MITSUBISHI

PROGRAMMABLE CONTROLLER

MELSEC-A

Reference Manual

MMS INTERFACE MANUAL

802.3/MAP interface module type AJ71M56EF[ ]

MITSUBISHI ELECTRIC

REVISIONS

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INTRODUCTION

Thank you for choosing the Mitsubishi MELSEC-A Series of General Purpose Programmable Controllers. Please read this manual carefully so that the equipment is used to its optimum. A copy of this manual should be forwarded to the end User.

CONTENTS

1. GENERAL DESCRIPTION

This manual describes the MMS (Manufacturing Message Specification) protocol of the PC 802.3/MAP interface module (AJ71M56EF[ ]), giving details about the services transmitted from the client (service demanding side) and the corresponding response.
The User's Manual gives details about how to send the Unsolicited Status, Information Report, Abort, Request Domain Download, and Request Domain Upload services as server and services as client.
The features are as follows:

(1) Equipped with a VMD

The VMD (Virtual Manufacturing Device) is a function described in the MAP protocol, working as a virtual MELSEC-A module viewed from the MMS services.
The AJ71M56EF[ ] MMS services were prepared by Mitsubishi so that they cover the correspondence of the core-part functions (irrespective of a PC, FA computer, NC, robot) to the MELSEC-A series modules (These services cannot be applied to the PC companion standards).

(2) Can access a local station in the MELSEC-NET

By installing the AJ71M56EF[ ] in a master station, it is possible to read/write from/to a local station device and start/stop a local station.
The AJ71M56EF[ ] can only be installed in a master station. If the AJ71M56EF1 has been installed in a local station, only the PC CPU (in which the AJ71M56EF[ ] is installed) can be accessed.

[Precautions when using a MELSEC-NET]

1) The AJ7156EF[ ] installed in a master station can access data in a local station. However, the AJ7156EF[ ] installed in a local station can only access the PC CPU of a station in which the AJ7156EF[ ] is installed.

2) The AJ71M56EF[ ] must manage remote-control operations (such as remote RUN/STOP, sequence program/parameter access, etc.). Make sure not to perform a computer link or remote operation from an A6GPP (except debugging and maintenance).

3) Accessing the device (D register, etc.) of a local station from the AJ71M56EF[ ] takes a long time. In addition, even if a service to access another device is accepted while the device of a local station is being accessed (during MAP MMS communications), the former service will be suspended until the latter is completed.

2. COMMUNICATING WITH AN AJ71M56EF[ ]

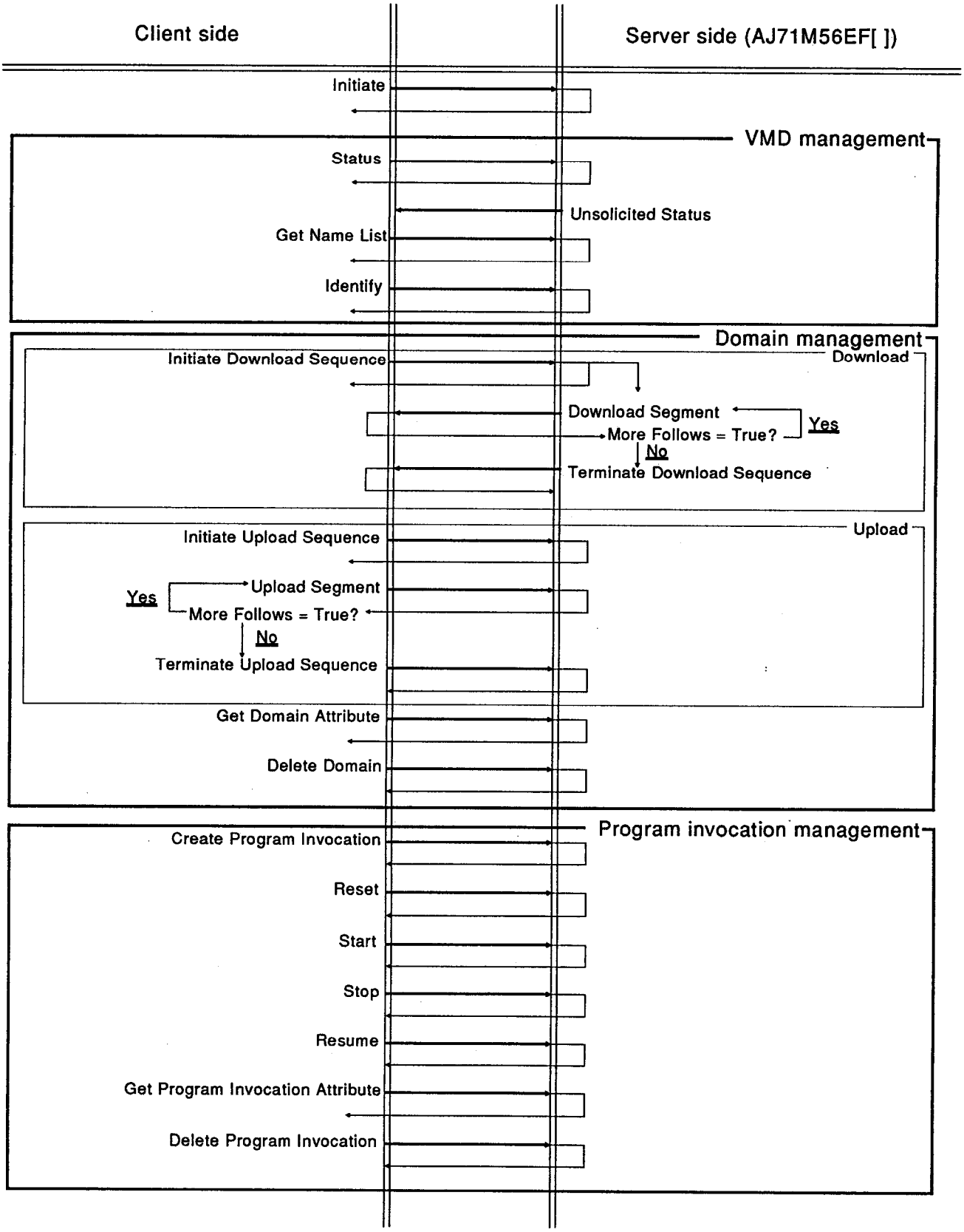
When communicating between two stations using MMS services, the roles of each station -- the client (service demanding side) and the server (service supplying side) -- should be clearly defined.

Since the AJ71M56EF[ ] works as a server, it is in wait state for a connection request (Initiate) when it is turned ON.

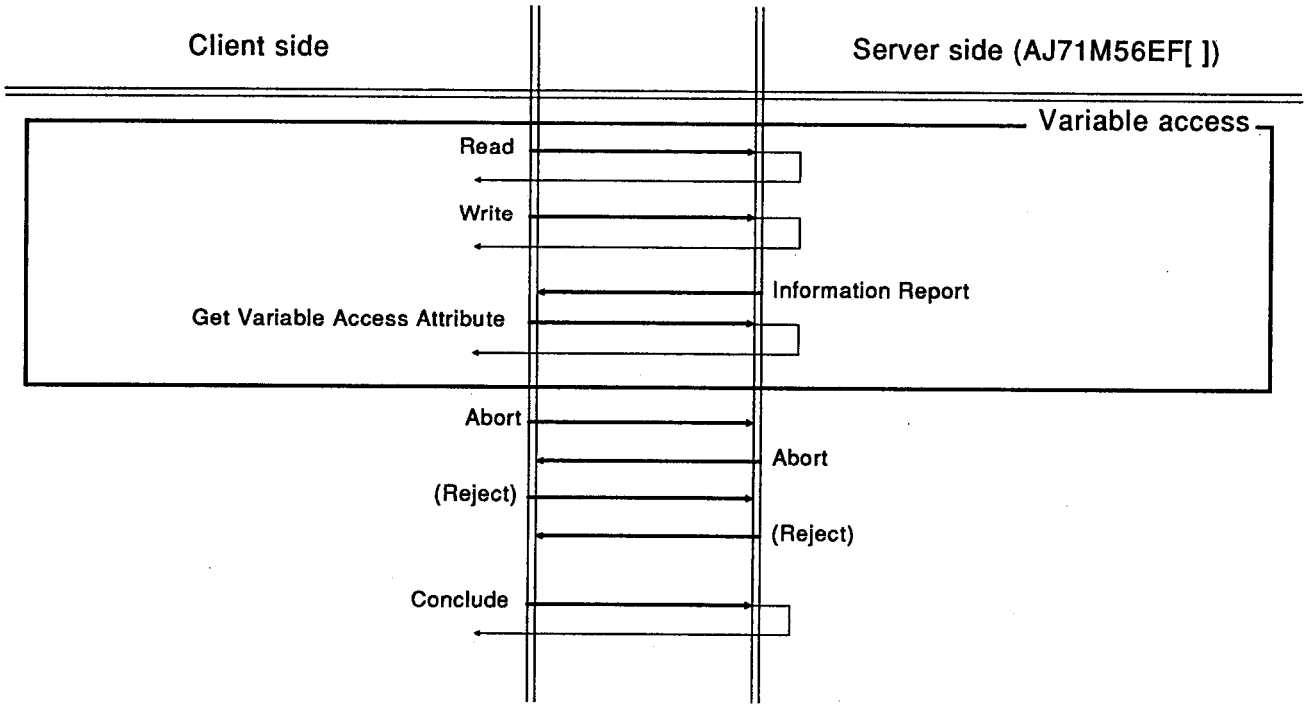
To communicate with the AJ71M56EF[ ], the client transmits the Initiate to make the connection normal. Then data is sent/received to/from the PC CPU using such services as VMD management, variable access, etc.
To cut off the connection, Conclude or Abort (if abnormal) is transmitted to release the connection, and communications is ended.

The next page shows the MMS protocols which are available for the AJ71M56EF[ ].

[MMS Protocols]



[MMS Protocols (continued)]



3. CONNECTING WITH AN AJ71M56EF[ ] Initiate

To communicate with the AJ71M56EF[ ], the client transmits the Initiate service to establish a logical connection association.

Up to 16 associations can be established with each AJ71M56EF[ ].

[Parameter required by the client]

- Called Presentation Address (AJ71M56EF[ ] side)

  This parameter must be set by the manager when constructing a network, and transmitted to the client in advance. (This parameter must be set on the client.)
  The address can be changed by using a software package (SW0GP-M56PC) for the MAP interface.

Items	Setting Values (hexadecimal)
NSAP (Network address)	49000100000000000001 ← factory-set
TSAP	0001 (Default)
SSAP	0001 (Default)
PSAP	0001 (Default)

- Application Title (AJ71M56EF[ ] side)

  Application Title of the AJ71M56EF[ ] is set at the following values as default, and can be changed by SW0GP-M56PC.

Application Title Setting Values
1, 3, 9999, 3, 7 (Default)

- Application Entity Qualifier (AJ71M56EF[ ] side)

  Application Entity Qualifier of the AJ71M56EF[ ] is set at the following value as default, and can be changed by SW0GP-M56PC.

Application Entity Qualifier Setting Value
1 (Default)

- Abstract Syntax Name

  This parameter is provided by the MMS. The following values are used.

Abstract Syntax Name Setting Values
1, 0, 9506. 2. 1 (fixed)

- Application Context Name

  This parameter is provided by the MMS. The following values are used.

Application Context Name Setting Values	
DIS version	1, 0, 9506, 1, 1 (fixed)
IS version	1, 0, 9506, 2, 3 (fixed)

- Application Title (client side)

  This parameter is set on the client.

- Application Entity Qualifier (client side)

  This parameter is set on the client as well as the Application Title.

[Response from the server (AJ71M56EF[ ])]

- Max Segment Size (DIS version only)

  The size of a MMS communication packet transmitted from the server

Max Segment Size Value
Max. 1100 bytes Performs negotiations with the required value by the client. Required value from the client ≥ 1100 --- 1100 is responded. Required value from the client < 1100 --- Required value by the client is responded.

POINT

When the Max Segment Size is 0, most services are not available.
When the Max Segment Size is about 512 or less, Service of variable access is available and Up Load services are unavailable.
When an Octet-String is used, the Size must be 1100 bytes.

- Max Outstanding Requests Calling

  The number of services which can be continuously transmitted before receiving the response of the MMS service from the client.

Max Outstanding Requests Calling Value
1 or 2 Performs negotiations with the required value by the client. Required value from the client ≥ 2 --- 2 is responded. Required value from the client < 2 --- 1 is responded.

- Max Outstanding Requests Called

  The number of services which can continuously transmit the packet of the MMS service from the server.

Max Outstanding Requests Called Value
1 or 2 Performs negotiations with the required value by the client. Required value from the client ≥ 2 --- 2 is responded. Required value from the client < 2 --- 1 is responded.

- Max data nesting = 0

  The nest level for supporting an array or structure

Max Data Nesting Value
0

- Version

  MMS version number specified by MAP

Version Number	
DIS version	0
IS version	1

- Parameter Support

  Available variable type

Parameter Support Value
28 (HEX) *1 Supports VNAM and VADR

  Note 1) The default value is VNAM or VADR. However, the value after verifying with the value presented by the client is returned.

- Service Support

  Types of available services

Service Support Values
EE 00 00 27 0F F4 00 00 01 00 10 (HEX) [MMS protocols] in Section 2 gives the service names.

4. IDENTIFICATION INFORMATION OF AN AJ71M56EF[ ] Identify

To get the identification information of the AJ71M56EF[ ], transmit the Identify service.

[Parameters required by the client]

- None

[Response from the server (AJ71M56EF[ ])]

- The following character strings are responded:

Items	Character Strings
Vendor Name	MITSUBISHI ELE.
Model Name	MELSEC-A
Revision	REV. 01. 000

5. PC CPU STATUS INFORMATION Status

To get the status information of the PC CPU, the client transmits the Status service. After receiving the service, AJ71M56EF[ ] transmits the data to the special relays (M9000 to M9094) of the PC, or the special relays (M9200 to M9255) for link.

[Parameters required by the client]

- Extended Derivation

  Designate a special relay (M9000 to M9094), or a special relay (M9200 to M9255) for link.

Extended Derivation Numbers	Relay Selections
False = 0	M9000 to M9094
True = not 0 (other than 0)	M9200 to M9255

[Response from the server (AJ71M56EF[ ])]

- VMD Logical Status

  Unused.

VMD Logical Status value	0 (fixed)

- VMD Physical Status

  VMD status is indicated.

Values	Names	Contents
0	Operational	Operable from the client side.
1	Partially-Operational	Operable from the client side. However, a self-diagnosis error occurs (M9008 goes ON).
2	Inoperable	Inoperable from the client side.
3	Needs-Commissioning	Operable from the client side. However, the PC CPU cannot be run. In addition, a self-diagnosis error may occur.

