



INVERTER

Plug-in option

FR-A7NE

INSTRUCTION MANUAL

EtherNet/IP™ communication function
conformance tested

PRE-OPERATION INSTRUCTIONS

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Thank you for choosing this Mitsubishi Inverter plug-in option. This instruction manual gives handling information and precautions for use of this equipment. Incorrect handling might cause an unexpected fault. Before using the equipment, please read this manual carefully to use the equipment to its optimum. Please forward this manual to the end user.

This section is specifically about safety matters

Do not attempt to install, operate, maintain or inspect this product until you have read through this instruction manual and appended documents carefully and can use the equipment correctly. Do not use this product until you have a full knowledge of the equipment, safety information and instructions.


In this instruction manual, the safety instruction levels are classified into "WARNING" and "CAUTION".

WARNING

Assumes that incorrect handling may cause hazardous conditions, resulting in death or severe injury.

CAUTION

Assumes that incorrect handling may cause hazardous conditions, resulting in medium or slight injury, or may cause physical damage only.

Note that even the  **CAUTION** level may lead to a serious consequence according to conditions. Please follow the instructions of both levels because they are important to personnel safety.

SAFETY INSTRUCTIONS

1. Electric Shock Prevention

WARNING

- While power is on or when the inverter is running, do not open the front cover. You may get an electric shock.
- Do not run the inverter with the front cover or wiring cover removed. Otherwise, you may access the exposed high-voltage terminals and charging part and get an electric shock.
- If power is off, do not remove the front cover except for wiring or periodic inspection. You may access the charged inverter circuits and get an electric shock.
- Before starting wiring or inspection, check to make sure that the indication of the inverter operation panel is off, wait for at least 10 minutes after the power supply has been switched off, and check that there are no residual voltage using a tester or the like. The capacitor is charged with high voltage for some time after power off and it is dangerous.
- Any person who is involved in the wiring or inspection of this equipment should be fully competent to do the work.
- Always install the plug-in option before wiring. Otherwise, you may get an electric shock or be injured.
- Do not touch the plug-in option with wet hands. Otherwise you may get an electric shock.
- Do not subject the cables to scratches, excessive stress, heavy loads or pinching. Otherwise you may get an electric shock.

2. Injury Prevention

CAUTION

- Apply only the voltage specified in the instruction manual to each terminal. Otherwise, burst, damage, etc. may occur.
- Ensure that the cables are connected to the correct terminals. Otherwise, burst, damage, etc. may occur.
- Always make sure that polarity is correct to prevent damage, etc. Otherwise, burst, damage may occur.
- While power is on or for some time after power-off, do not touch the inverter as it is hot and you may get burnt.

3. Additional Instructions

Also note the following points to prevent an accidental failure, injury, electric shock, etc.

1) Transportation and mounting

CAUTION

- Do not install or operate the plug-in option if it is damaged or has parts missing.
- Do not stand or rest heavy objects on the product.
- Check that the mounting orientation is correct.
- Prevent other conductive bodies such as screws and metal fragments or other flammable substance such as oil from entering the inverter.

2) Trial run

CAUTION

- Before starting operation, confirm and adjust the parameters. A failure to do so may cause some machines to make unexpected motions.

3) Usage

WARNING

- Do not modify the equipment.
- Do not perform parts removal which is not instructed in this manual. Doing so may lead to fault or damage of the inverter.

CAUTION

- When parameter clear or all parameter clear is performed, reset the required parameters before starting operations. Each parameter returns to the initial value.
- For prevention of damage due to static electricity, touch nearby metal before touching this product to eliminate static electricity from your body.

4) Maintenance, inspection and parts replacement

CAUTION

- Do not test the equipment with a megger (measure insulation resistance).

5) Disposal

CAUTION

- Treat as industrial waste.

6) General instruction

All illustrations given in this manual may have been drawn with covers or safety guards removed to provide in-depth description. Before starting operation of the product, always return the covers and guards into original positions as specified and operate the equipment in accordance with the manual.

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1 PRE-OPERATION INSTRUCTIONS

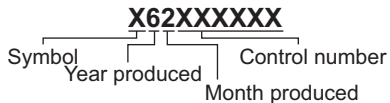
1.1 Unpacking and Product Confirmation

Take the plug-in option out of the package, check the unit name, and confirm that the product is as you ordered and intact.

This product is a plug-in option for the FR-A700-NA series inverter assembled in and after February 2006. Check the SERIAL number indicated on the rating plate or package.

● SERIAL number check

Refer to the inverter manual for the position of the rating plate.

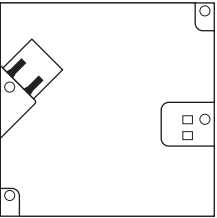
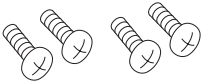
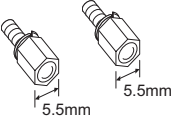
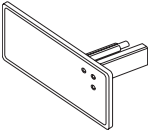


The SERIAL is made up of 1 version symbol, 2 numeric characters or 1 alphabet letter and 2 numeric characters indicating year and month, and 6 numeric characters indicating control number.

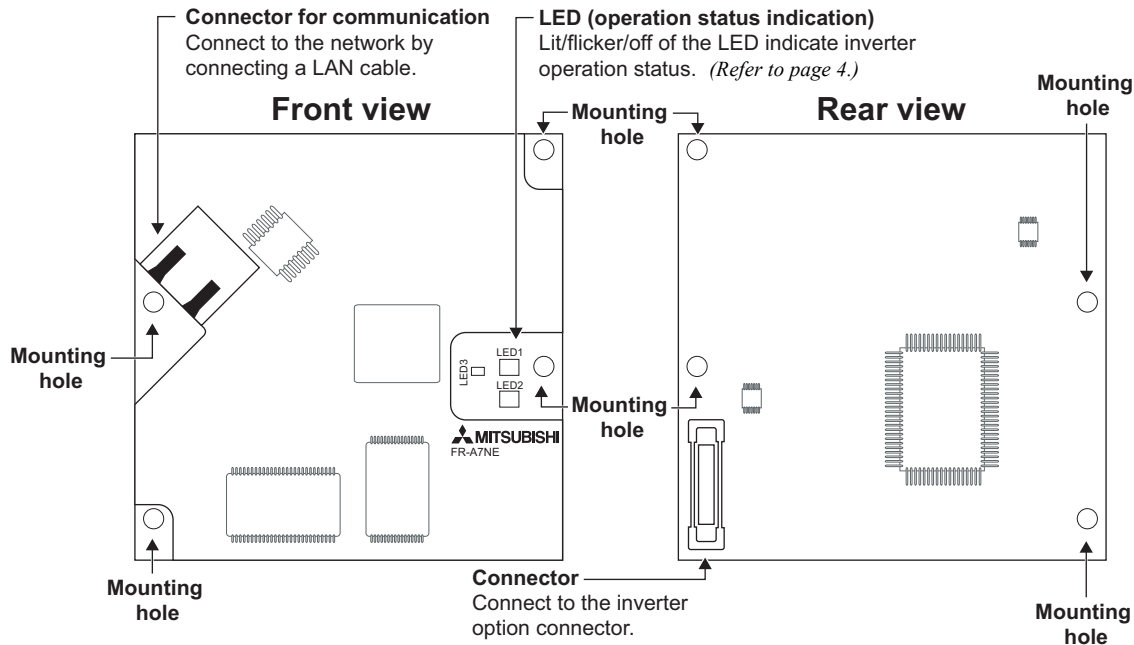
Month is indicated as 1 to 9, X (October), Y (November), and Z (December).

1.1.1 Packing confirmation

Check the enclosed items.

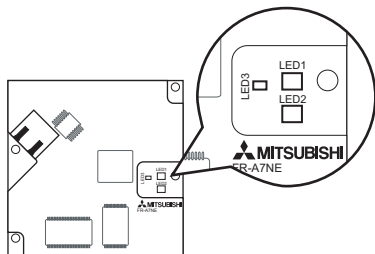
| | | |
|--|---|--|
| <p>Plug-in option 1</p>  | <p>Mounting screw (M3 × 6mm) 4 (Refer to page 8.)</p>  | <p>Hex-head screw for option mounting (5.5mm) 2 (Refer to page 8.)</p>  |
| <p>Communication option LED display cover 1 (Refer to page 7.)</p>  | <p>EtherNet/IP is a registered trademark of ControlNet International, Ltd.</p> | |

1.1.2 Parts



1.2 Status LED (operation status indication)

Status LED indicates the operation status of the option unit (Module Status LED) and network (Link/Activity, Network Status LED) according to the indication status.



LED1:Module Status LED
LED2:Network Status LED
LED3:Link/Activity LED

(1) Module Status LED (LED 1)

| LED Indication | System Status | Note |
|------------------------|-----------------------------|---|
| Off | Inverter power off | Inverter power is off. |
| Green is lit | Device operation is enabled | Option unit is being initialized. |
| Blinking green | Standby | Normal status (operation is enabled) |
| Blinking red | Minor fault | At the time of an inverter minor fault |
| Red is lit | Major fault | Please contact your sales representative. |
| Blinking green/ red | Self-test | During a test execution at power on |

(2) Network Status LED (LED 2)

| LED Indication | Network Status | Note |
|------------------------|-------------------------------------|---|
| Off | Inverter power off No IP address | Inverter power is off. IP address is not set. |
| Blinking green | Connection is not established | IP address is set. Ethernet/IP connection is not established. |
| Green is lit | Connection is established | At least one connection is established. |
| Blinking red | Connection time-out | More than one connection is in a time out status. This status stops if a time-out connection is reestablished or an option unit is reset. |
| Red is lit | Duplicate IP address | Detected that a set IP address is already used. |
| Blinking green/ red | Self-test | During a test execution at power on |

(3) Link/Activity LED (LED 3)

| LED Indication | System Status | Note |
|---------------------------|--|--|
| Off | Inverter power off During self-test EtherNet link is not established | Inverter power is off. Communication setting (communication speed, transmission direction) does not match |
| Green is lit | Ethernet link is established | Option unit is being initialized. |
| Blinking (green → off) | Receiving/sending | Receiving/sending in the EtherNet Link established status |

1.3 Specifications

| Item | Specifications |
|---|---|
| Operating power supply, Network power supply | Supplied from the inverter |
| Communication speed | Automatic detection setting and manual setting are enabled 10Mbps half-duplex/all-duplex, 100Mbps half-duplex/all-duplex |
| Node address setting | IP address · Automatic assignment (DHCP (including BOOTP)) · Setting by parameter |
| Topology | · Star (connection with a hub in the center) · Star bus (connection with multiple hubs) |
| Cable, Maximum wiring length, Number of connectable devices | Cable: 10Mbps: 10BASE-T (IEEE802.3), 100Mbps: 100BASE-TX (IEEE802.3u) Wiring length: 100m/segment Number of connectable devices: 1024 units |
| Connector | RJ45 connector |

2 INSTALLATION

2.1 Pre-Installation Instructions

Make sure that the input power of the inverter is off.

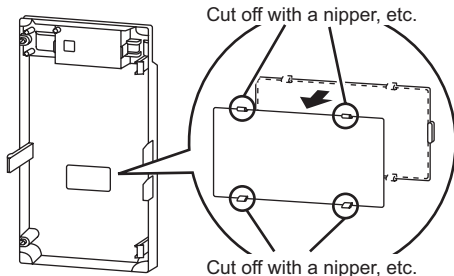
⚠ CAUTION

⚠ With input power on, do not install or remove the plug-in option. Otherwise, the inverter and plug-in option may be damaged.

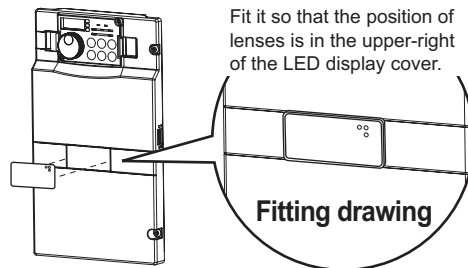
2.2 Installation of the Communication Option LED Display Cover

Mount the cover for displaying the operation status indication LED for the communication option on the inverter front cover.

- 1) Cut off hooks on the rear of the inverter front cover with nipper, etc. and open a window for fitting the LED display cover.



- 2) Fit the communication option LED display cover to the front of the inverter front cover and push it into until fixed with hooks.

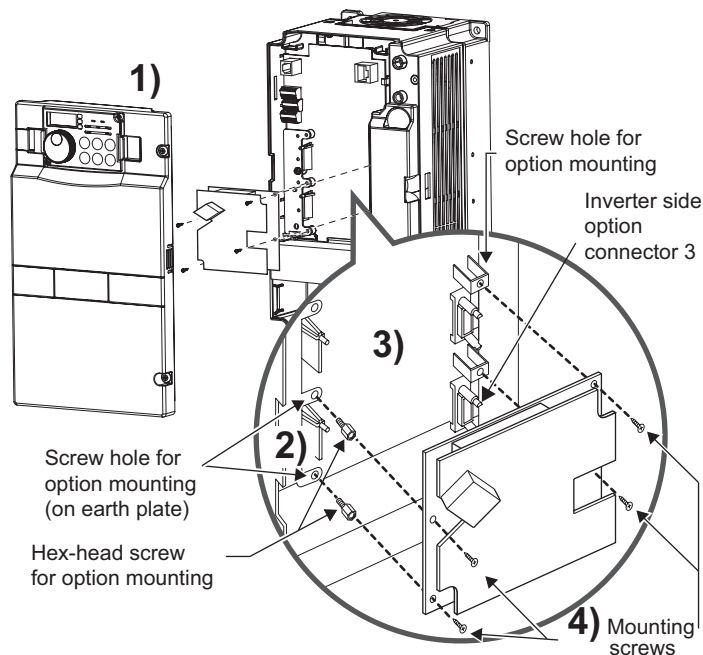


⚠ CAUTION

⚠ Take care not to hurt your hand and such with portions left by cutting hooks of the rear of the front cover.



2.3 Installation Procedure



1) Remove the inverter front cover.

2) Mount the hex-head screw for option mounting into the inverter screw hole (on earth plate). (size 5.5mm, tightening torque 0.56N·m to 0.75N·m)

3) Securely fit the connector of the plug-in option to the inverter connector along the guides. Occupies space equivalent to two option units.

4) Securely fix four points of the plug-in option to the inverter with the accessory mounting screws. If the screw holes do not line-up, the connector may not have been plugged snugly. Check for loose plugging.

REMARKS

After removing four screws on the right and left places, remove the plug-in option.
(The plug-in option is easily removed if the control circuit terminal block is removed before.)

CAUTION

- When using this option unit, mount it in the "option connector 3 (lowermost connector)" of the inverter.

