</td>
<td>1 to 64 words</td>
</tr>
<tr>
<td>&quot;WWR&quot;</td>
<td>Writes words.</td>
<td>1 to 64 words</td>
</tr>
<tr>
<td>&quot;WFL&quot;</td>
<td>Writes words of the same data.</td>
<td>1 to 256 words</td>
</tr>
<tr>
<td>&quot;WRR&quot;</td>
<td>Reads words randomly.</td>
<td>1 to 32 words</td>
</tr>
<tr>
<td>&quot;WRW&quot;</td>
<td>Writes words randomly.</td>
<td>1 to 32 words</td>
</tr>
<tr>
<td>&quot;WRS&quot;</td>
<td>Specifies the monitoring devices on a bit basis.</td>
<td>1 to 32 words</td>
</tr>
<tr>
<td>&quot;WRM&quot;</td>
<td>Monitors words.</td>
<td>1 to 32 words</td>
</tr>
</tbody>
</table>

### Special module accessing commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
<th>Number of points processed in one transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;SWR&quot;</td>
<td>Reads words.</td>
<td>1 to 64 channels (^<em>(1)^</em>) (^<em>(2)^</em>)</td>
</tr>
<tr>
<td>&quot;SWW&quot;</td>
<td>Writes words.</td>
<td>1 to 64 channels (^<em>(1)^</em>) (^<em>(2)^</em>)</td>
</tr>
<tr>
<td>&quot;SLR&quot;</td>
<td>Reads long words</td>
<td>1 to 32 channels (^<em>(1)^</em>) (^<em>(2)^</em>)</td>
</tr>
<tr>
<td>&quot;SLW&quot;</td>
<td>Writes long words</td>
<td>1 to 32 channels (^<em>(1)^</em>) (^<em>(2)^</em>)</td>
</tr>
</tbody>
</table>

\(^*(1)^*\): Not available for the F3BP20-0N and F3BP30-0N Basic CPUs.
\(^*(2)^*\): Not available for the F3GB01 module.
Program accessing commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
<th>ASCII</th>
<th>Binary</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRI</td>
<td>Reads program information.</td>
<td>$41</td>
<td>(*) (')</td>
</tr>
<tr>
<td>PLC</td>
<td>Cancels program loading or saving.</td>
<td>$42</td>
<td>(*) (')</td>
</tr>
<tr>
<td>PLD</td>
<td>Loads a program.</td>
<td>$43</td>
<td>(*) (')</td>
</tr>
<tr>
<td>PSV</td>
<td>Saves a program.</td>
<td>$44</td>
<td>(*) (')</td>
</tr>
<tr>
<td>STA</td>
<td>Starts a program.</td>
<td>$45</td>
<td>(*) (')</td>
</tr>
<tr>
<td>STP</td>
<td>Stops a program.</td>
<td>$46</td>
<td>(*) (')</td>
</tr>
</tbody>
</table>

*1: Not available for the F3BP20-0N and F3BP30-0N Basic CPUs.
*2: Not available for the F3GB01 module.

Test command

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
<th>ASCII</th>
<th>Binary</th>
</tr>
</thead>
<tbody>
<tr>
<td>TST</td>
<td>Performs a (loopback) test.</td>
<td>$51</td>
<td>(*) (')</td>
</tr>
</tbody>
</table>

*1: Not available for the F3BP20-0N and F3BP30-0N Basic CPUs.
*2: Not available for the F3GB01 module.

Miscellaneous commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Binary</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDR</td>
<td>$61</td>
</tr>
<tr>
<td>INF</td>
<td>$62</td>
</tr>
<tr>
<td>DTR</td>
<td>$63</td>
</tr>
<tr>
<td>DTW</td>
<td>$64</td>
</tr>
<tr>
<td>ERH</td>
<td>$65</td>
</tr>
<tr>
<td>ULR</td>
<td>$66</td>
</tr>
</tbody>
</table>

*1: Not available for the F3BP20-0N and F3BP30-0N Basic CPUs.
*2: Not available for the F3GB01 module.
1.2 Precautions to be Observed When Assessing Input/output Relays with Device Accessing Commands

A slot is regarded as having 64 points (4 words) when input (X) relays or output (Y) relays are accessed with a read/write block or same data command. When the number of actually attached modules is smaller than 64 points, any free slots are assumed to have 64 points. (Invalid data is written to or read from unoccupied points if the number of occupied points is smaller than 64 points). When input and output relay modules are installed alternately, invalid data will occur from between them. Note that the read input/output relay state commands are available only for the sequence CPU modules.

CAUTION

- In the coding examples for ASCII format commands and responses given in this section, the header and terminator fields are omitted and only the command body and parameter fields are described.

- The binary coded commands and responses are available only for the Ethernet interface module. The header and terminator fields are shown in the coding examples for binary coded commands and responses.
Reading 64 points (bits) from X00217

An FA-M3 system with the following configuration is described below as an example.

```
<table>
<thead>
<tr>
<th>Slot No.</th>
<th>CPU</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>XD32</td>
</tr>
<tr>
<td>2</td>
<td>XD32</td>
</tr>
<tr>
<td>3</td>
<td>Free</td>
</tr>
<tr>
<td>4</td>
<td>XD32</td>
</tr>
<tr>
<td>5</td>
<td>XD32</td>
</tr>
<tr>
<td>6</td>
<td>XD32</td>
</tr>
<tr>
<td>7</td>
<td>XD32</td>
</tr>
</tbody>
</table>
```

- **X00217**

```
Command: BRDX00217,064
Response: OK1111
(2) Invalid data
Invalid data
Invalid data

16 points
X00217
16 points
X00233
16 points
X00248
16 points
X00316
```

- **Binary (Ethernet interface module only)**

```
Command: $010100080018000000D90040
Response: $810000400101
(2) Invalid data
Invalid data
Invalid data

16 points
X00217
16 points
X00233
16 points
X00232
16 points
X00316
```

Data is read in the order of relay number. Since slot 2 has a 32-point module, Data at X00201 through X00232 is valid but data at X00233 through X00264 is invalid. No output (Y) relay is read if the starting device specified is an input (X) relay.
## Reading 16 words from X00217

### ASCII

<table>
<thead>
<tr>
<th>Command</th>
<th>WRDX00217,16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response</td>
<td>OKF0A5 0000 0000 0000 0000 0000 0000 0000 9876</td>
</tr>
<tr>
<td>(2)</td>
<td>Invalid Invalid Invalid Invalid Invalid Invalid Invalid Invalid</td>
</tr>
<tr>
<td>(5)</td>
<td>Invalid Invalid Invalid Invalid Invalid Invalid Invalid Invalid</td>
</tr>
</tbody>
</table>

When a read word command is executed, data is read in 16-bit (1 word) units starting at the starting device. Note that the bits in the word are arranged in the reverse order of relay number (in the order opposite to the one in which bits are read). In this case, data (F0A5) in device (2) looks like as shown below.

When a module that has less than 16 points is read, the higher-order bits are handled as invalid. Data in an 8-point module will look like as shown below.

### Binary (Ethernet interface module only)

<table>
<thead>
<tr>
<th>Command</th>
<th>$110100080018000000D90010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response</td>
<td>$9100 0020 F0A5 0000 0000 0000 0000 0000 0000</td>
</tr>
<tr>
<td>(2)</td>
<td>Invalid Invalid Invalid Invalid Invalid Invalid Invalid Invalid</td>
</tr>
<tr>
<td>(5)</td>
<td>Invalid Invalid Invalid Invalid Invalid Invalid Invalid Invalid</td>
</tr>
</tbody>
</table>

When a read word command is executed, data is read in 16-bit (1 word) units starting at the starting device. Note that the bits in the word are arranged in the reverse order of relay number (in the order opposite to the one in which bits are read). In this case, data (F0A5) in device (2) looks like as shown below.

When a module that has less than 16 points is read, the higher-order bits are handled as invalid. Data in an 8-point module will look like as shown below.
CAUTION

Read random (WRR) commands should be used for efficient reading in situations in which a volume of invalid data would otherwise result.

- ASCII

```
WRR05X217,Y301,Y317,X401,Y601
```

```
(2) (3) (4) (5)
OKF0A5 6101 1234 9876 2468
1 word 1 word 1 word 1 word
```
Writing 144 points (bits) starting at Y00317

The area surrounded by bold lines are subject to write processing.

**ASCII**

Command: BWRY317,144,1111...10101...01010...1

(4) 16 points 16 points 16 points

(5) Dummy data Dummy data Dummy data

0000...00000...0000...00000...0

16 points 16 points 16 points

(6) Dummy (A) Dummy (B)

1...0...00000...0

8 points 8 points 16 points

Y00517 Y00532

Y00516 Y00509

Y00501

**Binary (Ethernet interface module only)**

Command: $02010098001900000013D00900101...01010...01

(5) 16 points 16 points

(6) Dummy data Dummy data Dummy data

0000...00000...0000...00000...0

16 points 16 points 16 points

(8) Dummy (A) Dummy (B)

01...010...00000...0

8 points 8 points 16 points

Y00517 Y00532

Y00516 Y00509

Y00508
CAUTION

Use dummy data (any values) when writing into the module in this example as you cannot write into input relays (7). Append dummy data to the end of the write data when writing into a module that has less than 64 points. When dummy data comes at the end of write data as with the case in this example, you can reduce the number of points to be written and thus dispenses with the need to append dummy data by coding as follows:

ASCII  BWRY317,120,111...1

Binary  $0201008000190000013D0101...01
1.3 Device Accessing Commands for the BASIC CPU Module

You can use device accessing commands on the common area in the basic CPU modules (F3BP20 and F3BP30).

■ Word accessing on the common area

Code the device in the format “D*****.” “D0001” specifies the beginning of the common area and a single device is assumed to represent one word of input/output points. Each integer type variable is assigned one device. When a data type other than integer is used, the format of internal data need be converted within the module that is to read or write the data.

*Note: Device “D” means a data register to the sequence CPU.

```
BASIC program
DEFINT A-Z
OPTION BASE 1
COM A,B,RDATA(3)
.......  
```

```
Common area
A
B
RDATA(1)
RDATA(2)
RDATA(3)
```

```
Personal computer link access device name
D0001
D0002
D0003
D0004
D0005
```

■ Bit accessing on the common area

Code the device in the format “I*****.” “I0001” specifies the beginning of the common area and a single device is assumed to represent one bit of input/output point. Each integer type variable is assigned 16 devices. The module that is to read or write data needs to be aware of the format of the internal data.

*Note: Device “I” means an internal relay to the sequence CPU.

```
BASIC program
DEFINT A-Z
OPTION BASE 1
COM A,B,
.......  
```

```
Common area
LSB
MSB
```

```
Personal computer link access device name
I0016......I0002,I0001
I0032......I0018,I0017
```

⚠️ CAUTION

You can specify bit addresses from I0001 through I99999 in your program and access up to 12,499 bytes of data from the beginning of the common area.
2. ASCII Format Commands and Responses

- Command and response formats for the personal computer link module, (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58) sequence CPU modules and GP-IB communication module

Command format

<table>
<thead>
<tr>
<th>Bytes</th>
<th>1</th>
<th>2</th>
<th>2</th>
<th>1</th>
<th>3</th>
<th>Variable length</th>
<th>2</th>
<th>1</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element</td>
<td>STX</td>
<td>Station No. (SA)</td>
<td>CPU No. (nn)</td>
<td>Wait time (WT)</td>
<td>Command</td>
<td>Parameters</td>
<td>Checksum (SUM)</td>
<td>E</td>
<td>T</td>
</tr>
</tbody>
</table>

Required only when checksum test is enabled.
Required only when the termination character is enabled.

Response format

<table>
<thead>
<tr>
<th>Bytes</th>
<th>1</th>
<th>2</th>
<th>2</th>
<th>2</th>
<th>Variable length</th>
<th>2</th>
<th>1</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element</td>
<td>STX</td>
<td>Station No. (SA)</td>
<td>CPU No. (nn)</td>
<td>OK</td>
<td>Command response</td>
<td>Checksum (SUM)</td>
<td>E</td>
<td>T</td>
</tr>
</tbody>
</table>

These fields are added to the response only when they are specified in the corresponding command.

6 bytes in case of an error

- Command and response formats for the Ethernet interface module

Command

<table>
<thead>
<tr>
<th>Sub header</th>
<th>Command</th>
<th>Command parameters</th>
<th>Termination character</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 bytes</td>
<td>3 bytes</td>
<td>2 bytes</td>
<td></td>
</tr>
</tbody>
</table>

Response format

<table>
<thead>
<tr>
<th>Sub header</th>
<th>Termination code</th>
<th>Response parameters</th>
<th>Termination character</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 bytes</td>
<td>2 bytes (normal time) or 4 bytes (error time)</td>
<td>2 bytes</td>
<td></td>
</tr>
</tbody>
</table>

F020001.EPS
F020002.EPS
## Module Summary for Commands

### Device bit accessing commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRD</td>
<td>Reads bits</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>BWR</td>
<td>Writes bits</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>BFL</td>
<td>Writes bits of the same data</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>BRR</td>
<td>Reads bits randomly</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>BRW</td>
<td>Writes bits randomly</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>BRS</td>
<td>Specifies the monitoring devices on a bit basis</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>BRM</td>
<td>Monitors bits</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### Device word access commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRD</td>
<td>Reads words</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>WWR</td>
<td>Writes words</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>WFL</td>
<td>Writes words of the same data</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>WRR</td>
<td>Reads words randomly</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>WRW</td>
<td>Writes words randomly</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>WRS</td>
<td>Specifies the monitoring devices on a word basis</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>WRM</td>
<td>Monitors words</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### Special module accessing commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWR</td>
<td>Reads words</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SWW</td>
<td>Writes words</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SLR</td>
<td>Writes long words</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SLW</td>
<td>Reads long words</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
### Program accessing commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
<th>F 3</th>
<th>L 1</th>
<th>C 2</th>
<th>S 3</th>
<th>P 5</th>
<th>0 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;PRI&quot;</td>
<td>Reads program information</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>&quot;PLC&quot;</td>
<td>Cancels program loading or saving</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>&quot;PLD&quot;</td>
<td>Loads a program</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>&quot;PSV&quot;</td>
<td>Saves a program</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>&quot;STA&quot;</td>
<td>Saves a program</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>&quot;STP&quot;</td>
<td>Starts a program</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### Test command

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
<th>F 3</th>
<th>L 1</th>
<th>C 2</th>
<th>S 3</th>
<th>P 5</th>
<th>0 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;TST&quot;</td>
<td>Performs a (loopback) test</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### Miscellaneous commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
<th>F 3</th>
<th>L 1</th>
<th>C 2</th>
<th>S 3</th>
<th>P 5</th>
<th>0 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;MDR&quot;</td>
<td>Resets the module</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>&quot;INF&quot;</td>
<td>Reads the CPU module and the program status (sequence or BASIC)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>&quot;INF&quot;</td>
<td>Reads the system ID, CPU type and area size information</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>&quot;INF&quot;</td>
<td>Reads the mounting module name</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>&quot;INF&quot;</td>
<td>Reads causes of ERR LED or ALM LED of the CPU module</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>&quot;INF&quot;</td>
<td>Deletes the current alarm information of the CPU module</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>&quot;DTR&quot;</td>
<td>Writes date</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>&quot;DTW&quot;</td>
<td>Writes date</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>&quot;ERH&quot;</td>
<td>Reads error history</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>&quot;ULR&quot;</td>
<td>Reads user log</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
2.1 Device Bit Accessing Commands

**Bit Read (BRD)**

The BRD command reads the specified number of ON/OFF state bits from the consecutive devices starting at the device designated by the given device name. A response "0" ($30) represents the OFF state and a "1" ($31) represents the ON state.

**Command and response formats for the personal computer link module, (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58) sequence CPU modules and GP-IB communication module**

![Diagram of command and response formats for personal computer link module](F20101.EPS)

**Command and response formats for the Ethernet interface module**

![Diagram of command and response formats for Ethernet interface module](F20112.EPS)
- Refer to the user’s manual for the individual modules for the legitimate device names.

- Use caution when specifying two or more input or output relays at the same time. See Section 1.2.

- The number of points you can read at a time with this command is 1 to 256 points.

- Refer to the instruction manual for the individual modules for the response formats that are used at error times.

- The BRD command for reading input/output relay status is available only for the sequence CPU modules.
Bit Write (BWR)

The BWR command writes the specified number of bits of ON/OFF status data into the consecutive devices starting at the device designated by the given device name. A write data bit "0" ($30) represents the OFF state and a "1" ($31) represents the ON state.

Command and response formats for the personal computer link module, (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58) sequence CPU modules and GP-IB communication module

Command

<table>
<thead>
<tr>
<th>X</th>
<th>0</th>
<th>0</th>
<th>BWR</th>
<th>n</th>
<th>d</th>
<th>d</th>
<th>d</th>
<th>E</th>
<th>T</th>
<th>C</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wait time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPU No.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Station No.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Write data
ON : "1" ($31)
OFF : "0" ($30)
"," or space
Point count "0001" to "255"
"," or space
Device name

Response (normal time)

<table>
<thead>
<tr>
<th>X</th>
<th>0</th>
<th>0</th>
<th>OK</th>
<th>E</th>
<th>C</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checksum and CR are returned only when they are included in the command.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPU No.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Station No.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Checksum and CR fields are optional (required only when they are enabled with setup switches.)

Command and response formats for the Ethernet interface module

Command

<table>
<thead>
<tr>
<th>0</th>
<th>BWR</th>
<th>n</th>
<th>d</th>
<th>d</th>
<th>d</th>
<th>C</th>
<th>L</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ON : &quot;1&quot; ($31)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFF : &quot;0&quot; ($30)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;,&quot; or space</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Point count &quot;001&quot; to &quot;256&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;,&quot; or space</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Device name</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#: CPU No. 1-4

Response (normal time)

<table>
<thead>
<tr>
<th>1</th>
<th>OK</th>
<th>C</th>
<th>L</th>
<th>F</th>
</tr>
</thead>
</table>

#: CPU No. 1-4
● REMARKS

- Refer to the user’s manual for the individual modules for the legitimate device names.

- Be careful when specifying two or more input or output relays at the same time. See Section 1.2.

- The number of points you can write at a time with this command is 1 to 256 points.

- Refer to the instruction manual for the individual modules for the response formats that are used at error times.

- You cannot write bit data with this command if the data format setup switch is set to "Protect Enabled" (or "Write Protected"). An attempt to execute this command in such a condition will result in an error with an error code of 02.

- The BWR command for writing output relay status is available only for the sequence CPU modules.
## Bit Flush (BFL)

The BFL command writes the same data (ON/OFF state) into the specified number of points in the consecutive devices starting at the device designated by the given device name. A write data bit "0" ($30) represents the OFF state and a "1" ($31) represents the ON state.