Appendix 2 VMD PHYSICAL STATUS CRITERIA TABLES gives details.

- Local Detail

  Data stored in M9000 to M9094 or M9200 to M9255

When Extended Derivation = False

	MSB							LSB
0	X	X	X	X	X	X	X	0
1	9000	9001	9002	9003	9004	9005	9006	9007
2	9008	9009	9010	9011	9012	9013	9014	9015
3	9016	9017	9018	9019	9020	9021	9022	9023
4	9024	9025	9026	9027	9028	9029	9030	9031
5	9032	9033	9034	9035	9036	9037	9038	9039
6	9040	9041	9042	9043	9044	9045	9046	9047
7	9048	9049	9050	9051	9052	9053	9054	9055
8	9056	9057	9058	9059	9060	9061	9062	9063
9	9064	9065	9066	9067	9068	9069	9070	9071
10	9072	9073	9074	9075	9076	9077	9078	9079
11	9080	9081	9082	9083	9084	9085	9086	9087
12	9088	9089	9090	9091	9092	9093	9094	X

When Extended Derivation = True

	MSB							LSB
0	X	X	X	X	X	X	X	1
1	9200	9201	9202	9203	9204	9205	9206	9207
2	9208	9209	9210	9211	9212	9213	9214	9215
3	9216	9217	9218	9219	9220	9221	9222	9223
4	9224	9225	9226	9227	9228	9229	9230	9231
5	9232	9233	9234	9235	9236	9237	9238	9239
6	9240	9241	9242	9243	9244	9245	9246	9247
7	9248	9249	9250	9251	9252	9253	9254	9255

POINT

X above indicates indefinite values (either 0 or 1).
Some PC CPU models do not use the special relay (M9000 to M9999).
In such cases, these values are indefinite.

6. GETTING DOMAIN/EXECUTION PROGRAM LIST Get Name List

To get the list of named variables, domain names, or program invocations defined by the AJ71M56EF[ ], transmit the Get Name List.

[Parameters required by the client]

- Extended Object Class

  Designate Object Class on the AJ71M56EF[ ], and select Named Variable, Domain, or Program invocation as the object.

  Named Variable list ---------- "Named Variable"
  Domain name list ---------- "Domain"
  Program Invocation name list ---------- "Program Invocation"

Extended Object Class	Object
Object Class	0 Named Variable 9 Domain 10 Program Invocation

- Object Scope

  Designate VMD-Specific on the AJ71M56EF[ ].

Object Scope
VMD-Specific

- Domain Name

  Not used on the AJ71M56EF[ ].

- Continue After

  It is unnecessary to set this parameter when getting a new list.
  If the whole list has not been output (when the response More Follows from the server (AJ71M56EF[ ]) is True (not 0)), set the last name which was output, and transmit this service again to get the rest of the list.

POINT

The system can malfunction if an incorrect parameter is set.

[Response from the server (AJ71M56EF[ ])]

- List of Identifier (list of domain names or program invocation names)

  Up to 16 items can be obtained per service.
  Each name can have up to 32 characters and a Null code.

- More Follows(continued)

  Tells whether the whole list has been output or not.

More Follows	Contents
False = 0	Whole list has been output.
True = not 0 (other than 0)	Whole list has not been output.

7. GET CAPABILITY LIST Get Capability list

To get the maximum capacity used as domain for an AJ71M56EF[ ], transmit the Get Capability List service.

[Parameters required by the client]

- Continue After

  It is unnecessary to set this parameter when getting the new list.
  If the whole list has not been output (when the response More Follows from the server (AJ71M56EF[ ]) is True (not 0)), set the last name output, and transmit this service again to get the remaining list.

[Response from the server (AJ71M56EF[ ])]

- List Of Capabilities

  Up to 16 items can be obtained per service.
  Each name is composed of up to 16 characters.

List Nos.	Response States
Capability [0]	EXTCOM Δ Domain size
Capability [1]	KANACOM ΔDomain size
Capability [2]	MAINMIC Δ Domain size
Capability [3]	MAINSEQ Δ Domain size
Capability [4]	PARAM Δ Domain size
Capability [5]	SUBMIC Δ Domain size
Capability [6]	SUBSEQ Δ Domain size

- More Follows (continued)

  Tells whether the whole list has been output or not.

More Follows	Contents
False = 0	Whole list has been output.
True = not 0 (other than 0)	Whole list has not been output.

8. UPLOADING/DOWNLOADING

This section describes how the AJ71M56EF[ ] can upload/download data in a PC CPU from a device (client) in the MAP network.

When uploading, read all the data, such as main/sub-sequence programs, main/sub-microcomputer programs, parameter, comment/extension comment data, main/sub-timer set value and main/sub-counter set value from the PC CPU. (Only if the capacity is set in the PC CPU by a parameter).

When downloading, write all the uploaded data to the PC CPU. (Only if the capacity is set in the PC CPU by a parameter).

Download the parameter data before other programs.

Upload/download can also be executed to/from the CPU of a local station in the MELSEC-NET.

Do not download data while the PC CPU is in the RUN state. Make sure that the PC CPU is in the STOP state when uploading/downloading.
(To stop the PC CPU, either set the keyswitch to STOP or execute remote STOP from the client side. Remote RUN/STOP of the PC CPU gives details about the latter.

POINT

If downloading is executed while the PC CPU is in the RUN state, data in the PC CPU could be destroyed.

[Data type to be uploaded/downloaded]

- Main sequence program
- Sub-sequence program
- Main microcomputer program
- Sub-microcomputer program
- Comment data
- Parameter
- (Each device)
- (Extension file register)
- Extension comment

The above items can be defined as the domain by the AJ71M56EF[ ].
Uploading/downloading of the items in parentheses can be executed with the services for domain management and is the equivalent function to variable Read/Write. Normally, use the variable Read/Write services.

8.1 Parameters for Services Used for Uploading/Downloading Data

This section describes the basic parameters of the services used for uploading/downloading data.

8.1.1 Start of downloading Initiate Download Sequence

When downloading is executed from the client, transmit Initiate Download Sequence to create domains for each data item and gives a command to start downloading.

This service is also used to define a domain (when no actual data is transmitted).

Any domain already defined will remain until the Delete Domain service or power is reset. Therefore, if a domain has already been set when downloading, delete that domain.

[Parameters required by the client]

- Domain Name

  Set the domain name using up to 32 characters.
  Each name can be set as character strings. The following table gives examples to name a domain (see Appendix 3 DOMAIN MANAGEMENT PARAMETER TABLES).

Domains	Domain Names (examples)	Domain Types
Main sequence program	D_mainP[ ][ ]	MAINSEQ
Sub-sequence program	D_subP[ ][ ]	SUBSEQ
Main microcomputer program	D_mainM[ ][ ]	MAINMIC
Sub-microcomputer program	D_subM[ ][ ]	SUBMIC
Comment data	D_comm[ ][ ]	KANACOM
Parameter	D_param[ ][ ]	PARAM
Each device	D_( )( )( )dev[ ][ ]	DEVMEMS
Extension file register	D_( )( )( )dev[ ][ ]	DEVMEMR
Extension comment	D_extcom[ ][ ]	EXTCOM

POINT

- [ ][ ] represents a local station number (01 to 64) in the MELSECNET. If this number is omitted, it will show a self station number (the PC CPU in which the AJ71M56EF[ ] is installed).
- ( )( )( ) represents a device name and number.

- List of Capabilities

Set the data required when downloading.
Set the five data elements peculiar to the AJ71M56EF[ ].
Each element is 16 bytes (Octet-String) max.

Element Nos.	Element Names	Setting Values	
(0)	Domain types	"MAINSEQ"--- Main sequence program "SUBSEQ"---- Sub-sequence program "MAINMIC"----Main microcomputer program "SUBMIC"----- Sub-microcomputer program "KANACOM"--Comment data "PARAM"------ Parameter "DEVMEMS"--Each device "DEVMEMR"--Extension file register "EXTCOM"---- Extension comment	
(1)	Station Nos.	"FF"----------Master station (PC CPU connected to the client) "01" to "64"---Local station number	
(2)	Read addresses	MAINSEQ SUBSEQ MAINMIC SUBMIC KANACOM PARAM EXTCOM	"0" Fixed
		DEVMEMS DEVMEMR	See Appendix 1, DEVICE/SYMBOL ASSIGNMENT TABLES.
(3)	Domain size	MAINSEQ SUBSEQ	The number of steps is set with character strings (integer). (Capacity set value)
		MAINMIC SUBMIC KANACOM PARAM EXTCOM	The number of bytes is set with character strings (integer). (Capacity set value)
		DEVMEMS DEVMEMR	The number of modules is set with character strings (integer).
(4)	Comment	16-byte character string data can be set as required.	

- Sharable

  Determine whether or not to enable the defined domain to be shared when calling a program (Program invocation).

Sharable Values	Descriptions
False = 0	Not sharable
True = not 0 (other than 0)	Sharable

POINT

It is always False (not sharable) for an AJ71M56EF[ ].

- Download Detail

  Not used for the AJ71M56EF[ ].

[Response from the server (AJ71M56EF[ ])]

- None

8.1.2 Data downloading [Download Segment]

The Download Segment service is transmitted from the AJ71M56EF[ ], after receiving the Initiate Download Sequence from the client and responding normally.

When the domain data size is 0, the Download Segment service is not transmitted, but the Terminate Download Sequence service is transmitted.

Since this is a service transmitted by the server, it is unnecessary to set a parameter in the client. However, setting a response parameter is necessary.

The client responds with data whose length can be downloaded and More Follows data (True or False).

The Download Segment service will continue to be transmitted until the client sends back a More Follows = False response.

[Parameter of the server (AJ71M56EF[ ])]

- Domain Name

  Utilizes the domain name set by the Initiate Download Sequence.

[Parameters required by the client (response)]

- Load Data (Download data)

  This data is transmitted in data sizes up to 512 bytes max. with even number per service. (The maximum length varies according to the max. segment size at Initiate.) If the data length is an odd number, the system can malfunction.

- More Follows (continued)

  Notifies whether or not there is data to be downloaded.

More Follows value	Contents
False = 0	There is no data to be downloaded.
True = not 0 (other than 0)	There is data to be downloaded.

POINT

The AJ71M56EF[ ] continues to transmit the Download Segment service until the client sends back a More Follows = False (0) response.

8.1.3 End of downloading Terminate Download Sequence

The AJ71M56EF[ ] transmits the Terminate Download Sequence service when More Follows = false arrives after receiving the Initiate Download Sequence from the client.

Since this is a service transmitted by the server side, it is unnecessary to set a parameter in the client.

[Parameters of the server (AJ71M56EF[ ])]

- Domain Name

  Utilizes the domain name set by the Initiate Download Sequence.

- Discard (Abort domain data)

  Sets whether or not the downloaded domain has been deleted.
  In the AJ71M56EF[ ], the domain is deleted if the data size is incorrect or data cannot be written to the PC CPU (Discard=True).

Discard Values	Contents
False = 0	Normal end (Domain is not deleted.)
True = not 0 (other than 0)	Abnormal end (Domain is deleted.)

POINT

If downloading ends abnormally, data in the PC CPU may be destroyed.

[Parameters required by the client (response)]

- None

8.1.4 Start of uploading Initiate Upload Sequence

The Initiate Upload Sequence is transmitted from the client to set the server (AJ71M56EF[ ]) in the upload state.

If Max Segment Size is negotiated as about 512 or less, the upload services are not supported by the initiate service negotiation.

In the case of a domain whose capacity is not set in the PC CPU, an error will occur.

If the domain of data to be uploaded has not been defined, designate the size as 0, using the Initiate Download Sequence (actual data is not transmitted), define the domain, and then execute uploading.

The domain (except the local station) is predefined just after the power goes ON as follows:

Domain Names	Domain Types	Domains
D_main[ ][ ]	MAINSEQ	Main sequence program
D_param[ ][ ]	PARAM	Parameter

[Parameter required by the client]

- Domain Name

  Set the domain name using up to 32 characters.
  The domain name can be set as required using character strings, but in this manual, it is described for reference (See Appendix 3 DOMAIN MANAGEMENT PARAMETER TABLES).
  Predefine domain names can also be used.

Domains	Domain Names (examples)	Domain Types
Main sequence program	D_mainP[ ][ ]	MAINSEQ
Sub-sequence program	D_subP[ ][ ]	SUBSEQ
Main microcomputer program	D_mainM[ ][ ]	MAINMIC
Sub-microcomputer program	D_subM[ ][ ]	SUBMIC
Comment data	D_comm[ ][ ]	KANACOM
Parameter	D_param[ ][ ]	PARAM
Each device	D_( )( )( )dev[ ][ ]	DEVMEMS
Extension file register	D_( )( )( )dev[ ][ ]	DEVMEMR
Extension comment	D_extcom[ ][ ]	EXTCOM

POINT

- [ ][ ] represents a local station number (01 to 64) in the MELSECNET. If this number is omitted, it will show the station number of the self (the PC CPU in which the AJ71M56EF[ ] is installed).
- ( )( )( ) represents a device name and number.

[Response from the server (AJ71M56EF[ ])]

- Up Load State Machine ID

  ID (identification number) used for the Upload Segment and Terminate Upload Sequence services is allocated by the server.

- List of Capabilities

  Set the data required when downloading.
  Set the five data elements peculiar to the AJ71M56EF[ ].
  Each element is 16 bytes (Octet-String) max.

Element Nos.	Element Names	Setting Values	
(0)	Domain types	"MAINSEQ"---Main sequence program "SUBSEQ"----Sub-sequence program "MAINMIC"----Main microcomputer program "SUBMIC"-----Sub-microcomputer program "KANACOM"--Comment data "PARAM"------Parameter "DEVMEMS"--Each device "DEVMEMR"--Extension file register "EXTCOM"----Extension comment	
(1)	Station Nos.	"FF"----------Master station (PC CPU connected to the client) "01" to "64"---Local station number	
(2)	Read addresses	MAINSEQ SUBSEQ MAINMIC SUBMIC KANACOM PARAM EXTCOM	"0" Fixed
		DEVMEMS DEVMEMR	See Appendix 1, DEVICE/SYMBOL ASSIGNMENT TABLES.
(3)	Domain size	MAINSEQ SUBSEQ	The number of steps is set with character strings (integer). (Capacity set value)
		MAINMIC SUBMIC KANACOM PARAM EXTCOM	The number of bytes is set with character strings (integer). (Capacity set value)
		DEVMEMS DEVMEMR	The number of modules is set with character strings (integer).
(4)	Comment	16-byte character string data can be set as required.	