If it is fitted in option connector 1 or 2, "E. 1" or "E. 2" (option alarm) is displayed and the inverter will not function. In addition, when the inverter can not recognize that the option is mounted due to improper installation, etc., "E. 3" (option alarm) is displayed even if the option is fitted in the option connector 3.

- This option unit requires space equivalent to two option units, only one option can be used at a time. For other option units, mount it in the option connector 1. They can not be connected in the option connector 2.
 - Take care not to drop a hex-head screw for option mounting or mounting screw during mounting and removal.
 - Pull out the option straight to remove. Otherwise, the connector may be damaged by some applied force.
-

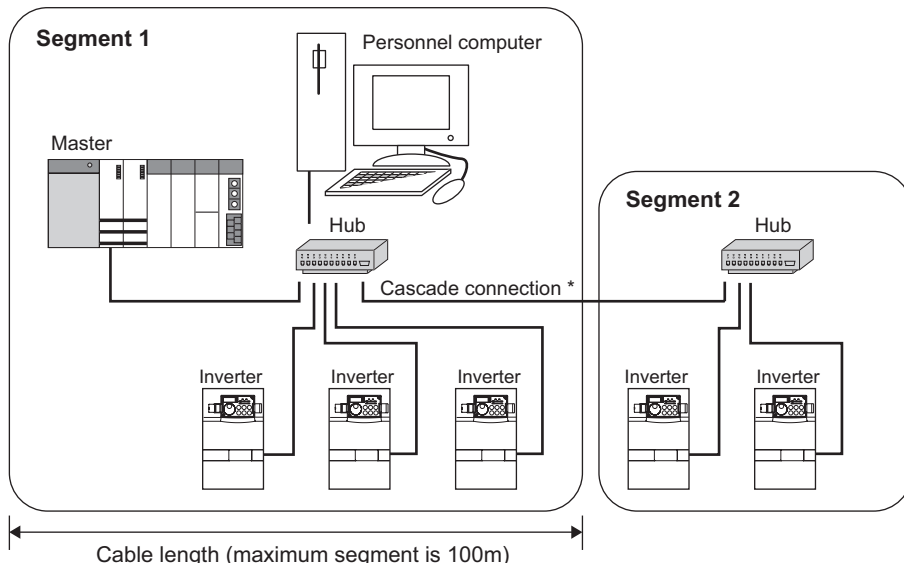
| Mounting Position | Error Display |
|-------------------|---------------|
| Connector 1 | E. 1 |
| Connector 2 | E. 2 |
| Connector 3 | E. 3 |

3 WIRING

3.1 Connection to Network

- (1) Be sure to check the following before connecting the inverter to the network.
- Check that the FR-A7NE is snugly inserted into the inverter. (Refer to page 7.)
 - Check that the correct IP address is set. (Refer to page 18.)
 - Check that a LAN cable is firmly connected to the FR-A7NE. (Refer to page 11.)

<System configuration>



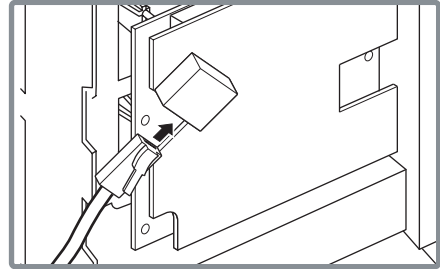
* Up to four units are connectable when the 10 BASE-T is used and up to two units are connectable when 100 BASE-TX is used.

3.2 Cable Specification

Connect the option unit (FR-A7NE) to the Ethernet using the LAN cable indicated below.

Cable used: Use cables whose category is TPCC3 (Twisted Pair Communication Cable for LAN Category 3) or higher and shape is UTP(Unshielded Twisted Pair). (according to the 10BASE-T(IEEE802.3), 100BASE-TX(IEEE802.3u) standard)

Maximum wiring length: The maximum length between HUB and inverter is 100m.
(according to the 10BASE-T(IEEE802.3), 100BASE-TX(IEEE802.3u) standard)



3.3 Precautions for System Configuration

Access to the Internet must be fully safeguarded.

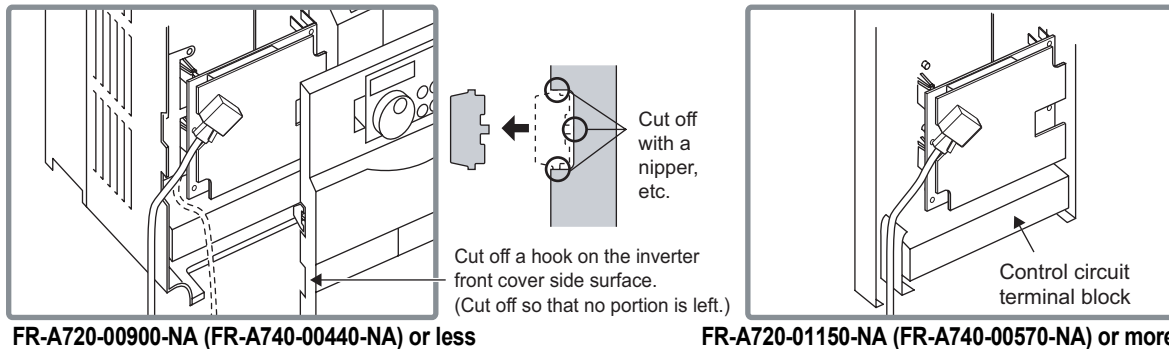
Consult the network access provider, Internet service provider or network manager (person who does network planning, IP address management, etc.).

We have no liability for any system problems that occur at the time of access to the Internet.



3.4 Wiring

- (1) For wiring of **FR-A720-00900-NA (FR-A740-00440-NA) or less**, route wires between the control circuit terminal block and front cover. If cables can not be routed between the control circuit terminal block and front cover (approx 7mm), remove a hook of the front cover and use a space become available.
For wiring of **FR-A720-01150-NA (FR-A740-00570-NA) or more**, use the space on the left side of the control circuit terminal block.



REMARKS

- When the hook of the inverter front cover is cut off for wiring, the protective structure (JEM1030) changes to open type (IP00).

⚠ CAUTION

- ⚠ When performing wiring using the space between the inverter front cover and control circuit terminal block, take care not to subject the cable to stress.
- ⚠ After wiring, wire offcuts must not be left in the inverter. They may cause an error, failure or malfunction.

4 INVERTER SETTING

4.1 Parameter List

The following parameters are used for the communication option (FR-A7NE)

Set the values according to need.

| Parameter Number | Name | Setting Range | Minimum Setting Increments | Initial Value | Refer to Page |
|------------------|--|--|----------------------------|---------------|---------------|
| 37 | Speed display | 0, 1 to 9998 | 1 | 0 | 37 |
| 79 | Operation mode selection | 0 to 4, 6, 7 | 1 | 0 | 21 |
| 144 | Speed setting switchover | 0, 2, 4, 6, 8, 10, 102, 104, 106, 108, 110 | 1 | 4 | 37 |
| 338 | Communication operation command source | 0, 1 | 1 | 0 | 24 |
| 339 | Communication speed command source | 0, 1, 2 | 1 | 0 | 24 |
| 340 | Communication startup mode selection | 0, 1, 2, 10, 12 | 1 | 0 | 21 |
| 342 | Communication EEPROM write selection | 0, 1 | 1 | 0 | 28 |
| 346 * | DeviceNet / EtherNet/IP baud rate | 0 to 4095 | 1 | 132 | 16 |
| 349 * | Communication reset selection | 0, 1 | 1 | 0 | 36 |
| 434 * | IP address 1 | 0 to 255 | 1 | 0 | 17 |
| 435 * | IP address 2 | 0 to 255 | 1 | 0 | 17 |
| 436 * | IP address 3 | 0 to 255 | 1 | 0 | 17 |
| 437 * | IP address 4 | 0 to 255 | 1 | 0 | 17 |
| 438 * | Sub-network mask 1 | 0 to 255 | 1 | 0 | 17 |
| 439 * | Sub-network mask 2 | 0 to 255 | 1 | 0 | 17 |

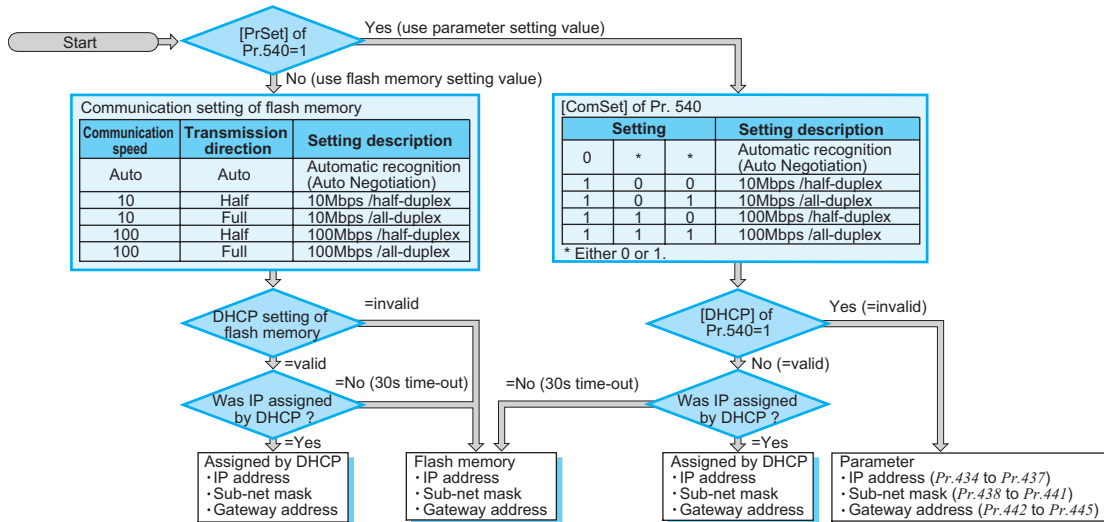


| Parameter Number | Name | Setting Range | Minimum Setting Increments | Initial Value | Refer to Page |
|------------------|--|---------------|----------------------------|---------------|---------------|
| 440 * | Sub-network mask 3 | 0 to 255 | 1 | 0 | 17 |
| 441 * | Sub-network mask 4 | 0 to 255 | 1 | 0 | 17 |
| 442 * | Gateway address 1 | 0 to 255 | 1 | 0 | 17 |
| 443 * | Gateway address 2 | 0 to 255 | 1 | 0 | 17 |
| 444 * | Gateway address 3 | 0 to 255 | 1 | 0 | 17 |
| 445 * | Gateway address 4 | 0 to 255 | 1 | 0 | 17 |
| 500 * | Communication error recognition waiting time | 0 to 999.8s | 0.1s | 0 | 29 |
| 501 * | Communication error occurrence count display | 0 | 1 | 0 | 30 |
| 502 * | Stop mode selection at communication error | 0, 1, 2, 3 | 1 | 0 | 31 |
| 540 * | EtherNet/IP data | 0 to 4095 | 1 | 0 | 18 |
| 550 | NET mode control source selection | 0, 1, 9999 | 1 | 9999 | 24 |

* Parameters which can be displayed when the plug-in option (FR-A7NE) is mounted.

4.2 Communication Setting and IP Configuration

IP configuration (communication establishment processing) is performed when the inverter power is turned on or reset (RES signal is turned on, etc.). In IP configuration, IP address, sub-net mask, and gateway address are set by parameter or automatic acquisition by DHCP.



REMARKS

When performing IP configuration by DHCP, it is necessary to match a communication setting (communication speed, all-duplex/half-duplex) between the DHCP server in advance.



4.2.1 DeviceNet baud rate (Pr. 346)

| Parameter Number | Name | Setting Range | Minimum Setting Increments | Initial Value |
|------------------|---------------------|---------------|----------------------------|---------------|
| 346 | DeviceNet baud rate | 0 to 4095 | 1 | 132 |

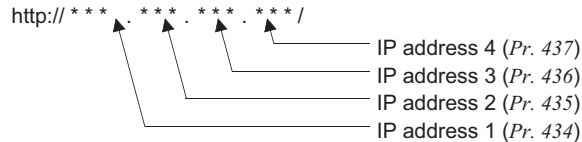
Set baud rate etc. to start EtherNet/IP communication.

| 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---------------|----|----|----|----------------|----|---|---|-----------------|---|---|---|---------------|---|---|---|
| Baud Rate Key | | | | Input Assembly | | | | Output Assembly | | | | Not Available | | | |

| Bit | Item | Initial Value | Setting Range | Description |
|----------|----------------------|---------------|----------------------|--|
| 0, 1 | — | 0 | — | Not available (The set value is ignored.) |
| 2 to 6 | Output Assembly (OA) | 1 | 0 | Output Instance 20 (0x14) |
| | | | 1 | Output Instance 21 (0x15) |
| | | | 6 | Output Instance 126 (0x7E) |
| | | | 7 | Output Instance 129 (0x81) |
| | | | Other than the above | Output Instance 21 (0x15) |
| 7 to 11 | Input Assembly (IA) | 1 | 0 | Input Instance 70 (0x46) |
| | | | 1 | Input Instance 71 (0x47) |
| | | | 6 | Input Instance 176 (0xB0) |
| | | | 7 | Input Instance 179 (0xB3) |
| | | | Other than the above | Input Instance 71 (0x47) |
| 12 to 15 | Baud Rate Key | 0 | 0 | Set "0" always. When a value other than "0" is set, the inverter operates as when "132" (initial value) is set in <i>Pr. 346</i> . |

4.2.2 IP address (Pr. 434 to Pr. 437)

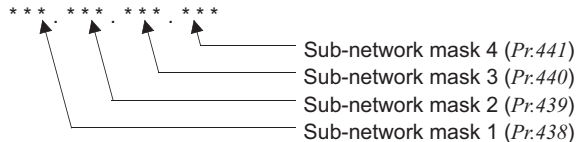
Set the IP address of the FR-A7NE. (Set the IP address that was assigned by the sub-network manager.)



The setting is reflected at the next power-on or inverter reset.

4.2.3 Sub-network mask (Pr. 438 to Pr. 441)

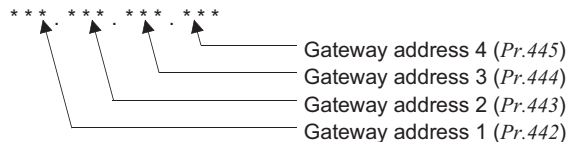
Set these parameters when there is an address block (sub-network) where the IP address of the FR-A7NE belongs.



The setting is reflected at the next power-on or inverter reset.

4.2.4 Gateway address (Pr. 442 to Pr. 445)

Set the address when the network of a different host is used.



The setting is reflected at the next power-on or inverter reset.