### Command and response formats for the personal computer link module, (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58) sequence CPU modules and GP-IB communication module

**Command**

- **STX**: Start of Text
- **BFL**: Bit Flush Command
- **n**: Point count (0001 to 255)
- **d**: Data ("0" ($30) for OFF, "1" ($31) for ON), "1" or space
- **ETX**: End of Text
- **CR**: Carriage Return
- **Checksum**: Optional (required only when enabled with setup switches)
- **CPU No.**, **Station No.**: Addresses
- **Wait time**: Required

**Response (normal time)**

- **STX**: Start of Text
- **OK**: Response (normal time)
- **ETX**: End of Text
- **CR**: Carriage Return
- **Checksum**: Optional
- **CPU No.**, **Station No.**: Addresses

### Command and response formats for the Ethernet interface module

**Command**

- **0#**: Device number (1-4)
- **BFL**: Bit Flush Command
- **n**: Point count (001 to 256)
- **d**: Data ("0" ($30) for OFF, "1" ($31) for ON), "1" or space
- **CR**: Carriage Return
- **#**: CPU No. 1-4

**Response (normal time)**

- **1#**: Device number (1-4)
- **OK**: Response (normal time)
- **CR**: Carriage Return
- **#**: CPU No. 1-4

Checksum and CR are returned only when they are included in the command.
● REMARKS

- Refer to the user's manual for the individual modules for the legitimate device names.

- Be careful when specifying two or more input or output relays at the same time. See Section 1.2.

- The number of points you can write at a time with this command is 1 to 256 points.

- Refer to the instruction manual for the individual modules for the response formats that are used at error times.

- You cannot write bit data with this command if the data format setup switch is set to "Protect Enabled" (or "Write Protected"). An attempt to execute this command in such a condition will result in an error with an error code of 02.

- The BFL command for writing output relay status is available only for the sequence CPU modules.
Bit Random Read (BRR)

The BRR command reads the ON/OFF state from randomly specified devices. A response "0" ($30) represents the OFF state and a "1" ($31) represents the ON state.

Command and response formats for the personal computer link module, (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58) sequence CPU modules and GP-IB communication module

Command

```
STX  BRR  n  Device name 1  Device name n  ETX  CR

Wait time
CPU No.
Station No.

Device names
Device names must be separated by commas "," or spaces.
Point count "01" to "32"

Checksum and CR fields are optional (required only when they are enabled with setup switches.)
```

Response (normal time)

```
STX  OK  d 1  d n  ETX  CR

CPU No.
Station No.

Checksum

Read data
ON : "1" ($31)
OFF : "0" ($30)

Checksum and CR are returned only when they are included in the command.
```

Command and response formats for the Ethernet interface module

Command

```
0#  BRR  n  Device name 1  Device name n  CR  LF

Device names
Device names must be separated by commas "," or spaces
Point count "01" to "32"

#: CPU No. 1-4
```

Response (normal time)

```
1#  OK  d 1  d n  CR  LF

Read data
ON : "1" ($31)
OFF : "0" ($30)

#: CPU No. 1-4
```

Checksum and CR are returned only when they are included in the command.
● REMARKS

- Refer to the user's manual for the individual modules for the legitimate device names.
- The number of points you can read at a time with this command is 1 to 32 points.
- Refer to the instruction manual for the individual modules for the response formats that are used at error times.
- The BRR command for reading input/output relay status is available only for the sequence CPU modules.
## Bit Random Write (BRW)

The BRW command writes the ON/OFF status data into randomly specified devices. A write data bit "0" ($30) represents the OFF state and a "1" ($31) represents the ON state.

### Command and response formats for the personal computer link module, (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58) sequence CPU modules and GP-IB communication module

- **Command**
- **Response (normal time)**

### Command and response formats for the Ethernet interface module

- **Command**
- **Response (normal time)**

Checksum and CR fields are optional (required only when they are enabled with setup switches.)

Iterations of device name and write data pair
A device name and write data must be separated by a comma "," or space.
Write data
ON : "1" ($31)
OFF : "0" ($30)
Point count "01" to "32"

Checksum and CR are returned only when they are included in the command.

Iterations of device name and write data pair
A device name and write data must be separated by a comma "," or space.
Write data
ON : "1" ($31)
OFF : "0" ($30)
Point count "01" to "32"

Checksum and CR fields are optional (required only when they are enabled with setup switches.)

Iterations of device name and write data pair
A device name and write data must be separated by a comma "," or space.
Write data
ON : "1" ($31)
OFF : "0" ($30)
Point count "01" to "32"
## REMARKS

- Refer to the user's manual for the individual modules for the legitimate device names.
- The number of points you can write at a time with this command is 1 to 32 points.
- Refer to the instruction manual for the individual modules for the response formats that are used at error times.
- You cannot write bit data with this command if the data format setup switch is set to "Protect Enabled" (or "Write Protected"). An attempt to execute this command in such a condition will result in an error with an error code of 02.
- The BRW command for writing output relay status is available only for the sequence CPU modules.
The BRS command specifies the name of devices to be monitored on a bit basis. The command only serves to designate device names. Actual monitoring is specified by issuing the bit relay monitoring command (BRM).

The device names specified in this command are stored with the given station number (personal computer link module or sequence CPU module (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53 or F3SP58) and CPU number. Consequently, they remain valid until a new BRS command is issued with the same station number (personal computer link module or sequence CPU module (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53 or F3SP58) and CPU number specified. The specified device names will be erased if the module is powered off or reset.

**Command and response formats for the personal computer link module, (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58) sequence CPU modules and GP-IB communication module**

**Command**

```
S T X  B R S  n  Device name 1  Device name n  E T X  C R
```

**Response**

```
S T X  O K  E T X  C R
```

Checksum and CR fields are optional (required only when they are enabled with setup switches.)

**Command and response formats for the Ethernet interface module**

**Command**

```
#  B R S  n  Device name 1  Device name n  C L R  F
```

**Response**

```
#  O K  C L R  F
```

Checksum and CR are returned only when they are included in the command.
REMARKS

- Refer to the user’s manual for the individual modules for the legitimate device names.
- The number of device points you can specify at a time is 1 to 32 points.
- Refer to the user’s manual for the individual modules for the response formats that are used at error times.
Bit Relay Monitor (BRM)

The BRM command reads the ON/OFF state from the devices that are specified in advance with a BRS command. A response "0" ($30) represents the OFF state and a "1" ($31) represents the ON state.

Command and response formats for the personal computer link module, (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58) sequence CPU modules and GP-IB communication module

Command and response formats for the Ethernet interface module
REMARKS

- You must specify the devices to monitor before executing this command. Use the BRS command to specify devices. An error with an error code of 06 will be generated if this command is executed with no device name specified.

- A similar error will result if the module is powered off or reset.

- Refer to the user's manual for the individual modules for the response formats that are used at error times.

- The BRM command for monitoring (reading) input/output relay status is available only for the sequence CPU modules.
2.2 Device Word Accessing Commands

Word Read (WRD)

The WRD command reads the specified number of words of ON/OFF state from the consecutive devices starting at the device designated by the given device name. A response consisting of 4-digit hexadecimal character string ("0000" to "FFFF") is returned.

Command and response formats for the personal computer link module, (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58) sequence CPU modules and GP-IB communication module

Command

<table>
<thead>
<tr>
<th>STX</th>
<th>WRD</th>
<th>n</th>
<th>ETX</th>
<th>CR</th>
</tr>
</thead>
</table>

- Wait time
- CPU No.
- Station No.
- Checksum
- Word count "01" to "64"
- "," or space
- Device name

Response (normal time)

<table>
<thead>
<tr>
<th>STX</th>
<th>OK</th>
<th>ddd.</th>
<th>ddd.</th>
<th>ETX</th>
<th>CR</th>
</tr>
</thead>
</table>

- CPU No.
- Station No.
- Checksum
- Specified number of read words
- Hexadecimal string pattern

Command and response formats for the Ethernet interface module

Command

<table>
<thead>
<tr>
<th>STX</th>
<th>C</th>
<th>L</th>
<th>R</th>
<th>WRD</th>
<th>n</th>
<th>CR</th>
<th>F</th>
</tr>
</thead>
</table>

- Word count "01" to "64"
- "," or space
- Device name

Response (normal time)

<table>
<thead>
<tr>
<th>STX</th>
<th>1#</th>
<th>OK</th>
<th>ddd.</th>
<th>ddd.</th>
<th>CR</th>
<th>F</th>
</tr>
</thead>
</table>

- #: CPU No. 1-4
- Specified number of read words
- Hexadecimal string pattern
- Refer to the user's manual for the individual modules for the legitimate device names.
- Be careful when specifying two or more input or output relays at the same time. See Section 1.2.
- The number of words you can read at a time with this command is 1 to 64 words.
- Refer to the user's manual for the individual modules for the response formats that are used at error times.
- The WRD command for reading input/output relay status is available only for the sequence CPU modules.
Word Write (WWR)

The WWR command writes the specified number of words of data into the consecutive devices starting at the device designated by the given device name. The write data must be a 4-digit hexadecimal character string ("0000" to "FFFF").

Command and response formats for the personal computer link module, (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58) sequence CPU modules and GP-IB communication module

Command

<table>
<thead>
<tr>
<th>STX</th>
<th>WWR</th>
<th>n</th>
<th>dddd1</th>
<th>dddd2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Response (normal time)

<table>
<thead>
<tr>
<th>STX</th>
<th>OK</th>
<th>ETX</th>
<th>C/R</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Command and response formats for the Ethernet interface module

Command

<table>
<thead>
<tr>
<th>#</th>
<th>WWR</th>
<th>n</th>
<th>dddd1</th>
<th>dddd2</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Response (normal time)

<table>
<thead>
<tr>
<th>#</th>
<th>OK</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
REMARKS

- Refer to the user's manual for the individual modules for the legitimate device names.
- Be careful when specifying two or more input or output relays at the same time. See Section 1.2.
- The number of words you can write at a time with this command is 1 to 64 words.
- Refer to the user's manual for the individual modules for the response formats that are used at error times.
- You cannot write timer or counter values with this command.
- You can write no data if the data format setup switch is set to "Protect Enabled" (or "Write Protected"). An attempt to execute this command in such a condition will result in an error with an error code of 02.
- The WWR command for writing output relay status is available only for the sequence CPU modules.
Word Flush (WFL)

The WFL command writes words of the same data into the consecutive devices starting at the device designated by the given device name. The write data must be a 4-digit hexadecimal character string ("0000" to "FFFF").

Command and response formats for the personal computer link module, (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58) sequence CPU modules and GP-IB communication module

Command

Response (normal time)

Command and response formats for the Ethernet interface module

Command

Response (normal time)
REMARKS

- Refer to the user's manual for the individual modules for the legitimate devic names.
- Be careful when specifying two or more input or output relays at the same time. See Section 1.2.
- The number of words you can write at a time with this command is 1 to 256 words.
- Refer to the user's manual for the individual modules for the response formats that are used at error times.
- You cannot write timer or counter values with this command.
- You can write no data if the data format setup switch is set to "Protect Enabled" (or "Write Protected"). An attempt to execute this command in such a condition will result in an error with an error code of 02.
- The WFL command for writing output relay status is available only for the sequence CPU modules.
Word Random Read (WRR)

The WRR command reads device status data in word units from randomly specified devices. A response consisting of 4-digit hexadecimal character string ("0000" to "FFFF") is returned.

Command and response formats for the personal computer link module, (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58) sequence CPU modules and GP-IB communication module

Command

Response (normal time)

Checksum and CR fields are optional (required only when they are enabled with setup switches.)

Words of device names
Device names must be separated by commas "," or spaces.

Word count "01" to "32"

Command and response formats for the Ethernet interface module

Command

Response (normal time)

Checksum and CR are returned only when they are included in the command.

Words of read data
Hexadecimal string pattern
● REMARKS

- Refer to the user’s manual for the individual modules for the legitimate device names.

- The number of words you can read at a time with this command is 1 to 32 words.

- Refer to the user’s manual for the individual modules for the response formats that are used at error times.

- The WRR command for reading input/output relay status is available only for the sequence CPU modules.
**Word Write Random (WRW)**

The WRW command writes data into words of randomly specified devices, a 4-digit hexadecimal string pattern into each device.

- **Command and response formats for the personal computer link module, (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58) sequence CPU modules and GP-IB communication module**

  Command

<table>
<thead>
<tr>
<th>Command</th>
<th>WRW n</th>
<th>Device name 1</th>
<th>dddd1</th>
<th>Device name n</th>
<th>dddd</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wait time</td>
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<td></td>
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<tr>
<td>CPU No.</td>
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<td></td>
<td></td>
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<tr>
<td>Station No.</td>
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<td></td>
</tr>
</tbody>
</table>

  Response (normal time)

<table>
<thead>
<tr>
<th>Command</th>
<th>WRW n</th>
<th>Device name 1</th>
<th>dddd1</th>
<th>Device name n</th>
<th>dddd</th>
<th>CR</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

  Word count iterations of device name and write data pair
  A device name and write data must be separated by a comma ",” or space.
  Write data consists of a hexadecimal string pattern.

  Checksum and CR fields are optional (required only when they are enabled with setup switches.)

- **Command and response formats for the Ethernet interface module**

  Command

<table>
<thead>
<tr>
<th>Command</th>
<th>WRW n</th>
<th>Device name 1</th>
<th>dddd1</th>
<th>Device name n</th>
<th>dddd</th>
<th>CR</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

  Word count iterations of device name and write data pair
  A device name and write data must be separated by a comma ",” or space.
  Write data consists of a hexadecimal string pattern.

  Checksum and CR are returned only when they are included in the command.

  #: CPU No. 1-4

Response (normal time)

<table>
<thead>
<tr>
<th>Command</th>
<th>WRW n</th>
<th>Device name 1</th>
<th>dddd1</th>
<th>Device name n</th>
<th>dddd</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

  #: CPU No. 1-4

F022029.EPS

F0220210.EPS
● REMARKS

- Refer to the user's manual for the individual modules for the legitimate device names.
- The number of words you can write at a time with this command is 1 to 32 words.
- Refer to the user's manual for the individual modules for the response formats that are used at error times.
- You cannot use this command to set a timer or counter value.
- You cannot write word data with this command if the data format setup switch is set to "Protect Enabled" (or "Write Protected"). An attempt to execute this command in such a condition will result in an error with an error code of 02.
- The WRW command for writing output relay status is available only for the sequence CPU modules.
## Word Relay Specify (WRS)

The WRS command specifies the name of devices to be monitored on a word basis. The command only serves to designate device names. Actual monitoring is specified by issuing the word relay monitoring command (WRM). The device names specified in this command are stored with the given station number (personal computer link module or sequence CPU module (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53 or F3SP58) and CPU number. Consequently, they remain valid until a new WRS command is issued with the same station number (personal computer link module) and CPU number specified. The specified device names will be erased if the module is powered off or reset.

### Command and response formats for the personal computer link module, (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58) sequence CPU modules and GP-IB communication module

#### Command

```
S X
WRS n Device name 1 Device name n
```

- **Wait time**
- **CPU No.**
- **Station No.**
- **Device name**
- **Monitored device name**
- **Checksum**
- **Word count “01” to “32”**
- **A device name and write data must be separated by a comma “,” or space.**

#### Response (normal time)

```
S X
OK
```

- **CPU No.**
- **Checksum**
- **Station No.**
- **Monitored device name**
- **Word count “01” to “32”**

### Command and response formats for the Ethernet interface module

#### Command

```
0# BRS n Device name 1 Device name n
```

- **Monitored device name**
- **A device name and write data must be separated by a comma “,” or space.**
- **Point count “01” to “32”**

#### Response (normal time)

```
1# OK
```

- **CPU No. 1-4**
- **Monitored device name**
- **Word count “01” to “32”**
REMARDS

- Refer to the user’s manual for the individual modules for the legitimate device names.
- The number of device points you can specify at a time is 1 to 32 points.
- Refer to the user’s manual for the individual modules for the response formats that are used at error times.
- The WRS command for reading input/output relay status is available only for the sequence CPU modules.
### Word Relay Monitor (WRM)

The WRM command reads device information from the devices that are specified in advance with a WRS command. 4-digit hexadecimal string patterns are returned.

#### Command and response formats for the personal computer link module, (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58) sequence CPU modules and GP-IB communication module

<table>
<thead>
<tr>
<th>Command</th>
<th>Response (normal time)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STX</strong></td>
<td><strong>OK</strong> dddd dddd <strong>ETX</strong></td>
</tr>
<tr>
<td></td>
<td><strong>CPU No.</strong> <strong>STX</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Station No.</strong></td>
</tr>
<tr>
<td><strong>WRM</strong></td>
<td><strong>Wait time</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Checksum</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Checksum and CR</strong></td>
</tr>
<tr>
<td></td>
<td><strong>CR</strong></td>
</tr>
</tbody>
</table>

Checksum and CR fields are optional (required only when they are enabled with setup switches.)

Command

![Command Diagram](image1)

Response (normal time)

![Response Diagram](image2)

Checksum and CR are returned only when they are included in the command.

#### Command and response formats for the Ethernet interface module

<table>
<thead>
<tr>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>0# <strong>WRM</strong> <strong>CR</strong></td>
</tr>
<tr>
<td>#: CPU No. 1-4</td>
</tr>
</tbody>
</table>

Response (normal time)

![Response Diagram](image3)

Specified number of read words
Hexadecimal string pattern

# #: CPU No. 1-4
REMARKS

- You must specify the devices to monitor before executing this command. Use the WRS command to specify devices. An error with an error code of 06 will be generated if this command is executed with no device name specified.

- A similar error will result if the module is powered off or reset.

- Refer to the user’s manual for the individual modules for the response formats that are used at error times.

- The WRM command for monitoring (reading) input/output relay status is available only for the sequence CPU modules.
2.3 Special Module Accessing Commands

- **Special Word Read (SWR)**

  The SWR command reads the specified number of data from a given special module*1 (analog input/output, temperature control, PID control, high-speed counter, etc.), starting at a specified data position number on a word basis.

  *1: Special modules refer only to those special modules that can be accessed with the READ/WRITE sequence instructions.

  **Command and response formats for the personal computer link module and sequence CPU (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)**

  **Command**

<table>
<thead>
<tr>
<th>S T X</th>
<th>SWR</th>
<th>n</th>
<th>E T X</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Checksum and CR fields are optional (required only when they are enabled with setup switches.)</td>
</tr>
<tr>
<td>Wait time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPU No.</td>
<td>Station No.</td>
<td>Data count &quot;01&quot; to &quot;64&quot;</td>
<td></td>
</tr>
<tr>
<td>Data position number</td>
<td>&quot;&quot;,&quot; or space</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Module slot No. &quot;01&quot; to &quot;16&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Module unit No. &quot;0&quot; to &quot;7&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

  **Response (normal time)**

<table>
<thead>
<tr>
<th>S T X</th>
<th>OK</th>
<th>dddd.</th>
<th>dddd.</th>
<th>E T X</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Checksum and CR are returned only when they are included in the command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPU No.</td>
<td>Station No.</td>
<td>Specified number of read data</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hexadecimal string pattern</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

  | Checksum |
  | CR |
  | RE |
  | TX |

  Checksum and CR are returned only when they are included in the command.