8.1.5 Data uploading [Upload Segment]

After the Initiate Upload Sequence service is completed, read the actual data using the Upload Segment service.

The client side responds with data whose length can be uploaded and sends More Follows data (True or False), showing there is data to be read.

The Upload Segment service will continue to be transmitted until the client sends back a More Follows = False response.

[Parameter required by the client]

- UpLoad State Machine ID

  Utilizes the ID (identification number) set by the Initiate Upload Sequence service.

[Response from the server (AJ71M56EF[ ])]

- Load Data (Download data)

  Data up to 512 bytes can be transmitted per service.

- More Follows (continuous)

  Tells whether or not there is data to be uploaded.

More Follows Values	Contents
False = 0	There is no data to be uploaded.
True = not 0 (other than 0)	There is data to be uploaded.

POINT

The AJ71M56EF[ ] continues to transmit the Upload Segment service until the client sends back a More Follows = False (0) response.

8.1.6 End of Uploading [Terminate Upload Sequence]

AJ71M56EF[ ] transmits the Terminate Upload Sequence service when More Follows = false arrives after receiving the Initiate Upload Sequence from the client.

If this service is not executed, the Conclude service will not be executed correctly.

[Parameter required by the client (response)]

- Up Load State Machine ID

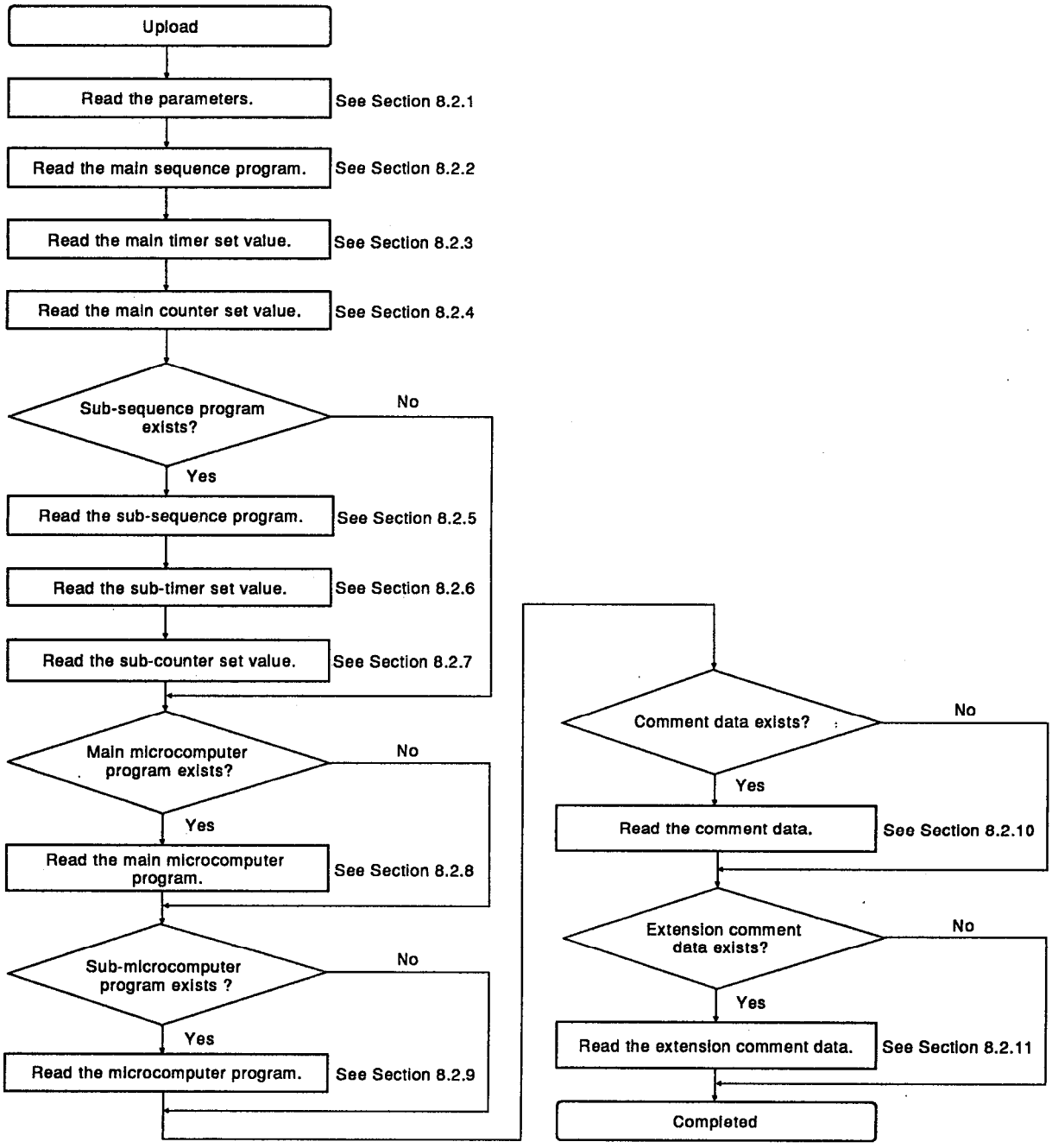
  Sets the ID (identification number) set by the Initiate Upload Sequence service.

[Response from the server (AJ71M56EF[ ])]

- None

8.2 Uploading

This section explains uploading. The uploading procedure (simplified) is shown in the following flowchart.



POINT

When uploading is executed, make sure to read the following data:

- Parameters
- Main sequence
- Main timer set value
- Main counter set value

8.2.1 Reading the parameters

Read the parameters as described below:

(1) Definition of parameter domain

Before executing uploading, the domain must be defined.
If the parameter domain has already been defined or if the predefined parameter "D_param[ ][ ]" is used, it is unnecessary to define.
When a parameter domain does not exist or definition is executed for a local station, the definition must be executed in accordance with the following procedure:

1) Transmit the Initiate Download Sequence as described below:

Domain Name	(Example) "D_param[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"PARAM"----Parameter
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Read address	"0" Fixed
	(3)	Domain size	"0" (byte) Fixed
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

POINT

The Download Segment service cannot be executed.
Sections 8.1.1 to 8.1.3 give Download details.

(2) Uploading the parameters

Using the parameter domain already defined, the Initiate Upload Sequence, Upload Segment, and Terminate Upload Sequence are executed.

POINT

The parameter data to be read is 3 Kbytes (fixed).
Sections 8.1.4 to 8.1.6 give Upload details.

8.2.2 Reading the main sequence program

This section explains how to read the main sequence program.

(1) Definition of main sequence program domain

Before uploading, the domain must be defined.
If the main sequence program domain has already been defined or if the predefined parameter "D_main[ ][ ]" is used, it is unnecessary to define.
When a main sequence program domain does not exist or definition is executed for local station, the definition must be executed in accordance with the following procedure:

1) Transmit the Initiate Download Sequence as described below:

Domain Name	(Example) "D_main[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"MAINSEQ"--Main sequence program
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Read address	"0" Fixed
	(3)	Domain size	"0" (step) Fixed
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

POINT

The Download Segment service cannot be executed.
Sections 8.1.1 to 8.1.3 give Download details.

(2) Main sequence program upload

Using the main sequence program domain already defined, the Initiate Upload Sequence, Upload Segment, and Terminate Upload Sequence are executed.

POINT

The sub-sequence program capacity is specified by the parameter capacity setting. (1 step = 2 byte) Read all data.
Sections 8.1.4 to 8.1.6 give Upload details.

8.2.3 Reading the main timer set value

This section explains how to read the main timer set value.

(1) Definition of main timer set value domain

Before executing uploading, the domain must be defined.
If the main timer set value domain has already been defined, it is unnecessary to define.
When a main timer set value domain does not exist or definition is executed for a local station, the definition must be executed in accordance with the following procedure:

1) Transmit the Initiate Download Sequence as described below:

Domain Name	(Example) "D_TM0dev[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"DEVMEMS"----Each device
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Read address	"( )( ).TM0" ( )( ). represents tje local station number (01 to 64) and omitted for the master station.
	(3)	Domain size	"256" Fixed (word units)
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Download Segment service.

POINT

The Download Segment service response is as follows:
Load data ------ No data is set. (No data)
More Follows -- False
Sections 8.1.1 to 8.1.3 give Download details.

3) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

(2) Main timer set value upload

Using the main timer set value domain already defined, the Initiate Upload Sequence, Upload Segment, and Terminate Upload Sequence are executed.

POINTS

(1) The main timer set value capacity is 256 words (512 bytes). Read all data.
Sections 8.1.4 to 8.1.6 give Upload details.

(2) The set data of up to 256 words (T0 to T255) can be read. Upload the data in the device memory (AnACPU extensions T256 to T2047) to the devices (D, W, R) assigned for the parameters to be stored.

8.2.4 Reading the main counter set value

This section explains how to read the main counter set value.

(1) Definition of main counter set value domain

Before uploading, the domain must be defined.
If the main counter set value domain has already been defined, it is unnecessary to define.
When a main counter set value domain does not exist or definition is executed for a local station, the definition must be executed in accordance with the following procedure:

1) Transmit the Initiate Download Sequence as described below:

Domain Name	(Example) "D_CM0dev[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"DEVMEMS"----Each device
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Read address	"( )( ).CM0" ( )( ). represents the local station number (01 to 64) and omitted for the master station.
	(3)	Domain size	"256" Fixed (word units)
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Download Segment service.

POINT

The Download Segment service response is as follows:
Load data ------ No data is set. (No data)
More Follows -- False
Sections 8.1.1 to 8.1.3 give Download details.

3) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

(2) Main counter set value upload

Using the main counter set value domain already defined, the Initiate Upload Sequence, Upload Segment, and Terminate Upload Sequence are executed.

POINTS

(1) The main counter set value capacity is 256 words (512 bytes). Read all data.
Sections 8.1.4 to 8.1.6 give Upload details.

(2) Set data of up to 256 words (C0 to C255) can be read. Upload the data in the device memory (AnACPU extensions C256 to C1023) to the devices (D, W, R) assigned for the parameters to be stored. Procedure to read the main counter set value is described here.

8.2.5 Reading the sub-sequence program

This section explains how to read the sub-sequence program.
When the sub-sequence program is not used, this procedure can be skipped.

(1) Definition of sub-sequence program domain

Before executing uploading, the domain must be defined.
When the sub-sequence program domain has already been defined, it is unnecessary to define.
When a sub-sequence program domain does not exist or definition is executed for a local station, the definition must be executed in accordance with the following procedure:

1) Transmit the Initiate Download Sequence as described below:

Domain Name	(Example) "D_subP[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"SUBSEQ"---Sub-sequence program
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Read address	"0" Fixed
	(3)	Domain size	"0" (step) Fixed
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

POINT

The Download Segment service cannot be executed.
Sections 8.1.1 to 8.1.3 give Download details.

(2) Sub-sequence program upload

Using the sub-sequence program domain already defined, the Initiate Upload Sequence, Upload Segment, and Terminate Upload Sequence are executed.

POINT

The sub-sequence program capacity is specified by the parameter capacity setting. (1 step = 2 byte) Read all data.
Sections 8.1.4 to 8.1.6 give Upload details.

8.2.6 Reading the sub-timer set value

This section explains how to read the sub-timer set value.
When the sub-sequence program is not used, this procedure can be skipped.

(1) Definition of sub-timer set value domain

Before executing uploading, the domain must be defined.
When the sub-timer set value domain has already been defined, it is unnecessary to define.
When a sub-timer set value domain does not exist or definition is executed for a local station, the definition must be executed in accordance with the following procedure:

1) Transmit the Initiate Download Sequence.

Domain Name	(Example) "D_TS0dev[_][_]" [_][_] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"DEVMEMS"----Each device
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Read address	"( )( ).TS0" ( )( ). represents the local station number (01 to 64) and omitted for the master station.
	(3)	Domain size	"256" Fixed (word units)
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Download Segment service.

POINT

The Download Segment service response is as follows:
Load data ------- No data is set. (No data)
More Follows -- False
Sections 8.1.1 to 8.1.3 give Download details.

3) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

(2) Sub-timer set value upload

Using the sub-timer set value domain already defined or defined above, Initiate Upload Sequence, Upload Segment, and Terminate Upload Sequence are executed.

POINTS

(1) Capacity of the sub-timer set value is 256 words (512 bytes). Read all data.
Sections 8.1.4 to 8.1.6 give Upload details.

(2) Set values of 256 words (T0 to T255) can be read. Upload the data in the device memory (AnACPU extensions T256 to T2047) for the devices (D, W, R) assigned for the parameters to be stored.

8.2.7 Reading the sub-counter set value

This section explains how to read the sub-counter set value.
When the sub-sequence program is not used, this procedure can be skipped.

(1) Definition of sub-counter set value domain

Before executing uploading, the domain must be defined.
When the sub-counter set value domain has already been defined, it is unnecessary to define.
When a sub-counter set value domain does not exist or definition is executed for a local station, the definition must be executed in accordance with the following procedure:

1) Transmit the Initiate Download Sequence.

Domain Name	(Example) "D_CS0dev[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"DEVMEMS"----Each device
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Read address	"( )( ).CS0" ( )( ). represents the local station number (01 to 64) and omitted for the master station.
	(3)	Domain size	"256" Fixed (word units)
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Download Segment service.

POINT

The Download Segment service response is as follows:
Load data ------ No data is set. (No data)
More Follows -- False
Sections 8.1.1 to 8.1.3 give Download details.

3) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

(2) Sub-counter set value upload

Using the sub-counter set value domain already defined, the Initiate Upload Sequence, Upload Segment, and Terminate Upload Sequence are executed.

POINTS

(1) The sub-counter set value capacity is 256 words (512 bytes). Read all data.
Sections 8.1.4 to 8.1.6 give Upload details.

(2) Set data of up to 256 words (C0 to C255) can be read. Upload the data in the device memory (AnACPU extensions C256 to C1023) to the devices (D, W, R) assigned for the parameters to be stored.

8.2.8 Reading the main microcomputer program

This section explains how to read the main microcomputer program.
If the main microcomputer program is not used, this procedure can be skipped.

(1) Definition of main microcomputer program domain

Before executing uploading, the domain must be defined.
If the main microcomputer program domain has already been defined, it is unnecessary to define.
When a main microcomputer program domain does not exist or definition is executed for a local station, the definition must be executed in accordance with the following procedure:

1) Transmit the Initiate Download Sequence .

Domain Name	(Example) "D_mainM[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"MAINMIC"---Main microcomputer program
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Read address	"0" Fixed
	(3)	Domain size	"0" (byte) Fixed
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

POINT

The Download Segment service cannot be executed.
Sections 8.1.1 to 8.1.3 give Download details.