4.2.5 EtherNet/IP data (Pr. 540)

| Parameter Number | Name | Setting Range | Minimum Setting Increments | Initial Value |
|------------------|------------------|---------------|----------------------------|---------------|
| 540 | EtherNet/IP data | 0 to 4095 | 1 | 0 |

The definition of *Pr. 540* is as follows.

| 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | |
|-------------|----|----|----|--------|---------------|---|---|---|---|---|-----------------------|---|---|---|---|------|-------|
| Address Key | | | | ResCom | Not Available | | | | | | Communication setting | | | | | DHCP | PrSet |

| Bit | Item | Initial Value | Setting Range | Description | | | | |
|--------|---|---------------|---------------|--|-----------|--|-------------------------------|--|
| 0 | Communication setting selection (PrSet) | 0 | 0 | Use a flash memory setting of an option unit | | | | |
| | | | 1 | Use a parameter setting value IP address (<i>Pr.434 to Pr.437</i>), sub net mask (<i>Pr.438 to Pr.441</i>), gateway address (<i>Pr.442 to Pr.445</i>), DHCP setting (DHCP section of this parameter), communication speed (ComSet section of this parameter), transmission direction (ComSet section of this parameter) | | | | |
| 1 | DHCP | 0 | 0 | DHCP is valid | | | | |
| | | | 1 | DHCP is invalid | | | | |
| 2 to 4 | Communication setting (ComSet) | 0 | b4 | b3 | b2 | Communication speed | Transmission direction | |
| | | | 0 | * | * | Automatic recognition (Auto Negotiation) | | |
| | | | 1 | 0 | 0 | 10Mbps | half-duplex | |
| | | | 1 | 0 | 1 | 10Mbps | all-duplex | |
| | | | 1 | 1 | 0 | 100Mbps | half-duplex | |
| 1 | 1 | 1 | 100Mbps | all-duplex | | | | |

* Either 0 or 1. (Initial value is "0".)

| Bit | Item | Initial Value | Setting Range | Description |
|----------|--|---------------|---------------|---|
| 5 to 10 | — | 0 | — | Not available (The set value is ignored.) |
| 11 | Selection of continuous communication at inverter reset (ResCom) | 0 | 0 | Reset the option unit in synchronization with the inverter. When connection is timed out, communication may not resume according to the master action. In this case, release connection and reestablish to make communication enabled. |
| | | | 1 | The option unit will not be reset even if the inverter is reset and communication continues. (except for after occurrence of "E.3") After inverter reset, preset a value other than "0" in Pr. 340 so that the inverter starts in network operation mode. |
| 12 to 15 | Key data | 0 | 0 | Set "0" always. When a value other than "0" is set, the inverter operates as when "0" (initial value) is set in Pr. 540. |

REMARKS

Even if the communication setting is set to "automatic recognition" (bit 4=0), the inverter may not be able to recognize the setting depending on the communication setting of the master. (Refer to the following table)

| Inverter Master | Automatic /recognition | 10Mbps /half-duplex | 10Mbps /all-duplex | 100Mbps /half-duplex | 100Mbps /all-duplex |
|-----------------------|---------------------------|------------------------|-----------------------|-------------------------|------------------------|
| Automatic recognition | ○ | ○ | — | ○ | — |
| 10Mbps/half-duplex | ○ | ○ | — | — | — |
| 10Mbps/all-duplex | — | — | ○ | — | — |
| 100Mbps/half-duplex | ○ | — | — | ○ | — |
| 100Mbps/all-duplex | — | — | — | — | ○ |

○ : Can be combined — : Can not be combined



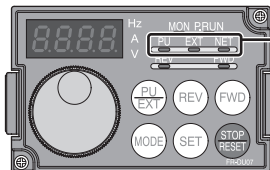
4.3 Operation Mode Setting

The inverter mounted with a communication option has three operation modes.

- (1) PU operation [PU]..... Controls the inverter from the key of the operation panel (FR-DU07) mounted on the inverter.
- (2) External operation [EXT] ... Controls the inverter by switching on/off external signals connected to the control circuit terminals of the inverter.
(The inverter is factory-set to this mode.)
- (3) Network operation [NET] ... Controls the inverter with instructions from the network via the communication option.
(The operation signal and running frequency can be entered from the control circuit terminals depending on the *Pr. 338 Communication operation command source* and *Pr. 339 Communication speed command source* setting.
Refer to page 25.)

4.3.1 Operation mode indication

FR-DU07



Operation mode indication
(The inverter operates according to the LED lit mode.)

- PU: PU operation mode
- EXT: External operation mode
- NET: Network operation mode

4.3.2 Operation mode switching and communication startup mode (Pr. 79, Pr. 340)

(1) Operation mode switching conditions

Before switching the operation mode, check that:

- 1) The inverter is at a stop;
- 2) Both the STF and STR signals are off; and
- 3) The *Pr. 79 Operation mode selection* setting is correct.

(Set with the operation panel of the inverter.)

Refer to *the inverter manual (applied)* for details of *Pr. 79*.

(2) Operation mode selection at power on and at restoration from instantaneous power failure

The operation mode at power on and at restoration from instantaneous power failure can be selected.

Set a value other than "0" in *Pr. 340* to select the network operation mode.

After started in network operation mode, parameter write from the network is enabled.

REMARKS

1. Change of the *Pr. 340* setting is made valid when powering on or resetting the inverter.
2. *Pr. 340* can be changed with the operation panel independently of the operation mode.




| Pr. 340 Setting | Pr. 79 Setting | Operation Mode at Power on or Power Restoration | Operation Mode Switchover |
|----------------------|-------------------|---|--|
| 0 (initial value) | 0 (initial value) | External operation mode | Switching among the external, PU, and NET operation mode is enabled *1 |
| | 1 | PU operation mode | PU operation mode fixed |
| | 2 | External operation mode | Switching between the external and Net operation mode is enabled Switching to the PU operation mode is disallowed |
| | 3, 4 | External/PU combined operation mode | Operation mode switching is disallowed |
| | 6 | External operation mode | Switching among the external, PU, and NET operation mode is enabled while running. |
| | 7 | X12 (MRS) signal ON external operation mode | Switching among the external, PU, and NET operation mode is enabled *1 |
| | | X12 (MRS) signal OFF ... external operation mode | External operation mode fixed (Forcibly switched to external operation mode.) |
| 1, 2 *2 | 0 | NET operation mode | Same as when Pr. 340 = "0" |
| | 1 | PU operation mode | |
| | 2 | NET operation mode | |
| | 3, 4 | External/PU combined operation mode | |
| | 6 | NET operation mode | |
| | 7 | X12 (MRS) signal ON NET operation mode | |
| | | X12 (MRS) signal OFF ... external operation mode | |
| 10, 12 *2 | 0 | NET operation mode | Switching between the PU and NET operation mode is enabled *3 |
| | 1 | PU operation mode | Same as when Pr. 340 = "0" |
| | 2 | NET operation mode | NET operation mode fixed |
| | 3, 4 | External/PU combined operation mode | Same as when Pr. 340 = "0" |
| | 6 | NET operation mode | Switching between the PU and NET operation mode is enabled while running *3 |
| | 7 | External operation mode | Same as when Pr. 340 = "0" |

*1 Operation mode can not be directly changed between the PU operation mode and network operation mode.

*2 The Pr. 340 settings "2, 12" are mainly used for communication operation using the inverter RS-485 terminal.

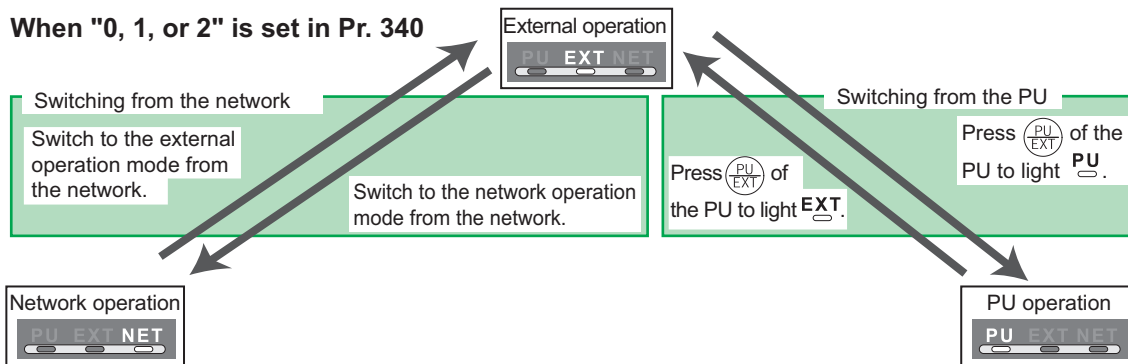
When a value other than "9999" (selection of automatic restart after instantaneous power failure) is set in Pr. 57 Restart coasting time, the inverter will resume the same operation state which was in before after power has been restored from an instantaneous power failure.

When Pr.340 = "1, 10", a start command turns off if power failure has occurred and then restored during a start command is on.

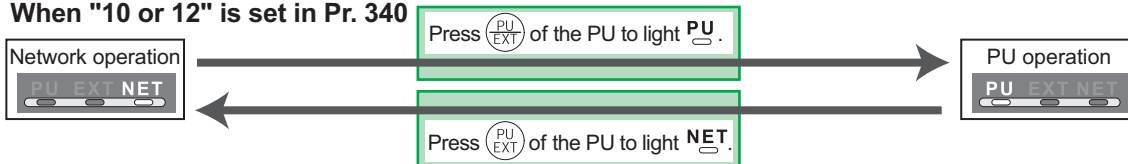
*3 Operation mode can be changed between the PU operation mode and network operation mode with  of the operation panel (FR-DU07) and X65 signal.

(3) Operation mode switching method

When "0, 1, or 2" is set in Pr. 340



When "10 or 12" is set in Pr. 340



For the switching method from the external terminal, refer to *the inverter manual (applied)*.
Refer to *page 65* for a switching method from the network.

CAUTION

- When starting the inverter in network operation mode at powering on or an inverter reset, set a value other than 0 in Pr. 340. (Refer to page 21)
- When setting a value other than 0 in Pr. 340, make sure that the initial settings of the inverter are correct.



4.4 Operation and Speed Command Source (Pr. 338, Pr. 339, Pr. 550)

(1) Select control source for the network operation mode (Pr. 550)

A control location for the network operation mode can be selected from either the inverter RS-485 terminal or communication option.

When using a communication option, set "0 or 9999 (initial value)" in *Pr. 550*.

| Parameter Number | Name | Initial Value | Setting Range | Description |
|------------------|---|---------------|---------------|---|
| 550 | NET mode operation command source selection | 9999 | 0 | Control source of the communication option is valid (control source of the inverter RS-485 terminal is invalid) |
| | | | 1 | Control source of the inverter RS-485 terminal is valid (control source of the communication option is invalid) |
| | | | 9999 | Automatic recognition of the communication option Normally, control source of the RS-485 terminal is valid. When a communication option is mounted, the control source of the communication option is valid. |

Refer to the inverter manual (applied) for details.

(2) Selection of control source for the network operation mode (Pr. 338, Pr. 339)

- As control sources, there are operation command source that controls signals related to the start command and function selection of the inverter and speed command source that controls signals related to frequency setting.
- In network operation mode, commands from the external terminals and communication are as listed below.

| Control Location Selection | Pr. 338 Communication operation command source | | | 0:NET | | | 1:External | | | Remarks |
|---|--|----------------------------------|---|--------------|-------------|-------------|------------|-------------|-------------|--|
| | Pr. 339 Communication speed command source | | | 0:NET | 1: External | 2: External | 0:NET | 1: External | 2: External | |
| Fixed functions (Functions equivalent to terminals) | Running frequency from communication | | | NET | — | NET | NET | — | NET | |
| | Terminal 2 | | | — | External | — | — | External | — | |
| | Terminal 4 | | | — | External | | — | External | | |
| | Terminal 1 | | | Compensation | | | | | | |
| Selective functions Pr. 178 to Pr. 189 settings | 0 | RL | Low-speed operation command/remote setting clear | NET | External | | NET | External | | Pr. 59 = "0" (multi-speed) Pr. 59 = "1, 2" (remote) |
| | 1 | RM | Middle-speed operation command/remote setting deceleration | NET | External | | NET | External | | |
| | 2 | RH | High-speed operation command/remote setting acceleration | NET | External | | NET | External | | |
| | 3 | RT | Second function selection | NET | | | External | | | |
| | 4 | AU | Terminal 4 input selection | — | Combined | | — | Combined | | |
| | 5 | JOG | Jog operation selection | — | | | External | | | |
| | 6 | CS | Automatic restart after instantaneous power failure selection | External | | | | | | |
| | 7 | OH | External thermal relay input | External | | | | | | |
| | 8 | REX | 15-speed selection | NET | External | | NET | External | | Pr. 59 = "0" (multi-speed) |
| | 9 | X9 | Third function | NET | | | External | | | |
| 10 | X10 | Inverter operation enable signal | External | | | | | | | |



| Control Location Selection | Pr. 338 Communication operation command source | | 0:NET | | | 1:External | | | Remarks | |
|--|--|----------------------------|--|-------------|-------------|------------|-------------|-------------|---------|---|
| | Pr. 339 Communication speed command source | | 0:NET | 1: External | 2: External | 0:NET | 1: External | 2: External | | |
| Selective functions Pr. 178 to Pr. 189 settings | 11 | X11 | FR-HC connection, instantaneous power failure detection | External | | | | | | |
| | 12 | X12 | PU operation external interlock | External | | | | | | |
| | 13 | X13 | External DC injection brake operation is started | NET | | | External | | | |
| | 14 | X14 | PID control valid terminal | NET | External | | NET | External | | |
| | 15 | BRI | Brake opening completion signal | NET | | | External | | | |
| | 16 | X16 | PU operation-external operation switching | External | | | | | | |
| | 17 | X17 | Load pattern selection forward rotation reverse rotation boost | NET | | | External | | | |
| | 18 | X18 | V/F swichover | NET | | | External | | | |
| | 19 | X19 | Load torque high speed frequency | NET | | | External | | | |
| | 20 | X20 | S-pattern acceleration/deceleration C switching terminal | NET | | | External | | | |
| | 22 | X22 | Orientation command *1 | NET | | | External | | | |
| | 23 | LX | Pre-excitation | NET | | | External | | | |
| | 24 | MRS | Output stop | Combined | | | External | | | Pr. 79 ≠ "7" |
| | | | PU operation interlock | External | | | | | | Pr. 79 = "7" When the X12 signal is not assigned |
| | 25 | STOP | Start self-holding selection | — | | | External | | | |
| | 26 | MC | Control mode swichover | NET | | | External | | | |
| | 27 | TL | Torque limit selection | NET | | | External | | | |
| | 28 | X28 | Start time tuning | NET | | | External | | | |
| | 37 | X37 | Traverse function selection | NET | | | External | | | |
| | 42 | X42 | Torque bias selection 1 *1 | NET | | | External | | | |
| 43 | X43 | Torque bias selection 2 *1 | NET | | | External | | | | |
| 44 | X44 | P/PI control swichover | NET | | | External | | | | |

| Control Location Selection | | Pr. 338 Communication operation command source | | 0:NET | | | 1:External | | | Remarks | |
|----------------------------|-----------------------------|--|-----|---|-------------|-------------|------------|-------------|-------------|---------|--|
| | | Pr. 339 Communication speed command source | | 0:NET | 1: External | 2: External | 0:NET | 1: External | 2: External | | |
| Selective functions | Pr. 178 to Pr. 189 settings | 50 | SQ | Sequence start | Combined | | | External | | | |
| | | 60 | STF | Forward rotation command | NET | | | External | | | |
| | | 61 | STR | Reverse rotation command | NET | | | External | | | |
| | | 62 | RES | Reset | | | | External | | | |
| | | 63 | PTC | PTC thermistor selection | | | | External | | | |
| | | 64 | X64 | PID forward rotation action switchover | NET | External | | NET | External | | |
| | | 65 | X65 | PU/NET operation switchover | | | | External | | | |
| | | 66 | X66 | NET/external operation switchover | | | | External | | | |
| | | 67 | X67 | Command source switchover | | | | External | | | |
| | | 68 | NP | Conditional position pulse train sign *1 | | | | External | | | |
| | | 69 | CLR | Conditional position droop pulse clear *1 | | | | External | | | |
| | | 70 | X70 | DC feeding operation permission | NET | | | External | | | |
| | | 71 | X71 | DC feeding cancel | NET | | | External | | | |

*1 Available only when used with the FR-A7AP.