  *Checksum and CR fields are optional (required only when they are enabled with setup switches.)*
Command and response formats for the Ethernet interface module

Command

<table>
<thead>
<tr>
<th>0#</th>
<th>SWR</th>
<th></th>
<th>n</th>
<th>C</th>
<th>R</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Data count "01" to "64"
- "," or space
- Data position number
- "," or space
- Module slot No. "01" to "16"
- Module unit No. "0" to "7" (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58, F3BP20 and F3BP30)

Response (normal time)

<table>
<thead>
<tr>
<th>1#</th>
<th>OK</th>
<th>dddd-</th>
<th>dddd-</th>
<th>C</th>
<th>R</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- #: CPU No. 1-4
- Specified number of read data
- Hexadecimal string pattern

REMARKS

- The number of data you can read at a time with this command is 1 to 64 words.
- Refer to the user’s manual for the individual modules for the response formats that are used at error times.
Special Word Write (SWW)

The SWW command writes the specified number of data into a given special module*1 (analog input/output, temperature control, PID control, high-speed counter, etc.), starting at a specified data position number on a word basis.

*1: Special modules refer only to those special modules that can be accessed with the READ/WRITE sequence instructions.

Command and response formats for the personal computer link module and sequence CPU (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)

Command

<table>
<thead>
<tr>
<th>STX</th>
<th>CPU No.</th>
<th>Station No.</th>
<th>Wait time</th>
<th>SWW</th>
<th>n</th>
<th>dddd1</th>
<th>dddd2</th>
<th>ETX</th>
<th>CR</th>
</tr>
</thead>
</table>

Response (normal time)

<table>
<thead>
<tr>
<th>STX</th>
<th>CPU No.</th>
<th>Station No.</th>
<th>Checksum</th>
<th>OK</th>
<th>ETX</th>
<th>CR</th>
</tr>
</thead>
</table>

Checksum and CR fields are optional (required only when they are enabled with setup switches.)

Checksum and CR are returned only when they are included in the command.

Specified number of write data
Hexadecimal string pattern

*. or space
Data count "01" to "64"

*. or space
Data position number

*. or space
Module slot No. "0" to "16"

Module unit No. "0" to "7" (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58, F3BP20 and F3BP30)
Command and response formats for the Ethernet interface module

Command

| 0# | SWW | n | dddd₁ | dddd₂ | C₁ | L | F |

- Specified number of write data
- Hexadecimal string pattern
- "," or space
- Data count "01" to "64"
- "," or space
- Data position number
- "," or space
- Module slot No. "0" to "16"
- Module unit No. "0" to "7"

(F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58, F3BP20 and F3BP30)

Response (normal time)

| 1# | OK | C₁ | L | F |

#: CPU No. 1-4

REMARKS

- The number of data you can write at a time with this command is 1 to 64 words.
- Refer to the user's manual for the individual modules for the response formats that are used at error times.
- You cannot write word data with this command if the data format setup switch is set to "Protect Enabled" (or "Write Protected"). An attempt to execute this command in such a condition will result in an error with an error code of 02.
Special Long Read (SLR)

The SLR command reads the specified number of data from a given special module*1 (analog input/output, temperature control, PID control, high-speed counter, etc.), starting at a specified data position number on a long word basis.

*1: Special modules refer only to those special modules that can be accessed with the READ/WRITE sequence instructions.

Command and response formats for the personal computer link module and sequence CPU (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)

Command

<table>
<thead>
<tr>
<th>CPU No.</th>
<th>Station No.</th>
<th>SLR</th>
<th>n</th>
<th>Checksum and CR fields are optional (required only when they are enabled with setup switches.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Wait time</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Data count &quot;01&quot; to &quot;32&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&quot;.&quot; or space</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Data position number</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&quot;.&quot; or space</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Module slot No. &quot;01&quot; to &quot;16&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Module unit No. &quot;0&quot; to &quot;7&quot; (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58, F3BP20 and F3BP30)</td>
</tr>
</tbody>
</table>

Response (normal time)

<table>
<thead>
<tr>
<th>CPU No.</th>
<th>Station No.</th>
<th>OK</th>
<th>dddddddd1</th>
<th>dddddddd2</th>
<th>Checksum and CR are returned only when they are included in the command.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Specified number of read data</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Hexadecimal string pattern</td>
</tr>
</tbody>
</table>

Checksum and CR are returned only when they are included in the command.
Command and response formats for the Ethernet interface module

Command

0# SLR n C L R F

Data count "01" to "32"
"," or space
Data position number
"," or space
Module slot No. "01" to "16"
Module unit No. "0" to "7" (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58, F3BP20 and F3BP30)

Response (normal time)

1# OK dddddddd dddddddd C L R F

#: CPU No. 1-4

Specified number of read data
Hexadecimal string pattern

REMARKS

- The number of data you can read at a time with this command is 1 to 32 long words.
- Refer to the user’s manual for the individual modules for the response formats that are used at error times.
## Special Long Write (SLW)

The SLW command writes the specified number of data into a given special module*1 (analog input/output, temperature control, PID control, high-speed counter, etc.), starting at a specified data position number on a long word basis.

*1: Special modules refer only to those special modules that can be accessed with the READ/WRITE sequence instructions.

### Command and response formats for the personal computer link module and sequence CPU (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)

#### Command

<table>
<thead>
<tr>
<th>CPU No.</th>
<th>Station No.</th>
<th>SLW</th>
<th>Wait time</th>
<th>n</th>
<th>ddddddd.</th>
<th>ddddddd.</th>
<th>E TX</th>
<th>C R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checksum and CR fields are optional (required only when they are enabled with setup switches.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Data count "01" to "32" |
| "." or space |
| Data position number |
| "." or space |
| Module slot No. "01" to "16" |
| Module unit No. "0" to "7" (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58, F3BP20 and F3BP30) |

#### Response (normal time)

<table>
<thead>
<tr>
<th>CPU No.</th>
<th>Station No.</th>
<th>OK</th>
<th>E TX</th>
<th>C R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checksum and CR are returned only when they are included in the command.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Checksum |

Command and response formats for the Ethernet interface module

Command

<table>
<thead>
<tr>
<th>0#</th>
<th>SLW</th>
<th>n</th>
<th>dddddddd</th>
<th>dddddddd</th>
<th>CLRF</th>
</tr>
</thead>
</table>

- Specified number of write data
- Hexadecimal string pattern
- "," or space
- Data count "01" to "32"
- "," or space
- Data position number
- "," or space
- Module slot No. "01" to "16"
- Module unit No. "0" to "7" (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58, F3BP20 and F3BP30)

Response (normal time)

<table>
<thead>
<tr>
<th>1#</th>
<th>OK</th>
<th>CLRF</th>
</tr>
</thead>
</table>

#: CPU No. 1-4

REMARKS

- The number of data you can write at a time with this command is 1 to 32 long words.
- Refer to the user’s manual for the individual modules for the response formats that are used at error times.
- You cannot write word data with this command if the data format setup switch is set to "Protect Enabled" (or "Write Protected"). An attempt to execute this command in such a condition will result in an error with an error code of 02.
2.4 Program Accessing Commands

### Program Information (PRI)

The PRI command reads the name of a program, creation date, and other program information.

**Command and response formats for the personal computer link module and sequence CPU (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)**

#### Command

<table>
<thead>
<tr>
<th>STX</th>
<th>PRI</th>
<th>ETX</th>
<th>CR</th>
</tr>
</thead>
</table>

- **Wait time**
- **CPU No.**
- **Station No.**
- **Checksum and CR**

Checksum and CR fields are optional (required only when they are enabled with setup switches.)

#### Response (normal time)

- **STX**
- **OK**
- **CPU No.**
- **Station No.**
- **Creation date**
  - "YY/MM/DD HH:MM"
  - Year Month Day Hour Minute
- **Size**: Number of steps
- **Program name**
- **Name of executable program**

- **Checksum**

When the read information is "000"

When the read information is n (n ≠ "000")

<table>
<thead>
<tr>
<th>STX</th>
<th>OK</th>
<th>ETX</th>
<th>CR</th>
</tr>
</thead>
</table>

- **CPU No.**
- **Station No.**
- **Checksum**
- **Size**: Number of steps
- **Block name**

Checksum and CR are returned only when they are included in the command.
Command and response formats for the Ethernet interface module

Command

<table>
<thead>
<tr>
<th>0#</th>
<th>PRI</th>
<th>CL</th>
<th>R</th>
<th>F</th>
</tr>
</thead>
</table>

Read information:
- "000": Program name, creation date
- "001" to "n": name of nth block read

#: CPU No. 1-4

Response (normal time)

- When the read information is "000"
  
<table>
<thead>
<tr>
<th>1#</th>
<th>OK</th>
<th>CL</th>
<th>R</th>
<th>F</th>
</tr>
</thead>
</table>

  - Creation date
  - "YY/MM/DD HH:MM" Year Month Day Hour Minute
  - Size: Number of steps
  - Program name

  #: CPU No. 1-4

- When the read information is n (N ≠ "000")

<table>
<thead>
<tr>
<th>1#</th>
<th>OK</th>
<th>CL</th>
<th>R</th>
<th>F</th>
</tr>
</thead>
</table>

  - Size: Number of steps
  - Block name

#: CPU No. 1-4

- REMARKS

- You can read no program information from a program whose program block number falls within 1000 and 1024 on a F3SP28, F3SP35, F3SP38, F3SP53 or a F3SP58 sequence CPU module.
- Refer to the user’s manual for the individual modules for the response formats that are used at error times.
- You can access sensor control blocks like normal blocks on a F3SP28, F3SP38, F3SP53 or a F3SP58 sequence CPU module. The block number is the last normal block number+1. If this number is between 1000 and 1024 (inclusive), access is not allowed.
Program Load/Save Cancel (PLC)

The PLC command cancels program load or save processing.

- Command and response formats for the personal computer link module and sequence CPU (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)

Command

```
S T X    PLC    E T X
```

Response

```
S T X    OK    E T X
```

- Command and response formats for the Ethernet interface module

Command

```
0# PLC C L F
```

Response

```
1# OK C L F
```

REMARKS

- If you use this command to cancel the loading of a program into an FA-M3 sequence CPU module with a specified CPU No. which has already been loaded with another program using the Program Load (PLD) command, the old program will also be removed from the sequence CPU module (the sequence CPU module will have no program at all).

- Refer to the user's manual for the individual modules for the response formats that are used during error.

- You can access sensor control blocks like normal blocks on a F3SP28, F3SP38, F3SP53 or a F3SP58 sequence CPU module. The block number is the last normal block number + 1. If this number is between 100 and 1024 (inclusive), access is not allowed.
Program Load (PLD)

The PLD command loads a program which has been saved with a save command.

- **Command and response formats for the personal computer link module and sequence CPU (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)**

```
Command

<table>
<thead>
<tr>
<th>STX</th>
<th>PLD</th>
<th>n</th>
<th>dddd1</th>
<th>dddd2</th>
<th>ETX</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wait time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPU No.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Station No.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Response (normal time)

<table>
<thead>
<tr>
<th>STX</th>
<th>OK</th>
<th>E</th>
<th>C</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checksum and CR are optional (required only when they are enabled with setup switches.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPU No.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Station No.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Command and response formats for the Ethernet interface module**

```
Command

<table>
<thead>
<tr>
<th>#</th>
<th>PLD</th>
<th>n</th>
<th>dddd1</th>
<th>dddd2</th>
<th>CL</th>
<th>LF</th>
</tr>
</thead>
<tbody>
<tr>
<td>#: CPU No. 1-4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Response (normal time)

<table>
<thead>
<tr>
<th>#</th>
<th>OK</th>
<th>CL</th>
<th>LF</th>
</tr>
</thead>
<tbody>
<tr>
<td>#: CPU No. 1-4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Checksum and CR are returned only when they are included in the command.

See Table 2.1.
2-44

**REMARKS**

- The number of words you can load with this command is 32 to 64 words.
- The start flag, end flag, block No., and transmission No. to be specified in this command must be identical to those which were established when the program was saved.
- Observe the programming notes that are separately listed below if you are controlling your programs using neither program type nor block No. (only the program parts are controlled according to their type and blocks). (Observe the programming notes entitled "Programming notes to be observed when programs are controlled separately according to their type or block."
- This command must be executed when the sequence CPU module is running no program. An error will be reported if an attempt is made to execute this command when the sequence CPU module is running a program.
- You cannot load a program with this command if the data format setup switch is set to "Protect Enabled" (or "Write Protected"). An attempt to execute this command in such a condition will result in an error with an error code of 02.
- You cannot load any programs with program block Nos. 100 to 128 into an F3SP25 sequence CPU module.
- You cannot load any programs with program block Nos. 100 to 1024 into an F3SP28, F3SP35, F3SP38, F3SP53 or an F3SP58 sequence CPU module.
- Refer to the user's manual for the individual modules for the response formats that are used at error times.
- You can access sensor control blocks like normal blocks on a F3SP28, F3SP38, F3SP53 or a F3SP58 sequence CPU module. The block number is the last normal block number+1. If this number is between 100 and 1024 (inclusive), access is not allowed.

**Programming notes to be observed when programs are controlled separately according to their type or block**

- Set the start flag to "1" for the first load. Set the start flag to "0" for the subsequent loads.
- Set the end flag at the end of each block to "1" and the end flag at the end of the program to "3."
- Assign the transmission number to the program blocks sequentially starting at 1. Skipped or duplicate numbers are disallowed.

### Ladder sequence programs

**Table 2.1 Program Load Types and Block Numbers**

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Block No.</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Executable program information</td>
<td>Always set to 00001</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Configuration information</td>
<td>Always set to 00001</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Program block (block units)</td>
<td>00001 to 99999</td>
<td>Same as the program block No.</td>
</tr>
<tr>
<td>04</td>
<td>Macro instruction information</td>
<td>Always set to 00001</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Macro instruction</td>
<td>00001 to 00064</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>User log message</td>
<td>Always set to 00001</td>
<td></td>
</tr>
</tbody>
</table>

**BASIC**

You can load no BASIC program with this command.
Program Save (PSV)

The PSV command saves (transfer to another node) the program from the sequence CPU module. The size of program code that can be saved with this command is from 32 to 64 words. Execute this command more than once if the program is larger than 64 words.

Command and response formats for the personal computer link module and sequence CPU modules (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)

Command

<table>
<thead>
<tr>
<th>STX</th>
<th>CPU No.</th>
<th>Station No.</th>
<th>Wait time</th>
<th>Command (PSV)</th>
<th>ETX</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Response (normal time)

<table>
<thead>
<tr>
<th>STX</th>
<th>CPU No.</th>
<th>Station No.</th>
<th>Data</th>
<th>Hexadecimal string pattern</th>
<th>Data count</th>
<th>&quot;.&quot; or space</th>
<th>Transmission No.</th>
<th>4-digit hexadecimal string pattern</th>
<th>Block No.</th>
<th>Type</th>
<th>End flag</th>
<th>Start flag</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Size of program to save: "32" to "64"
Save unit: Word
Valid only for the first save.
Start flag
"1": First save
"0": Other than first save
Data
Hexadecimal string pattern
"." or space
Data count
"." or space
Transmission No.
4-digit hexadecimal string pattern
Block No. "See Table 2.1.
Type
End flag
"0": Continued
"1": End of block
"3": End of program
Start flag
"1": First save
"0": Other than first save
Checksum
### Command and response formats for the Ethernet interface module

#### Command

<table>
<thead>
<tr>
<th>0#</th>
<th>PSV</th>
<th>C_L</th>
<th>R_F</th>
</tr>
</thead>
</table>

- **Size of program to save**: "32" to "64"
- **Save unit**: Word
- **Valid only for the first save**
- **Start flag**: 
  - "1": First save
  - "0": Other than first save

#### Response (normal time)

<table>
<thead>
<tr>
<th>1#</th>
<th>OK</th>
<th>n</th>
<th>dddd</th>
<th>dddd</th>
</tr>
</thead>
</table>

- **Data**: Hexadecimal string pattern
- **"", or space**: Data count
- **"", or space**: Transmission No.
- **4-digit hexadecimal string pattern**: Block No.
- **Type**: See Table 2.1.
- **End flag**: 
  - "0": Continued
  - "1": End of block
  - "3": End of program
- **Start flag**: 
  - "1": First save
  - "0": Other than first save

---

#: CPU No. 1-4
- The number of words you can save with this command is 32 to 64 words. Specify the program size in the first save. Specify the same program size in the subsequent saves. You cannot change the program size in the middle of save processing.

- Set the start flag to "1" for the first save. Set the start flag to "0" for the subsequent saves.

- When a program that has been saved with this command is to be loaded with a PLD command, be sure to save all of the start flag, end flag, type, block number, and transmission number. In this case, you need not be aware of the start flag, end flag, type, or block number. Regard them as part of program data.

- Observe the programming notes that are separately listed below if you are controlling your programs using neither program type nor block No. (only the program parts are controlled according to their type and blocks):

  - You can save no BASIC program with this command.
  - You cannot save any programs with program block Nos. 100 to 128 from an F3SP25 sequence CPU module.
  - You cannot save any programs with program block Nos. 100 to 1024 from an F3SP28, F3SP35, F3SP38, F3SP53 or an F3SP58 sequence CPU module.
  - Refer to the user's manual for the individual modules for the response formats that are used at error times.
  - You can access sensor control blocks like normal blocks on a F3SP28, F3SP38, F3SP53 or a F3SP58 sequence CPU module. The block number is the last normal block number+1. If this number is between 100 and 1024 (inclusive), access is not allowed.

**Programming notes to be observed when programs are controlled separately according to their type or block**

- Set the end flag at the end of each block to "1" and the end flag at the end of the program to "3." Set the end flag of any block that is to be followed by another block to "0."

- The transmission number is assigned sequentially starting at 1.
Program Load Extended (PLX)

The PLX command loads a program which has been saved with a save command.

- Command and response formats for the personal computer link module (F3LC11-1F, F3LC12-1F)

Command and response formats for the personal computer link module (F3LC11-1F, F3LC12-1F)
● REMARKS

- This command is only valid on F3LC11-1F and F3LC12-1F.
- The number of words you can load with this command is 32 to 64 words.
- The start flag, end flag, block No., and transmission No. to be specified in this command must be identical to those which were established when the program was saved.
- Observe the programming notes that are separately listed below if you are controlling your programs using neither program type nor block No. (only the program parts are controlled according to their type and blocks). (Observe the programming notes entitled “Programming notes to be observed when programs are controlled separately according to their type or block.”)
- This command must be executed when the sequence CPU module is running no program. An error will be reported if an attempt is made to execute this command when the sequence CPU module is running a program.
- You cannot load a program with this command if the data format setup switch is set to "Protect Enabled" (or "Write Protected"). An attempt to execute this command in such a condition will result in an error with an error code of 02.
- Refer to the user's manual for the individual modules for the response formats that are used at error times.
- You can access sensor control blocks like normal blocks on a F3SP28, F3SP38, F3SP53 or a F3SP58 sequence CPU module. The block number is the last normal block number+1.

● Programming notes to be observed when programs are controlled separately according to their type or block

- Set the start flag to "1" for the first load. Set the start flag to "0" for the subsequent loads.
- Set the end flag at the end of each block to "1" and the end flag at the end of the program to "3."
- Assign the transmission number to the program blocks sequentially starting at 1. Skipped or duplicate numbers are disallowed.