(2) Main microcomputer program upload

Using the main microcomputer program domain already defined, the Initiate Upload Sequence, Upload Segment, and Terminate Upload Sequence are executed.

POINT

The main microcomputer program capacity is specified by the parameter capacity setting. Read all data.
Sections 8.1.4 to 8.1.6 give Upload details.

8.2.9 Reading the sub-microcomputer program

This section explains how to read the sub-microcomputer program.
When the sub-microcomputer program is not used, this procedure can be skipped.

(1) Definition of sub-microcomputer program domain

Before executing uploading, the domain must be defined.
When the sub-microcomputer program domain has already been defined, it is unnecessary to define.
When a sub-microcomputer program domain does not exist or definition is executed for a local station, the definition must be executed in accordance with the following procedure:

1) Transmit the Initiate Download Sequence.

Domain Name	(Example) "D_subM[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"SUBMIC"----Sub-microcomputer program
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Read address	"0" Fixed
	(3)	Domain size	"0" (byte) Fixed
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

POINT

The Download Segment service cannot be executed.
Sections 8.1.1 to 8.1.3 give Download details.

(2) Sub-microcomputer program upload

Using the sub-microcomputer program domain already defined, the Initiate Upload Sequence, Upload Segment, and Terminate Upload Sequence are executed.

POINT

The sub-microcomputer program capacity is specified by the parameter capacity setting.Read all data.
Sections 8.1.4 to 8.1.6 give Upload details.

8.2.10 Reading comment data

This section explains how to read comment data.
When comment data is not used, this procedure can be skipped.

(1) Definition of comment data domain

Before executing uploading, the domain must be defined.
When the comment data domain has already been defined, it is unnecessary to define.
When a comment data domain does not exist or definition is executed for a local station, the definition must be executed in accordance with the following procedure:

1) Transmit the Initiate Download Sequence.

Domain Name	(Example) "D_comm[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"KANACOM"----Comment data
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Read address	"0" Fixed
	(3)	Domain size	"0" (byte) Fixed
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

POINT

The Download Segment service cannot be executed.
Sections 8.1.1 to 8.1.3 give Download details.

(2) Comment data upload

Using the comment data domain already defined, the Initiate Upload Sequence, Upload Segment, and Terminate Upload Sequence are executed.

POINT

The comment data capacity is specified by the parameter capacity setting. Read all data.
Sections 8.1.4 to 8.1.6 give Upload details.

8.2.11 Reading extension comment data

This section explains how to read extension comment data .
When extension comment data is not used, this procedure can be skipped.

(1) Definition of extension comment data domain

Before executing uploading, the domain must be defined.
When extension comment data domain has already been defined, it is unnecessary to define.
When an extension comment data domain does not exist or definition is executed for a local station, the definition must be executed in accordance with the following procedure:

1) Transmit the Initiate Download Sequence.

Domain Name	(Example) "D_extcom[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"EXTCOM"---Extension Comment data
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Read address	"0" Fixed
	(3)	Domain size	"0" (byte) Fixed
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

POINT

The Download Segment service cannot be executed.
Sections 8.1.1 to 8.1.3 give Download details.

(2) Extension comment data upload

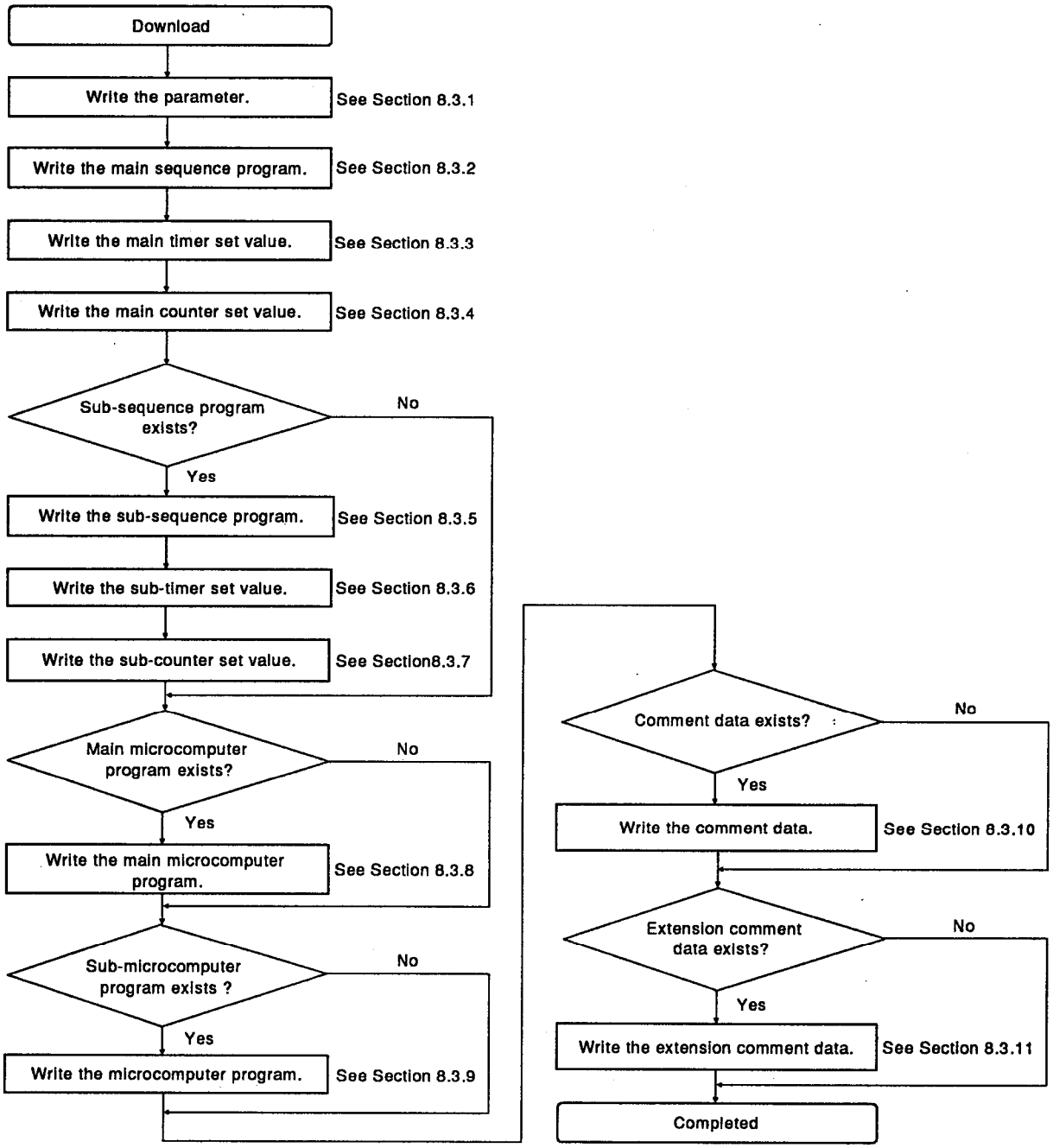
Using the extension comment data domain already defined, the Initiate Upload Sequence, Upload Segment, and Terminate Upload Sequence are executed.

POINT

The extension comment data capacity is specified by the parameter capacity setting. Read all data.
Sections 8.1.4 to 8.1.6 give Upload details.

8.3 Downloading

This section explains downloading. The downloading procedure (simplified) is shown in the following flowchart.



POINT

When downloading is executed, all data uploaded will be written as described in Section 8.2 Upload.
(If all data is not written, the system may malfunction.)

8.3.1 Writing the parameter

This section explains how to write the parameters.

(1) Deleting the existing parameter domain

When the parameter domain has already been defined, delete it by using the Delete Domain service. (See Section 8.5 Deleting the Domain.)
It is unnecessary to delete the predefined parameter "D_param[ ][ ]".

(2) Downloading the parameter

1) Transmit the Initiate Download Sequence.

Domain Name	(Example) "D_param[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"PARAM"----Parameter
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Write address	"0" Fixed
	(3)	Domain size	"3072" (byte) Fixed
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Download Segment service.

POINT

Response of Download Segment service
Load Data -- Parameter data is transmitted in units of 512 bytes.
More Follows -- "True" when data to be downloaded remains
"False" for the last data
Sections 8.1.1 to 8.1.3 give Upload details.
The parameter data to be written shall be 3 Kbytes (fixed).

3) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

8.3.2 Writing the main sequence program

This section explains how to write the main sequence program.

(1) Deleting the existing main sequence program domain

If the main sequence program domain has already been defined, delete it by using the Delete Domain service (See Section 8.5 Deleting the Domain).
It is unnecessary to delete the predefined parameter "D_main[ ][ ]".

(2) Downloading the main sequence program

1) Transmit the Initiate Download Sequence.

Domain Name	(Example) "D_mainP[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"MAINSEQ"--Main sequence program
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Write address	"0" Fixed
	(3)	Domain size	"Main sequence program size" (step)
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Download Segment service.

POINT

Response of the Download Segment service
Load Data -- Main sequence program is transmitted in units of 512 bytes.
More Follows -- "True" when data to be downloaded remains
"False" for the last data
Sections 8.1.1 to 8.1.3 give Download details.
Write all data in the capacity of main sequence program of the size set by the parameter (1 step = 2 byte).

3) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

8.3.3 Writing the main timer set value

This section explains how to write the main timer set value.

(1) Deleting the existing main timer set value domain

If the main timer set value domain has already been defined, delete it by using the Delete Domain service. (See Section 8.5 Deleting the Domain).

(2) Downloading the main timer set value

1) Transmit the Initiate Download Sequence.

Domain Name	(Example) "D_TM0dev[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"DEVMEMS"----Each device
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Write address	"( )( ).TM0" ( )( ). represents the local station number (01 to 64) and omitted for the master station.
	(3)	Domain size	"256" Fixed (word units)
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Download Segment service.

POINTS

(1) Response of the Download Segment service.
Load Data--Main timer set value is transmitted in units of 512 bytes.
More Follows--"True" when data to be downloaded remains
"False" for the last data
Sections 8.1.1 to 8.1.3 for the details of Download.

(2) Set data of up to 256 bytes (T0 to T255) can be read. Download the data in the device memory (AnACPU extensions T256 to T2047) to the devices (D, W, R) assigned for the parameters to be stored.

3) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

8.3.4 Writing the main counter set value

This section explains how to write the main counter set value.

(1) Deleting the existing main counter set value domain

If the main counter set value domain has already been defined, delete it by using the Delete Domain service. (See Section 8.5 Deleting the Domain).

(2) Downloading the main counter set value

1) Transmit the Initiate Download Sequence.

Domain Name	(Example) "D_CM0dev[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"DEVMEMS"----Each device
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Write address	"( )( ).CM0" ( )( ). represents the local station number (01 to 64) and omitted for the master station.
	(3)	Domain size	"256" Fixed (word units)
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Download Segment service.

POINTS

(1) Response of the Download Segment service
Load Data -- Main timer set value is transmitted in units of 512 bytes.
More Follows--"True" when data to be downloaded remains
"False" for the last data
Sections 8.1.1 to 8.1.3 give Download details.

(2) Set data of up to 256 bytes (C0 to C255) can be read. Download the data in the device memory (AnACPU extension C256 to C1023) to the devices (D, W, R) assigned for the parameters to be stored.

3) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

8.3.5 Writing the sub-sequence program

This section explains how to write the sub-sequence program .
When the sub-sequence program is not used, this procedure can be skipped.

(1) Deleting the existing sub-sequence program domain

When the sub-sequence program domain has already been defined, delete it by using the Delete Domain service (See Section 8.5 Deleting the Domain).

(2) Downloading the sub-sequence program

1) Transmit Initiate Download Sequence using the following setting:

Domain Name	(Example) "D_subP[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"SUBSEQ"---Sub-sequence program
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Write address	"0" Fixed
	(3)	Domain size	"Sub-sequence program size" (step)
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits Download Segment service.

POINT

Response of Download Segment service
Load Data -- Sub-sequence program is transmitted in units of 512 bytes.
More Follows -- "True" when data to be downloaded remains
"False" for the last data
Sections 8.1.1 to 8.1.3 give Download details.
Write all data in the capacity of sub sequence program of the size set by the parameter (1 step = 2 byte).

3) The AJ71M56EF[ ] transmits "Terminate Download Sequence" service.

8.3.6 Writing the sub-timer set value

This section explains how to write the sub-timer set value .
When the sub-sequence program is not used, this procedure can be skipped.

(1) Deleting the existing sub-timer set value domain

When the sub-timer set value domain has already been defined, delete it by using the Delete Domain service (See Section 8.5 Deleting the Domain).

(2) Downloading the sub-timer set value

1) Transmit the Initiate Download Sequence.

Domain Name	(Example) "D_TS0dev[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"DEVMEMS"----Each device
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Write address	"( )( ).TS0" ( )( ). represents the local station number (01 to 64) and omitted for the master station.
	(3)	Domain size	"256" Fixed (word units)
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Download Segment service.

POINTS

(1) Response of the Download Segment service
Load Data -- Sub-timer set value is transmitted in units of 512 bytes.
More Follows -- "True" when data to be downloaded remains
"False" for the last data
Sections 8.1.1 to 8.1.3 give Download details.

(2) Set data up to 256 bytes (T0 to T255) can be read. Download the data in the device memory (AnACPU extensions T256 to T2047) to the devices (D, W, R) assigned for the parameters to be stored.

3) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

8.3.7 Writing the sub-counter set value

This section explains how to write the sub-counter set value.
When the sub-sequence program is not used, this procedure can be skipped.

(1) Deleting the existing sub-counter set value domain

When the sub-counter set value domain has already been defined, delete it by using the Delete Domain service (See Section 8.5 Deleting the Domain).

(2) Downloading the sub-counter set value

1) Transmit the Initiate Download Sequence.

Domain Name	(Example) "D_CS0dev[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"DEVMEMS"----Each device
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Write address	"( )( ).CS0" ( )( ). represents the local station number (01 to 64) and omitted for the master station.
	(3)	Domain size	"256" Fixed (word units)
	(4)	Comment	16-byte character strings (optional)
Shareble	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Download Segment service.

POINTS

(1) Response of the Download Segment service
Load Data -- Sub-timer set value is transmitted in units of 512 bytes.
More Follows -- "True" when data to be downloaded remains
"False" for the last data
Sections 8.1.1 to 8.1.3 give Download details.

(2) Set data of up to 256 bytes (C0 to C255) can be read. Download the data in the device memory (AnACPU extensions C256 to C2047) to the devices (D, W, R) assigned for the parameters to be stored.

3) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

8.3.8 Writing the main microcomputer program

This section explains how to write the main microcomputer program.
If the main microcomputer program is not used, this procedure can be skipped.

(1) Deleting the main microcomputer domain

When the main microcomputer domain has already been defined, delete it by using the Delete Domain service (See Section 8.5 Deleting the Domain).

(2) Downloading the main microcomputer program

1) Transmit the Initiate Download Sequence.

Domain Name	(Example) "D_mainM[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"MAINMIC"---Main microcomputer program
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Write address	"0" Fixed
	(3)	Domain size	"Main microcomputer program size" (byte)
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Download Segment service.

POINT

Response of the Download Segment service
Load Data -- Main microcomputer program is transmitted in units of 512 bytes.
More Follows -- "True" when data to be downloaded remains
"False" for the last data
Sections 8.1.1 to 8.1.3 give Download details.
Write all data in the capacity of main microcomputer program of the size set by the parameter (byte).

3) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

8.3.9 Write the sub-microcomputer program

This section explains how to write the sub-microcomputer program.
When the sub-microcomputer program is not used, this procedure can be skipped.

(1) Deleting the existing sub-microcomputer program domain

When the sub-microcomputer program domain has already been defined, delete it by using the Delete Domain service (See Section 8.5 Deleting the Domain).

(2) Downloading the sub-microcomputer program

1) Transmit the Initiate Download Sequence.

Domain Name	(Example) "D_subM[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"SUBMIC"---Sub-microcomputer program
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Write address	"0" Fixed
	(3)	Domain size	"Sub-microcomputer program size" (byte)
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Download Segment service.

POINT

Response of the Download Segment service
Load Data -- Sub-microcomputer program is transmitted in units of 512 bytes.
More Follows -- "True" when data to be downloaded remains
"False" for the last data
Sections 8.1.1 to 8.1.3 give Download details.
Write all data in the capacity of sub-microcomputer program of the size set by the parameter (byte).

3) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

8.3.10 Writing comment data

This section explains how to write the comment data.
When comment data is not used, this procedure can be skipped.

(1) Deleting the existing comment data domain

When the comment data domain has already been defined, delete it by using the Delete Domain service (See Section 8.5 Deleting the Domain).

(2) Downloading the comment data

1) Transmit the Initiate Download Sequence.

Domain Name	(Example) "D_comm[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"KANACOM"---Comment data
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Write address	"0" Fixed
	(3)	Domain size	"Comment data size" (byte)
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Download Segment service.

POINT

Response of the Download Segment service
Load Data -- Comment data is transmitted in units of 512 bytes.
More Follows -- "True" when data to be downloaded remains
"False" for the last data
Sections 8.1.1 to 8.1.3 give Download details.
Write all data in the capacity of comment data of the size set by the parameter (byte).

3) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

8.3.11 Writing extension comment data

This section explains how to write extension comment data.
When extension comment data is not used, this procedure can be skipped.

(1) Deleting the existing extension comment data domain

When the extension comment data domain has already been defined, delete it by using the Delete Domain service (See Section 8.5 Deleting the Domain).

(2) Downloading the extension comment data

1) Transmit the Initiate Download Sequence

Domain Name	(Example) "D_extcom[ ][ ]" [ ][ ] represents the local station number (01 to 64) of MELSEC-NET. Omitted if it is a master station.		
List of Capabilities	**Element Nos.**	**Element Names**	**Set Values**
	(0)	Domain types	"EXTCOM"---Comment data
	(1)	Station Nos.	"FF"----------Master station (self) (PC CPU connected to the client) "01" to "64"--Local station number
	(2)	Write address	"0" Fixed
	(3)	Domain size	"Comment data size" (byte)
	(4)	Comment	16-byte character strings (optional)
Sharable	False (Cannot share)		

2) The AJ71M56EF[ ] transmits the Download Segment service.

POINT

Response of the Download Segment service
Load Data -- Extension comment data is transmitted in units of 512 bytes.
More Follows -- "True" when data to be downloaded remains
"False" for the last data
Sections 8.1.1 to 8.1.3 give Download details.
Write all data in the capacity of extension comment data of the size set by the parameter (byte).

3) The AJ71M56EF[ ] transmits the Terminate Download Sequence service.

8.4 Confirmation of the Domain Attribute Get Domain Attribute

The Get Domain Attribute service is used to identify the contents of a domain which has already been defined.

[Parameter required by the client]

- Domain Name

The Domain Management Parameter Table lists the names of AJ71M56EF[ ] domains.

The following predefined domain names can be used:

Domain Names	Domain Types	Domains
D_main[ ][ ]	MAINSEQ	Main sequence program
D_param[ ][ ]	PARAM	Parameter

[Response from the server (AJ71M56EF[ ])]

- List of Capabilities

Five elements of information peculiar to the AJ71M56EF[ ] are set. Each element is 16 bytes (Octet-String) max.

Element Nos.	Element Names	Setting Values	
(0)	Domain types	"MAINSEQ"---Main sequence program "SUBSEQ"---- Sub-sequence program "MAINMIC"----Main microcomputer program "SUBMIC"-----Sub-microcomputer program "KANACOM"--Comment data "PARAM"------Parameter "DEVMEMS"--Each device "DEVMEMR"--Extension file register "EXTCOM"----Extension comment	
(1)	Station Nos.	"FF"----------Master station (PC CPU connected to the client) "01" to "64"---Local station number	
(2)	Read addresses	MAINSEQ SUBSEQ MAINMIC SUBMIC KANACOM PARAM EXTCOM	"0" Fixed
		DEVMEMS DEVMEMR	See Appendix 1, DEVICE/SYMBOL ASSIGNMENT TABLES.
(3)	Domain sizes	MAINSEQ SUBSEQ	The number of steps is set with character strings (integer). (Capacity set value)
		MAINMIC SUBMIC KANACOM PARAM EXTCOM	The number of bytes is set with character strings (integer). (Capacity set value)
		DEVMEMS DEVMEMR	The number of modules is set with character strings (integer).
(4)	Comment	16-byte character string data can be set as required.	

- State

The domain states are shown as follows:

Values	State Names	Contents
1	LOADING	State during downloading
2	READY	State when downloading has been successfully completed
3	IN-USE	State where the program invocation is assigned With the AJ71M56EF[ ], only applicable to the domain of the main sequence program.
4	COMPLETE	State when the last downloaded data has been received but Terminate Download Sequence has not yet been transmitted.
5	INCOMPLETE	Intermediate state where the Download Sequence ends before downloading has been completed (error).

- MMS Deletable

Shows whether or not the domain is deletable.

MMS Deletable Values	Contents
False = 0	Not deletable
True = not 0	Deletable

POINT

The device memory variable is False (not deletable).

- Sharable

Shows whether or not program invocation can be assigned to this domain.

Sharable Values	Contents
False = 0	Cannot be assigned
True = not 0	Can be assigned

POINT

For the AJ71M56EF[ ], "False" is always set.

- List of Program Invocations

  Shows the names of program invocations defined in this domain.
  With the AJ71M56EF[ ], one program invocation can be assigned to each domain.

- Upload in Progress

  Shows the number of upload sequences which are being executed for the specified domain using integer values.
  If this value is zero (0), no upload is being executed for this domain.

8.5 Deleting the Domain Delete Domain

To delete a domain which has already been defined, the Delete Domain service is transmitted from the client side.

POINT

Make sure that the specified domain exists. The MMS Deletable is "True" (with the AJ71M56EF[ ], True), and the State is READY. These conditions must be satisfied to delete a domain.
A domain in READY state requires that no program invocation is defined for the domain. Therefore, any domain for which program invocation is defined cannot be deleted before the definition is deleted.
(For deletion of program invocation, see the Delete Program Invocation service.)

[Parameter required by the client]

- Domain Name

  Sets the name of the domain to be deleted.
  The Domain Management Parameter Table gives the names of domains that can be used with the AJ71M56EF[ ].
  The following predefined domain names can also be deleted:

Domain Names	Domain Types	Domains
D_main[ ][ ]	MAINSEQ	Main sequence program
D_param[ ][ ]	PARAM	Parameter

[Response from the server (AJ71M56EF[ ])]

- None

9. REMOTE RUN/STOP OF THE PC CPU

To control RUN/STOP/PAUSE of the PC CPU the client transmits Create Program Invocation, Start, Reset, Stop, Resume, or the Delete Program Invocation service.

To execute Start, Reset, Stop or Resume services, program invocation must be defined.

Program invocation is defined by using the Create Program Invocation service.

Definition of program invocation (Create Program Invocation) with the AJ71M56EF[ ] is executed only for the main sequence program domain.
To execute definition of program invocation, the domain must be already defined.

The local station connected to the MELSEC-NET can be also controlled.

9.1 Defining the Program Invocation [Create Program Invocation]

With the AJ71M56EF[ ], program invocation is defined for the main sequence program domain.

Program invocation can be assigned only for the main sequence program domain.

Only one program invocation can be defined including predefined program invocation as shown below. The predefined one must be deleted, before another program invocation is defined.

Section 8.2.2 explains how to create the main sequence program domain.

[Parameters required by the client]

- Program Invocation Name

  The program invocation name is set using 32 characters max.

Example

Program invocation name: "P_mainPXX"
XX represents the local station number (01 to 64). For the master station (PC CPU of the module connected to the AJ71M56EF[ ]), it is omitted.

- List of Domain Names

  Name of the main sequence program is set.
  Multiple domain names can be set. However, With the AJ71M56EF[ ], one main sequence program domain is set.

Example

Domain name: "D_mainXX"
XX represents the local station number (01 to 64). For the master station (PC CPU of the module in which the AJ71M56EF[ ] is installed), it is omitted.

POINT

The following domain name is assigned to the main sequence program as the "predefine" just after the power is turned ON (including reset of the AJ71M56EF[ ]). "D_main00"

The following Program Invocation (execution program) is assigned as the "predefine" using the predefined domain. "P_main00"

- Monitor

  Not used with the AJ71M56EF[ ].

[Response from the server (AJ71M56EF[ ])]

- None

9.2 Stopping the PC CPU Reset

The PC CPU is reset (remote STOP) on the client side.

When the station is the master (PC CPU of the unit in which the AJ71M56EF[ ] is installed), it operates only when the VMD Physical Status name in APPENDIX 2 VMD PHYSICAL STATUS CRITERIA TABLES is Operational (0) or Partially-Operational (1) (Can be checked by using the Status service).

When the above is checked in the local station of MELSEC-NET, check by reading M9008 and D9015 with variable access Read service.

Service	States of Program Invocation			State after Invocation
	IDLE	RUNNING	STOPPED	
Reset	X	X	O	IDLE

O---Can be reset
X---Cannot be reset

[Parameter required by the client]

- Proguram Invocation Name

  The name of the program invocation defined in the Create Program Invocation.

Example

Program invocation name: "P_mainPXX"
XX represents the local station number (01 to 64). For the master station (PC CPU of the module connected to the AJ71M56EF[ ]), it is omitted.

[Response from the server (AJ71M56EF[ ])]

- None

9.3 Starting the PC CPU Start

The PC CPU is started (remote RUN) on the client side.

When the station is the master (PC CPU of the unit in which the AJ71M56EF[ ] is installed), it operates only when the VMD Physical Status name in APPENDIX 2 VMD PHYSICAL STATUS CRITERIA TABLES is Operational (0) or Partially-Operational (1) (Can be checked by using the Status service).

When the above is checked in the local station of MELSEC-NET, check by reading M9008 and D9015 using the variable access Read service.

This operation is available only for the Reset status.

Service	States of Program Invocation			State after Invocation
	IDLE	RUNNING	STOPPED	
Start	X	X	O	IDLE

O---Can be started
X---Cannot be started

[Parameter required by the client]

- Program Invocation Name

  The name of the program invocation defined in the Create Program Invocation.

Example

Program invocation name: "P_mainPXX"
XX represents the local station number (01 to 64). For the master station (PC CPU of the module connected to the AJ71M56EF[ ]), it is omitted.

[Response from the server (AJ71M56EF[ ])]

- None

9.4 Stopping the PC CPU [Stop]

The PC CPU is stopped (remote PAUSE) on the client side.

When the station is the master (PC CPU of the unit in which the AJ71M56EF[ ] is installed), it operates only when the VMD Physical Status name in APPENDIX 2 VMD PHYSICAL STATUS CRITERIA TABLES is Operational (0) or Partially-Operational (1) (Can be checked by using the Status service).

When the above is checked in the local station of MELSEC-NET, check by reading M9008 and D9015 using the variable access Read service.

Service	States of Program Invocation			State after Invocation
	IDLE	RUNNING	STOPPED	
Stop	X	O	X	STOPPED

O---Can be stopped
X---Cannot be stopped

[Parameter required by the client]

- Program Invocation Name

  The name of the program invocation defined in the Create Program Invocation.

Example

Program invocation name: "P_mainPXX"
XX represents the local station number (01 to 64). For the master station (PC CPU of the module connected to the AJ71M56EF[ ]), it is omitted.

[Response from the server (AJ71M56EF[ ])]

- None

9.5 Resuming the PC CPU Resume

The PC CPU is resumed on the client side.

When the station is the master (PC CPU of the unit in which the AJ71M56EF[ ] is installed), it operates only when the VMD Physical Status name in APPENDIX 2 VMD PHYSICAL STATUS CRITERIA TABLES is Operational (0) or Partially-Operational (1) (Can be checked by using the Status service).

When the above is checked in the local station of MELSEC-NET, check by reading M9008 and D9015 using the variable access Read service.

This operation is available only for Stop status.

Service	States of Program Invocation			State after Invocation
	IDLE	RUNNING	STOPPED	
Resum	X	X	O	RUNNING

O---Can be resumed
X---Cannot be resumed

[Parameter required by the client]

- Program Invocation Name

  The name of the program invocation defined in the Create Program Invocation.

Example

Program invocation name: "P_mainPXX"
XX represents the local station number (01 to 64). For the master station (PC CPU of the module connected to the AJ71M56EF[ ]), it is omitted.

[Response from the server (AJ71M56EF[ ])]

- None

9.6 Confirming the Program Invocation Attribute

The Get Program Invocation Attribute service is transmitted to identify the contents of an already defined program invocation.

[Parameter required by the client]

- Program Invocation Name

  Set the program invocation whose attribute will be checked.

Example

Program invocation name: "P_mainPXX"
XX represents the local station number (01 to 64). For the master station (PC CPU of the module connected to the AJ71M56EF[ ]), it is omitted.