[Explanation of table]

External :Control by signal from external terminal is only valid.

NET :Control from network is only valid

Combined :Operation from either external terminal or communication is valid.

— :Operation from either external terminal or computer is invalid.

Compensation :Control by signal from external terminal is only valid if Pr. 28 Multi-speed input compensation setting is "1".



4.4.1 Communication EEPROM write selection (Pr. 342)

When parameter write is performed from the communication option, write to RAM is enabled. Set when frequent parameter changes are necessary.

| Parameter Number | Name | Initial Value | Setting Range | Description |
|------------------|--------------------------------------|---------------|---------------|--|
| 342 | Communication EEPROM write selection | 0 | 0 | Parameter values written by communication are written to the EEPROM and RAM. |
| | | | 1 | Parameter values written by communication are written to the RAM. |

- When changing the parameter values frequently, set "1" in *Pr. 342* to write them to the RAM. Performing frequent parameter write with "0 (initial value)" (EEPROM write) set will shorten the life of the EEPROM.

REMARKS

When "1" (write to RAM only) is set in *Pr. 342*, powering off the inverter will erase the changed parameter values. Therefore, the parameter values available when power is switched on again are the values stored in EEPROM previously.

4.5 Operation at Communication Error Occurrence

4.5.1 Operation selection at communication error occurrence (Pr. 500 to Pr. 502)

You can select operations at communication error occurrences by setting *Pr. 500 to Pr. 502* under network operation.

(1) The set time from when a communication line error occurrence until communication error output

You can set the waiting time from when a communication line error occurs until it is recognized as a communication error.

| Parameter Number | Name | Setting Range | Minimum Setting Increments | Initial Value |
|------------------|--|---------------|----------------------------|---------------|
| 500 | Communication error execution waiting time | 0 to 999.8s | 0.1s | 0 |

If the communication line error still persists after the time set in *Pr. 500* has elapsed, it is recognized as a communication error.

When the error is restored to normal communication within the set time, it is not regarded as a communication error and operation continues.

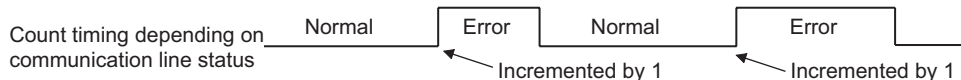


(2) Display and erasure of communication error occurrence count

The cumulative number of communication error occurrences can be indicated.

Write "0" to erase this cumulative count.

| Parameter Number | Name | Setting Range | Minimum Setting Increments | Initial Value |
|------------------|--|---------------|----------------------------|---------------|
| 501 | Communication error occurrence count display | 0 | 1 | 0 |



At the point of communication line error occurrence, *Pr. 501 Communication error occurrence count display* is incremented by 1.

CAUTION

The communication error count occurrence is stored into RAM temporarily. Since this data is stored in EEPROM at one-hour intervals, performing power-on reset or inverter may cause the *Pr. 501* data to be the value stored in EEPROM the last time depending on the reset timing.

(3) Inverter operation selection at communication error occurrence

You can select the inverter operation if a communication line error or an error of the option unit itself occurs.

| Parameter Number | Name | Setting Range | Minimum Setting Increments | Initial Value |
|------------------|--|---------------|----------------------------|---------------|
| 502 | Stop mode selection at communication error | 0, 1, 2, 3 | 1 | 0 |

About setting**●Operation at error occurrence**

| Alarm Definition | Pr. 502 Setting | Operation | Indication | Alarm Output |
|-----------------------------|-----------------|---------------------|---------------------|---------------------|
| Communication line | 0 | Continued * | Normal indication * | Not provided * |
| | 1 | | | |
| | 2 | | | |
| | 3 | | | |
| Communication option itself | 0, 3 | Coast to stop | E. 3 lit | Provided |
| | 1, 2 | Decelerated to stop | E. 3 lit after stop | Provided after stop |

*When the error returns to normal communication within the time set in Pr. 500, it is not regarded as a communication line error (E.OP3).

●Operation at error recognition after elapse of Pr. 500 time

| Alarm Definition | Pr. 502 Setting | Operation | Indication | Alarm Output |
|-----------------------------|-----------------|---------------------|----------------------|---------------------|
| Communication line | 0 | Coast to stop | E.OP3 lit | Provided |
| | 1 | Decelerated to stop | E.OP3 lit after stop | Provided after stop |
| | 2 | | | Not provided |
| | 3 | Continued | Normal indication | |
| Communication option itself | 0, 3 | Coast to stop | E.3 lit | Provided |
| | 1, 2 | Decelerated to stop | E.3 lit after stop | Provided after stop |


●Operation at error removal

| Alarm Definition | Pr. 502 Setting | Operation | Indication | Alarm Output |
|-----------------------------|-----------------|--------------|-------------------|---------------|
| Communication line | 0 | Kept stopped | E.OP3 kept lit | Kept provided |
| | 1 | | | |
| | 2 | Restart | Normal indication | Not provided |
| | 3 | Continued | | |
| Communication option itself | 0, 3 | Kept stopped | E.3 kept lit | Kept provided |
| | 1, 2 | | | |

CAUTION

1. A communication line error [E.OP3 (alarm data: HA3)] is an error that occurs on the communication line, and an error of the communication option unit itself [E. 3 (alarm data: HF3)] is a communication circuit error in the option.
 2. The alarm output indicates alarm output signal (terminal ABC1) or alarm bit output.
 3. When the setting was made to provide an alarm output, the error definition is stored into the alarm history. (The error definition is written to the alarm history when an alarm output is provided.)
When no alarm output is provided, the error definition overwrites the alarm indication of the alarm history temporarily, but is not stored.
After the error is removed, the alarm indication is reset and returns to the ordinary monitor, and the alarm history returns to the preceding alarm indication.
 4. When the Pr. 502 setting is "1" or "2", the deceleration time is the ordinary deceleration time setting (e.g. Pr. 8, Pr. 44, Pr. 45).
 5. The acceleration time at a restart is the ordinary acceleration time setting (e.g. Pr. 7, Pr. 44).
 6. When the Pr. 502 setting is "2", the operation/speed command at a restart is the one given before the error occurrence.
 7. When a communication line error occurs at the Pr. 502 setting of "2", removing the error during deceleration causes acceleration to restart at that point. (Acceleration is not restarted if the error is that of the option unit itself.)
-

4.5.2 Alarm and measures

(1) The inverter operates as follows at alarm occurrences.

| Alarm Location | Status | | Operation Mode | | |
|----------------------|---------------------------------------|--------------------|---|--|--|
| | | | Network Operation | External Operation | PU Operation |
| Inverter | Inverter operation | | Inverter trip | Inverter trip | Inverter trip |
| | Data communication | | Continued | Continued | Continued |
| Communication line | Inverter operation | | Inverter trip (depends on the Pr. 502 setting) | Continued | Continued |
| | Data communication | | Stop | Stop | Stop |
| Communication option | Communication option connection error | Inverter operation | Inverter trip (depends on the Pr. 502 setting) | Inverter trip (depends on the Pr. 502 setting) | Inverter trip (depends on the Pr. 502 setting) |
| | | Data communication | Continued | Continued | Continued |
| | Error of communication option itself | Inverter operation | Inverter trip (depends on the Pr. 502 setting) | Continued | Continued |
| | | Data communication | Stop | Stop | Stop |

**(2) Measures at alarm occurrences**

| Alarm Indication | Alarm Definition | Measures |
|-------------------------|--------------------------|--|
| E.OP3 | Communication line error | Check the LED status of the option unit and remove the cause of the alarm. (Refer to <i>page 4</i> for LED indication status) Inspect the master. |
| E.1, E.2, E.3 | Option alarm | Check the connection between the inverter and option unit for poor contact, etc. and remove the cause of the error. Fit the communication option in the option connector 3. |

When alarms other than the above are displayed, refer to the inverter manual and remove the cause of the alarm.

4.6 Inverter Reset

(1) Operation conditions of inverter reset

Which resetting method is allowed or not allowed in each operation mode is described below.

| Resetting Method | | | Operation Mode | | |
|-----------------------------|---|------------|-------------------|--------------------|--------------|
| | | | Network Operation | External Operation | PU Operation |
| Reset from the network | Inverter reset (Class 0x2A, Instance 1, Attribute 101) (Refer to page 62) *1 | | Allowed | Disallowed | Disallowed |
| | Error reset at inverter fault (Refer to page 36) *2 | Pr.349 = 0 | Allowed | Allowed | Allowed |
| Pr.349 = 1 | | Disallowed | | Disallowed | |
| Turn on the terminal RES-SD | | | Enabled | Enabled | Enabled |
| Switch off inverter power | | | Enabled | Enabled | Enabled |
| Reset from the PU/DU | Inverter reset | | Enabled | Enabled | Enabled |
| | Reset at inverter fault | | Enabled | Enabled | Enabled |

*1 Inverter reset can be made any time.

*2 Reset can be made only when the protective function of the inverter is activated.

CAUTION

- When a communication line error has occurred, reset cannot be made from the network.
- The inverter is set to the external operation mode if it has been reset in network operation mode in the initial status.
To resume the network operation, the inverter must be switched to the network operation mode again. Set a value other than "0" in Pr. 340 to start in network operation mode. (Refer to page 21.)
- The inverter can not be controlled for about 1s after release of a reset command .


(2) Error reset operation selection at inverter fault

When used with the communication option (FR-A7NE), an error reset command* from network can be made invalid in the external operation mode or PU operation mode.

| Parameter Number | Name | Initial Value | Setting Range | Function |
|------------------|-------------------------------|---------------|---------------|--|
| 349 | Communication reset selection | 0 | 0 | Error reset* is enabled independently of operation mode |
| | | | 1 | Error reset* is enabled only in the network operation mode |

*Class 0x04 Attribute 3 Instance 20, 21, 126, 129 Byte0 Bit2 (Refer to page 45.)

4.7 Frequency and Speed Conversion Specifications

When the running speed monitor is selected, each monitor and setting are determined by the combination of *Pr. 37* and *Pr. 144* as listed below. (The units within the thick frame are the initial values.)

| <i>Pr. 37</i> Setting | <i>Pr. 144</i> Setting | Output Frequency Monitor | Set Frequency Monitor | Running Speed Monitor | Frequency Setting Parameter Setting |
|--------------------------|---------------------------|-----------------------------|--------------------------|--------------------------|--|
| 0 (initial value) | 0 | Hz | Hz | r/min *1 | Hz |
| | 2 to 10 | Hz | Hz | r/min *1 | Hz |
| | 102 to 110 | Hz (r/min) *3 | Hz (r/min) *3 | r/min *1 | Hz (r/min) *3 |
| 1 to 9998 | 0 | Hz | Hz | Machine speed *1 | Hz |
| | 2 to 10 | Hz (Machine speed) *3 | Hz (Machine speed) *3 | Machine speed *1 | Hz (Machine speed) *3 |
| | 102 to 110 | Hz | Hz | r/min *1 | Hz |

*1 Motor speed r/min conversion formula frequency \times 120/number of motor poles (*Pr. 144*)

Machine speed conversion formula *Pr. 37* \times frequency/*Pr. 505**

* *Pr. 505* is always set as frequency (Hz).

For *Pr. 144* in the above formula, the value is "*Pr. 144-100*" when "102 to 110" is set in *Pr. 144* and the value is "4" when *Pr. 37* = 0 and *Pr. 144* = 0.

*2 The increments for Hz are 0.01Hz, machine speed are 1m/min, and r/min are 1r/min.

*3 When the FR-A7NE is not mounted, the unit of the value is as in parenthesis.

REMARKS

Refer to the inverter manual (applied) for details of *Pr. 37*, *Pr. 144*, and *Pr. 505*.

5 FUNCTIONS

5.1 Output from the Inverter to the Network

Main items to be output from the inverter (FR-A7NE) to the network and their descriptions are explained below.

| Item | Description | Refer to Page |
|---------------------|---|---------------|
| Inverter monitor | Monitor various items such as inverter output frequency and output current. | 68, 89 |
| Operation mode read | Read the operation mode of the inverter. | 65 |
| Parameter read | Read parameter settings of the inverter. | 79, 86, 88 |
| Inverter status | Monitor the output signal of the inverter. | 65 |
| Alarm definition | Monitor the alarm history of the inverter. | 66 |

REMARKS

Refer to *the inverter manual (applied)* for functions controllable from the network in each operation mode.

5.2 Input to the Inverter from the Network

Main items which can be commanded from the network to the inverter and their descriptions are explained below.

| Item | Description | Refer to Page |
|----------------------|---|---------------|
| Frequency setting | Set the running frequency of the inverter. | 45 |
| Operation mode write | Set the operation mode of the inverter. | 65 |
| Run command | Set the control input command such as forward operation signal (STF) and reverse rotation signal (STR). | 45, 65 |
| Inverter reset | Reset the inverter. | 44, 64 |
| Parameter write | Set parameters of the inverter. | 79, 86, 88 |
| Parameter clear | Return parameters to the initial values. | 44, 64 |

REMARKS

Refer to *the inverter manual (applied)* for functions controllable from the network in each operation mode.