Ladder sequence programs

Table 2.2 Program Load Types and Block Numbers

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Block No.</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Executable program information</td>
<td>Always set to 00001</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Configuration information</td>
<td>Always set to 00001</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Program block (block units)</td>
<td>00001 to 99999</td>
<td>Same as the program block No.</td>
</tr>
<tr>
<td>04</td>
<td>Macro instruction information</td>
<td>Always set to 00001</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Macro instruction</td>
<td>00001 to 00064</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>User log message</td>
<td>Always set to 00001</td>
<td></td>
</tr>
</tbody>
</table>

BASIC

You can load no BASIC program with this command.
Program Save Extended (PSX)

The PSX command saves (transfer to another node) the program from the sequence CPU module. The size of program code that can be saved with this command is from 32 to 64 words. Execute this command more than once if the program is larger than 64 words.

Command and response formats for the personal computer link modules (F3LC11-1F, F3LC12-1F)

Command

<table>
<thead>
<tr>
<th>X</th>
<th>PSX</th>
<th>X</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Wait time
CPU No.
Station No.
Checksum

Size of program to save: “32” to “64”
Save unit: Word
Valid only for the first save.
Start flag
"1": First save
"0": Other than first save

Response (normal time)

<table>
<thead>
<tr>
<th>X</th>
<th>OK</th>
<th>n</th>
<th>ddd1</th>
<th>dddn</th>
<th>X</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CPU No.
Station No.
Checksum

Data
"." or space
Data count
"." or space
Transmission No.
4-digit hexadecimal number
"." or space
Block No.
"." or space
Type
"." or space
End flag
"." or space
Start flag

Checksum and CR fields are optional (required only when they are enabled with setup switches.)

See Table 2.1.
● REMARKS

- The number of words you can save with this command is 32 to 64 words. Specify the program size in the first save. Specify the same program size in the subsequent saves. You cannot change the program size in the middle of save processing.

- Set the start flag to "1" for the first save. Set the start flag to "0" for the subsequent saves.

- When a program that has been saved with this command is to be loaded with a PLX command, be sure to save all of the start flag, end flag, type, block number, and transmission number. In this case, you need not be aware of the start flag, end flag, type, or block number. Regard them as part of program data.

- Observe the programming notes that are separately listed below if you are controlling your programs using neither program type nor block No. (only the program parts are controlled according to their type and blocks):

- You can save no BASIC program with this command.

- Refer to the user's manual for the individual modules for the response formats that are used at error times.

- You can access sensor control blocks like normal blocks on a F3SP28, F3SP38, F3SP53 or a F3SP58 sequence CPU module. The block number is the last normal block number + 1.

● Programming notes to be observed when programs are controlled separately according to their type or block

- Set the end flag at the end of each block to "1" and the end flag at the end of the program to "3." Set the end flag of any block that is to be followed by another block to "0."

- The transmission number is assigned sequentially starting at 1.
### Start (STA)

The STA command starts a blocked program.

- **Command and response formats for the personal computer link module and sequence CPU modules (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)**

  **Command**
  
<table>
<thead>
<tr>
<th>STX</th>
<th>STA</th>
<th>CR</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

  Response time
  
  CPU No.
  
  Station No.

  Checksum and CR fields are optional (required only when they are enabled with setup switches.)

  **Response (normal time)**
  
<table>
<thead>
<tr>
<th>STX</th>
<th>OK</th>
<th>CR</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

  Checksum
  
  CPU No.
  
  Station No.

  Checksum and CR are returned only when they are included in the command.

- **Command and response formats for the Ethernet interface module**

  **Command**
  
<table>
<thead>
<tr>
<th>0#</th>
<th>STA</th>
<th>CR</th>
<th>LF</th>
</tr>
</thead>
<tbody>
<tr>
<td>#: CPU No. 1-4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

  **Response (normal time)**
  
<table>
<thead>
<tr>
<th>1#</th>
<th>OK</th>
<th>CR</th>
<th>LF</th>
</tr>
</thead>
<tbody>
<tr>
<td>#: CPU No. 1-4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

  **REMARKS**
  
  - This command will be ignored if it is executed while a program is already being executed.
  
  - Refer to the user’s manual for the individual modules for the response formats that are used at error times.
Stop (STP)

The STP command stops the executing program.

Command and response formats for the personal computer link module and sequence CPU modules (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53 or F3SP58)

Command

```
| STX | STP | CTR |
```

Response (normal time)

```
| STX | OK  | CTR |
```

Checksum and CR fields are optional (required only when they are enabled with setup switches.

Checksum and CR are returned only when they are included in the command.

Command and response formats for the Ethernet interface module

Command

```
| 0# | STP | CR |
```

#: CPU No. 1-4

Response (normal time)

```
| 1# | OK  | CR |
```

#: CPU No. 1-4

Remarks

- This command will be ignored if it is executed when no program is being executed.
- Refer to the user's manual for the individual modules for the response formats that are used at error times.
2.5 Test command

■ Loopback Test (TST)

The TST command is used to carry out communications tests. It transmits a given stream of data (256 bytes maximum). Connection is tested by checking to determine whether the transmitted data is returned with no modification.

Command and response formats for the personal computer link module and sequence CPU modules (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)

Command

<table>
<thead>
<tr>
<th>STX</th>
<th>TST</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Checksum and CR fields are optional (required only when they are enabled with setup switches.)

Response (normal time)

<table>
<thead>
<tr>
<th>STX</th>
<th>OK</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Checksum and CR are returned only when they are included in the command.

Command and response formats for the Ethernet interface module

Command

<table>
<thead>
<tr>
<th>STX</th>
<th>TST</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#: CPU No. 1-4

Arbitrary data, 256 bytes maximum

Response (normal time)

<table>
<thead>
<tr>
<th>STX</th>
<th>OK</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#: CPU No. 1-4

Arbitrary data, 256 bytes maximum

The transmitted data stream is returned as is.
REMARKS

- The length of the given test string is 1 to 256 bytes.
- Refer to the user’s manual for the individual modules for the response formats that are used at error times.
- The given test string must contain none of the following control codes:

**Ethernet interface module**

<table>
<thead>
<tr>
<th>Control code</th>
<th>Code (hexadecimal)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRLF</td>
<td>$0D0A</td>
<td>Termination character</td>
</tr>
</tbody>
</table>

**Personal computer link module and sequence CPU modules (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)**

<table>
<thead>
<tr>
<th>Control code</th>
<th>Code (hexadecimal)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>STX</td>
<td>$02</td>
<td>Start of Text</td>
</tr>
<tr>
<td>ETX</td>
<td>$03</td>
<td>End of Text</td>
</tr>
<tr>
<td>CR</td>
<td>$0D</td>
<td>Carriage Return</td>
</tr>
</tbody>
</table>
2.6 Miscellaneous Commands

Module Reset (MDR)

The MDR command resets a module. When this command is executed on a personal link module, the currently executing command is canceled and the monitoring device names which are specified in a BRS or WRS command are cleared. When this command is executed on an Ethernet interface module, the currently open connection is closed immediately. The settings made in the modules are also cleared.

Command and response formats for the personal computer link module and sequence CPU modules (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)

Command

<table>
<thead>
<tr>
<th>S</th>
<th>T</th>
<th>X</th>
<th>M</th>
<th>D</th>
<th>R</th>
<th>C</th>
<th>E</th>
<th>T</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Checksum and CR fields are optional (required only when they are enabled with setup switches.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Response (normal time)

No response is returned.

Command and response formats for the Ethernet interface module

Command

<table>
<thead>
<tr>
<th>0</th>
<th>#</th>
<th>M</th>
<th>D</th>
<th>R</th>
<th>C</th>
<th>L</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#: CPU No. 1-4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Response (normal time)

No response is returned.

REMARKS

- This command returns no response.
- This command can be executed even before a response is returned by another command. The command returns no response in such a case.
## Information (INF)

The INF command reads one of the following types of information as specified by the given parameter number:

<table>
<thead>
<tr>
<th>Parameter No.</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>* 1 *</td>
<td>CPU’s Ready/Not Ready state. Operating state of a sequence or BASIC program</td>
</tr>
<tr>
<td>* 2 *</td>
<td>System ID, CPU type, area size</td>
</tr>
<tr>
<td>* 3 *</td>
<td>Name of the module installed in the specified unit and input/output relay information</td>
</tr>
<tr>
<td>* 4 *</td>
<td>Source of ERR or ALM LED that is lit on the CPU module</td>
</tr>
<tr>
<td>* 5 *</td>
<td>Erased source of ALM LED currently lit on the CPU module</td>
</tr>
</tbody>
</table>
(1) Reading CPU module or program (sequence or BASIC) status

- Command and response formats for the personal computer link module and sequence CPU modules (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)

```
Command

<table>
<thead>
<tr>
<th>STX</th>
<th>INF</th>
<th>1</th>
<th>CTR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Checksum</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Parameter No.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CPU No.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Station No.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Response time</td>
</tr>
</tbody>
</table>

Checksum and CR fields are optional (required only when they are enabled with setup switches.)
```

```
Response (normal time)

<table>
<thead>
<tr>
<th>STX</th>
<th>OK</th>
<th>1</th>
<th>CTR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Checksum</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Program status</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CPU status</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CPU No.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Station No.</td>
</tr>
</tbody>
</table>

Checksum and CR are returned only when they are included in the command.
```

- Command and response formats for the Ethernet interface module

```
Command

<table>
<thead>
<tr>
<th>0#</th>
<th>INF</th>
<th>1</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Parameter No.</td>
</tr>
</tbody>
</table>

#: CPU No. 1-4

```

```
Response (normal time)

<table>
<thead>
<tr>
<th>1#</th>
<th>OK</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Program status

"01": Operating
"02": Stopped
"03": Debugging
"FF": ROM write

CPU status

"00": Ready
"01": Not Ready

#: CPU No. 1-4
```
(2) Reading system ID, CPU type, and area size

Command and response formats for the personal computer link module and sequence CPU modules (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)

<table>
<thead>
<tr>
<th>Parameter No.</th>
<th>Command</th>
<th>Checksum</th>
<th>CPU No.</th>
<th>Station No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>INF</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Checksum and CR fields are optional (required only when they are enabled with setup switches.)

Response (normal time)

<table>
<thead>
<tr>
<th>Parameter No.</th>
<th>Command</th>
<th>Checksum</th>
<th>CPU No.</th>
<th>Station No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OK</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Checksum and CR are returned only when they are included in the command.

Contains the response length in bytes (starting from the station number to just before the checksum, not including STR, checksum, ETX and CR).

Command and response formats for the Ethernet interface module

<table>
<thead>
<tr>
<th>Parameter No.</th>
<th>Command</th>
<th>Checksum</th>
<th>CPU No.</th>
<th>Station No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0# INF</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#: CPU No. 1-4

Response (normal time)

<table>
<thead>
<tr>
<th>Parameter No.</th>
<th>Command</th>
<th>Checksum</th>
<th>CPU No.</th>
<th>Station No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1# OK</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#: CPU No. 1-4

Program area size
Unit: K steps (sequence)
K bytes (BASIC)

CPU type
“01”: Sequence
“12”: BASIC

Revision
8 bytes
F3SP21-0N, F3SP25-2N, F3SP35-5N, F3SP05-0N, F3FP36-3N, F3BP20-0N, F3BP30-0N, F3SP28-3N, F3SP38-6N, F3SP53-4H, F3SP58-6H

System ID
16 bytes
(3) Reading the name of installed modules

- Command and response formats for the personal computer link module and sequence CPU modules (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)

**Command**

<table>
<thead>
<tr>
<th>STX</th>
<th>CPU No.</th>
<th>Station No.</th>
<th>INF</th>
<th>Parameter No.</th>
<th>Module unit No. &quot;0&quot; to &quot;7&quot; (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>, or space</td>
</tr>
</tbody>
</table>

- Response (normal time)

<table>
<thead>
<tr>
<th>STX</th>
<th>CPU No.</th>
<th>Station No.</th>
<th>OK</th>
<th>Number of input/output relay points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>&quot;00&quot;: No input/output relay</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>&quot;01&quot;: Input relays only</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>&quot;02&quot;: Output relays only</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>&quot;03&quot;: Both input/output relays present</strong></td>
</tr>
</tbody>
</table>

Checksum and CR are returned only when they are included in the command.

Checksum and CR fields are optional (required only when they are enabled with setup switches.)
### Command and response formats for the Ethernet interface module

#### Command

<table>
<thead>
<tr>
<th>#</th>
<th>INF</th>
<th>3</th>
<th>C</th>
<th>L</th>
<th>R</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>0#</td>
<td>INF</td>
<td>3</td>
<td>C</td>
<td>L</td>
<td>R</td>
<td>F</td>
</tr>
</tbody>
</table>

Module unit No. "0" to "7" (F3SP05, F3SP21, F3SP25, F3SP28, F2SP95, F3SP38, F3SP53, F3SP58, F3BP20 and F3BP30)

#: CPU No. 1-4

#### Response (normal time)

<table>
<thead>
<tr>
<th>#</th>
<th>OK</th>
<th>C</th>
<th>L</th>
<th>R</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1#</td>
<td>OK</td>
<td>C</td>
<td>L</td>
<td>R</td>
<td>F</td>
</tr>
</tbody>
</table>

Slot 1 module information
Slot 16 module information

Number of input/output relay points
Input/output type
- "00": No input/output relay
- "01": Input relays only
- "02": Output relays only
- "03": Both input/output relays present

Module name

#: CPU No. 1-4
(4) Reading the source of ERR or ALM LED lit on the CPU module

- Command and response format for the personal computer link module and sequence CPU modules (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)

Command

<table>
<thead>
<tr>
<th>STX</th>
<th>INF</th>
<th>4</th>
<th>EOT</th>
<th>CR</th>
</tr>
</thead>
</table>

- Checksum and CR fields are optional (required only when they are enabled with setup switches.)

Source flag
- "1": ERR source
- "2": ALM source
- "," or space
- Parameter No.

Response (normal time)

When ERR source is specified

<table>
<thead>
<tr>
<th>STX</th>
<th>OK</th>
<th>CPU No.</th>
<th>EOT</th>
<th>CR</th>
<th>Checksum</th>
</tr>
</thead>
</table>

- Checksum and CR are returned only when they are included in the command.

Source
- "0001": BASIC stopped.
- "0002": RAM check error.
- "0100": Sequence stopped.
- "8900": Abnormal memory check pattern.

When ALM source is specified

<table>
<thead>
<tr>
<th>STX</th>
<th>OK</th>
<th>CPU No.</th>
<th>EOT</th>
<th>CR</th>
<th>Checksum</th>
</tr>
</thead>
</table>

- Checksum and CR are returned only when they are included in the command.

Source
- Sources are assigned to 16 words of area on a bit basis. A 1 bit indicates the presence of the corresponding ALM source. This 16-word hexadecimal pattern is returned.
Command and response formats for the Ethernet intertace module

Command

<table>
<thead>
<tr>
<th>0#</th>
<th>INF</th>
<th>4</th>
<th>C</th>
<th>L</th>
<th>R</th>
<th>F</th>
</tr>
</thead>
</table>

Source flag
- "1": ERR source
- "2": ALM source
- "": or space

Parameter No.

#: CPU No. 1-4

Response (normal time)

When ERR source is specified

<table>
<thead>
<tr>
<th>1#</th>
<th>OK</th>
<th>C</th>
<th>L</th>
<th>R</th>
<th>F</th>
</tr>
</thead>
</table>

Source
- "0001": BASIC stopped.
- "0002": RAM check error.
- "0100": Sequence stopped.
- "8000": Abnormal memory check pattern.

#: CPU No. 1-4

When ALM source is specified

<table>
<thead>
<tr>
<th>1#</th>
<th>OK</th>
<th>C</th>
<th>L</th>
<th>R</th>
<th>F</th>
</tr>
</thead>
</table>

Source
Sources are assigned to 16 words of area on a bit basis. A 1 bit indicates the presence of the corresponding ALM source. This 16-word hexadecimal pattern is returned.

#: CPU No. 1-4
The sources of turning on the ALM LEDs are assigned to 16 words of bit stream as shown in Table 2.2. This 16-word bit stream is returned in hexadecimal representation.

### Table 2.2 Sources of Turning On ALM LEDs

<table>
<thead>
<tr>
<th></th>
<th>15</th>
<th>14</th>
<th>13</th>
<th>12</th>
<th>11</th>
<th>10</th>
<th>9</th>
<th>8</th>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>31</td>
<td>30</td>
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<td>22</td>
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<td>52</td>
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<td>7</td>
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<tr>
<td>8</td>
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</tr>
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<td>147</td>
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</tr>
<tr>
<td>11</td>
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<td>172</td>
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<td>165</td>
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</tr>
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<td>179</td>
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<td>177</td>
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</tr>
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<td>13</td>
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</tr>
<tr>
<td>Bit No.</td>
<td>Source</td>
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<tr>
<td>--------</td>
<td>------------------------------------------------------------------------</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Power supply error (line hit occurred)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>9</td>
<td>Scan timeout</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>10</td>
<td>Sensor control block scan timeout&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
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</tr>
<tr>
<td>17</td>
<td>Input/output match error</td>
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<td></td>
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<td></td>
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</tr>
<tr>
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<td>Input/output match error (READ/WRITE instruction)</td>
<td></td>
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</tr>
<tr>
<td>19</td>
<td>Input/output match error (HRD/HWR instruction)</td>
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</tr>
<tr>
<td>25</td>
<td>Inter-CPU communication error</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>26</td>
<td>Subunit transmitter error</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Subunit transmitter switching occurred</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td>33</td>
<td>Parameter error</td>
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<td></td>
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</tr>
<tr>
<td>34</td>
<td>Data error</td>
<td></td>
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<td>35</td>
<td>BIN/BCD conversion error</td>
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<td>36</td>
<td>Invalid FIFO table pointer</td>
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<td>37</td>
<td>Device boundary error</td>
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<td>38</td>
<td>FOR-NEXT balance error</td>
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<td>49</td>
<td>Subroutine error (no return address)</td>
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<td>50</td>
<td>Subroutine error (nesting too deep)</td>
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<td>57</td>
<td>Macro instruction error (no return address)</td>
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<td>58</td>
<td>Macro instruction error (nesting too deep)</td>
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<td>Interrupt error (no return address)</td>
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<td>Duplicate FA link 1 device allocation</td>
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<td>FA link 2 station number error</td>
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<td>116</td>
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<td>117</td>
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<td>118</td>
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<td>120</td>
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<tr>
<td>121</td>
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<td>122</td>
<td>Duplicate FA link 8 device allocation</td>
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</tbody>
</table>

<sup>1</sup>: F3SP28, F3SP38, F3SP53 and F3SP58 only
Table 2.3 Sources of Turning On ALM LEDs (2/2)

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>128 to 143</td>
<td>Main unit slot 1-16 module error</td>
</tr>
<tr>
<td>144 to 159</td>
<td>Subunit 1 slot 1-16 module error</td>
</tr>
<tr>
<td>160 to 175</td>
<td>Subunit 2 slot 1-16 module error</td>
</tr>
<tr>
<td>176 to 191</td>
<td>Subunit 3 slot 1-16 module error</td>
</tr>
<tr>
<td>192 to 207</td>
<td>Subunit 4 slot 1-16 module error</td>
</tr>
<tr>
<td>208 to 223</td>
<td>Subunit 5 slot 1-16 module error</td>
</tr>
<tr>
<td>224 to 239</td>
<td>Subunit 6 slot 1-16 module error</td>
</tr>
<tr>
<td>240 to 255</td>
<td>Subunit 7 slot 1-16 module error</td>
</tr>
</tbody>
</table>

**CAUTION**

Subunit channel errors and subunit channel switching errors can occur in revision 8 and later versions of sequence CPU models F3SP21, F3SP25, F3SP35, F3SP36.
(5) Erasing current alarm information from a CPU module

- Command and response formats for the personal computer link module and sequence CPU modules (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)

**Command**

![Command Format](image1.png)

- Checksum and CR fields are optional (required only when they are enabled with setup switches.)