[Response from the server AJ71M56EF[ ]]

- State

  The Program invocation states are represented as follows:

Names	States
IDLE	State where operation is ready
RUNNING	State where program is running
STOPPED	State where operation is stopped
UNRUNNABLE	State during unrunnable processing
STARTING	State during operation start processing
STOPPING	State during operation stop processing
RESUMING	State during operation resume processing
RESETTING	State during operation reset processing

POINT

With the AJ71M56EF[ ], only the IDLE, RUNNING, and STOPPED states can be displayed.

- List of Domain References

  Shows the domain names for which this program invocation is defined. AJ71M56EF[ ] is the name of the main sequence program domain.

- MMS Seletable

  Shows whether or not this program invocation is deletable.

MMS Deletable Values	Contents
False = 0	Not deletable
True = not 0 (other than 0)	Deletable

- Reusable

  Shows whether or not the state of this program invocation becomes IDLE or UNRUNNABLE when the program invocation is defined.
  With the AJ71M56EF[ ], it is always True.

Reusable Values	Contents
False = 0	UNRUNNABLE
True = not 0 (other than 0)	IDLE

- Monitor

  Infomation on event monitoring is shown with True (not 0) or False (0).
  Not used With the AJ71M56EF[ ].

- Execution Argument

  Character strings show the parameter of starting the program.
  Not used With the AJ71M56EF[ ].

- Additional Detail

  This item is used in Companion Standard.
  Not used With the AJ71M56EF[ ].

9.7 Deleting the program invocation Delete Program Invocation

The Delete Program Invocation service is transmitted to delete an already defined program invocation.

POINT

Check that the specified program invocation exists. MMS Deletable is True" (With the AJ71M56EF[ ], True), and the State is IDLE or STOPPED. All the conditions must be satisfied to delete the program invocation.

[Parameter required by the client]

- Program Invocation Name

  Set the program invocation which will be deleted.

Example

Program invocation name: "P_mainPXX"
XX represents the local station number (01 to 64). For the master station (PC CPU of the module connected to the AJ71M56EF[ ]), it is omitted.

[Response from the server (AJ71M56EF[ ])]

- None

9.8 Program Invocation State Transition Table of an AJ71M56EF[ ]

O: cnf(+) X: cnf(-)

Service	States of Program Invocation	D9015					
		RUN (RUNNING)		STOP (IDLE or NON-EXISTENT)		PAUSE (STOPPED)	
Create PI	NON-EXISTENT	O	RUN RUNNING	O	STOP IDLE	O	PAUSE STOPPED
	IDLE	X	RUN IDLE	X	STOP IDLE	X	PAUSE IDLE
	RUNNING	X	RUN RUNNING	X	STOP RUNNING	X	PAUSE RUNNING
	STOPPED	X	RUN STOPPED	X	STOP STOPPED	X	PAUSE STOPPED
Start	NON-EXISTENT	X	RUN NON-EXIST	X	STOP NON-EXIST	X	PAUSE NON-EXIST
	IDLE	X	RUN RUNNING	O	RUN RUNNING	X	PAUSE STOPPED
	RUNNING	X	RUN RUNNING	O	RUN RUNNING	X	PAUSE STOPPED
	STOPPED	X	RUN RUNNING	O	RUN RUNNING	X	PAUSE STOPPED
Stop	NON-EXISTENT	X	RUN NON-EXIST	X	STOP NON-EXIST	X	PAUSE NON-EXIST
	IDLE	O	PAUSE STOPPED	X	STOP IDLE	X	PAUSE STOPPED
	RUNNING	O	PAUSE STOPPED	X	STOP IDLE	X	PAUSE STOPPED
	STOPPED	O	PAUSE STOPPED	X	STOP IDLE	X	PAUSE STOPPED
Reset	NON-EXISTENT	X	RUN NON-EXIST	X	STOP NON-EXIST	X	PAUSE NON-EXIST
	IDLE	X	RUN RUNNING	X	STOP IDLE	O	STOP IDLE
	RUNNING	X	RUN RUNNING	X	STOP IDLE	O	STOP IDLE
	STOPPED	X	RUN RUNNING	X	STOP IDLE	O	STOP IDLE

O: cnf(+) X: cnf(-)

Service	States of Program Invocation	D9015					
		RUN (RUNNING)		STOP (IDLE or NON-EXISTENT)		PAUSE (STOPPED)	
Resume	NON-EXISTENT	X	RUN NON-EXIST	X	STOP NON-EXIST	X	PAUSE NON-EXIST
	IDLE	X	RUN RUNNING	X	STOP IDLE	O	RUN RUNNING
	RUNNING	X	RUN RUNNING	X	STOP IDLE	O	RUN RUNNING
	STOPPED	X	RUN RUNNING	X	STOP IDLE	O	RUN RUNNING
Delete PI	NON-EXISTENT	X	RUN NON-EXIST	X	STOP NON-EXIST	X	PAUSE NON-EXIST
	IDLE	X	RUN RUNNING	O	STOP NON-EXIST	O	PAUSE NON-EXIST
	RUNNING	X	RUN RUNNING	O	STOP NON-EXIST	O	PAUSE NON-EXIST
	STOPPED	X	RUN RUNNING	O	STOP NON-EXIST	O	PAUSE NON-EXIST

10. READING THE DEVICE MEMORY Read

The Read service is transmitted on the client side to read the device memory for the PC CPU.

After receiving the service, AJ71M56EF[ ] transmits the data in the specified device memory.

AJ71M56EF[ ] can read 16 devices (variables) in maximum for one service.

For the device memory to be read, formats, etc., see APPENDIX 1 DEVICE/SYMBOL ASSIGNMENT TABLE.

[Parameter required by the client]

- Specification with Result

  Specifies whether or not the response from AJ71M56EF[ ] contains the information on variable access specification.

Specification with Result Values	Contents
False = 0	Not contained
True = not 0 (other than 0)	Contained

- Variable Access Specification

  AJ71M56EF[ ] has the following specifications:
  AJ71M56EF[ ] can respond even if max. 16 items of Variable Access Specification are contained in one service.

  - MMS Variable Access Model

    The Variables of the AJ71M56EF[ ] are Unnamed Variable Object and Named Variable.

  - Variable Access Specification

    Device reading with the AJ71M56EF[ ] is executed with Object Name, Address, or Variable Description.
    For the Address, Symbolic Address is specified.

Variable Access Specification	Setting Items
list of variable	Variable Specification

- Variable Specification

For the parameter set in Variable Specification, Name, Address, or Variable Description is selected as follows:

Variable Specification	Setting Items
name	Object Name
address	Address
variable Description	Address --- type Specification

[In the case of Name]

- Name

Parameter set for Name is as follows:

Name	Setting Item
vmd_specific	Identifier

- Identifier

The Identifier is set using character strings. With the AJ71M56EF[ ], registered variable name of the Named Variable is set.
Registration of variable name is executed using the SW0GP-M56PC software package.

[In the case of Address]

- Address

  Parameter set for Address is as follows:

Address	Setting Item
symbolic Address	Visible String

- Visible String

  For Visible String, the variable is set using character strings. With the AJ71M56EF[ ], the device name is set.
  For details, see the Symbolic Address Format of APPENDIX 1 DEVICE/SYMBOL ASSIGNMENT TABLE.

POINT

The Variable class of each device is as follows:
Word device -- Integer (16 bits)
Bit device --Boolean

[In the case of Variable Description]

In addition to the information of [In the case of address], class information is also set.

Device Types	Variable Classes	Variable Size Settings
Words	Integer	16 bits integer including the symbol Set 16 for the bit length.
	octet-String	Byte string (Max 1024 octet) Set the optional byte length.
Bit	Boolean	Logic value 0 (False), not 0 (True) Not set.
	bit-String	Bit string (Max 8192 bit) Set the optional bit length.

[Response from the server (AJ71M56EF[ ])]

- Variable Access Specification

  When Specification with Result of the service request from the client is True, the information on Variable Access Specification is transmitted.
  The configuration of data is the same as that described in [Parameter required by the client].

- List of Access Results

  Result information which is read is set.
  It is set in the order of setting in Variable Access Specification.

Items	Contents
Success	The information on whether or not it is successful is set. True (not 0)-----Successful False (0)---------Not successful
Data	Variable class and real data on device

When bit-string is selected, data is arranged as follows:

When accessed from M100 with 16 bit-strings

	MSB							LSB
0	M100	M101	M102	M103	M104	M105	M106	M107
1	M108	M109	M110	M111	M112	M113	M114	M115

When accessed from M100 with 14 bit-strings

	MSB							LSB
0	M100	M101	M102	M103	M104	M105	M106	M107
1	M108	M109	M110	M111	M112	M113	X	X

POINT

X shows the indefinite value (Not defined to 0 or 1).

11 WRITE DEVICE MEMORY Write

To write data to the device memory of the PC CPU, the Write service is transmitted on the client side.

After receiving the service, AJ71M56EF[ ] writes the data to the specified device memory.

The AJ71M56EF[ ] can write 16 devices (variables) max. for one service.

For the device memory to be written, formats, etc., see APPENDIX 1 DEVICE/SYMBOL ASSIGNMENT TABLE.

[Parameters required by the client]

- Variable Access Specification

  See Section 10.READ THE DEVICE MEMORY.

- List of Data

  Sets variable class and real data.
  Sets variable class and real data in the order of setting in Variable Access Specification.
  For variable classes of each device, see APPENDIX 1 DEVICE/SYMBOL ASSIGNMENT TABLE.
  When bit-string is selected, the data is arranged as follows:

When accessed from M100 with 16 bit-strings

	MSB							LSB
0	M100	M101	M102	M103	M104	M105	M106	M107
1	M108	M109	M110	M111	M112	M113	M114	M115

When accessed from M100 with 14 bit-strings

	MSB							LSB
0	M100	M101	M102	M103	M104	M105	M106	M107
1	M108	M109	M110	M111	M112	M113	X	X

POINT

X is ignored (Both 0 and 1 are OK).

[Response from the server (AJ71M56EF[ ])]

- List of Write Result

The information whether or not it is successful is set.

Item	Contents
Success	True (not 0)-----Successful False (0)---------Not successful

12. GETTING THE VARIABLE ACCESS ATTRIBUTES Get Variable Access Attributes

To get the attributes of variable (device memory) defined by using the AJ71M56EF[ ], the Get Variable Access Attributes service is transmitted on the client side.

[Parameters required by the client]

- Kind of Variable

  With the AJ71M56EF[ ], the Symbolic Address is specified.

Kind of Variable	Setting Items
name	Object Name
address	Address

- Name

  The parameter set for Name is as follows:

Name	Setting Item
vmd_specific	Identifier

- Identifier

  The Identifier is set using character strings. With the AJ71M56EF[ ], the registered variable name of Named Variable is set.
  Registration of variable name is executed using the SW0GP-M56PC software package.

- Address

  The parameter set for Address is as follows:

Address	Setting Item
symbolic Address	Visible String

- Visible String

  For Visible String, the variable is set using character strings. With the AJ71M56EF[ ], the device name is set.
  For details, see the Symbolic Address Format of APPENDIX 1 DEVICE/SYMBOL ASSIGNMENT TABLE.

[Response from the server (AJ71M56EF[ ])]

- MMS Deletable

  Shows whether or not the variable object is deletable.

MMS Deletable	Contents
False = 0	Not deletable
True = not 0 (other than 0)	Deletable

POINT

The device memory variable is always False (not deletable).

- Address

  Not used with the AJ71M56EF[ ].

- Type Specification

  Variable information of the service request from the client is transmitted.

POINT

The Variable class of each device is as follows:
Word device -- Integer (16 bits)
Bit device -- Boolean

13. NORMAL RELEASE OF CONNECTIONS WITH THE AJ71M56EF[ ] Conclude

To normally release connections with the AJ71M56EF[ ], the Conclude service is transmitted.
After Conclude completes normally, logic connection is in the release state.

[Parameter required by the client]

- None

[Response from the server (AJ71M56EF[ ])]

- None

14. ABNORMAL RELEASE OF CONNECTIONS WITH THE AJ71M56EF[ ] Abort

To forcibly release connections with the AJ71M56EF[ ], the Abort service is transmitted.

If incorrect data is included in the MMS protocol or parameter, Abort is automatically transmitted.

After Abort is transmitted or received, logic connection is in the release state.

[Parameter required by the client]

- None

[Response from the server (AJ71M56EF[ ])]

- None

15. SERVICE CANCEL Reject

Since Reject is transmitted when the MMS protocol is in abnormal condition, it cannot be controlled from the user side.

16. SERVICES TRANSMITTED BY THE AJ71M56EF[ ]

The AJ71M56EF[ ] can transmit Abort (release of association), Information Report (transmission of other data) and Unsolicited Status (transmission of status information of the PC CPU) of Unconfirmed Service.
This section describes the data transmitted by these services.

See the AJ71M56EF[ ] User's Manual for the transmission procedure.

16.1 Release of Association [Abort]

When association is released from AJ71M56EF[ ] (server side), the Abort is transmitted using input/output (X,Y) of the PC CPU and the buffer.

See the AJ71M56EF[ ] User's Manual for the transmission procedure.

After transmitting, association is released.

[Transmission Data of the server (AJ71M56EF[ ])]

- None

16.2 Transmission of Other Data [Information Report]

When the device data is transmitted from the AJ71M56EF[ ] (server side), the Information Report is transmitted using input/output (X,Y) of the PC CPU and the buffer.

See the AJ71M56EF[ ] User's Manual for the transmission procedure.

[Transmission Data of the server (AJ71M56EF[ ])]

- Variable Access Specification

  See "Parameter required by the client" of Section 10. READING THE DEVICE MEMORY for the data configuration.

POINT

The Variable class of each device is as follows:
Word device -- Integer (16 bits)
Bit device -- Boolean

- List of Access Result

  Result information which is read is set.

16.3 Transmitting status information of the PC CPU [Unsolicited Status]

When status information (M9000 to M9094 or M9200 to M9255) of the PC CPU is transmitted from the AJ71M56EF[ ] (server side), the Unsolicited Status is transmitted using input/output (X,Y) of the PC CPU and the buffer.

See the AJ71M56EF[ ] User's Manual for the transmission procedure.

[Transmission Data of the server (AJ71M56EF[ ])]

See "Response from the server (AJ71M56EF[ ])" of Section 5. STATUS INFORMATION OF THE PC CPU.