6 OBJECT MAP DEFINITIONS

6.1 Object Model of EtherNet/IP Communication

For EtherNet/IP communication, each node is modeled as collections of objects (abstraction of particular functions of the products).

The following four terms are used to describe object.

| Item | Description |
|-----------|--|
| Class | Collections of all objects which have same types of functions. Generalization of object |
| Instance | Concrete expression of object |
| Attribute | Expression of object characteristic |
| Service | Function supported by object or class |

The following explains object definitions for use of the FR-A7NE EtherNet/IP.

| Class | Object Name | Page |
|-------|---------------------------|------|
| 0x01 | Identity Object | 43 |
| 0x04 | Assembly Object | 45 |
| 0x06 | Connection Manager Object | 58 |
| 0x28 | Motor Data Object | 59 |
| 0x29 | Control Management Object | 60 |
| 0x2A | AC Drive Object | 62 |
| 0xF4 | Port Object | 70 |

| Class | Object Name | Page |
|--------------|-------------------------|------|
| 0xF5 | TCP/IP Interface Object | 72 |
| 0xF6 | EtherNet Link Object | 75 |
| 0x66 | Extended Object I | 79 |
| 0x67 | Extended Object II | 86 |
| 0x70 to 0x79 | Extended Object III | 88 |
| 0x80 | Extended Object IV | 89 |

In the following tables, Get and Set mean:

Get :Read from inverter

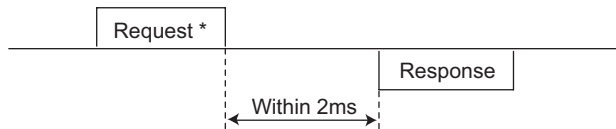
Set :Read from inverter



6.2 Response Level

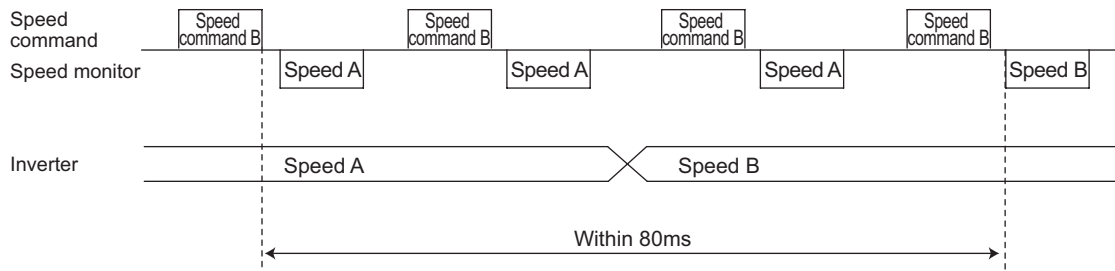
6.2.1 Response level of Polling I/O

(1) Response level of bus



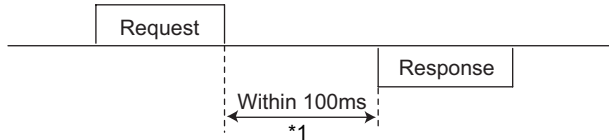
* Polling request is accepted only when polling data is changed.

(2) Reflect timing on the speed monitor after speed setting

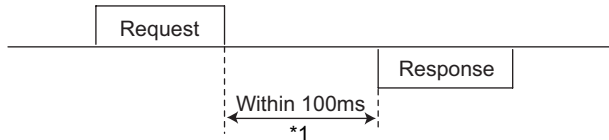


6.2.2 Response level of explicit message

(1) Reading



(2) Writing



*1 Return "Object State Conflict" during processing of 1 command. (Refer to page 94)

(3) Parameter clearing

The inverter will not respond until parameter clear processing complete (about 5s) after sending parameter all clear command.



6.3 Recommendation for Software Design

Please note the followings when developing designing.

- (1) After sending request to the FR-A7NE, wait for response from the FR-A7NE, then send the next request.
- (2) Set waiting time between each message based on FR-A7NE response time on *page 40*.
For example, after sending a writing request by Explicit message, wait for more than 100ms, then send the next request.

7 OBJECT MAP

7.1 Class 0x01 (Identity-Object)

7.1.1 Class 0x01 Instance 0

(1) Attribute

| Attribute ID | Access | Description | Data Length | Attribute Value |
|--------------|--------|-------------------------|-------------|-----------------|
| 1 | Get | Revision | Word | 1 |
| 2 | Get | Maximum Instance | Word | 1 |
| 6 | Get | Max Class Attributes | Word | 7 |
| 7 | Get | Max Instance Attributes | Word | 7 |

(2) Service

| Service Code | Description |
|--------------|----------------------|
| 0x0E | Get Attribute Single |



7.1.2 Class 0x01 Instance 1

(1) Attribute

| Attribute ID | Access | Description | Data Length | Attribute Value |
|--------------|--------|---------------------------------|-------------|-----------------|
| 1 | Get | Vendor ID (Mitsubishi electric) | Word | 161 |
| 2 | Get | Device Type (AC drive) | Word | 02 |
| 3 | Get | Product Code | Word | 56 |
| 4 | Get | Revision | Struct | 1.YYY *1 |
| 5 | Get | Status | Word | *2 |
| 6 | Get | Serial Number | Double Word | xxxxxxxx |
| 7 | Get | Product Name (FR-A700) | 5 Byte | A700 *3 |

*1 High byte of hexadecimal word data means integer and low byte means decimal.
For example, when the read data is 0x010A, it means version 1.010.

*2 Bit definition

Bit 0: 0 = allocated, 1 = not allocated, Bit 2: 0, Bit 8: 1 = minor fault occurrence, Bit 9: 0, Bit 10: 1 = LED is flickering red, Bit 11: 1 = LED is lit red

*3 As the actual data, 0x04, 0x41, 0x37, 0x30, and 0x30 are stored. 0x04 means 4 byte data and the rest means ASCII code of "A700".

(2) Service

| Service Code | Symbol | Name | Setting Range | Description |
|--------------|--------|----------------------|---------------|---|
| 0x05 | Reset | Reset *1 | 0 | Inverter reset *2 |
| | | | 1 | Flash memory clear, inverter reset after all parameter clear *2 |
| 0x0E | Get | Get_Attribute_Single | — | Get Attribute Single |

*1 As set in *Pr. 75*. Refer to the inverter manual for details of *Pr. 75*.

*2 Inverter reset and all parameter clear are not performed when the inverter will not accept the order.

7.2 Class 0x04 (Assembly Object)

7.2.1 Class 0x04 Output Instance 20, 21, 126, 129

Use Class 0x29 Instance 1 Attribute 141 for selection of output assembly (Instance 20, 21, 126, 129).
(Refer to page 60)

| Attribute ID | Access | Name | Initial Value | Data Length | Description |
|--------------|--------|------|---------------|----------------|-------------------|
| 3 | Get | Data | — | Byte alignment | Refer to 1. to 4. |

1. Output Instance 20

When using Output Instance 20, set Input Instance to 70.

| Byte | Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
|------|-----------------------------|-------|-------|-------|-------|-------------|-------|---------|
| 0 | — | — | — | — | — | Fault Reset | — | Run Fwd |
| 1 | — | | | | | | | |
| 2 | Speed reference (low byte) | | | | | | | |
| 3 | Speed reference (high byte) | | | | | | | |

[Instance 20 details]

| | | | |
|----------------|------|-------------|--|
| Byte0 | Bit0 | Run Fwd | Forward rotation signal (0:forward rotation off 1:forward rotation on) |
| | Bit2 | Fault Reset | Reset request at an error occurrence Valid only at in inverter trip (0:no function 1:fault reset request) |
| Byte2 Byte3 | | Speed Ref | Speed reference (r/min) Conversion of speed and frequency depends on the <i>Pr. 144</i> setting. (refer to page 37.) |



2. Output Instance 21 (initial value)

When using Output Instance 21, set Input Instance to 71.

| Byte | Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
|------|-----------------------------|---------|----------|-------|-------|-------------|---------|---------|
| 0 | — | Net Ref | Net Ctrl | — | — | Fault Reset | Run Rev | Run Fwd |
| 1 | — | | | | | | | |
| 2 | Speed reference (low byte) | | | | | | | |
| 3 | Speed reference (high byte) | | | | | | | |

[Instance 21 details]

| | | | | |
|------------------------|-------------|--------------------|--|---------------------------------------|
| Byte0 | Bit0 | Run Fwd | Forward rotation signal (0: forward rotation off 1: forward rotation on) | Control related signals |
| | Bit1 | Run Rev | Reverse rotation signal (0: reverse rotation off 1: reverse rotation on) | |
| | Bit2 | Fault Reset | Reset request at an error occurrence Valid only at an inverter trip (0:no function 1:fault reset request) | Only NetCtrl (Bit 5) = 1 is valid. |
| | Bit5 | NetCtrl | Request permission bit of control related signals (Bit 0 to Bit 2) 0: Control related signals are invalid (it will not function even if bit is set). 1: Control related signals are valid (it will not be reflected to Pr. 338). | |
| | Bit6 | NetRef | Request permission bit of speed reference (Byte2, Byte3) 0: Speed related data is invalid (it will not function even if a value is set). 1: Speed related data is valid (it will not be reflected to Pr. 339). | |
| Byte2 Byte3 | | Speed Ref | Speed reference (r/min) Conversion of speed and frequency depends on the Pr. 144 setting. (refer to page 37.) | Only NetRef (Bit 6) = 1 is valid. |

3. Output instance 126

When using Output Instance 126, set Input Instance to 176.

| Byte | Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
|------|---|---------|----------|-------|-------|-------------|---------|---------|
| 0 | Write Param | Net Ref | Net Ctrl | — | — | Fault Reset | Run Rev | Run Fwd |
| 1 | Parameter Instance No. | | | | | | | |
| 2 | Speed reference or parameter write data (low byte) | | | | | | | |
| 3 | Speed reference or parameter write data (high byte) | | | | | | | |
| 4 | Parameter class | | | | | | | |
| 5 | Parameter attribute No. | | | | | | | |



[Instance 126 details]

| Byte0 | Bit0 | Run Fwd | Forward rotation signal (0:forward rotation off 1:forward rotation on) | Control related signals | | | | | | | | | | | | | |
|----------------|-----------------------------------|--|---|------------------------------------|---------|---------------|---|---|---|---|---|-----------------|---|---|----------------------|---|---|
| | Bit1 | Run Rev | Reverse rotation signal (0:reverse rotation off 1:reverse rotation on) | | | | | | | | | | | | | | |
| | Bit2 | Fault Reset | Reset request at an error occurrence Valid only at in inverter trip (0:no function 1:fault reset request) | Only NetCtrl (Bit 5) = 1 is valid. | | | | | | | | | | | | | |
| | Bit5 | NetCtrl | Request permission bit of control related signals (Bit 0 to Bit 2) 0: Control related signals are invalid (It will not function even if bit is set.) 1: Control related signals are valid (It will not be reflected to Pr. 338.) | | | | | | | | | | | | | | |
| | Bit6 | NetRef | Request permission bit of speed reference (Byte 2, Byte 3) 0: Speed setting value (Byte 2, 3) is invalid (It will not function even if a value is set.) 1: Speed setting value (Byte 2, 3) is valid (It will not reflected to Pr. 339.) | | | | | | | | | | | | | | |
| | Bit7 | Write Param | Request permission bit of speed reference or parameter write (Byte 2, Byte 3) 0: Byte 2, 3 are speed reference 1: Byte 2, 3 are written to parameter write data (It is written to parameter class and attribute set with Byte 4, 5.) | | | | | | | | | | | | | | |
| Byte1 | Parameter Instance No. | Instance No. can be specified. When 00 is specified, instance No. is regarded as 1. | | | | | | | | | | | | | | | |
| Byte2 Byte3 | Speed Ref or Parameter Write Data | Speed reference (r/min) or parameter write data Selection conditions are determined according to a combination of "NetRef (Bit 6)" and "WriteParam (Bit 7)". [When speed reference is selected] Conversion of speed and frequency depends on the Pr. 144 setting. (refer to page 37.) | <table border="1"> <thead> <tr> <th>Write Param</th> <th>Net Ref</th> <th>Selected Data</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>—</td> </tr> <tr> <td>0</td> <td>1</td> <td>Speed reference</td> </tr> <tr> <td>1</td> <td>0</td> <td rowspan="2">Parameter write data</td> </tr> <tr> <td>1</td> <td>1</td> </tr> </tbody> </table> | Write Param | Net Ref | Selected Data | 0 | 0 | — | 0 | 1 | Speed reference | 1 | 0 | Parameter write data | 1 | 1 |
| Write Param | Net Ref | Selected Data | | | | | | | | | | | | | | | |
| 0 | 0 | — | | | | | | | | | | | | | | | |
| 0 | 1 | Speed reference | | | | | | | | | | | | | | | |
| 1 | 0 | Parameter write data | | | | | | | | | | | | | | | |
| 1 | 1 | | | | | | | | | | | | | | | | |
| Byte4 | Parameter Class ID | Class ID to access to the inverter parameter (class 0x2A, 0x66, 0x67 etc.) | | | | | | | | | | | | | | | |
| Byte5 | Parameter Attribute ID | Attribute ID to access to the inverter parameter | | | | | | | | | | | | | | | |

4. Output instance 129

When using Output Instance 129, set Input Instance to 179.

| Byte | Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
|------|-----------------------------|---------|----------|-------|-------|-------------|---------|---------|
| 0 | MRS | Net Ref | Net Ctrl | — | — | Fault Reset | Run Rev | Run Fwd |
| 1 | STOP | MRS | JOG | RH | RM | RL | RT | AU |
| 2 | Speed reference (low byte) | | | | | | | |
| 3 | Speed reference (high byte) | | | | | | | |
| 4 | Monitor selection | | | | | | | |
| 5 | <i>Pr. 496</i> write value | | | | | | | |