**Response (normal time)**

![Response Format](image2.png)

- Checksum and CR are returned only when they are included in the command.

- Command and response formats for the Ethernet interface module

**Command**

![Command Format](image3.png)

- #: CPU No. 1-4

**Response (normal time)**

![Response Format](image4.png)

- #: CPU No. 1-4

- **REMARKS**

Refer to the user's manual for the individual modules for the response formats that are used at error times.
**Date Read (DTR)**

The DTR command reads the current time and correction value that are maintained in the CPU module.

- **Command and response formats for the personal computer link module and sequence CPU modules (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)**

  **Command**

  ![Command Diagram](F020613.EPS)

  **Response (normal time)**

  ![Response Diagram](F020613.EPS)

  Checksum and CR are returned only when they are included in the command.

  Checksum and CR fields are optional (required only when they are enabled with setup switches.)

  **Checksum and CR are returned only when they are included in the command.**

  **Correction value:**
  - M: `+` or `−` sign
  - SS: Second
  - Time
    - HH: Hour `00" to "23`
    - MM: Minute `00" to "59`
    - SS: Second `00" to "59`
  - Date
    - YY: Year (lowest 2 digits of calendar year) `01" to "12`
    - DD: Day `01" to "31`'

- **Command and response formats for the Ethernet interface module**

  **Command**

  ![Command Diagram](F020614.EPS)

  **Response (normal time)**

  ![Response Diagram](F020614.EPS)

  **Correction value:**
  - M: `+` or `−` sign
  - SS: Second
  - Time
    - HH: Hour `00" to "23`
    - MM: Minute `00" to "59`
    - SS: Second `00" to "59`
  - Date
    - YY: Year (lowest 2 digits of calendar year) `01" to "31`
    - MM: Month `01" to "12`
    - DD: Day `01" to "31`
**REMARKS**

Refer to the user’s manual for the individual modules for the response formats that are used at error times.

### Date Write (DTW)

The DTW command sets the date and correction value of the internal clock in the CPU module. Leave all the date fields blank (pad with spaces) when the date is to be left unchanged. Leave all the time fields blank (pad with spaces) when the time is to be left unchanged. Leave all the correction value fields blank (pad with spaces) when the correction value is to be left unchanged. Note that you cannot modify only part of the date or time subfield such as month or second.

### Command and response formats for the personal computer link module and sequence CPU modules (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)

<table>
<thead>
<tr>
<th>Command</th>
<th>Response (normal time)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTW</td>
<td>OK</td>
</tr>
</tbody>
</table>

Checksum and CR are returned only when they are included in the command.

Response time

CPU No.

Station No.

Checksum

Correction value: "MSSS"
M: *"+" or "+" sign
S S S: Second "000" to "100"

Time
H H: Hour "00" to "23"
M M: Minute "00" to "59"
S S: Second "00" to "59"

Date
Y Y: Year (lowest 2 digits of calendar year)
M M: Month "01" to "12"
D D: Day "01" to "31"
Command and response formats for the Ethernet interface module

**Command**

<table>
<thead>
<tr>
<th>#</th>
<th>DTW</th>
<th>C</th>
<th>L</th>
<th>R</th>
<th>F</th>
</tr>
</thead>
</table>

Correction value: "MSSS"
- **M**: "+" or "+" sign
- **S S S**: Second "000" to "100"

Time "HH:MM:SS"
- **H H**: Hour "00" to "23"
- **M M**: Minute "00" to "59"
- **S S**: Second "00" to "59"

Date "YY/MM/DD"
- **Y Y**: Year (lowest 2 digits of calendar year)
- **M M**: Month "01" to "12"
- **D D**: Day "01" to "31"

#: CPU No. 1-4

**Response (normal time)**

<table>
<thead>
<tr>
<th>#</th>
<th>OK</th>
<th>C</th>
<th>L</th>
<th>R</th>
<th>F</th>
</tr>
</thead>
</table>

#: CPU No. 1-4

**REMARKS**

- You cannot load data with this command if the data format setup switch is set to "Protect Enabled" (or "Write Protected"). An attempt to execute this command in such a condition will result in an error with an error code of 02.

- Refer to the user's manual for the individual modules for the response formats that are used at error times.
### Error History (ERH)

The ERH command reads a log of errors (error codes). Conversion of the error codes into error messages must be accomplished by the higher-level computer. (The current error information can be obtained by reading the special relays and registers with the BRD or WRD command.)

#### Command and response formats for the personal computer link module and sequence CPU modules (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)

**Command**

```
STX ERH ETX
```

Checksum and CR fields are optional (required only when they are enabled with setup switches.)

**Response (normal time)**

```
STX OK ETCR
```

Checksum and CR are returned only when they are included in the command.

- **Response time**
- **CPU No.**
- **Station No.**
- **Error log read position**
  - "000": Latest error data
  - "001" to "n": nth latest error data.
- **Additional information**
  - Explained on separate sheets.
- **Occurrence time**
  - HH:MM:SS
- **Occurrence date**
  - YY/MM/DD
- **Error code**
  - 4-digit hexadecimal string pattern
- **Error type**
  - "00": System error
  - "01": BASIC error
  - "02": Sequence error
  - "03": I/O error
Command and response formats for the Ethernet interface module

### Command

<table>
<thead>
<tr>
<th>0#</th>
<th>ERH</th>
<th>C</th>
<th>L</th>
<th>R</th>
<th>F</th>
</tr>
</thead>
</table>

Error log read position
- "000": Latest error data
- "001" to "n": nth latest error data.

#: CPU No. 1-4

### Response (normal time)

<table>
<thead>
<tr>
<th>1#</th>
<th>OK</th>
<th>C</th>
<th>L</th>
<th>R</th>
<th>F</th>
</tr>
</thead>
</table>

Additional information
- Explained on separate sheets.
- Occurrence time "HH:MM:SS"
- Occurrence date "YY/MM/DD"
- Error code
- 4-digit hexadecimal string pattern
- Error type
  - "00": System error
  - "01": BASIC error
  - "02": Sequence error
  - "03": I/O error

#: CPU No. 1-4

### REMARKS

The error number will be shifted by one if a new error occurs while the current error log is being read.
Additional information

System error:

No additional information is present.

Remarks

- The error number will be shifted by one if a new error occurs while the current error log is being read.
- Refer to the user’s manual for the individual modules for the response formats that are used at error times.
Table 2.4 Error Codes (1/2)

<table>
<thead>
<tr>
<th>Error type</th>
<th>Error code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU error</td>
<td>$1101</td>
<td>BPU error</td>
</tr>
<tr>
<td></td>
<td>$1102</td>
<td>ALU error</td>
</tr>
<tr>
<td></td>
<td>$1111</td>
<td>Instruction swap error</td>
</tr>
<tr>
<td></td>
<td>$1112</td>
<td>SPU-CPU interface error</td>
</tr>
<tr>
<td>Memory error</td>
<td>$1201</td>
<td>Program memory error</td>
</tr>
<tr>
<td></td>
<td>$1202</td>
<td>Device memory error</td>
</tr>
<tr>
<td></td>
<td>$1203</td>
<td>System memory error</td>
</tr>
<tr>
<td>Instruction analysis error</td>
<td>$1701</td>
<td>Invalid instruction code found.</td>
</tr>
<tr>
<td>Missing END instruction</td>
<td>$1702</td>
<td>Missing END instruction</td>
</tr>
<tr>
<td>Circuit analysis error</td>
<td>$2001</td>
<td>Label not found.</td>
</tr>
<tr>
<td>Input/output point count overflow</td>
<td>$2002</td>
<td>Input/output count exceeded maximum limit.</td>
</tr>
<tr>
<td>ROM cassette error</td>
<td>$8203</td>
<td>Invalid version.</td>
</tr>
<tr>
<td></td>
<td>$8204</td>
<td>Read/write disabled.</td>
</tr>
<tr>
<td>Subunit transmitter error</td>
<td>$8301</td>
<td>Failed to read from or write to a subunit.</td>
</tr>
<tr>
<td>Subunit transmitter switching occurred</td>
<td>$8401</td>
<td>One of remote I/O cable pair was disconnected.</td>
</tr>
<tr>
<td>Startup error</td>
<td>$1002</td>
<td>Module count overflow</td>
</tr>
<tr>
<td></td>
<td>$1003</td>
<td>Module mapping error</td>
</tr>
<tr>
<td></td>
<td>$1004</td>
<td>Module access error</td>
</tr>
<tr>
<td></td>
<td>$1005</td>
<td>Internal error.</td>
</tr>
<tr>
<td>Input/output matching error</td>
<td>$2401</td>
<td>DREF instruction issued to DIO.</td>
</tr>
<tr>
<td></td>
<td>$2402</td>
<td>READ/ WRITE instruction issued to DIO.</td>
</tr>
<tr>
<td></td>
<td>$2403</td>
<td>HRD/HWR instruction issued to DIO.</td>
</tr>
<tr>
<td>Input/output error</td>
<td>$80xx</td>
<td>Input/output module access failed.</td>
</tr>
<tr>
<td>Scan timeout</td>
<td>$1401</td>
<td>Scan time expired.</td>
</tr>
<tr>
<td>Sensor control block scan timeout</td>
<td>$1402</td>
<td>Could not maintain execution period of the sensor control block</td>
</tr>
<tr>
<td>Power failure</td>
<td>$1302</td>
<td>Power failure occurred or power turned off.</td>
</tr>
<tr>
<td>FA link station number error</td>
<td>$1501</td>
<td>FA link configuration number exceeded the valid range or duplicate numbers were found.</td>
</tr>
<tr>
<td></td>
<td>$1601</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1901</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1A01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1B01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1C01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1D01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1E01</td>
<td></td>
</tr>
<tr>
<td>FA link configuration information error</td>
<td>$1502</td>
<td>FA link configuration information corrupted.</td>
</tr>
<tr>
<td></td>
<td>$1602</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1902</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1A02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1B02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1C02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1D02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1E02</td>
<td></td>
</tr>
<tr>
<td>Duplicate FA link device allocation</td>
<td>$1503</td>
<td>Two FA link devices were allocated.</td>
</tr>
<tr>
<td></td>
<td>$1603</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1903</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1A03</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1B03</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1C03</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1D03</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1E03</td>
<td></td>
</tr>
</tbody>
</table>

*1: F3SP28, F3SP38, F3SP53 and F3SP58 only
### Table 2.4 Error Codes (2/2)

<table>
<thead>
<tr>
<th>Error type</th>
<th>Error code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery error</td>
<td>$1801</td>
<td>Battery ran out.</td>
</tr>
<tr>
<td>Line hit occurred</td>
<td>$1301</td>
<td>A line hit occurred.</td>
</tr>
<tr>
<td>Inter-CPU communication error</td>
<td>$4001</td>
<td>A communication error occurred between multi-CPU's.</td>
</tr>
<tr>
<td>Instruction processing error</td>
<td>$2101</td>
<td>Parameter error.</td>
</tr>
<tr>
<td></td>
<td>$2102</td>
<td>Invalid data (invalid arithmetic data).</td>
</tr>
<tr>
<td></td>
<td>$2103</td>
<td>An error occurred during binary/BCD conversion.</td>
</tr>
<tr>
<td></td>
<td>$2104</td>
<td>Invalid FIFO table pointer.</td>
</tr>
<tr>
<td></td>
<td>$2105</td>
<td>Device boundary error (available device address space exceeded).</td>
</tr>
<tr>
<td></td>
<td>$2106</td>
<td>Unbalanced FOR-NEXT phrases.</td>
</tr>
<tr>
<td>Subroutine error</td>
<td>$2201</td>
<td>No return address (RET).</td>
</tr>
<tr>
<td></td>
<td>$2202</td>
<td>The subroutines maximum nesting level was exceeded.</td>
</tr>
<tr>
<td>Interrupt error</td>
<td>$2301</td>
<td>No return address was found (IRET).</td>
</tr>
<tr>
<td></td>
<td>$2302</td>
<td>An overflow condition occurred in the interrupt stack.</td>
</tr>
<tr>
<td>Macro instruction error</td>
<td>$2501</td>
<td>No return address is found (MRET).</td>
</tr>
<tr>
<td></td>
<td>$2502</td>
<td>The macros maximum nesting level was exceeded.</td>
</tr>
<tr>
<td>Startup completed</td>
<td>$0100</td>
<td>Power on or system started normally.</td>
</tr>
<tr>
<td>Power off</td>
<td>$0300</td>
<td>Power off.</td>
</tr>
</tbody>
</table>

---

**CAUTION**

Subunit transmitter errors and subunit transmitter switching errors can occur in revision 8 and later versions of sequence CPU models F3SP21, F3SP25, F3SP35, F3SP36.
### User Log Read (ULR)

The ULR command reads user log.

#### Command and response formats for the sequence CPU modules (F3SP21, F3SP25, F3SP35)

**Command**

```
+----------------+----------------+----------------+----------------+
|                | ULR            |                |                |
| STX            |                | ETX           | CR             |
+----------------+----------------+----------------+----------------+
```

- Checksum and CR fields are optional (required only when they are enabled with setup switches.)
- User log read position
  - "000": Latest user log
  - "001" to "00n": nth latest user log
- Response time
- CPU No.
- Station No.

**Response (normal time)**

```
+----------------+----------------+----------------+----------------+
|                | OK             |                |                |
| STX            |                | ETX           | CR             |
+----------------+----------------+----------------+----------------+
```

- Checksum
- User log
  - 0 to 256 bytes
- CPU No.
- Station No.

#### Command and response formats for the Ethernet interface module

**Command**

```
0# ULR CR
```

- User log read position
  - "000": Latest user log
  - "001" to "00n": nth latest user log

#: CPU No. 1-4

**Response (normal time)**

```
1# OK CR
```

- User log
  - 0 to 256 bytes

#: CPU No. 1-4
● REMARKS

- The user log number will be shifted by one if a new user log occurs while the current user log is being read.

- Refer to the user’s manual for the individual modules for the response formats that are used at error times.
3. Binary Format Commands and Responses

The binary format commands and responses are available only for the Ethernet interface module.

![Diagram of Higher-level link data frames with Command and Response sections.]

- **Command**
  - Sub header
  - CPU number
  - Size
  - Command parameter
  
  | 1 byte | 1 byte | 2 bytes |

- **Response**
  - Sub header
  - Termination code
  - Size
  - Response parameter
  
  | 1 byte | 1 byte | 2 bytes |
3.1 Device Bit Accessing Commands

**Bit Read (01)**

The Bit Read (BRD) command reads the specified number of ON/OFF state bits from the consecutive devices starting at the device designated by the given device name. A response $00$ represents the OFF state and a $01$ represents the ON state.

**Command**

```
$01 $0# $0008 n
```

- $0#$: CPU No. 1-4
- $n$: Device name
- Point count 1 to 256

**Response (normal time)**

```
$01 $00 n d1 d2 dn
```

- $n$: Device name
- $d1$, $d2$, and $dn$: Read data
- ON: $01$
- OFF: $00$

**REMARKS**

- Refer to “Section 3.1 ▪ Device Specification” on the next page or “Ethernet Interface Module” (IM34M6H24-01E) for the legitimate device names.
- Be careful when specifying two or more input or output relays at the same time. See Section 1.2.
- The number of points you can read at a time with this command is 1 to 256 points.
- Refer to “Ethernet Interface Module” (IM34M6H24-01E) for the response formats that are used at error times.
- The BRD command for reading input/output relay status is available only for the sequence CPU modules.
Device Specification

A device is specified using its device attribute and device number.

<table>
<thead>
<tr>
<th>Device attribute</th>
<th>Device number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 bytes</td>
<td>4 bytes</td>
</tr>
</tbody>
</table>

Device Attributes

The device attributes are listed below

Table 3.4 Device Attributes in Binary Setting

<table>
<thead>
<tr>
<th>Device Type</th>
<th>Attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input relay</td>
<td>X $0018</td>
</tr>
<tr>
<td>Output relay</td>
<td>Y $0019</td>
</tr>
<tr>
<td>Internal relay</td>
<td>I $0009</td>
</tr>
<tr>
<td>Shared relay</td>
<td>E $0005</td>
</tr>
<tr>
<td>Special relay</td>
<td>M $000D</td>
</tr>
<tr>
<td>Timer relay</td>
<td>T $0014</td>
</tr>
<tr>
<td>Counter relay</td>
<td>C $0003</td>
</tr>
<tr>
<td>Link relay</td>
<td>L $000C</td>
</tr>
<tr>
<td>Data register</td>
<td>D $0004</td>
</tr>
<tr>
<td>File register</td>
<td>B* $0002</td>
</tr>
<tr>
<td>Shared register</td>
<td>R $0012</td>
</tr>
<tr>
<td>Index register</td>
<td>V $0016</td>
</tr>
<tr>
<td>Special register</td>
<td>Z $001A</td>
</tr>
<tr>
<td>Link register</td>
<td>W $0017</td>
</tr>
<tr>
<td>Timer setup value</td>
<td>$0020</td>
</tr>
<tr>
<td>Timer present value</td>
<td>$0021</td>
</tr>
<tr>
<td>Timer present value (count-up type)</td>
<td>$0025</td>
</tr>
<tr>
<td>Counter setup value</td>
<td>$0030</td>
</tr>
<tr>
<td>Counter present value</td>
<td>$0031</td>
</tr>
<tr>
<td>Counter present value (count up type)</td>
<td>$0035</td>
</tr>
</tbody>
</table>

* Available only for F3SP05/25/28/35/38/53/58 CPU modules.

Device Number

The device number is specified using 4 bytes.

Example: To specify data register 100 (D0100), the value will be:

$00 $00 $00 $00 $00 $04 $00 $64
## Bit Write ($02$)

The Bit Write (BWR) command writes the specified number of bits of ON/OFF status data into the consecutive devices starting at the device designated by the given device name. $00$ represents the OFF state and $01$ represents the ON state.