16.4 Request Domain Download

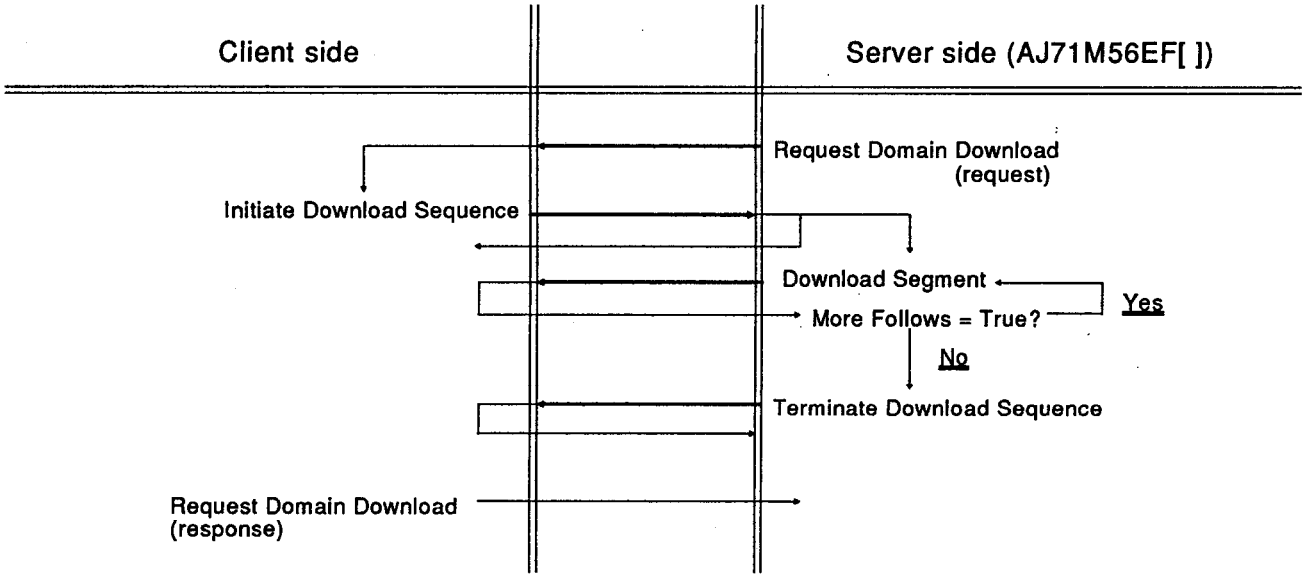
When domain download is requested from the AJ71M56EF[ ] (server side), the Request Domain Download service is transmitted using input/output (X,Y) of the PC CPU and the buffer.

See the AJ71M56EF[ ] User's Manual for the transmission procedure.

[Transmission Data of the server (AJ71M56EF[ ])]

- None

[Execution of Request Domain Download]



16.5 Request Domain Upload

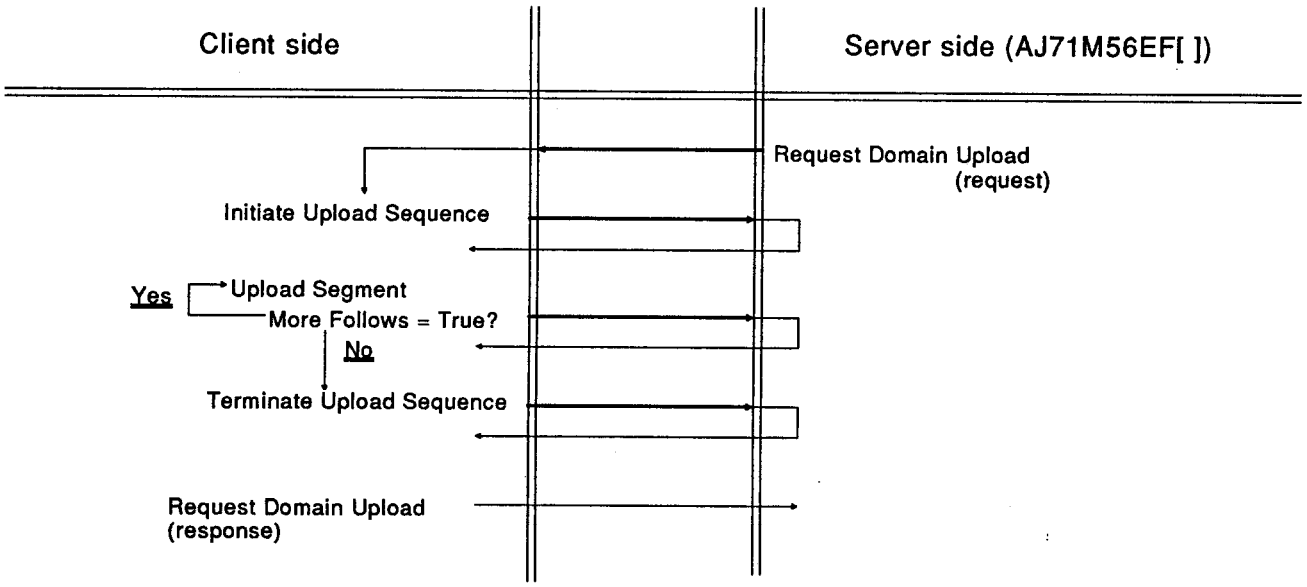
When domain upload is requested from the AJ71M56EF[ ] (server side), the Request Domain Upload service is transmitted using input/output (X,Y) of the PC CPU and the buffer.

See the AJ71M56EF[ ] User's Manual for the transmission procedure.

[Transmission Data of the server (AJ71M56EF[ ])]

- None

[Execution of Request Domain Upload]



17. PRECAUTIONS

This section describes precautions to take with the AJ71M56EF[ ].

17.1 Operations When Power is Turned ON

To check the conformity of internal status between the PC CPU and VMD when the power is turned ON, the client side can check as follows:

(1) The program invocation, P_main00, has already been defined using the predefined D_main00.

(2) Check the PI state using the Program Invocation Attribute service.

17.2 Concerning Domain

(1) Predefine

Only for the main sequence program and parameter of the PC CPU in which the AJ71M56EF[ ] is installed (excluding the local station of MELSEC-NET), domain names has been defined as D_main[ ][ ] and D_param[ ][ ] respectively.
These domain names can be changed, but use the predefined domain name as much as possible.

POINT

When a predefined domain is deleted, only one domain can be defined. (When a predefined domain is not deleted, up to two domains can be defined for the main sequence program and parameter respectively.)

(2) Download

Do not write the domain for the sequence program, microcomputer program, and timer and counter set values (other than those for devices) while the PC CPU is in the RUN state.
However, definition of domain can be executed.

17.3 Read/Write

When the Variable Description function is used, the max. access sizes are as follows:

Octet-String --- 1024 bytes
Bit-String --- 8192 bits

17.4 Information Report

The Information Report service is transmitted in approx. 500 msec. from it is requested on the PC CPU side.
The service can be transmitted continuously for up to 4 associations, and the continuous 4 transmissions takes about 600 msec.

POINT

Response to a service request from the client can be transmitted in 100 msec. on average. However, low priority of receipt of the request from the PC CPU and limited performance of the PC CPU may take more time.

(1) Designation of the client

For Information Report, Unsolicited Status, and Abort services, the association number can be selected in accordance with the order of designation of the association. However, client cannot be designated.

(2) Designation of the device

When designating the device to be transmitted using Information Report, the device name and number can be designated in a similar way to Read. Designation equivalent to the Variable Description (access type, access length) is also applicable.

17.5 Access to the MELSEC-NET Local Stations

Due to the limited performance of the PC CPU and MELSEC-NET, access time to local stations may be longer under some conditions. If reduction of the access time is desired, transmit the information of the local station using the MELSEC-NET data link (B, W) device.

(1) Service request from the client

When another service is received during access to a local station, the processing starts after the preceding service is completed.

(2) Service transmission from the PC CPU

When transmission time for event information using the Information Report service is limited concerning the system for the reason mentioned in (1), do not execute data access with a large capacity to the local station.

17.6 Service Parameter Errors

When the service parameter has an error, the MMS generally responds by issuing Reject. However, Abort may be issued with the AJ71M56EF[ ]. In this case, execute the connection again using the Initiate service.

APPENDICES

APPENDIX 1 DEVICE/SYMBOL ASSIGNMENT TABLE

No.	Device Symbols	Device Names	*1	Symbolic Address Format	*2	Variable Access Variable Description		Remarks
						Defaults	Extensions	
1	X	Input	B	[( )( ).] X0 to 7FF	H	bool	bit-string	
2	Y	Output	B	[( )( ).] Y0 to 7FF	H	bool	bit-string	
3	L	Latch relay	B	[( )( ).] L0 to 8191	D	bool	bit-string	
4	M	Internal relay	B	[( )( ).] M0 to 8191	D	bool	bit-string	
5	SM	Special relay	B	[( )( ).] M9000 to 9255	D	bool	bit-string	
6	F	Annunciator	B	[( )( ).] F0 to 255	D	bool	bit-string	
7	TT	Timer contact	B	[( )( ).] TT0 to 2047	D	bool	bit-string	
8	TC	Timer coil	B	[( )( ).] TC0 to 2047	D	bool	bit-string	
9	CT	Counter contact	B	[( )( ).] CT0 to 1023	D	bool	bit-string	
10	CC	Counter coil	B	[( )( ).] CC0 to 1023	D	bool	bit-string	
11	TN	Timer present value	W	[( )( ).] TN0 to 2047	D	int16	octet-string	
12	CN	Counter present value	W	[( )( ).] CN0 to 1023	D	int16	octet-string	
13	D	Data register	W	[( )( ).] D0 to 6143	D	int16	octet-string	
14	SD	Special register	W	[( )( ).] D9000 to 9255	D	int16	octet-string	
15	TM	Timer set value main	W	[( )( ).] TM0 to 2047	D	int16	octet-string	
16	TS	Timer set value sub	W	[( )( ).] TS0 to 2047	D	int16	octet-string	
17	CM	Counter set value main	W	[( )( ).] CM0 to 1023	D	int16	octet-string	
18	CS	Counter set value sub	W	[( )( ).] CS0 to 1023	D	int16	octet-string	
19	A	Accumulator	W	[( )( ).] A0 to 1	D	int16	octet-string	
20	Z	Index register	W	[( )( ).] Z0 to 6	D	int16	octet-string	
21	V	Index register	W	[( )( ).] V0 to 6	D	int16	octet-string	
22	R	Fail register	W	[( )( ).] R0 to 8191	D	int16	octet-string	
23	B	Link relay	B	[( )( ).] B0 to FFF	H	bool	bit-string	
24	W	Link register	W	[( )( ).] W0 to FFF	H	int16	octet-string	
31	1R	Extension file register number 1	W	[( )( ).] 01R0 to 8191	D	int16	octet-string	
|	|	|	|	|	|	|	|	
78	48R	Extension file register number 28	W	[( )( ).] 48R0 to 8191	D	int16	octet-string	

Notes

- *1 shows the device type; B: bit device, W: word device.
- *2 shows the notation of symbolic address format; H: hexadecimal, D: decimal.
- Symbolic Address Format is set with a character string.
- [( )( ).] specifies the station number on MELSECNET, and numerical values 1 to 64 (decimal values) are set into ( )( ). Omitted when the station is the host (PC of the unit in which the AJ71M56EF[ ] is installed).
- bool : boolean (logical value True, False), bit-string: bit string, int16: unsigned 16 bits (word data), octet-string: byte string
- The accessible range, within extended file register numbers 1 to 48, varies according to the capacity of memory cassette. Number 9 is not accessible due to the ACPU specifications.
- Set values of the timer and counter are accessible using ( )( ).TM0 to 255, ( )( ).TS0 to 255, ( )( ).CM0 to 255 and ( )( ).CM0 to 255 of the symbolic address. The ranges of T256 to 2047 and C256 to 1023 of the AnACPU are accessible for devices (D, W, R) to which parameters are assigned for the storage of set values.

APPENDIX 2 VMD PHYSICAL STATUS CRITERIA TABLE

Values	VMD Physical Status Names	Status of PC CPU in Self-Diagnosis Error	M9008(Self-Diagnosis Error)	States of D9015			
				Key (CPU)	Parameter	Program	Remote
0	Operational	RUN	OFF	RUN	RUN	RUN	
1	Partially-Operational	RUN	ON	RUN	RUN	RUN	
2	Inoperable	STOP					
3	Needs - Commisioning	RUN		Other than RUN	RUN	RUN	
		RUN		RUN	Other than RUN	RUN	
		RUN		RUN	RUN	Other than RUN	

Note

- Self-diagnosis errors include blown fuses, I/O verification errors, operation errors, and special-function unit check errors. RUN/STOP can be set using parameters in the PC CPU.

APPENDIX 3 DOMAIN MANAGEMENT PARAMETER TABLE

Domains	Domain Names (Examples)	Domain Types	*1	Units	Remarks
Main sequence program	D_mainP[ ][ ]	MAINSEQ	0	step	
Sub-sequence program	D_subP[ ][ ]	SUBSEQ	0	step	
Main microcomputer program	D_mainM[ ][ ]	MAINMIC	0	byte	
Sub-microcomputer program	D_subM[ ][ ]	SUBMIC	0	byte	
Comment data	D_comm[ ][ ]	KANACOM	0	byte	
Parameter	D_param[ ][ ]	PARAM	0	byte	
Each device	D_( )( )( )dev[ ][ ]	DEVMEMS	*2	pcs.	
Extension file register	D_( )( )( )dev[ ][ ]	DEVMEMR	*2	pcs.	
Extension comment	D_extcom[ ][ ]	EXTCOM	0	byte	

Notes

- [ ][ ] represents the local station number (01 to 64) on MESLECNET. Omitted when the station is the host (PC of the unit in which the AJ71M56EF1 is installed).
- ( )( )( ) represents the device number name and number.
  <Example>
  Domain name from D100 is D_D100dev.
  When the extension file register number is 3, the domain name is D_03R??dev (?? shows the station number.).
- See APPENDIX 1.
- *1 shows the top write/read address.
- *2 describes the APPENDIX DEVICE/SYMBOL ASSIGNMENT TABLE.

APPENDIX 4 PICS (MMS PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT)

Mitsubishhi MELSEC-A MAPi/f unit, AJ71M56EF[ ]

MMS Protocol Implementation Conformance Statement

This document describes the conformance of Mitsubishi's MELSEC-A AJ71M56EF[ ] to ISO 9506 - MMS.