[Instance 129 details]

| | | | | |
|----------------|----------------------|-------------|--|------------------------------------|
| Byte0 | Bit0 | Run Fwd | Forward rotation signal (0:forward rotation off 1:forward rotation on) | Control related signals |
| | Bit1 | Run Rev | Reverse rotation signal (0:reverse rotation off 1:reverse rotation on) | |
| | Bit2 | Fault Reset | Reset request at an error occurrence Valid only at in inverter trip (0:no function 1:fault reset request) | Only NetCtrl (Bit 5) = 1 is valid. |
| | Bit5 | NetCtrl | Request permission bit of control related signals (Bit 0 to Bit 2) 0: Control related signals are invalid (It will not function even if bit is set.) 1: Control related signals are valid (it will not be reflected to Pr. 338.) | |
| | Bit6 | NetRef | Request permission bit of speed reference (Byte2, Byte3) 0: Speed setting value (Byte2, Byte3) is invalid (it will not function even if a value is set.) 1: Speed setting value (Byte2, Byte3) is valid (it will not be reflected to Pr. 339.) | |
| | Bit7 | MRS | MRS signal (Signal is not affected by settings of Pr. 178 to Pr.189 (input terminal function selection).) 0: OFF 1: ON (output stop) | |
| Byte1 | Various input signal | | 1:ON 0:OFF (Signals can be set using Pr.178 to Pr.189 (input terminal function selection).) | |
| Byte2 Byte3 | Speed Ref | | Speed reference (r/min) Conversion of speed and frequency depends on the Pr. 144 setting. (refer to page 37.) | Only NetRef (Bit 6) = 1 is valid. |
| Byte4 | Monitor selection | | Value for monitor selection * | |
| Byte5 | Pr. 496 write value | | Write to Pr. 496. Write is performed under the condition that the current value and "Pr. 496 write value" are different. | |

* Value for monitor selection is as in the table below.

| Value | Description |
|-------|---|
| H01 | Output frequency |
| H02 | Output current |
| H03 | Output voltage |
| H05 | Frequency setting |
| H06 | Running speed |
| H07 | Motor torque |
| H08 | Converter output voltage |
| H09 | Regenerative brake duty |
| H0A | Electronic thermal relay function load factor |
| H0B | Output current peak value |
| H0C | Converter output voltage peak value |
| H0D | Input power |
| H0E | Output power |
| H0F | Input terminal status |
| H10 | Output terminal status |
| H11 | Load meter |
| H12 | Motor excitation current |
| H13 | Position pulse |

| Value | Description |
|-------|--------------------------------|
| H14 | Cumulative energization time |
| H16 | Orientation status |
| H17 | Actual operation time |
| H18 | Motor load factor |
| H19 | Cumulative power |
| H20 | Torque command |
| H21 | Torque current command |
| H22 | Motor output |
| H23 | Feedback pulse |
| H32 | Power saving effect |
| H33 | Cumulative saving power |
| H34 | PID set point |
| H35 | PID measured value |
| H36 | PID deviation time |
| H3A | Option input terminal status 1 |
| H3B | Option input terminal status 2 |
| H3C | Option input terminal status 3 |



7.2.2 Class 0x04 Input Instance 70, 71, 176, 179

Use Class 0x29 Instance 1 Attribute 140 for selection of input assembly (Instance 70, 71, 176, 179). (Refer to page 60)

| Attribute ID | Access | Name | Initial Value | Data Length | Description |
|--------------|--------|------|---------------|----------------|-------------------|
| 3 | Get | Data | — | Byte alignment | Refer to 1. to 4. |

1. Input Instance 70

When using Input Instance 70, set Output Instance to 20.

| Byte | Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
|------|--------------------------|-------|-------|-------|-------|-------------|-------|---------|
| 0 | — | — | — | — | — | Running Fwd | — | Faulted |
| 1 | 00 | | | | | | | |
| 2 | Speed actual (low byte) | | | | | | | |
| 3 | Speed actual (high byte) | | | | | | | |

[Instance 70 details]

| | | | |
|----------------|------|--------------|--|
| Byte0 | Bit0 | Faulted | Inverter error signal (0: inverter is under normal operation 1: inverter is in a fault state) |
| | Bit2 | Running Fwd | Forward rotation (0: other than forward rotation 1: forward rotation) |
| Byte2 Byte3 | | Speed Actual | Actual speed currently operating (r/min) Conversion of speed and frequency depends on the Pr. 144 setting. (refer to page 37.) |

2. Input Instance 71 (initial value)

When using Input Instance 71, set Output Instance to 21.

| Byte | Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
|------|--------------------------|--------------|---------------|-------|-------------|-------------|-------|---------|
| 0 | At Ref Speed | Ref From Net | Ctrl From Net | Ready | Running Rev | Running Fwd | — | Faulted |
| 1 | 00 | | | | | | | |
| 2 | Speed actual (low byte) | | | | | | | |
| 3 | Speed actual (high byte) | | | | | | | |

[Instance 71 details]

| | | | |
|----------------|------|--------------|---|
| Byte0 | Bit0 | Faulted | Inverter error signal (0: inverter is under normal operation 1: inverter is in a fault state) |
| | Bit2 | Running Fwd | Forward rotation (0: other than forward rotation 1: forward rotation) |
| | Bit3 | Running Rev | Reverse rotation (0: other than reverse rotation 1: reverse rotation) |
| | Bit4 | Ready | Ready signal (0: operation preparation 1: operation ready) (Always "1" after power on) |
| | Bit5 | CtrlFromNet | State of operation command source (Run/Stop) (Same definition with Class 0x29 Instance 1 Attribute 15 <i>Refer to page 60</i>) 0: Command is enabled in operation other than network 1: Command is enabled in network operation |
| | Bit6 | RefFromNet | State of speed command source (Same definition with Class 0x2A Instance 1 Attribute 29 <i>Refer to page 62</i>) 0: Command is enabled in operation other than network 1: Command is enabled in network operation |
| | Bit7 | AtReference | Up-to-frequency signal (SU signal) (Same definition with Class 0x2A Instance 1 Attribute 3 <i>Refer to page 62</i>) |
| Byte2 Byte3 | | Speed Actual | Actual speed currently operating (r/min) Conversion of speed and frequency depends on the Pr. 144 setting. (<i>refer to page 37.</i>) |



3. Input Instance 176

When using Input Instance 176, set Output Instance to 126.

| Byte | Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
|------|---------------------------------|--------------|---------------|-------|-------------|-------------|------------------|---------|
| 0 | At Reference | Ref From Net | Ctrl From Net | Ready | Running Rev | Running Fwd | Run command mode | Faulted |
| 1 | PrEnd | 00 | | | | | | |
| 2 | Speed actual (low byte) | | | | | | | |
| 3 | Speed actual (high byte) | | | | | | | |
| 4 | Parameter read data (low byte) | | | | | | | |
| 5 | Parameter read data (high byte) | | | | | | | |

[Instance 176 details]

| | | | |
|----------------|------|---------------------|---|
| Byte0 | Bit0 | Faulted | Inverter error signal (0: inverter is under normal operation 1: inverter is in a fault state) |
| | Bit1 | Run Command Mode * | 0: Command is disabled in network operation 1: Command is enabled in network operation |
| | Bit2 | Running Fwd | Forward rotation (0: other than forward rotation 1: forward rotation) |
| | Bit3 | Running Rev | Reverse rotation (0: other than reverse rotation 1: reverse rotation) |
| | Bit4 | Ready | Ready signal (0: operation preparation 1: operation ready) (Always "1" after power on) |
| | Bit5 | CtrlFromNet | State of operation command source (Run/Stop) (Same definition with Class 0x29 Instance 1 Attribute 15 <i>Refer to page 60</i>) 0: Command is enabled in operation other than network 1: Command is enabled in network operation |
| | Bit6 | RefFromNet | State of speed command source (Same definition with Class 0x2A Instance 1 Attribute 29 <i>Refer to page 62</i>) 0: Command is enabled in operation other than network 1: Command is enabled in network operation |
| | Bit7 | AtReference | Up-to-frequency signal (SU signal) (Same definition with Class 0x2A Instance 1 Attribute 3 <i>Refer to page 62</i>) |
| Byte1 | Bit7 | PrEnd | Parameter write is completed 0: Parameter write is not performed 1: During parameter write processing (during inverter processing) (This bit may change to 1 during Explicit message processing.) |
| Byte2 Byte3 | | Speed Actual | Actual speed currently operating (r/min) Conversion of speed and frequency depends on the <i>Pr. 144</i> setting. (<i>Refer to page 37</i>) |
| Byte4 Byte5 | | Parameter Read Data | Parameter read data specified with Parameter Class ID of Instance 126 Parameter Attribute ID (<i>Refer to page 48</i>) |

*Bit status in the run command mode is as follows. (For the running speed command source, refer to *page 25*.)

| Inverter Status | | | Run Command Mode |
|-----------------|----------------|----------------|------------------|
| Operation Mode | <i>Pr. 338</i> | <i>Pr. 339</i> | |
| NET | 0: NET | 0: NET | 1 |
| | 0: NET | 1: External | 0 |
| | 1: External | 0: NET | |
| | 1: External | 1: External | |
| Other than NET | — | — | |



4. Input Instance 179

When using Input Instance 179, set Output Instance to 129.

| Byte | Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
|------|--------------------------|--------------|---------------|-------|-------------|-------------|------------------|---------|
| 0 | At Reference | Ref From Net | Ctrl From Net | Ready | Running Rev | Running Fwd | Run command mode | Faulted |
| 1 | STOP | MRS | JOG | RH | RM | RL | RT | AU |
| 2 | Speed actual (low byte) | | | | | | | |
| 3 | Speed actual (high byte) | | | | | | | |
| 4 | Monitor data (low byte) | | | | | | | |
| 5 | Monitor data (high byte) | | | | | | | |

[Instance 179 details]

| | | | |
|-------|-------|------------------------|---|
| Byte0 | Bit0 | Faulted | Inverter error signal (0: inverter is under normal operation 1: inverter is in a fault state) |
| | Bit1 | Run Command Mode *1 | 0: Command is disabled in network operation 1: Command is enabled in network operation |
| | Bit2 | Running Fwd | Forward rotation (0: other than forward rotation 1: forward rotation) |
| | Bit3 | Running Rev | Reverse rotation (0: other than reverse rotation 1: reverse rotation) |
| | Bit4 | Ready | Ready signal (0: operation preparation 1: operation ready) (Always "1" after power on) |
| | Bit5 | CtrlFromNet | State of operation command source (Run/Stop) (Same definition with Class 0x29 Instance 1 Attribute 15 <i>Refer to page 60</i>) 0: Command is enabled in operation other than network 1: Command is enabled in network operation |
| | Bit6 | RefFromNet | State of speed command source (Same definition with Class 0x2A Instance 1 Attribute 29 <i>Refer to page 62</i>) 0: Command is enabled in operation other than network 1: Command is enabled in network operation |
| | Bit7 | AtReference | Up-to-frequency signal (SU signal) (Same definition with Class 0x2A Instance 1 Attribute 3 <i>Refer to page 62</i>) |
| Byte1 | | Input terminal monitor | 1: ON 0: OFF |
| Byte2 | Byte3 | Speed Actual *2 | Actual speed currently operating (r/min) Conversion of speed and frequency depends on the <i>Pr. 144</i> setting. (<i>Refer to page 37</i>) |
| Byte4 | Byte5 | Monitor data | Monitor data specified with "monitor selection" of Instance 129. |

*1 Bit status in the run command mode is as follows. (For the running speed command source, refer to *page 25*.)

| Inverter Status | | | Run Command Mode |
|-----------------|----------------|----------------|------------------|
| Operation Mode | <i>Pr. 338</i> | <i>Pr. 339</i> | |
| NET | 0: NET | 0: NET | 1 |
| | 0: NET | 1: External | 0 |
| | 1: External | 0: NET | |
| | 1: External | 1: External | |
| Other than NET | — | — | |

*2 As output frequency monitor (Hz) is converted into speed (r/min), the actual speed value may not always match with the "running speed monitor value (monitor code=06h)".



7.3 Class 0x06 (Connection Manager Object)

Instance attribute is not available.

(1) Service

| Service Code | Description |
|--------------|-----------------------|
| 0x0E | Open the connection. |
| 0x10 | Close the connection. |

7.4 Class 0x28 (Motor Data Object)

7.4.1 Class 0x28 Instance 1

(1) Attribute

| Attribute ID | Access | Name | Range | Description |
|--------------|---------|--------------------------------------|-------------|---|
| 3 | Get/Set | Motor type | 7 | Squirrel-cage induction motor (fixed value) |
| 6 | Get/Set | Rated motor current (<i>Pr. 9</i>) | 0 to 0xFFFF | [GET] Return the <i>Pr. 9</i> setting in 0.1A increments. (For the 55K or less, round the value to one decimal place.) [SET] Write the value to <i>Pr. 9</i> in 0.1A increments. |
| 7 | Get/Set | Rated voltage (<i>Pr. 19</i>) | 0 to 0xFFFF | [GET] · When <i>Pr. 19</i> = "9999" or "8888", return "200" for the 200V class and "400" for the 400V class. · When <i>Pr. 19</i> = "0 to 1000", return the <i>Pr. 19</i> setting. (decimal places are rounded) [SET] "0 to 1000", "65535(9999)", "65520(8888)" can be set. |

(2) Service

| Service Code | Description |
|--------------|----------------------|
| 0x0E | Get Attribute Single |
| 0x10 | Set Attribute Single |



7.5 Class 0x29 (Control Supervisor Object)

7.5.1 Class 0x29 Instance 1

(1) Attribute

Class 0x29 Instance 1

| Attribute ID | Access | Name | Initial Value | Range | Description |
|--------------|---------|--|---------------|-------|---|
| 3 | Get/Set | RUN1 | 00 | 0 | Stop |
| | | | | 1 | Forward rotation |
| 4 | Get/Set | RUN2 | 00 | 0 | Stop |
| | | | | 1 | Reverse rotation |
| 5 | Get/Set | NetCtrl (operation command source) (Pr. 338) | 1 | 0 | Other than Network operation |
| | | | | 1 | Network operation |
| 6 | Get | State | 3 | 1 | Startup |
| | | | | 2 | Not_Ready (during reset) |
| | | | | 3 | Ready (during stop) |
| | | | | 4 | Enabled (during acceleration, during constant speed, during reverse deceleration) |
| | | | | 5 | Stopping (during deceleration) |
| | | | | 6 | Fault_Stop (during deceleration with Pr. 502) |
| | | | | 7 | Faulted (during alarm occurrence) |
| 7 | Get | Running 1 (forward rotation command) | 0 | 0 | During stop |
| | | | | 1 | During forward rotation |
| 8 | Get | Running 2 (reverse rotation command) | 0 | 0 | During stop |
| | | | | 1 | During reverse rotation |

Class 0x29 Instance 1

| Attribute ID | Access | Name | Initial Value | Range | Description |
|--------------|---------|---|---------------|-------|-------------------------------------|
| 9 | Get | Ready | 1 | 0 | During reset or alarm occurrence |
| | | | | 1 | Stop or running |
| 10 | Get | Faulted | 0 | 0 | No fault present |
| | | | | 1 | Fault occurred (latched) |
| 12 | Get/Set | FaultRst (fault reset) *1 | 0 | 0 | Reset release at fault occurrence |
| | | | | 1 | Reset execution at fault occurrence |
| 15 | Get | CtrlFromNet (operation command source monitor) *2 | 1 | 0 | Other than Network operation |
| | | | | 1 | Network operation |
| 140 | Get/Set | Instance ID of Input Assembly *2, *3 | 0x47 (71) | 0x46 | Input Instance 70 |
| | | | | 0x47 | Input Instance 71 |
| | | | | 0xB0 | Input Instance 176 |
| | | | | 0xB3 | Input Instance 179 |
| 141 | Get/Set | Instance ID of Output Assembly *2, *4 | 0x15 (21) | 0x14 | Output Instance 20 |
| | | | | 0x15 | Output Instance 21 |
| | | | | 0x7E | Output Instance 126 |
| | | | | 0x81 | Output Instance 129 |

*1 After reset with 01 set, this value must be set to 00 before inverter reset may be performed.