### Command

- **$02$**: CPU No. 1-4
- **B+H**: Write data
- **n**: Point count 1 to 256
- **d1-dn**: Device name

### Response (normal time)

- **$82$**: $00$ $0000$

### REMARKS

- Refer to “Section 3.1 Device Specification” or “Ethernet Interface Module” (IM34M6H24-01E) for the legitimate device names.
- Be careful when specifying two or more input or output relays at the same time. See Section 1.2.
- The number of points you can write at a time with this command is 1 to 256 points.
- Refer to “Ethernet Interface Module” (IM34M6H24-01E) for the response formats that are used at error times.
- You cannot write bit data with this command if the data format setup switch on the Ethernet interface module is set to “Write Protected.” An attempt to execute this command in such a condition will result in an error with a termination code $02$.
- The BWR command for writing output relay status is available only for the sequence CPU modules.
Bit Flush ($03)

The Bit Flush (BFL) command writes the same data (ON/OFF state) into the specified number of points in the consecutive devices starting at the device designated by the given device name. $00$ represents the OFF state and $01$ represents the ON state.

**Command**

```
$03 $0# $000D n d
```

- **Write data**
  - ON : $01$
  - OFF : $00$
- **Point count** 1 to 256
- **Device name**

**Response (normal time)**

```
$83 $00 $0000
```

**REMARKS**

- Refer to “Section 3.1 ■ Device Specification” or “Ethernet Interface Module” (IM34M6H24-01E) for the legitimate device names.
- Be careful when specifying two or more input or output relays at the same time. See Section 1.2.
- The number of points you can write at a time with this command is 1 to 256 points.
- Refer to “Ethernet Interface Module” (IM34M6H24-01E) for the response formats that are used at error times.
- The BFL command for writing output relay status is available only for the sequence CPU modules.
- You cannot write bit data with this command if the data format setup switch on the Ethernet interface module is set to “Write Protected.” An attempt to execute this command in such a condition will result in an error with a termination code $02.$
**Bit Random Read ($04)**

The Bit Random Read (BRR) command reads the ON/OFF state from randomly specified devices. A response $00$ represents the OFF state and a $01$ represents the ON state.

**Command**

```
$04 $0# 2+6xn n Device name 1 Device name n
```

- $#: CPU No. 1-4
- Point count 1 to 32

**Response (normal time)**

```
$84 $00 n d- d+
```

- Read data
- ON : $01
- OFF : $00

**REMARKS**

- Refer to “Section 3.1 Device Specification” or “Ethernet Interface Module” (IM34M6H24-01E) for the legitimate device names.
- The number of points you can read at a time with this command is 1 to 32 points.
- Refer to “Ethernet Interface Module” (IM34M6H24-01E) for the response formats that are used at error times.
- The BRR command for reading input/output relay status is available only for the sequence CPU modules.
**Bit Random Write ($05)$**

The Bit Random Write (BRW) command writes the ON/OFF status data into randomly specified devices. A 0 represents the OFF state and a 1 represents the ON state.

**Command**

```
$05  $0#  1+8n  n  Device name 1  d1  $00
     $00  Device name n  d2
```

- #: CPU No. 1-4
- Iterations of device name and write data pair (point count pairs)
- Write information ON :$01
- OFF :$00
- A device name and write data must be separated by 1 byte of dummy data

**Response (normal time)**

```
$85  $00  $0000
```

**REMARKS**

- Refer to “Section 3.1 Device Specification” or “Ethernet Interface Module” (IM34M6H24-01E) for the legitimate device names.
- The number of points you can write at a time with this command is 1 to 32 points.
- Refer to “Ethernet Interface Module” (IM34M6H24-01E) for the response formats that are used at error times.
- The BRW command for reading input/output relay status is available only for the sequence CPU modules.
- You cannot write bit data with this command if the data format setup switch on the Ethernet interface module is set to “Write Protected.” An attempt to execute this command in such a condition will result in an error with a termination code $02.
Bit Relay Specify ($06)

The Bit Relay Specify (BRS) command specifies the name of devices to be monitored on a bit basis. The command only serves to designate device names. Actual monitoring is specified by issuing the bit relay monitoring command. The device names specified in this command are stored with the given CPU number. Consequently, they remain valid until a new BRS command is issued with the CPU number specified. The specified device names will be erased if the module is powered off or reset.

Command

Response (normal time)

REMARKS

- Refer to “Section 3.1 Device Specification” or “Ethernet Interface Module” (IM34M6H24-01E) for the legitimate device names.
- The number of device points you can specify at a time is 1 to 32 points.
- Refer to “Ethernet Interface Module” (IM34M6H24-01E) for the response formats that are used at error times.
### Bit Relay Monitor ($07)

The Bit Relay Monitor (BRM) command reads the ON/OFF state from the devices that are specified in advance with a Bit Relay Specify command ($06). A response $00 represents the OFF state and a $01 represents the ON state.

#### Command

```
$07 $0# $0000
```

#: CPU No. 1-4

#### Response (normal time)

```
$87 $00 n d1 d2 d3
```

Read data

ON : $01
OFF : $00

#### REMARKS

- You must specify the devices to monitor before executing this command. Use the $06 command to specify devices. An error with an error code of 06 will be generated if this command is executed with no device name specified.

- Refer to “Ethernet Interface Module” (IM34M6H24-01E) for the response formats that are used at error times.

- The BRM command for monitoring (reading) input/output relay status is available only for the sequence CPU modules.
3.2 Device Word Accessing Commands

■ Word Read ($11)

The Word Read (WRD) command reads the specified number of words of ON/OFF state from the consecutive devices starting at the device designated by the given device name. A response is returned on a word basis.

Command

```
$11 $0# $0008 n
```

#: CPU No. 1-4
Device name

Word count 1 to 64

Response (normal time)

```
$91 $00 2xn d1 d2
```

Specified number of read words

- **REMARKS**

  - Refer to “Section 3.1 ■ Device Specification” or “Ethernet Interface Module” (IM34M6H24-01E) for the legitimate device names.
  - Be careful when specifying two or more input or output relays at the same time. See Section 1.2.
  - The number of words you can read at a time with this command is 1 to 64 words.
  - Refer to “Ethernet Interface Module” (IM34M6H24-01E) for the response formats that are used at error times.
  - The number of words you can read at a time with this command is 1 to 64 words.
  - The WRD command for reading input/output relay status is available only for the sequence CPU modules.
**Word Write ($12)**

The Word Write (WWR) command writes the specified number of words of data into the consecutive devices starting at the device designated by the given device name. The write data must be specified on a word basis.

**Command**

```
$12 $0# 8+n2
```

- Specified number of read words
- Word count 1 to 64
- Device name

#: CPU No. 1-4

**Response (normal time)**

```
$92 $00 $0000
```

**REMARKS**

- Refer to “Section 3.1 Device Specification” or “Ethernet Interface Module” (IM34M6H24-01E) for the legitimate device names.
- Be careful when specifying two or more input or output relays at the same time. See Section 1.2.
- The number of words you can write at a time with this command is 1 to 64 words.
- Refer to “Ethernet Interface Module” (IM34M6H24-01E) for the response formats that are used at error times.
- You cannot write bit data with this command if the data format setup switch on the Ethernet interface module is set to “Write Protected.” An attempt to execute this command in such a condition will result in an error with a termination code $02.
- The WWR command for writing output relay status is available only for the sequence CPU modules.
**Word Flush ($13)**

The Word Flush (WFL) command writes words of the same data into the consecutive devices starting at the device designated by the given device name. The write data must be specified on a word basis.

**Command**

```
$13   $0#   $000A   n   d
```

- #: CPU No. 1-4
- Write data
- Word count: 1 to 256
- Device name

**Response (normal time)**

```
$0# $000A
```

**REMARKS**

- Refer to “Section 3.1 Device Specification” or “Ethernet Interface Module” (IM34M6H24-01E) for the legitimate device names.
- Be careful when specifying two or more input or output relays at the same time. See Section 1.2.
- The number of words you can write at a time with this command is 1 to 256 words.
- Refer to “Ethernet Interface Module” (IM34M6H24-01E) for the response formats that are used at error times.
- You cannot write bit data with this command if the data format setup switch on the Ethernet interface module is set to “Write Protected.” An attempt to execute this command in such a condition will result in an error with a termination code $02.
- The WFL command for writing output relay status is available only for the sequence CPU modules.
**Word Random Read ($14)**

The Word Random Read (WRR) command reads device status data in word units from randomly specified devices. A response is returned on a word basis.

**Command**

```
$14 $0# 2+6xn n
```

- **Device name 1**
- **Device name n**
- #: CPU No. 1-4
- Word count 1 to 32

**Response (normal time)**

```
$94 $00 2xn d. d.
```

- Specified number of read words

**REMARKS**

- Refer to “Section 3.1 Device Specification” or “Ethernet Interface Module” (IM34M6H24-01E) for the legitimate device names.
- The number of words you can read at a time with this command is 1 to 32 words.
- Refer to “Ethernet Interface Module” (IM34M6H24-01E) for the response formats that are used at error times.
- The WRR command for reading input/output relay status is available only for the sequence CPU modules.
### Word Write Random ($15)$

The Word Write Random (WRW) command writes data into words of randomly specified devices.

#### Command

<table>
<thead>
<tr>
<th>$15$</th>
<th>$#0$</th>
<th>$2+n$</th>
<th>n</th>
<th>Device name 1</th>
<th>d₁</th>
<th>Device name n</th>
<th>dₙ</th>
</tr>
</thead>
</table>

#: CPU No. 1-4

Word count iterations of device name and write data pair
Word count 1 to 32

#### Response (normal time)

| $95$ | $00$ | $0000$ |

#### REMARKS

- Refer to “Section 3.1 ■ Device Specification” or “Ethernet Interface Module” (IM34M6H24-01E) for the legitimate device names.

- The number of words you can write at a time with this command is 1 to 32 words.

- Refer to “Ethernet Interface Module” (IM34M6H24-01E) for the response formats that are used at error times.

- You cannot write bit data with this command if the data format setup switch on the Ethernet interface module is set to “Write Protected.” An attempt to execute this command in such a condition will result in an error with a termination code $02$.

- The WRW command for writing output relay status is available only for the sequence CPU modules.
# Word Relay Specify ($16)

The Word Relay Specify (WRS) command specifies the name of devices to be monitored on a word basis. The command only serves to designate device names. Actual monitoring is specified by issuing the word relay monitoring command. The device names specified in this command are stored with the given CPU number. Consequently, they remain valid until a new Word Relay Specify command is issued with the same CPU number specified. The specified device names will be erased if the module is powered off or reset.

**Command**

![Command Diagram](F30305.EPS)

**Response (normal time)**

![Response Diagram](F30305.EPS)

## REMARKS

- Refer to “Section 3.1 ■ Device Specification” or “Ethernet Interface Module” (IM34M6H24-01E) for the legitimate device names.
- The number of words you can specify at a time with this command is 1 to 32 words.
- Refer to “Ethernet Interface Module” (IM34M6H24-01E) for the response formats that are used at error times.
**Word Relay Monitor ($17)**

The Word Relay Monitor (WRM) command reads device information from the devices that are specified in advance with a $16 command. A response is returned on a word basis.

**Command**

```
$17 $0# $0000
```

#: CPU No. 1-4

**Response (normal time)**

```
$97 $00 2xn d1 d2
```

Word count data

**REMARKS**

- You must specify the devices to monitor before executing this command. Use the $16 command to specify devices. An error with an error code of 06 will be generated if this command is executed with no device name specified.

- Refer to “Ethernet Interface Module” (IM34M6H24-01E) for the response formats that are used at error times.

- The WRM command for monitoring (reading) input/output relay status is available only for the sequence CPU modules.
3.3 Special Module Accessing Commands

**Special Word Read ($31)**

The Special Word Read (SWR) command reads the specified number of data from a given special module*1 (analog input/output, temperature control, PID control, high-speed counter, etc.), starting at a specified data position number on a word basis.

*1: Special modules refer only to those special modules that can be accessed with the READ/WRITE sequence instructions.

**Command**

![Command Diagram](attachment:F030301.EPS)

- **Data Count**: 1 to 64
- **Data position number**: 1 to 16
- **Module slot No.**: 1 to 16
- **Module unit No.**: “0” to “7” (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58, F3BP20 and F3BP30)
- **#: CPU No. 1-4**

**Response (normal time)**

- **Specified number of read data**

![Response Diagram](attachment:F03001.EPS)

**REMARKS**

- The number of data you can read at a time with this command is 1 to 64 words.
- Refer to “Ethernet Interface Module” (IM34M6H24-01E) for the response formats that are used at error times.
### Special Word Write ($32)

The Special Word Write (SWW) command writes the specified number of data into a given special module\(^*1\) (analog output, temperature control, PID control, high-speed counter, etc.), starting at a specified data position number on a word basis.

\(^*1\): Special modules refer only to those special modules that can be accessed with the READ/WRITE sequence instructions.

#### Command

- **Specified number of write data**: 1 to 64
- **Data position number**: Module slot No. 1 to 16; Module unit No. “0” to “7” (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58, F3BP20 and F3BP30)

#### Response (normal time)

- **#: CPU No. 1-4**

- **Specified number of write data**
- **Data count**: 1 to 64
- **Data position number**: Module slot No. 1 to 16
- **Module unit No. “0” to “7”**

#### REMARKS

- The number of data you can write at a time with this command is 1 to 64 words.
- Refer to “Ethernet Interface Module” (IM34M6H24-01E) for the response formats that are used at error times.
- You cannot write bit data with this command if the data format setup switch on the Ethernet interface module is set to “Write Protected.” An attempt to execute this command in such a condition will result in an error with a termination code $02.
### Special Long Read ($33$)

The Special Long Read (SLR) command reads the specified number of data from a given special module*1 (analog input/output, temperature control, PID control, high-speed counter, etc.), starting at a specified data position number on a long word basis.

*1: Special modules refer only to those special modules that can be accessed with the READ/WRITE sequence instructions.

#### Command

- **Data count**: 1 to 64
- **Data position number**: 1 to 64
- **Module slot No.**: 1 to 16
- **Module unit No.**: "0" to "7" (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58, F3BP20 and F3BP30)
- **#: CPU No.**: 1-4

#### Response (normal time)

- **Specified number of read data**

#### REMARKS

- The number of data you can read at a time with this command is 1 to 32 long words.
- Refer to “Ethernet Interface Module” (IM34M6H24-01E) for the response formats that are used at error times.
**Special Long Write ($34)**

The Special Long Write (SLW) command writes channel data for the specified number of channels into a given special module*1 (analog output, temperature control, PID control, high-speed counter, etc.), starting at a specified data position number on a long word basis.

*1: Special modules refer only to those special modules that can be accessed with the READ/WRITE sequence instructions.

**Command**

```
$34 $0# 6+4xn n d1 dl
```

- Specified number of write data
- Data count 1 to 64
- Data position number
- Module slot No. 1 to 16
- Module unit No. "0" to "7" (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58, F3BP20 and F3BP30)

#: CPU No. 1-4

**Response (normal time)**

```
$B4 $00 $0000
```

**REMARKS**

- The number of data you can write at a time with this command is 1 to 32 long words.
- Refer to "Ethernet Interface Module" (IM34M6H24-01E) for the response formats that are used at error times.
- You cannot write bit data with this command if the data format setup switch on the Ethernet interface module is set to "Write Protected." An attempt to execute this command in such a condition will result in an error with a termination code $02.
3.4 Program Accessing Commands

**Program Information ($41)**

The Program Information command (PRI) reads the name of a program, creation date, and other program information.

**Command**

```
$41 $0# $0002
```

- **Read information**
  - 0 : Program name, creation date
  - 1 to n : Name of nth block read

- **#: CPU No. 1 to 4**

**Response (normal time)**

When the read information is $0000

```
$C1 $00 $0016 $YYY $MMM $DDD $HHH $MMM
```

- Creation date and time
  - $YYYY$MMMM$DDD$HHH$HHH$MMM
  - Year Month Day Hour Minute

- Number of steps
- Program name, 8 bytes

When the read information is n (n /= 0)

```
$C1 $00 $000C
```

- Number of steps for the nth block
- Name of nth block

**REMARKS**

- You can read no program information from a program whose program block number falls within 1000 and 1024 on an F3SP28, F3SP35, F3SP38, F3SP53 or an F3SP58 sequence CPU module.
- Refer to the user’s manual for the individual modules for the response formats that are used at error times.
- You can access sensor control blocks like normal blocks on a F3SP28, F3SP38, F3SP53 or a F3SP58 sequence CPU module. The block number is the last normal block number+1. If this number is between 1000 and 1024 (inclusive), access is not allowed.
Program Load Cancel ($42)

The Program Load Cancel (PLC) command cancels program load or save processing.

Command

<table>
<thead>
<tr>
<th>$42</th>
<th>$0#</th>
<th>$0000</th>
</tr>
</thead>
</table>

#: CPU No. 1-4

Response (normal time)

| $C2 | $00 | $0000 |

REMARKS

- If you cancel, with this command, the loading of a program into an FA-M3 sequence CPU module with a specified CPU No. which has already been loaded with another program, the old program will also be removed from the sequence CPU module (the sequence CPU module has no program at all).

- Refer to the user’s manual for the individual modules for the response formats that are used at error times.
Program Load ($43)

The Program Load (PLD) command loads a program which has been saved with a save command.

**Command**

```
$43 $0# a+n xn
```

- **Data count**
- **Transmission No.**
- **Block No.**
- **Type**
- **End flag**
- **Start flag**

#: CPU No. 1-4

**Response (normal time)**

```
$C3 $00 $0000
```

**REMARKS**

- The number of words you can load with this command is 32 to 64 words.
- The start flag, end flag, type, block No., and transmission No. to be specified in this command must be identical to those which were established when the program was saved.
- Observe the programming notes that are separately listed below if you are controlling your programs using neither program type nor block No. (only the program parts are controlled according to their type and block).
- This command must be executed when the sequence CPU module is running no program. An error will be reported if an attempt is made to execute this command when the sequence CPU module is running a program.
- You cannot load any programs with program block Nos. 100 to 128 into an F3SP25 sequence CPU module.
- You cannot load any programs with program block Nos. 256 to 1024 into an F3SP28, F3SP35, F3SP38, F3SP53 or an F3SP58 sequence CPU module.
- You cannot load a program with this command if the data format setup switch is set to “Write Protected.” An attempt to execute this command in such a condition will result in an error with a termination code $02.
- Refer to the user’s manual for the individual modules for the response formats that are used at error times.
- You can access sensor control blocks like normal blocks on a F3SP28, F3SP38, F3SP53 or a F3SP58 sequence CPU module. The block number is the last normal block number+1. If this number is between 100 and 1024.
Programming notes to be observed when programs are controlled separately according to their type or block

- Set the start flag to $01$ for the first load. Set the start flag to $00^*$ for the subsequent loads.
- Set the end flag at the end of each block to $01$ and the end flag at the end of the program to $03$.
- Assign the transmission number to the program blocks sequentially starting at 1. Skipped or duplicate numbers are disallowed.

Ladder sequence programs

Table 3.1 Program Load Types and Block Numbers

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Block No.</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Executable program information</td>
<td>Always set to 01.</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Configuration information</td>
<td>Always set to 01.</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Program block (block units)</td>
<td>01 to 99</td>
<td>Same as the program block No.</td>
</tr>
<tr>
<td>04</td>
<td>Macro instruction information</td>
<td>Always set to 01.</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Macro instruction</td>
<td>01 to 64</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>User log message</td>
<td>Always set to 01.</td>
<td></td>
</tr>
</tbody>
</table>

BASIC

You can load no BASIC program with this command.
Program Save ($44)

The Program Save (PSV) command saves (transfer to another node) the program from the sequence CPU module. The size of program code that can be saved with this command is from 32 to 64 words. Execute this command more than once if the program is larger than 64 words.