PICS Part One: Implementation Information

PICS Serial Number: **Date Issued: September 10, '92**

Implementation's Vendor Name	Mitsubishi
Implementation's Model Name	MELSEC-A
Implementation's Revision Identifier	Ver1.0
Machine Name(s) and Version Number(s)	AJ71M56EF[ ]
Operating System(s)	N/A
MMS Abstract syntax	[1 0 9506 2 1]
MMS Version Number Supported	1/0 alternative
MMS Companion Standard abstract syntaxes	None
MMS Companion Standard Version Number Supported	N/A
Calling MMS-user (indicate "Yes" or "No")	Yes
Called MMS-user (indicate "Yes" or "No")	Yes
List of Standardized Names	None

PICS Part Two: Service CBBs

PICS Serial Number: **Date Issued: September 10, '92**

Service Conformance Building Blocks (Table 1 of 4)	Server, Client or Both
Initiate	B
Conclude	B
Cancel	
Unsolicited Status	S
Status	S
Get Name List	S
Identify	S
Rename	
Get Capability List	S
Read	B
Write	B
Information Report	S
Get Variable Access Attributes	S
Define Named Variable	
Define Scattered Access	
Get Scattered Access Attributes	
Delete Variable Access	
Define Named Variable List	
Get Named Variable List Attributes	
Delete Named Variable List	
Define Named Type	
Create Program Invocation	S
Delete Program Invocation	S
Start	S
Stop	S
Resume	S
Reset	S
Kill	
Get Program Invocation Attributes	S
Obtain File	
Define Event Condition	
Delete Event Condition	
Get Event Condition Attributes	

Report Event Conditions Status	
Alter Event Condition Monitoring	
Trigger Event	
Define Event Action	
Delete Event Action	
Get Event Action Attributes	
Report Event Action Status	
Define Event Enrollment	
Delette Event Enrollment	
Alter Event Enrollment	
Report Event Enrollment Status	
Get Event Enrollment Attributes	
Get Name Type Attributes	
Delete Named Type	
Input	
Output	
Take Control	
Relinquish Control	
Define Semaphore	
Delete Semaphore	
Report Semaphore Status	
Report Pool Semaphore Status	
Report Semaphore Entry Status	
Attach To Semaphore	
Initiate Download Sequence	S
Down Load Segment	S
Terminate Download Sequence	S
Initiate Upload Sequence	S
Upload Segment	S
Terminate Upload Sequence	S
Request Domain Download	S
Request Domain Upload	S
Load Domain Content	
Store Domain Content	
Delete Domain	S
Get Domain Attributes	S

Acknowledge Event Notification	
Attach To Event Condition	
Event Notification	
Get Alarm Summary	
Get Alarm Enrollment Summary	
Read Journal	
Write Journal	
Initialize Journal	
Create Journal	
Delete Journal	
Report Journal Status	
File Open	
File Read	
File Close	
File Rename	
File Delete	
File Directory	

PICS Part Three: Parameter CBBs

PICS Serial Number: **Date Issued: September 10, '92**

Parameter Conformance Building Blocks	Supported? (Value)
STR1	N
STR2	N
NEST (>=0 . Give integer value.)	0
VNAM	Y
VADR	Y
VALT	N
VSCA	N
TPY	N
VLIS	N
REAL	N
AKEC	N
CEI	N

PICS Part Four: Local Implementation Values

PICS Serial Number: **Date Issued: September 10, '92**

Range of values for floating point numbers	N/A
Supported values of the floating point exponent width	N/A
Supported values of the floating point format width	N/A
Range of values for signed integer	2^{31}-1 to -(2^{31})
Range of values for unsigned integer	0 to 2^{31}-1
Maximum length for BIT STRING in bits	8192 bits (Note 1)
Maximum length for OCTET STRING in octets	1024 octets (Note 1)
Address formats for VADR horizontal CBB	Table 1
Maximum Input Time Out in seconds	N/A
Level of support for time	N/A
Granularity of time in milliseconds	N/A
Uninterruptible access to variable	Note 2
Priority processing for semaphores	N/A
Capabilities of VMD	Note 3
Local Detail	Note 4
File Name Syntax	N/A
Range of Maximum Services Outstanding Calling	1 to 2
Range of Maximum Services Outstanding Called	1 to 2
Execution Argument	N/A
Additional Code in Error Type	N/A
Additional Detail in Error Type	N/A
Method for Extended Derivation of Status Information	Note 5
Local Detail Calling/Called	Note 6
Load Data Format	N/A
Maximum number of Upload State Machines	N/A

Note 1

The maximum length is limited by the max PDU size.

Note 2

Variables are located in MELSEC-A CPU unit.
The MMS server application in AJ71M56EF[ ] has interface functions to MELSEC-A CPU unit which can hundle max 128 bytes per access.
Read and write indications which have more than 128 bytes need multiple access to MELSEC-A CPU unit.

Note 3

All resources of MELSEC-A are located in the CPU unit. If the CPU unit has a link system of many CPUs (MELSEC-NET) and act as a master for other CPUs in the link system, resources of many CPUs can be accessed from AJ71M56EF[ ]. In this case, the "Master CPU unit with AJ71M56EF[ ]" works as a gateway.
Each capability of VMD of AJ71M56EF[ ] is assigned to resource as follows.

(1) Variables

The Symbols defined in CPU unit can be used in MMS.
(refer to Table 1)
Symbolic Address Variables are located in MELSEC-A CPU unit.
Named Variables can be defined with corresponding Symbolic Address Variables in AJ71M56EF[ ], but limited just to define another "Name" to "Symbolic Address".

(2) Domains

Domains in CPU unit generally don't have "Domain Name" originally.
MMS can define "Domain Name" in AJ71M56EF[ ] and upload/download domains.
Pre-defined Domain Name is available only for "Main Sequence Program in the CPU unit" as an exception.

(3) P.I.

Programs in CPU unit don't have "Program Invocation Name" originally.
MMS can define "Program Invocation Name" in AJ71M56EF[ ] and control PIs.
Pre-defined program invocation is available using the pre-defined domain.

(4) Remote AE

All necessory parameters to send Initiate. req from AJ71M56EF[ ] can be defined by SW0GP-M56PC.

Note 4

Symbolic Variables, M9000 to M9094 or M9200 to M9255, are assigned to the local detail.

M9000 to M9094 contain the status information of "Master CPU unit".
M9200 to M9255 contain the status information of "MELSEC-NET".

Note 5

If the extended derivation is False, it indicates Master CPU unit.
If the extended derivation is True, it indicates MELSEC-NET.

Note 6

If MMS Version Number is 0 (DIS), Local Detail in Initiate. req is used to get proposed_Max_PDU_Size value and Local Detail in Initiate. resp is used to send negotiate_Max_PDU_Size value, based on the NIST (National Instisute for Standards and Technology, USA) Agreements.

Appendix A: Critical Parameters

(1) Physical layer
IEEE802.3 (10BASE5/10BASE2)

(2) MAC sub layer
None

(3) LLC sub layer
None

(4) Network layer
ES-IS protocol is supported.
Config. Timer, Redirect Timer — Configurable

(5) Transport layer
Retry Timer, Window Timer, Retry Count, Inactive — Configurable

(6) Session layer
None

(7) Presentation
None

(8) MMS Initiate Service

	- In case of Server -	- In Case of Client -
Max_Seg_Size	configurable (Default 1100)	1100
Max_Serv_Calling	configurable (Default 2)	1
Max_Serv_Called	configurable (Default 2)	1

Note: Version Number is alternative. DIS or IS can be selected as product series.

Table 1 Device code, device number and access type list

Symbol	Device	Device Code	Access Type *1	Device Number	
X	Input	1	1	0 to 7FFh	*3
Y	Output	2	1	0 to 7FFh	*3
L	Latch relay	3	1	0 to 8191	*3
M	Internal relay	4	1	0 to 8191	*3
SM	Special relay	5	1	0 to 255	
F	Annunciator	6	1	0 to 255	
TT	Timer contact	7	1	0 to 2047	
TC	Timer coil	8	1	0 to 2047	
CT	Counter contact	9	1	0 to 1023	
CC	Counter coil	10	1	0 to 1023	
TN	Timer current value	11	3	0 to 2047	
CN	Counter current value	12	3	0 to 1023	
D	Data register	13	3	0 to 6143	
SD	Special register	14	3	0 to 255	
TM	Timer set value, main	15	3	0 to 2047	
TS	Timer set value, sub	16	3	0 to 2047	
CM	Counter set value, main	17	3	0 to 1023	
CS	Counter set value, sub	18	3	0 to 1023	
A	Accumulator	19	3	0,1 (2 points)	
Z	Index register	20	3	0 to 6	
V	Index register	21	3	0 to 6	
R	File register	22	3	0 to 8191	*2, *3
B	Link relay	23	1	0 to FFFh	*3
W	Link register	24	3	0 to FFFh	*3
1R	Extension file register 1	31	3	0 to 8191	*2, *3
|	|	|	|	|	
48R	Extension file register 48	78	3	0 to 8191	*2, *3

REMARKS

*1: In the access type section, 1 indicates a bit and 3 a word.

*2: The capacities depend on the PLC CPU used. Consult the corresponding PLC CPU manual.

*3: The capacities and device numbers of the above device can be set in the parameters of the PLC CPU. Use the preset values.

APPENDIX 5 ERROR CODE

5.1 Domain

(1) Common

Class	Code	Cause (factor)	Action
RESOURCE(3)	proc_resource_unavail(2)	• Error in the MELSEC-A CPU unit	*1
DEFINITION(2)	objedt_undefined(1)	• Domain is not registered.	*2

*1: Check configuration parameter and status of CPU unit.
*2: Check parameter of domain services.

(2) Download

Class	Code	Cause (factor)	Action
RESOURCE(3)	proc_resource_unavail(2)	• Error on station number designation • Domain capacity set by the user is larger than the parameter set value. • Capability List length is less than 4.	*1
	capability_unavailable(4)	• Domain name is not set. • Capability list is not set completely.-	
DEFINITION(2)	object_attr_incon(6)	• Download was executed during PC CPU RUN. (excluding each device domain)	*2
		• Sharable is not FALSE.	*1
	object_exists(5)	• Domain name is defined twice.	

*1: Check parameter of Initiate Download Seguence service
*2: Check PI status.

(3) Upload

Class	Code	Cause (factor)	Action
RESOURCE(3)	capability_unknown(5)	• Designated domain does not exist.	*1
SERVICE(4)	object_state_conflict(2)	• Domain is not in the Ready or In use state.	*2
	primitive_out_of_seq(1)	• Up_id is not correct. • When morefollows = FALSE, Upload Seg. req was transmitted.	*3

*1: Check parameter of Initiate Upload Sequence.
*2: Check the domain status.
*3: Check parameter of Upload Segment.

(4) Delete Domain

Class	Code	Cause (factor)	Action
SERVICE(4)	object_state_conflict(2)	Domain state is not Ready.	*1

*1: Check the domain status and if it is used by PI.

5.2 PI

(1) Common

Class	Code	Cause (factor)	Action
DEFINITION(2)	object_undefined(1)	• PI name is not registered.	*1
RESOURCE(3)	proc_resource_unavail(2)	• Error on MELSEC-A CPU Unit	*2

*1: Check service parameter in request.
*2: Check config parameter and status of CPU unit.

(2) Start, Stop, Reset, Resume

Class	Code	Cause (factor)	Action
SERVICE(4)	object_state_conflict(2)	• PI state is not available for the service.	*1

*1: Check the PI state and if CPU unit is stopped by H/W key switch.

(3) Create Program Invocation

Class	Code	Cause (factor)	Action
DEFINITION(2)	object_exists(5)	• PI Name is double defined or illegal domain name designated.	*1
	object_attr_incon(6)	• 2 or more MAINSEQ were designated. • Domain other than MAINSEQ was designated.	*2
		• Domain state is not Ready.	*3

*1: Check service parameter in request.
*2: Use proper domain.
*3: Check the domain status.

(4) Delete Program Invocation

Class	Code	Cause (factor)	Action
SERVICE(4)	object_state_conflict(2)	• PI state is not Idle or Stop.	*1
		• PI name is not registered.	*2

*1: Change PI state.
*2: Check service parameter in request.

5.3 Variable Access

(1) Common

Class	Code	Cause (factor)	Action
ACCESS(7)	object_acc_unsupported(1)	• Length of octet_string is more than 1024 bytes. • Length of bit_string is more than 8192 bits. • varAccSpec is not List Of Variable. • Address is not Symbolic Address.	*1
DEFINITION(2)	object_undefined(1)	• Variable name is not registered. • The length of strings in the named variable is exceeded the max. change the length by SW0GP-M56PC.	
RESOURCE(3)	proc_resource_unavail(2)	• Symbolic Address is not correct. • Error on station number designation • Error on MELSEC-A CPU Unit	*2

*1: Check service parameter in request.
*2: Check config parameter and status of CPU unit.

(2) Read

Class	Code	Cause (factor)	Action
DEFINITION(2)	type_inconsistent(4)	• Data type is not correct	*1

*1: Check service parameter in request.

(3) Write

Class	Code	Cause (factor)	Action
DEFINITION(2)	type_inconsistent(4)	• Data type is not correct	*1

*1: Check service parameter in request.

(4) Get Variable Access Attributes

Class	Code	Cause (factor)	Action
ACCESS(7)	object_acc_unsupported(1)	• Other than name or address was designated.	*1

*1: Check service parameter in request.

5.4 VMD Support

(1) Common

Class	Code	Cause (factor)	Action
RESOURCE(3)	proc_resource_unavail(2)	• Error on MELSEC-A CPU Unit	*1

*1: Check config parameter and status of CPU unit.

(2) Get Name List

Class	Code	Cause (factor)	Action
ACCESS(7)	object_acc_unsupported(1)	• Object Scope is not VMD Specific. • Extended Object Class is not Object Class .	*1

*1: Check service parameter in request.

Note: If the error code is related to the MELSEC-A CPU unit, please check the configuration parameters and status of CPU unit.

Other error codes are related with the parameter of each service, and don't effect on the functionalities.

IMPORTANT

(1) Design the configuration of a system to provide an external protective or safety inter locking circuit for the PCs.

(2) The components on the printed circuit boards will be damaged by static electricity, so avoid handling them directly. If it is necessary to handle them take the following precautions.

(a) Ground your body and the work bench.

(b) Do not touch the conductive areas of the printed circuit board and its electrical parts with non-grounded tools, etc.

Under no circumstances will Mitsubishi Electric be liable or responsible for any consequential damage that may arise as a result of the installation or use of this equipment.

All examples and diagrams shown in this manual are intended only as an aid to understanding the text, not to guarantee operation. Mitsubishi Electric will accept no responsibility for actual use of the product based on these illustrative examples.

Owing to the very great variety in possible applications of this equipment, you must satisfy yourself as to its suitability for your specific application.

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE:MITSUBISHI DENKI BLDG MARUNOUCHI TOKYO 100 TELEX: J24532 CABLE MELCO TOKYO
NAGOYA WORKS : 1-14 , YADA-MINAMI 5 , HIGASHI-KU , NAGOYA , JAPAN

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