*2 This data is only updated after inverter reset or power-on reset.

*3 When this ID is set, it is reflected to bit 7 to 11 of *Pr. 346*.

*4 When this ID is set, it is reflected to bit 2 to 6 of *Pr. 346*.

(2) Service

| Service Code | Description |
|--------------|----------------------|
| 0x0E | Get Attribute Single |
| 0x10 | Set Attribute Single |



7.6 Class 0x2A (AC Drive Object)

7.6.1 Class 0x2A Instance 1

(1) Attribute

Class 0x2A Instance 1

| Attribute ID | Access | Name | Range | Description | |
|--------------|---------|--|-----------------|--|---|
| 3 | Get | AtReference (up to frequency) | 0 | Output frequency has not reached the set frequency | |
| | | | 1 | Output frequency has reached the set frequency | |
| 4 | Get/Set | NetRef (operation command source) (Pr. 339) | 0 | Other than Network operation (Pr. 339=1) | Actual state of operation command can be monitored with Attribute 29. |
| | | | 1 | Network operation (Pr. 339=0) | |
| 6 | Get | DriveMode (operation mode) | 0 | Always 0 | |
| 7 | Get | SpeedActual (actual speed) | 0 to 32767r/min | The output frequency converted to speed is returned. (1r/min) As set in Pr. 37, Pr. 144. (Refer to page 37) | |
| 8 | Get/Set | SpeedRef (speed setting value) | 0 to 32767r/min | Set speed (1r/min) Conversion of frequency and speed depends on the Pr. 37, Pr. 144 setting. (Refer to page 37) | |
| 9 | Get | CurrentActual (actual current) | 0 to 3276.7A | The output current is monitored in 0.1A increments. | |
| 15 | Get | PowerActual (actual power) | 0 to 65535W | Output power is monitored in 1W increments. | |

Class 0x2A Instance 1

| Attribute ID | Access | Name | Range | Description |
|--------------|---------|---|-----------------|--|
| 17 | Get | OutputVoltage (output voltage) | 0 to 32767V | The output voltage is monitored in 1V increments. |
| 18 | Get/Set | AccelTime (acceleration time) | 0 to 65535ms | Acceleration time = $Pr. 7 \times (Pr. 1 / Pr. 20)$ Set the increments in ms regardless of the <i>Pr. 21</i> setting. |
| 19 | Get/Set | DecelTime (deceleration time) | 0 to 65535ms | Acceleration time = $Pr. 8 \times (Pr. 1 / Pr. 20)$ Set the increments in ms regardless of the <i>Pr. 21</i> setting. |
| 20 | Get/Set | LowSpdLimit (minimum frequency) (<i>Pr. 2</i>) | 0 to 65535r/min | Minimum speed (1r/min) Conversion of frequency and speed depends on the <i>Pr. 37, Pr. 144</i> setting. (Refer to page 37) |
| 21 | Get/Set | HighSpdLimit (maximum frequency) (<i>Pr. 1</i>) | 0 to 65535r/min | Maximum speed (1r/min) Conversion of frequency and speed depends on the <i>Pr. 37, Pr. 144</i> setting. (Refer to page 37) |
| 29 | Get | RefFromNet (speed command source monitor) | 0 | Other than Network operation |
| | | | 1 | Network operation |



Class 0x2A Instance 1

| Attribute ID | Access | Range | Description | |
|--------------|---------|----------------|---|---|
| 101 | Set | Any | Inverter reset Set a value other than "0" in Pr. 340 to start in network operation mode after reset. (Refer to page 21) *1 | |
| 102 | Set | 0x965A | Parameter clear *1 | |
| 103 | Set | 0x99AA | All parameter clear *1 | |
| 105 | Set | 0x5A96 | Clear parameters (except for communication parameter) *1 | |
| 106 | Set | 0xAA99 | All parameter clear (except for communication parameter) *1 | |
| 112 | Get/Set | 0 to 0x9C40 | Set frequency (RAM) *2 | Either write the set frequency to RAM or read from RAM. (0.01Hz increments) |
| 113 | Set | 0 to 0x9C40 | Set frequency (EEPROM) *2 | Write the set frequency to EEPROM (0.01Hz increments) |

*1 Error response is returned when the inverter will not accept the order.

*2 The data written to Attribute 112, 113 can be read from Attribute 112.

Class 0x2A Instance 1

| Attribute ID | Access | Range | Description |
|--------------|---------|--------|--|
| 114 | Get/Set | — | Inverter status monitor/run command *1 |
| 120 | Get/Set | 0 | External operation |
| | | 1 | PU operation |
| | | 2 | External jog operation |
| | | 3 | PU jog operation |
| | | 4 | Network operation |
| | | 5 | External/PU combined operation |
| | | 0x0010 | External operation |
| | | 0x0011 | PU operation (when <i>Pr</i> : 79 = 6) |
| | | 0x0014 | Network operation |
| | | | Operation mode read (Get) |
| | | | Operation mode write (Set) *2 |

*1 Inverter status monitor/bit map of run command

| Inverter Status (Get) | |
|-----------------------|------------------------------------|
| bit | Definition |
| 0 | RUN (inverter running) |
| 1 | FWD (during forward rotation) |
| 2 | REV (reverse running) |
| 3 | SU (up-to-frequency) |
| 4 | OL (overload) |
| 5 | IPF (instantaneous power failure) |
| 6 | FU (frequency detection) |
| 7 | ABC1 (alarm) |
| 8 to 14 | (blank) |
| 15 | Operation ready completion (READY) |

| Run Command (Set) | | | |
|-------------------|---------------------------------------|----------|---|
| bit | Definition | bit | Definition |
| 0 | (blank) | 7 | RT (second function selection) * |
| 1 | STF (forward rotation command) | 8 | AU (current input selection) * |
| 2 | STR (reverse rotation command) | 9 | CS (selection of automatic restart after instantaneous power failure) * |
| 3 | RH (high-speed operation command) * | 10 | MRS (output shutoff) |
| 4 | RM (middle-speed operation command) * | 11 | STOP (start self-holding selection) * |
| 5 | RL (low-speed operation command) * | 12 | RES (reset) * |
| 6 | JOG (jog operation selection) * | 13 to 15 | (blank) |

* Signal names are initial values. Definitions change according to the *Pr*: 190 to *Pr*: 196 (input terminal function selection).

*2 Input 2 byte data.

**Class 0x2A Instance 1**

| Attribute ID | Access | Description |
|--------------|---------|---|
| 141 | Get/Set | Alarm definition (latest) Alarm definition all clear * |
| 142 | Get | Alarm definition 2 (second alarm in past) |
| 143 | Get | Alarm definition 3 (third alarm in past) |
| 144 | Get | Alarm definition 4 (fourth alarm in past) |
| 145 | Get | Alarm definition 5 (fifth alarm in past) |
| 146 | Get | Alarm definition 6 (sixth alarm in past) |
| 147 | Get | Alarm definition 7 (seventh alarm in past) |
| 148 | Get | Alarm definition 8 (eighth alarm in past) |

* Writing any value will clear the alarm definition.

List of alarm definition

| Data | Definition |
|------|------------|
| 0x00 | No alarm |
| 0x10 | OC1 |
| 0x11 | OC2 |
| 0x12 | OC3 |
| 0x20 | OV1 |
| 0x21 | OV2 |
| 0x22 | OV3 |
| 0x30 | THT |
| 0x31 | THM |
| 0x40 | FIN |
| 0x50 | IPF |
| 0x51 | UVT |
| 0x52 | ILF |
| 0x60 | OLT |

| Data | Definition |
|------|------------|
| 0x70 | BE |
| 0x80 | GF |
| 0x81 | LF |
| 0x90 | OHT |
| 0x91 | PTC |
| 0xA0 | OPT |
| 0xA3 | OP3 |
| 0xB0 | PE |
| 0xB1 | PUE |
| 0xB2 | RET |
| 0xB3 | PE2 |
| 0xC0 | CPU |
| 0xC1 | CTE |
| 0xC2 | P24 |

| Data | Definition |
|------|------------|
| 0xC4 | CDO |
| 0xC5 | IOH |
| 0xC6 | SER |
| 0xC7 | AIE |
| 0xC8 | USB |
| 0xD0 | OS *1 |
| 0xD1 | OSD *1 |
| 0xD2 | ECT *1 |
| 0xD3 | OD *1 |
| 0xD5 | MB1 |
| 0xD6 | MB2 |
| 0xD7 | MB3 |
| 0xD8 | MB4 |
| 0xD9 | MB5 |

| Data | Definition |
|------|------------|
| 0xDA | MB6 |
| 0xDB | MB7 |
| 0xDC | EP *1 |
| 0xF1 | E.1 |
| 0xF2 | E.2 |
| 0xF3 | E.3 |
| 0xF6 | E.6 |
| 0xF7 | E.7 |
| 0xFB | E.11 |
| 0xFD | E.13 |

*1 Appears when the FR-A7AP (option) is fitted.

Refer to the inverter manual for details of alarm definitions.


Class 0x2A Instance 1

| Attribute ID | Access | Description |
|--------------|--------|--|
| 170 | Get | Output frequency (0.01Hz) |
| 171 | Get | Output current (0.01A/0.1A) *1 |
| 172 | Get | Output voltage (0.1V) |
| 174 | Get | Frequency setting (0.01Hz) |
| 175 | Get | Operation speed (1r/min) |
| 176 | Get | Motor torque (0.1%) |
| 177 | Get | Converter output voltage (0.1V) |
| 178 | Get | Regenerative brake duty (0.1%) |
| 179 | Get | Electronic thermal relay function load factor (0.1%) |
| 180 | Get | Output current peak value (0.01A/0.1A) *1 |
| 181 | Get | Converter output voltage peak value (0.1V) |

| Attribute ID | Access | Description |
|--------------|--------|--|
| 182 | Get | Input voltage (0.01kW/0.1kW) *1 |
| 183 | Get | Output voltage (0.01kW/0.1kW) *1 |
| 184 | Get | Input terminal status *2 |
| 185 | Get | Output terminal status *3 |
| 186 | Get | Load meter |
| 187 | Get | Motor excitation current (0.01A/0.1A) *1 |
| 188 | Get | Position pulse *4 |
| 189 | Get | Cumulative energization time (1h) |
| 191 | Get | Orientation status *4 |
| 192 | Get | Actual operation time (1h) |
| 193 | Get | Motor load factor (0.1%) |
| 194 | Get | Cumulative power (1kWh) |

*1 The setting depends on the inverter capacity (FR-A720-02150-NA (FR-A740-01100-NA) or less / FR-A720-02880-NA (FR-A740-01440-NA) or more).

*2 Input terminal status details

b15

| | | | | | | | | | | | | | | | |
|---|---|---|---|----|-----|------|-----|-----|----|----|----|----|----|-----|-----|
| — | — | — | — | CS | RES | STOP | MRS | JOG | RH | RM | RL | RT | AU | STR | STF |
|---|---|---|---|----|-----|------|-----|-----|----|----|----|----|----|-----|-----|

b0

*3 Output terminal status details

b15

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|------|------|----|----|-----|----|-----|
| — | — | — | — | — | — | — | — | — | — | ABC2 | ABC1 | FU | OL | IPF | SU | RUN |
|---|---|---|---|---|---|---|---|---|---|------|------|----|----|-----|----|-----|

b0

*4 Available only when the FR-A7AP is mounted.

(2) Service

| Service Code | Description |
|--------------|----------------------|
| 0x0E | Get Attribute Single |
| 0x10 | Set Attribute Single |



7.7 Class0xF4 (Port Object)

7.7.1 Class 0xF4 Class attribute

Class 0xF4 Class attribute

| Attribute ID | Access | Name | Type | Attribute Value | Description |
|--------------|--------|---------------|-------------------------------|---|---|
| 1 | Get | revision | UINT | 0x0001 | Revision 1 |
| 2 | Get | Max Instance | UINT | 0x0002 | 2 is the highest instance number (initial value) |
| 3 | Get | Num Instances | UINT | 0x0001 | 1 instance is implemented (initial value) |
| 8 | Get | Entry Port | UINT | 0x0002 | Through which port this request entered the device. Return the instance of the Port object that describes the port. |
| 9 | Get | All Ports | ARRAY of STRUCT {UINT; UINT;} | 0x0000 0x0000 0x0000 0x0000 0x0004 0x0002 | Array of structure containing attributes 1 and 2 from each instance. Instance 1 is at byte offset 4. Instance 2 is at byte offset 8, etc. the 4 bytes at offset 0 shall be 0 (initial value). |

7.7.2 Class 0xF4 Instance 2

(1) Attribute

Class 0xF4 Instance 2

| Attribute ID | Access | Name | Type | Attribute Value | Description |
|--------------|--------|--------------|--------------|------------------------|-------------------------------------|
| 1 | Get | Port Type | UINT | 0x0004 | 4 = TCP/IP |
| 2 | Get | Port Number | UINT | 0x0002 | Port 2 |
| 3 | Get | Port Object | Struct of: | | |
| | | Path Size | UINT | 0x0002 | Path size |
| | | Path | Padded EPATH | 0x20 0xF5 0x24 0x01 | TCP class, Instance 1 |
| 4 | Get | Port name | SHORT_STRING | "TCP/IP" | Name of port |
| 7 | Get | Node address | Padded EPATH | N/A | EPATH describing our TCP/IP address |

(2) Service

| Service Code | Description |
|--------------|---|
| 0x0E | Get Attribute Single of TCP/IP Interface Object (class0xF5) |
| 0x10 | Set Attribute Single of TCP/IP Interface Object (class0xF5) |



7.8 Class 0xF5 (TCP/IP Interface Object)

7.8.1 Class 0xF5 Class attributes

| Attribute ID | Access | Name | Type | Attribute Value | Description |
|--------------|--------|----------|------|-----------------|-------------|
| 1 | Get | Revision | UINT | 0x0001 | Revision 1 |

7.8.2 Class 0xF5 Instance 1

(1) Attribute

Class 0xF5 Instance 1

| Attribute ID | Access | Name | Type | Attribute Value | Description |
|--------------|-------------|--------------------------|-------|-----------------|---|
| 1 | Get | Status | DWORD | 0x00000001 | 1 = The interface configuration attribute contains valid configuration. |
| 2 | Get | Configuration Capability | DWORD | 0x00000014 | Interface configuration attribute is settable. Capable of obtaining network configuration via DHCP. |
| 3 | Get/ Set | Configuration Control | DWORD | — | 0: Interface Configuration is stored in the nonvolatile memory, H/W switch, etc. beforehand. 2: Interface Configuration is set via DHCP at a start up. |

Class0xF5 Instance 1

| Attribute ID | Access | Name | Type | Attribute Value | Description |
|----------------|-------------|-------------------------|-------------------------|-----------------|--|
| 4 | Get | Physical Link Object | Struct of: | — | Physical link -> Ethernet object |
| | | Path size | UINT | 0x0002 | Expressed in 16 bit numerals. |
| | | Path | Padded EPATH | 20 F6 24 01 | Class 0 xF6, Instance 1 Refer to "Common Industrial Protocol Appendix C" for details of encode of segment |
| 5 | Get/ Set | Interface Configuration | Struct of: | | |
| | | IP Address *1 | UDINT | — | IP address of device |
| | | Network Mask | UDINT | — | Network mask of device. 0 is set when the network mask has not been set. |
| | | Gateway Address *1 | UDINT | — | Gateway address of default. |
| | | Name Server *1 | UDINT | — | Address of primary name server. |
| | | Name Server 2 *1 | UDINT | — | Address of secondary name server. |
| Domain Name *2 | STRING | — | Domain name of default. | | |
| 6 | Get/ Set | Host Name *2 | STRING | — | Host Name |

*1 Set IP address of class A, B, and C. 0 is set when the IP address has not been assigned.
Do not set loop back address such as 127.0.0.1.