Command

```
$44 $0# $0004 $00
```

- Size of program to save: 32 to 64
- Save unit: Word
- Valid only for the first save
- Start flag, 1 byte
  - $01: First save
  - $00: Other than first save

Response (normal time)

```
$C4 $00 B=2xn n d1 d2
```

- Data
- Data count
- Transmission No. $0001 to $FFFF
- Block No.
- Type
- End flag
  - $00: Continued
  - $01: End of block
  - $03: End of program
- Start flag
  - $01: First save
  - $00: Other than first save
● REMARKS

- The number of words you can save with this command is 32 to 64 words. Specify the program size in the first save. Specify the same program size in the subsequent saves. You cannot change the program size in the middle of save processing.

- Set the start flag to $01 for the first save. Set the start flag to $00 for the subsequent saves.

- When a program that has been saved with this command is to be loaded with a Program Load ($43) command, be sure to save all of the start flag, end flag, type, block number, and transmission number. In this case, you need not be aware of the start flag, end flag, type, or block number. Regard them as part of program data.

- Observe the programming notes that are separately listed below if you are controlling your programs using neither program type nor block No. (only the program parts are controlled according to their type and blocks).

- You cannot save any programs with program block Nos. 100 to 128 from an F3SP28, F3SP35, F3SP38, F3SP53 or an F3SP58 sequence CPU module.

- You cannot save any programs with program block Nos. 256 to 1024 from an F3SP35 sequence CPU module.

- Refer to the user’s manual for the individual modules for the response formats that are used at error times.

- You can access sensor control blocks like normal blocks on a F3SP28, F3SP38, F3SP53 or a F3SP58 sequence CPU module. The block number is the last normal block number+1. If this number is between 100 and 1024 (inclusive), access is not allowed.

● Programming notes to be observed when programs are controlled separately according to their type or block

- Set the end flag at the end of each block to $01 and the end flag at the end of the program to $03. Set the end flag of any block that is to be followed by another block to $00.

- The transmission number is assigned sequentially starting at 1.
### Start ($45)

The Start (STA) command starts a blocked program.

**Command**

```
$45 $0# $0000
```

#: CPU No. 1-4

**Response (normal time)**

```
$C5 $00 $0000
```

**REMARKS**

- This command will be ignored if it is executed while a program is already being executed.
- Refer to the user’s manual for the individual modules for the response formats that are used at error times.

### Stop ($46)

The Stop (STP) command stops the executing program.

**Command**

```
$46 $0# $0000
```

#: CPU No. 1-4

**Response (normal time)**

```
$C6 $00 $0000
```

**REMARKS**

- This command will be ignored if it is executed when no program is being executed.
- Refer to the user’s manual for the individual modules for the response formats that are used at error times.
3.5 Test command

■ Loopback Test ($51)

The Loopback Test command is used to carry out communication tests. It transmits a given stream of data (256 bytes maximum). Connection is tested by checking to determine whether the transmitted data is returned with no modification.

Command

```
$51 $0# n
```

#: CPU No. 1-4

Arbitrary data

Response (normal time)

```
$D1 $00 n
```

Arbitrary data

The transmitted data stream is returned as is.

● REMARKS

- The length of the given test string is 1 to 256 bytes.
- Refer to the user's manual for the individual modules for the response formats that are used at error times.
3.6 Miscellaneous Commands

■ Module Reset ($61)

The Module Reset command resets a module. When this command is executed on an Ethernet interface module, the currently open connection is closed immediately. The settings made in the modules are also cleared.

Command

```
$61 $0# $0000
```

#: CPU No. 1-4

Response (normal time)

No response is returned

● REMARKS

- This command returns no response.
- This command can be executed even before a response is returned by another command. The command returns no response in such a case.
## Information ($62)

The Information command reads one of the following types of information as specified by the given parameter number:

<table>
<thead>
<tr>
<th>Parameter No.</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0001</td>
<td>CPU’s Ready/Not Ready state. Operating state of a sequence or BASIC program</td>
</tr>
<tr>
<td>$0002</td>
<td>System ID, CPU type, area size</td>
</tr>
<tr>
<td>$0003</td>
<td>Name of the module installed in the specified unit and input/output relay information</td>
</tr>
<tr>
<td>$0004</td>
<td>Source of ERR or ALM LED that is lit on the CPU module</td>
</tr>
<tr>
<td>$0005</td>
<td>Erased source of ALM LED currently lit on the CPU module</td>
</tr>
</tbody>
</table>

### Reading CPU module or program status

**Command**

```
$62 $0# $0002 $0001
```

- $62: Command
- $0#: CPU No. 1-4
- $0002: Subheader
- $0001: Parameter No.

**Response (normal time)**

```
$E2 $00 $0002
```

- $E2: Response
- $00: Program status
- $0002: CPU status
  - $00: Ready
  - $01: Not Ready
  - $02: Stopped
  - $03: Debugging
  - $FF: ROM writer
● Reading system ID, CPU type, and area size

Command

<table>
<thead>
<tr>
<th>$62</th>
<th>$0#</th>
<th>$0002</th>
<th>$0002</th>
</tr>
</thead>
</table>

#: CPU No. 1-4

Parameter No.

Response (normal time)

<table>
<thead>
<tr>
<th>$E2</th>
<th>$00</th>
<th>$001C</th>
</tr>
</thead>
</table>

Program area size
Unit: K steps (sequence CPU)
K bytes (BASIC CPU)

CPU type
$0001: Sequence
$0002: BASIC

Revision, 8 bytes

System ID (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58, F3BP20 and F3BP30)
16 bytes
Reading the name of installed modules

Command

```
$62 $0# $0004 $0003
```

#: CPU No. 1-4

Response (normal time)

```
$E2 $00 $0060
```

Slot 1 module information
Slot 16 module information

- Number of input/output relay points
- Input/output type
  - $00: No input/output relay
  - $01: Input relays only
  - $02: Output relays only
  - $03: Both input/output
- Module name
Reading the source of ERR or ALM LED lit on the CPU module

Command

Source flag
$0001: ERR source
$0002: ALM source
Parameter No.
# : CPU No. 1-4

Response (normal time)

When ERR source is specified

Source
$0001: BASIC stopped.
$0002: RAM check error.
$0100: Sequence stopped.
$8000: Abnormal memory check pattern.

When ALM source is specified

Sources
Sources are assigned to 16 words of area on a bit basis (see Table 3.2). A 1 bit indicates the presence of the corresponding ALM source.
The sources of turning on the ALM LEDs are assigned to 16 words of bit stream as shown in Table 3.2. This 16-word bit stream is returned in hexadecimal representation.

### Table 3.2 Sources of Turning On ALM LEDs (1)

<table>
<thead>
<tr>
<th>1</th>
<th>15</th>
<th>14</th>
<th>13</th>
<th>12</th>
<th>11</th>
<th>10</th>
<th>9</th>
<th>8</th>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>31</td>
<td>30</td>
<td>29</td>
<td>28</td>
<td>27</td>
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</tr>
</tbody>
</table>
### Table 3.3 Sources of Turning On ALM LEDs (1/2)

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power supply error (line hit occurred)</td>
</tr>
<tr>
<td>9</td>
<td>Scan timeout</td>
</tr>
<tr>
<td>10</td>
<td>Sensor control block scan timeout *1</td>
</tr>
<tr>
<td>17</td>
<td>Input/output match error</td>
</tr>
<tr>
<td>18</td>
<td>Input/output match error (READ/WRITE instruction)</td>
</tr>
<tr>
<td>19</td>
<td>Input/output match error (HRD/HWR instruction)</td>
</tr>
<tr>
<td>25</td>
<td>Inter-CPU communication error</td>
</tr>
<tr>
<td>26</td>
<td>Subunit transmitter error</td>
</tr>
<tr>
<td>27</td>
<td>Subunit transmitter switching occurred</td>
</tr>
<tr>
<td>33</td>
<td>Parameter error</td>
</tr>
<tr>
<td>34</td>
<td>Data error</td>
</tr>
<tr>
<td>35</td>
<td>BIN/BCD conversion error</td>
</tr>
<tr>
<td>36</td>
<td>Invalid FIFO table pointer</td>
</tr>
<tr>
<td>37</td>
<td>Device boundary error</td>
</tr>
<tr>
<td>38</td>
<td>FOR-NEXT balance error</td>
</tr>
<tr>
<td>49</td>
<td>Subroutine error (no return address)</td>
</tr>
<tr>
<td>50</td>
<td>Subroutine error (nesting too deep)</td>
</tr>
<tr>
<td>57</td>
<td>Macro instruction error (no return address)</td>
</tr>
<tr>
<td>58</td>
<td>Macro instruction error (nesting too deep)</td>
</tr>
<tr>
<td>65</td>
<td>Interrupt error (no return address)</td>
</tr>
<tr>
<td>66</td>
<td>Interrupt stack overflow</td>
</tr>
<tr>
<td>81</td>
<td>FA link 1 station number error</td>
</tr>
<tr>
<td>82</td>
<td>FA link 1 configuration information error</td>
</tr>
<tr>
<td>83</td>
<td>Duplicate FA link 1 device allocation</td>
</tr>
<tr>
<td>97</td>
<td>FA link 2 station number error</td>
</tr>
<tr>
<td>98</td>
<td>FA link 2 configuration information error</td>
</tr>
<tr>
<td>99</td>
<td>Duplicate FA link 2 device allocation</td>
</tr>
<tr>
<td>100</td>
<td>FA link 3 station number error</td>
</tr>
<tr>
<td>101</td>
<td>FA link 3 configuration information error</td>
</tr>
<tr>
<td>102</td>
<td>Duplicate FA link 3 device allocation</td>
</tr>
<tr>
<td>104</td>
<td>FA link 4 station number error</td>
</tr>
<tr>
<td>105</td>
<td>FA link 4 configuration information error</td>
</tr>
<tr>
<td>106</td>
<td>Duplicate FA link 4 device allocation</td>
</tr>
<tr>
<td>108</td>
<td>FA link 5 station number error</td>
</tr>
<tr>
<td>109</td>
<td>FA link 5 configuration information error</td>
</tr>
<tr>
<td>110</td>
<td>Duplicate FA link 5 device allocation</td>
</tr>
<tr>
<td>112</td>
<td>FA link 6 station number error</td>
</tr>
<tr>
<td>113</td>
<td>FA link 6 configuration information error</td>
</tr>
<tr>
<td>114</td>
<td>Duplicate FA link 6 device allocation</td>
</tr>
<tr>
<td>116</td>
<td>FA link 7 station number error</td>
</tr>
<tr>
<td>117</td>
<td>FA link 7 configuration information error</td>
</tr>
<tr>
<td>118</td>
<td>Duplicate FA link 7 device allocation</td>
</tr>
<tr>
<td>120</td>
<td>FA link 8 station number error</td>
</tr>
<tr>
<td>121</td>
<td>FA link 8 configuration information error</td>
</tr>
<tr>
<td>122</td>
<td>Duplicate FA link 8 device allocation</td>
</tr>
</tbody>
</table>

*1: F3SP28, F3SP38, F3SP53 and F3SP58 only
### CAUTION

Subunit transmitter errors and subunit transmitter switching errors can occur in revision 8 and later versions of sequence CPU models F3SP21, F3SP25, F3SP35, F3SP36.

---

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>128 to 143</td>
<td>Main unit slot 1-16 module error</td>
</tr>
<tr>
<td>144 to 159</td>
<td>Subunit 1 slot 1-16 module error</td>
</tr>
<tr>
<td>160 to 175</td>
<td>Subunit 2 slot 1-16 module error</td>
</tr>
<tr>
<td>176 to 191</td>
<td>Subunit 3 slot 1-16 module error</td>
</tr>
<tr>
<td>192 to 207</td>
<td>Subunit 4 slot 1-16 module error</td>
</tr>
<tr>
<td>208 to 223</td>
<td>Subunit 5 slot 1-16 module error</td>
</tr>
<tr>
<td>224 to 239</td>
<td>Subunit 6 slot 1-16 module error</td>
</tr>
<tr>
<td>240 to 255</td>
<td>Subunit 7 slot 1-16 module error</td>
</tr>
</tbody>
</table>
● Erasing current alarm information from a CPU module

Command

\[
\begin{array}{c}
$62 \ 00 \ 0002 \ 0005 \\
\end{array}
\]

Parameter No.

#: CPU No. 1-4

Response (normal time)

\[
\begin{array}{c}
$E2 \ 00 \ 0000 \\
\end{array}
\]

● REMARKS

- Refer to the user’s manual for the individual modules for the response formats that are used at error times.

■ Date Read ($63$)

The Date Read command reads the current time and correction value that are maintained in the CPU module.

Command

\[
\begin{array}{c}
$63 \ 00 \ 0000 \\
\end{array}
\]

#: CPU No. 1-4

Response (normal time)

\[
\begin{array}{c}
$E3 \ 00 \ 0010 \\
\end{array}
\]

Correction value: Unit in seconds

- Second: 0 to 59
- Minute: 0 to 59
- Hour: 0 to 23
- Day: 1 to 31
- Month: 1 to 12
- Year: Lowest 2 digits of calendar year

● REMARKS

- Refer to the user’s manual for the individual modules for the response formats that are used at error times.
The Date Write command sets the date and correction value of the internal clock in the CPU module. Set all the date fields to $FFFF when the date is to be left unchanged. Set all the time fields to $FFFF when the time is to be left unchanged. Set all the correction value fields to $80000000 when the correction value is to be left unchanged. Note that you cannot modify only part of the date or time subfield such as month or second.

**Command**

![Command Diagram]

**Response (normal time)**

![Response Diagram]

**REMARKS**

- You cannot load data with this command if the data format setup switch is set to “Write Protected.” An attempt to execute this command in such a condition will result in an error with a termination code $02.

- Refer to the user’s manual for the individual modules for the response formats that are used at error times.
Error History ($65)

The Error History command reads a log of errors (error codes). Conversion of the error codes into error messages must be accomplished by the higher-level computer. (The current error information can be obtained by reading the special relays and registers with the BRD or WRD command.)

Command

$65 $0# $0002

Error log read position, 2 bytes
0: Latest error data
n: nth latest error data.

#: CPU No. 1-4

Response (normal time)

$E5 $00016+a

Additional information
Occurrence time
$HHHHMMSSSS
  Hour  Minute  Second
Occurrence date
$YYYYMMDDDD
  Year  Month  Day
Lowest 2 digits of calendar year
Error code
Error type
$0000: System error
$0001: BASIC error
$0002: Sequence error
$0003: I/O error
## Additional information

System error:
No additional information is present.

Sequence error

![Sequence error diagram]

Instruction number
Block name

BASIC error

![BASIC error diagram]

Line number
5-digit decimal number
Subprogram name
8 characters
Program name
8 characters

I/O error

![I/O error diagram]

Detail error
Slot No.

## REMARKS

- The error number will be shifted by one if a new error occurs while the current error log is being read.
- Refer to the user’s manual for the individual modules for the response formats that are used at error times.
### Table 3.4 Error Codes (1/2)

<table>
<thead>
<tr>
<th>Error type</th>
<th>Error code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU error</strong></td>
<td>$1101</td>
<td>BPU error</td>
</tr>
<tr>
<td></td>
<td>$1102</td>
<td>ALU error</td>
</tr>
<tr>
<td></td>
<td>$1111</td>
<td>Instruction swap error</td>
</tr>
<tr>
<td></td>
<td>$1112</td>
<td>SPU-CPU interface error</td>
</tr>
<tr>
<td><strong>Memory error</strong></td>
<td>$1201</td>
<td>Program memory error</td>
</tr>
<tr>
<td></td>
<td>$1202</td>
<td>Device memory error</td>
</tr>
<tr>
<td></td>
<td>$120</td>
<td>System memory error</td>
</tr>
<tr>
<td><strong>Instruction analysis error</strong></td>
<td>$1701</td>
<td>Invalid instruction code found.</td>
</tr>
<tr>
<td><strong>Missing END instruction</strong></td>
<td>$1702</td>
<td>Missing END instruction</td>
</tr>
<tr>
<td><strong>Circuit analysis error</strong></td>
<td>$2001</td>
<td>Label not found.</td>
</tr>
<tr>
<td><strong>Input/output point count overflow</strong></td>
<td>$2002</td>
<td>Input/output count exceeded upper limit.</td>
</tr>
<tr>
<td><strong>ROM cassette error</strong></td>
<td>$8203</td>
<td>Invalid version.</td>
</tr>
<tr>
<td></td>
<td>$8204</td>
<td>Read/write disabled.</td>
</tr>
<tr>
<td><strong>Subunit channel error</strong></td>
<td>$8301</td>
<td>Failed to read from or write to a subunit.</td>
</tr>
<tr>
<td><strong>Subunit channel switching occurred</strong></td>
<td>$8401</td>
<td>One of remote I/O cable pair was disconnected.</td>
</tr>
<tr>
<td><strong>Startup error</strong></td>
<td>$1002</td>
<td>Module count overflow.</td>
</tr>
<tr>
<td></td>
<td>$1003</td>
<td>Module mapping error</td>
</tr>
<tr>
<td></td>
<td>$1004</td>
<td>Module access error</td>
</tr>
<tr>
<td></td>
<td>$1005</td>
<td>Internal error</td>
</tr>
<tr>
<td><strong>Input/output matching error</strong></td>
<td>$2401</td>
<td>DREF instruction issued to DIO.</td>
</tr>
<tr>
<td></td>
<td>$2402</td>
<td>READ/WRITE instruction issued to DIO.</td>
</tr>
<tr>
<td></td>
<td>$2403</td>
<td>HRD/HWR instruction issued to DIO.</td>
</tr>
<tr>
<td><strong>Input/output error</strong></td>
<td>$80xx</td>
<td>Input/output module access failed.</td>
</tr>
<tr>
<td><strong>Scan timeout</strong></td>
<td>$1401</td>
<td>Scan time expired.</td>
</tr>
<tr>
<td><strong>Sensor control block scan timeout</strong></td>
<td>$1402</td>
<td>Could not maintain execution period of the sensor control block</td>
</tr>
<tr>
<td><strong>Power failure</strong></td>
<td>$1302</td>
<td>Power failure occurred or power turned off.</td>
</tr>
<tr>
<td><strong>FA link station number error</strong></td>
<td>$1501</td>
<td>FA link configuration number exceeded the valid range or duplicate numbers were found.</td>
</tr>
<tr>
<td></td>
<td>$1601</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1901</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1A01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1B01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1C01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1D01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1E01</td>
<td></td>
</tr>
<tr>
<td><strong>FA link configuration information error</strong></td>
<td>$1502</td>
<td>FA link configuration information corrupted.</td>
</tr>
<tr>
<td></td>
<td>$1602</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1902</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1A02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1B02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1C02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1D02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1E02</td>
<td></td>
</tr>
<tr>
<td><strong>Duplicate FA link device allocation</strong></td>
<td>$1503</td>
<td>Two FA link devices were allocated.</td>
</tr>
<tr>
<td></td>
<td>$1603</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1903</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1A03</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1B03</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1C03</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1D03</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1E03</td>
<td></td>
</tr>
</tbody>
</table>

*1: F3SP28, F3SP38, F3SP53 and F3SP58 only*
CAUTION

Subunit transmitter errors and subunit transmitter switching errors can occur in revision 8 and later versions of sequence CPU models F3SP21, F3SP25, F3SP35 and F3SP36.

<table>
<thead>
<tr>
<th>Error type</th>
<th>Error code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery error</td>
<td>$1801</td>
<td>Battery ran out.</td>
</tr>
<tr>
<td>Line hit occurred</td>
<td>$1301</td>
<td>A line hit occurred.</td>
</tr>
<tr>
<td>Inter-CPU communication error</td>
<td>$4001</td>
<td>A communication error occurred between multi-CPUs.</td>
</tr>
<tr>
<td>Instruction processing error</td>
<td>$2101</td>
<td>Parameter error.</td>
</tr>
<tr>
<td></td>
<td>$2102</td>
<td>Invalid data (invalid arithmetic data).</td>
</tr>
<tr>
<td></td>
<td>$2103</td>
<td>An error occurred during binary/BCD conversion.</td>
</tr>
<tr>
<td></td>
<td>$2104</td>
<td>Invalid FIFO table pointer.</td>
</tr>
<tr>
<td></td>
<td>$2105</td>
<td>Device boundary error (available device address space exceeded).</td>
</tr>
<tr>
<td></td>
<td>$2106</td>
<td>Unbalanced FOR-NEXT phrases.</td>
</tr>
<tr>
<td>Subroutine error</td>
<td>$2201</td>
<td>No return address (RET).</td>
</tr>
<tr>
<td></td>
<td>$2202</td>
<td>The subroutines maximum nesting level was exceeded.</td>
</tr>
<tr>
<td>Interrupt error</td>
<td>$2301</td>
<td>No return address was found (IRET).</td>
</tr>
<tr>
<td></td>
<td>$2302</td>
<td>An overflow condition occurred in the interrupt stack.</td>
</tr>
<tr>
<td>Macro instruction error</td>
<td>$2501</td>
<td>No return address is found (MRET).</td>
</tr>
<tr>
<td></td>
<td>$2502</td>
<td>The macros maximum nesting level was exceeded.</td>
</tr>
<tr>
<td>Startup completed</td>
<td>$0100</td>
<td>Power on or system started normally.</td>
</tr>
<tr>
<td>Power off</td>
<td>$0300</td>
<td>Power off.</td>
</tr>
</tbody>
</table>
**User Log Read ($66)**

The User Log Read command reads user log.

**Command**

```
$66 $0# $0002
```

#: CPU No. 1-4
0: Latest user log
m: mth latest user log

**Response (normal time)**

```
$E6 $00 n
```

User log
0 to 256 bytes = n

**REMARKS**

- The user log number will be shifted by one if a new user log occurs while the current user log is being read.
- Refer to the user’s manual for the individual modules for the response formats that are used at error times.
Appendix 1. Communication Control for F3LC11-1F and F3LC12-1F Modules

The transmission specification of this module should match that on the PC (or display) end to achieve communication. Set the transmission specification of the module using the hardware setting switches or software settings. Set the transmission specification of the PC using a communication software (program). In the case of a display, do it by setting the configuration.
Communication control in this module is achieved through interactive commands and responses using a proprietary protocol.

A command is an instruction sent from a higher level computer (or display) to this module.

A response is a reply returned by this module to the higher level computer (or display) for the command.

This module will never send a command to the higher level computer (or display). The higher level computer (or display) has the initial right of transmission. Once it transmits a command, the right of transmission is transferred to this module and a response is sent from this module.

Do not send a new command before a response is returned for the current command. Otherwise, the command sent later will be ignored.

**Figure Appx.1.1 Operation Diagram**

PC (for Visual BASIC)
Format overview of commands and responses

<table>
<thead>
<tr>
<th>Command</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Higher level computer)</td>
<td>(FA-M3)</td>
</tr>
<tr>
<td>STX code</td>
<td>STX CODE</td>
</tr>
<tr>
<td>station number</td>
<td>Station number</td>
</tr>
<tr>
<td>CPU number</td>
<td>CPU number</td>
</tr>
<tr>
<td>Response wait time</td>
<td>Command response</td>
</tr>
<tr>
<td>Command</td>
<td>Checksum</td>
</tr>
<tr>
<td>Parameter</td>
<td>Checksum</td>
</tr>
<tr>
<td></td>
<td>ETX code</td>
</tr>
<tr>
<td></td>
<td>Ending character</td>
</tr>
</tbody>
</table>

To higher level computer (or to display)

To FA-M3

Figure Appx.1.2 Commands and Responses

Only upper-case alphabetic characters from A to Z (ASCII codes 41 to 5A in hexadecimal) are used in commands and responses.
Command Format and its Elements

The format of a command transmitted from a higher level computer (or display) to the FA-M3 is shown below.

<table>
<thead>
<tr>
<th>No. of bytes</th>
<th>STX</th>
<th>Station number (SA)</th>
<th>CPU number (nn)</th>
<th>Response wait time (WT)</th>
<th>Command</th>
<th>Parameter</th>
<th>Checksum (SUM)</th>
<th>ETX</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elements</td>
<td>STX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) **STX (Start of Text)**
   This precedes a block of text. The corresponding character code is CHR$(2).

(2) **Station Number**
   Indicates which PC link module is to be accessed.
   For the F3LC11-1F or F3LC12-1F module, the station number is fixed to 01.

(3) **CPU Number**
   Specifies the CPU module or one of the add-on CPU modules.
   01: CPU module
   02: Add-on CPU module 1
   03: Add-on CPU module 2
   04: Add-on CPU module 3

(4) **Response Wait Time**
   You can specify the waiting time (time lag) between a transmitted command and its response. Set a longer wait time if programming is done using a BASIC interpreter, etc. on the higher level computer. Specify this time using one character (0 to F).
Response wait time 0 to 600ms can be set using a single character (1 byte) from 0 to F.

<table>
<thead>
<tr>
<th>Character</th>
<th>Response wait time (Unit: ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0*1</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>6</td>
<td>60</td>
</tr>
<tr>
<td>7</td>
<td>70</td>
</tr>
<tr>
<td>8</td>
<td>80</td>
</tr>
<tr>
<td>9</td>
<td>90</td>
</tr>
<tr>
<td>A</td>
<td>100</td>
</tr>
<tr>
<td>B</td>
<td>200</td>
</tr>
<tr>
<td>C</td>
<td>300</td>
</tr>
<tr>
<td>D</td>
<td>400</td>
</tr>
<tr>
<td>E</td>
<td>500</td>
</tr>
<tr>
<td>F</td>
<td>600</td>
</tr>
</tbody>
</table>

*1: Event if the response wait time is set to 0, the process lags behind the process time required for internal processing.

Figure Appx. 1.3 Response wait time

(5) Command

Specifies the type of access to be performed on the F3LC11 from a higher level computer (or display). Specify the command with three characters.

(6) Parameters

These include device name, number of points, data, etc. It varies with the command in use. Some commands do not require parameters.
(7) **Checksum**

Checksum can be added for data checking. You can select whether to add the checksum by using the Data Format Setting switch at the back and right of the F3LC11-1F and the F3LC12-1F. If the checksum is enabled, a checksum must be appended to a command when it is transmitted from the higher level computer (or display) to the FA-M3. When a command is transmitted with a checksum appended, then a checksum is automatically appended to the response. If the checksum is disabled using the setup switch, this element is not required.

How the checksum is calculated is shown below.

Add the ASCII codes of the characters following STX and preceding the checksum.

Extract the low order byte of the sum and express its hexadecimal value as a character string (2 characters, 2 bytes) to obtain the checksum.

**Example**  Reading 16 bits from X00201 from CPU number 1 of station number 01 with a 100 ms response wait time (when the ending character is CR)

Transmission text (character string)  | Range of checksum calculation  | Checksum  | Ending character
---|---|---|---
STX | 0 | 1 | 0 | 1 | A | B | R | D | X | 0 | 0 | 2 | 0 | 1 | . | 1 | 6 | B | 9 | ETX | CR
02 30 31 30 31 41 42 52 44 58 30 30 32 30 31 2C 31 36 42 39 03 0D

30+31+30+31+41+42+52+44+58+30+30+32+30+31+2C+31+36=3B9 (in hexadecimal)

The lower order byte ($B9) of the addition result ($3B9), when represented as a character string, “B9” becomes the checksum.

(8) **ETX (End of Text)**

This character terminates a block of text that is started with STX. The corresponding character code is CHR$(3).

(9) **CR (Carriage Return)**

This is a control code indicating termination. The corresponding character code is CHR$(13) [ASCII code 0D in hexadecimal]. This control code is required only when the ending character is enabled at the back and right of the F3LC11-1F and the F3LC12-1F.
### Response Format and its Elements

The format of a response that is sent back from the FA-M3 to a higher level computer (or display) is shown here. For the meaning of each element, refer to Command format and its elements.

(1) **If communication is normal**

If communication is normal, the character string “OK” and the command response are returned.

<table>
<thead>
<tr>
<th>No. of bytes</th>
<th>1</th>
<th>2</th>
<th>2</th>
<th>2</th>
<th>Variable length</th>
<th>2</th>
<th>1</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element</td>
<td>STX</td>
<td>Station number (SA)</td>
<td>CPU number (nn)</td>
<td>OK</td>
<td>Command response</td>
<td>Checksum (SUM)</td>
<td>ETX</td>
<td>CR</td>
</tr>
</tbody>
</table>

In normal communication, the character string “OK” and the command response are returned.

(2) **If a communications error occurs**

If a communications error occurs, the character string “ER” and two error codes (EC1 and EC2) are returned.

<table>
<thead>
<tr>
<th>No. of bytes</th>
<th>1</th>
<th>2</th>
<th>2</th>
<th>2</th>
<th>2</th>
<th>2</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element</td>
<td>STX</td>
<td>Station number (SA)</td>
<td>CPU number (nn)</td>
<td>ER</td>
<td>EC1</td>
<td>EC2</td>
<td>Command</td>
<td>Checksum (SUM)</td>
<td>ETX</td>
<td>CR</td>
</tr>
</tbody>
</table>

- **EC1**: Error code (see Table Appx.2.1)
- **EC2**: Detailed error code (valid only if EC1 is 03, 04, 05, 08, 41 and 52. See Table Appx.2.2)

- If an invalid CPU number is specified, the CPU number (2 bytes) received by the F3LC11 is returned as the CPU number.
- In case of a station number error, no response is returned.
- If ETX (End of Text) is not received, a response may not be returned. Be sure to perform timeout processing in the higher level computer or display.
Devices that can be Specified

The device names that can be specified in each type of command are shown in Table Appx.1.1.

Use a comma (,) or a space (_) to delimit parameters.

The device names are represented using six characters (number of bytes). Abbreviations may be used.

(X00201 and V00002 can be abbreviated as X201 and V02 or V2, respectively.)

(Example) To read 5 points of data from input relay X00201 of CPU number 1 in station number 2 with a response wait time of 100 ms.

```
STX 02 01 AB R D X0 02 01 , 00 5

<table>
<thead>
<tr>
<th>STX</th>
<th>02</th>
<th>01</th>
<th>AB</th>
<th>R</th>
<th>D</th>
<th>X0</th>
<th>02</th>
<th>01</th>
<th>,</th>
<th>00</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Command
Response wait time code
CPU number
Station number
```
Table Appx.1.1 Devices that can be Specified

<table>
<thead>
<tr>
<th>Device name</th>
<th>Read</th>
<th>Write</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Bit</td>
</tr>
<tr>
<td>BIT Device</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xnnnnn Input relay</td>
<td>6 bytes</td>
<td>✓</td>
</tr>
<tr>
<td>Ynnnnn Output relay</td>
<td>6 bytes</td>
<td>✓</td>
</tr>
<tr>
<td>Innnnn Internal relay</td>
<td>6 bytes</td>
<td>✓</td>
</tr>
<tr>
<td>Ennnnn Shared relay</td>
<td>6 bytes</td>
<td>✓</td>
</tr>
<tr>
<td>Lnnnnn Link relay</td>
<td>6 bytes</td>
<td>✓</td>
</tr>
<tr>
<td>Mnnnnn Special relay</td>
<td>6 bytes</td>
<td>✓</td>
</tr>
<tr>
<td>Tnnnnn Timer</td>
<td>6 bytes</td>
<td>✓</td>
</tr>
<tr>
<td>Cnnnnn Counter</td>
<td>6 bytes</td>
<td>✓</td>
</tr>
<tr>
<td>WORD device</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dnnnnn Data register</td>
<td>6 bytes</td>
<td>–</td>
</tr>
<tr>
<td>Rnnnnn Shared register</td>
<td>6 bytes</td>
<td>–</td>
</tr>
<tr>
<td>Vnnnnn Index register</td>
<td>6 bytes</td>
<td>–</td>
</tr>
<tr>
<td>Bnnnnn File register</td>
<td>6 bytes</td>
<td>–</td>
</tr>
<tr>
<td>Wnnnnn Link register</td>
<td>6 bytes</td>
<td>–</td>
</tr>
<tr>
<td>Znnnnn Special register</td>
<td>6 bytes</td>
<td>–</td>
</tr>
</tbody>
</table>

*1: Specify:
  - Time-up relay as TUnnnn
  - Count-up relay as CUnnnn

*2: Specify:
  - Current value of count-down timer as TInnnn
  - Current value of count-up counter as CInnnn
  - Current value of count-up counter *4 as CInnnn
  - Set value of timer *5 as TSnnnn
  - Set value of counter *5 as CSnnnn

*3: Only available on the F3SP25, F3SP35, F3SP28, F3SP38, F3SP53 and F3SP58 CPU modules.

*4: In the FA-M3, count-down timers and counters are provided for displaying on the higher level personal computers. Current value of count-up timer/counter – set value = current value of count-down timer/counter.

*5: You cannot use
  - Timer set values TSnnnn
  - Counter set values CSnnnn
  in word writing commands.

*6: You cannot use the BWR, BFL, WWR and WFL commands to write to the F3SP28, F3SP38, F3SP53 and F3SP58 CPU modules. Use the BRW and WRW commands instead.

---

**CAUTION**

- For FCLC11-1N and F3LC11-2N, up to 6 bytes can be used to specify a file register. (B00001 to B99999).
- For the PC Link function of the programming tool connector for the F3LC1□-1F and CPU modules or the Ethernet Interface Module, up to 7 bytes (B100000 onwards) can be used.
Precautions for communication

(1) You should include timeout handling on the higher level computer to handle situations where a response is not returned due to say, an incorrect station number specified in the command. Send a Reset command to initialize the module during timeout processing.

(2) If the F3LC11-1F or F3LC12-1F is used to download a program, then you should not load another program from another source (FA link, WideField, etc.) at the same time. Otherwise, the operation is not guaranteed.

(3) Even when writing to a shared device, the value may be immediately overwritten if another CPU is using the same device.

(4) Do not change the setup switches during communication.

(5) If a power failure occurs when a monitoring command is in use, it is necessary to set it again.

(6) The maximum text length that can be transmitted or received each time by the F3LC11-1F or the F3LC12-1F is 512 bytes. However, higher level computers usually cannot receive more than 256 bytes. In such cases, make sure that the size does not exceed 256 bytes by reducing the number of points to be read.

(7) The F3LC11-1F or the F3LC12-1F module performs communication processing during scanning and scan breaks for sequence CPU modules. When the F3LC11-1F or the F3LC12-1F module is used, there is a time lag until the next scanning starts; however, the time required for one scanning operation (scan time) does not change.

(8) The inter-character receiving time of the F3LC11-1F or the F3LC12-1F is 5 seconds. If a command is interrupted and the next character is not received within 5 seconds, a time-out error (error code = 44) occurs. However, if an ETX is received during this period, then the data up to that moment is interpreted and an error is returned because the command is interrupted. However, if a command is interrupted before receiving the station number or if there is damage after STX is received, no error is returned. (There is no response)
Appendix 2. Error Code in Response

A communication error may occur while receiving a command. In this case, this module replies with ER (character string) and an error code.

The following error codes are provided.

<table>
<thead>
<tr>
<th>Error code (EC1)</th>
<th>Semantics</th>
<th>Probable causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>CPU number error</td>
<td>• CPU number is out of the valid range of 1 to 4.</td>
</tr>
</tbody>
</table>
| 02               | Command error | • Command does not exist.  
• Command is not executable. |
| 03               | Device specification error | • The specification is not correct when a bit device is used in words.  
• Device name does not exist.\(^{(1)}\)  
• Characters other than 0 and 1 are used for bit setting. \(^{(1)}\)  
• Value outside the setting range \(^{(1)}\)  
• Data count out of range \(^{(1)}\)  
• Value of checksum differs. (Bit omitted or changed characters) \(^{(1)}\)  
• Data received exceeds stipulated value. \(^{(1)}\)  
• Ending character or ETX was not received. \(^{(1)}\)  
• Timeout duration is 5 seconds. \(^{(1)}\)  
• CPU processing error \(^{(1)}\)  
• CPU has detected an error during processing \(^{(1)}\)  
• Corrective action: Re-send commands. |

\(\text{Table Appx.2.1 Error Codes}\)

*1: For details, see “Detailed Error Codes” in the following page.

*2: This failure may occur temporarily in the following cases:
• Immediately after supplying power to a sequence CPU with a 9 K-step or longer program.
• Immediately after downloading a 9 K-step or longer program to the CPU, or
• Immediately after online editing of a 9 K-step or longer program.
Corrective action: Re-send commands.

*3: This may occur if the Ladder Diagram Programming Tool M3 is used and more than 20 READ/WRITE/DREF instructions are executed each scan.
Corrective action: Reduce the number of READ/WRITE/DREF instructions executed in each scan.
In the case of a parameter error, the error parameter number is stored in the detailed error code.

In the case of a communication error, the error content is stored in the detailed error code.

**Table Appx.2.2 Detailed Error Codes**

<table>
<thead>
<tr>
<th>Error code (EC1)</th>
<th>Semantics</th>
<th>Detailed error code (EC2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>03</td>
<td>Device specification error</td>
<td>Error parameter number, expressed in hexadecimal. (The number of the first parameter where an error has occurred, counting from the beginning of the parameters) (Example)</td>
</tr>
<tr>
<td>04</td>
<td>Value outside the setting range</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Data count out of range</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>Parameter error</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Communication error</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>CPU communication error</td>
<td>E1: An error occurred in communications between the CPU module and this module.</td>
</tr>
<tr>
<td>52</td>
<td>CPU processing error</td>
<td>1\□: Self-diagnostic error</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2\□: Program error (including parameter error)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3\□: inter-CPU communication error</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4\□: Device access error</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5\□: Communication protocol error</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A\□: Parameter error</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B\□: Operating mode error, protected/exclusive access</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C\□: Device/block specification error</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F\□: System internal error</td>
</tr>
</tbody>
</table>

When the value of EC1 is other than those mentioned above, EC2 has no meaning.
Revision Information

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