*2 Written in ASCII code. The maximum character length is 48 characters.

**(2) Service**

| Service Code | Description |
|---------------------|----------------------|
| 0x0E | Get Attribute Single |
| 0x10 | Set Attribute Single |

7.9 Class 0xF6 (EtherNet link object)

7.9.1 Class 0xF6 Class attributes

| Attribute ID | Access | Name | Type | Attribute Value | Description |
|--------------|--------|----------|------|-----------------|-------------|
| 1 | Get | Revision | UINT | 0x0001 | Revision 2 |

7.9.2 Class0xF6 Instance 1

(1) Attribute

Class0xF6 Instance 1

| Attribute ID | Access | Name | Type | Attribute Value | Description |
|--------------|--------|--------------------|-------------------|-----------------|---|
| 1 | Get | Interface Speed | UDINT | 10 | 10Mbps |
| | | | | 100 | 100Mbps |
| 2 | Get | Interface Flags *1 | DWORD | 0 | Bit0: Link Status Bit1: Half/Full Duplex Bit2-4: Negotiation Status Bit5: Manual Setting Requires Reset Bit6: Local Hardware Fault Bit7 to -31: Reserve (always 0) |
| 3 | Get | Physical Address | ARRAY of 6 USINTs | MAC address | MAC address of interface Stores from the first octet of the MAC address expressed as "XX-XX-XX-XX-XX-XX". |



Class0xF6 Instance 1

| Attribute ID | Access | Name | Type | Attribute Value | Description |
|--------------|---------|------------------------|------------|-----------------|--|
| 6 | Get/Set | Interface Control | STRUCT of: | | |
| | | Control Bits *2 | WORD | — | Bit0: Auto-negotiate Bit1: Forced Duplex Mode Bit2 to -15: Reserve (always 0) |
| | | Forced Interface Speed | UINT | — | Indicates communication speed of the interface when "Auto-negotiate" bit is 0. Unit is Mbps. When the interface does not support requested communication speed, 0x09 (Invalid Attribute Value) is returned. When an attempt was made to set this bit when auto negotiation is valid, 0x0C (Object State Conflict) is returned . |

- *1 The Interface Flags attribute contains status and configuration information about the physical interface and shall be as follows:

| Bit(s): | Called: | Definition |
|---------|-------------------------------|--|
| 0 | Link Status | Indicates whether or not the Ethernet802.3 communications interface is connected to an active network. 0: Inactive link 1: Active link The determination of link status is implementation specific. In some cases, devices can tell whether the link is active via hardware/driver support. In other cases, the device may only be able to tell whether the link is active by the presence of incoming packets. |
| 1 | Half/Full Duplex | Indicates the duplex mode currently in use 0: Half duplex (half duplex communication) 1: Full duplex (full duplex communication) Note that if the Link Status flag (Bit 0) is 0, then the value of the Half/Full Duplex flag is indeterminate. |
| 2-4 | Negotiation Status | Indicates the status of auto-negotiation (function that changes own communication speed according to the connected device) link. 0: Auto-negotiation in progress 1: Auto-negotiation and speed detection failed. Using default values for speed and duplex. Default values are product-dependent; recommended defaults are 10Mbps and half duplex. 2: Auto negotiation failed and speed detection succeeded. Use a default setting of the product for duplex. Recommended value is half duplex. 3: Synchronization of communication speed and duplex succeeded 4: Auto negotiation has not been executed and communication speed and duplex are forced. |
| 5 | Manual Setting Requires Reset | 0: Interface can automatically reflect link parameters (communication speed of auto negotiation, duplex mode and interface) 1: Link parameter (communication speed of auto negotiation, duplex mode and interface) is reflected by resetting Identity Object. |
| 6 | Local Hardware Fault | 0: No hardware fault 1: Hardware fault is detected Hardware fault is product specific. |



*2 Control Bits are as shown below.

| Bit(s): | Called: | Definition |
|---------|--------------------|--|
| 0 | Auto-negotiate | 0: 802.3 Link auto negotiation (communication speed automatic detection) is invalid 1: Auto negotiation is valid When auto negotiation is invalid, a device uses the setting indicated by "Forced Duplex Mode" and "Forced Interface speed bit". |
| 1 | Forced Duplex Mode | Indicates that the interface operates in which mode, full duplex mode or half duplex mode, when "Auto-negotiate" bit is 0. 0: Duplex of the interface is half duplex 1: Duplex of the interface is full duplex When the interface does not support requested duplex, 0x09 (Invalid Attribute Value) is returned. When an attempt was made to set this bit when auto negotiation is valid, 0x0C (Object State Conflict) is returned . |

(2) Service

| Service Code | Description |
|--------------|----------------------|
| 0x0E | Get Attribute Single |
| 0x10 | Set Attribute Single |

7.10 Class 0x66 (Extended Object I)

7.10.1 Class 0x66 Instance 1

Set parameters of the inverter. Refer to the inverter manual for details of the parameters.

(1) Attribute

Class 0x66 Instance 1

| Attribute ID | Parameters | Access | Name |
|--------------|------------|---------|--|
| 10 | Pr. 0 | Get/Set | Torque boost |
| 11 | Pr. 1 | Get/Set | Maximum frequency |
| 12 | Pr. 2 | Get/Set | Minimum frequency |
| 13 | Pr. 3 | Get/Set | Base frequency |
| 14 | Pr. 4 | Get/Set | Multi-speed setting (high speed) |
| 15 | Pr. 5 | Get/Set | Multi-speed setting (middle speed) |
| 16 | Pr. 6 | Get/Set | Multi-speed setting (low speed) |
| 17 | Pr. 7 | Get/Set | Acceleration time |
| 18 | Pr. 8 | Get/Set | Deceleration time |
| 19 | Pr. 9 | Get/Set | Electronic thermal O/L relay |
| 20 | Pr. 10 | Get/Set | DC injection brake operation frequency |
| 21 | Pr. 11 | Get/Set | DC injection brake operation time |
| 22 | Pr. 12 | Get/Set | DC injection brake operation voltage |
| 23 | Pr. 13 | Get/Set | Starting frequency |
| 24 | Pr. 14 | Get/Set | Load pattern selection |
| 25 | Pr. 15 | Get/Set | Jog frequency |

Class 0x66 Instance 1

| Attribute ID | Parameters | Access | Name |
|--------------|------------|---------|--|
| 26 | Pr. 16 | Get/Set | Jog acceleration/deceleration time |
| 27 | Pr. 17 | Get/Set | MRS input selection |
| 28 | Pr. 18 | Get/Set | High speed maximum frequency |
| 29 | Pr. 19 | Get/Set | Base frequency voltage |
| 30 | Pr. 20 | Get/Set | Acceleration/deceleration reference frequency |
| 31 | Pr. 21 | Get/Set | Acceleration/deceleration time increments |
| 32 | Pr. 22 | Get/Set | Stall prevention operation level |
| 33 | Pr. 23 | Get/Set | Stall prevention operation level compensation factor at double speed |
| 34 | Pr. 24 | Get/Set | Multi-speed setting (speed 4) |
| 35 | Pr. 25 | Get/Set | Multi-speed setting (speed 5) |
| 36 | Pr. 26 | Get/Set | Multi-speed setting (speed 6) |
| 37 | Pr. 27 | Get/Set | Multi-speed setting (speed 7) |
| 38 | Pr. 28 | Get/Set | Multi-speed input compensation selection |
| 39 | Pr. 29 | Get/Set | Acceleration/deceleration pattern selection |
| 40 | Pr. 30 | Get/Set | Regenerative function selection |


Class 0x66 Instance 1

| Attribute ID | Parameters | Access | Name |
|--------------|------------|---------|---|
| 41 | Pr. 31 | Get/Set | Frequency jump 1A |
| 42 | Pr. 32 | Get/Set | Frequency jump 1B |
| 43 | Pr. 33 | Get/Set | Frequency jump 2A |
| 44 | Pr. 34 | Get/Set | Frequency jump 2B |
| 45 | Pr. 35 | Get/Set | Frequency jump 3A |
| 46 | Pr. 36 | Get/Set | Frequency jump 3B |
| 47 | Pr. 37 | Get/Set | Speed display |
| 51 | Pr. 41 | Get/Set | Up-to-frequency sensitivity |
| 52 | Pr. 42 | Get/Set | Output frequency detection |
| 53 | Pr. 43 | Get/Set | Output frequency detection for reverse rotation |
| 54 | Pr. 44 | Get/Set | Second acceleration/ deceleration time |
| 55 | Pr. 45 | Get/Set | Second deceleration time |
| 56 | Pr. 46 | Get/Set | Second torque boost |
| 57 | Pr. 47 | Get/Set | Second V/F (base frequency) |
| 58 | Pr. 48 | Get/Set | Second stall prevention operation current |
| 59 | Pr. 49 | Get/Set | Second stall prevention operation frequency |
| 60 | Pr. 50 | Get/Set | Second output frequency detection |
| 61 | Pr. 51 | Get/Set | Second electronic thermal O/L relay |
| 62 | Pr. 52 | Get/Set | DU/PU main display data selection |
| 64 | Pr. 54 | Get/Set | FM terminal function selection |

Class 0x66 Instance 1

| Attribute ID | Parameters | Access | Name |
|--------------|------------|---------|---|
| 65 | Pr. 55 | Get/Set | Frequency monitoring reference |
| 66 | Pr. 56 | Get/Set | Current monitoring reference |
| 67 | Pr. 57 | Get/Set | Restart coasting time |
| 68 | Pr. 58 | Get/Set | Restart cushion time |
| 69 | Pr. 59 | Get/Set | Remote setting function |
| 70 | Pr. 60 | Get/Set | Energy saving control selection |
| 71 | Pr. 61 | Get/Set | Reference current |
| 72 | Pr. 62 | Get/Set | Reference value at acceleration |
| 73 | Pr. 63 | Get/Set | Reference value at deceleration |
| 74 | Pr. 64 | Get/Set | Starting frequency for elevator mode |
| 75 | Pr. 65 | Get/Set | Retry selection |
| 76 | Pr. 66 | Get/Set | Stall prevention operation reduction starting frequency |
| 77 | Pr. 67 | Get/Set | Number of retries at alarm occurrence |
| 78 | Pr. 68 | Get/Set | Retry waiting time |
| 79 | Pr. 69 | Get/Set | Retry count display erase |
| 80 | Pr. 70 | Get/Set | Special regenerative brake duty |
| 81 | Pr. 71 | Get/Set | Applied motor |
| 82 | Pr. 72 | Get/Set | PWM frequency selection |
| 83 | Pr. 73 | Get/Set | Analog input selection |
| 84 | Pr. 74 | Get/Set | Input filter time constant |
| 85 | Pr. 75 | Get/Set | Reset selection/disconnected PU detection/PU stop selection |

Class 0x66 Instance 1

| Attribute ID | Parameters | Access | Name |
|--------------|------------|---------|---------------------------------------|
| 86 | Pr. 76 | Get/Set | Alarm code output selection |
| 87 | Pr. 77 | Get | Parameter write selection |
| 88 | Pr. 78 | Get/Set | Reverse rotation prevention selection |
| 89 | Pr. 79 | Get | Operation mode selection |
| 90 | Pr. 80 | Get/Set | Motor capacity |
| 91 | Pr. 81 | Get/Set | Number of motor poles |
| 92 | Pr. 82 | Get/Set | Motor excitation current |
| 93 | Pr. 83 | Get/Set | Motor rated voltage |
| 94 | Pr. 84 | Get/Set | Rated motor frequency |
| 99 | Pr. 89 | Get/Set | Speed control gain |
| 100 | Pr. 90 | Get/Set | Motor constant (R1) |
| 101 | Pr. 91 | Get/Set | Motor constant (R2) |
| 102 | Pr. 92 | Get/Set | Motor constant (L1) |
| 103 | Pr. 93 | Get/Set | Motor constant (L2) |
| 104 | Pr. 94 | Get/Set | Motor constant (X) |
| 105 | Pr. 95 | Get/Set | Online auto tuning selection |
| 106 | Pr. 96 | Get/Set | Auto tuning setting/status |
| 110 | Pr. 100 | Get/Set | V/F1(first frequency) |
| 111 | Pr. 101 | Get/Set | V/F1(first frequency voltage) |
| 112 | Pr. 102 | Get/Set | V/F2 (second frequency) |
| 113 | Pr. 103 | Get/Set | V/F2 (second frequency voltage) |
| 114 | Pr. 104 | Get/Set | V/F3 (third frequency) |
| 115 | Pr. 105 | Get/Set | V/F3 (third frequency voltage) |
| 116 | Pr. 106 | Get/Set | V/F4 (fourth frequency) |

Class 0x66 Instance 1

| Attribute ID | Parameters | Access | Name |
|--------------|------------|---------|---|
| 117 | Pr. 107 | Get/Set | V/F4 (fourth frequency voltage) |
| 118 | Pr. 108 | Get/Set | V/F5 (fifth frequency) |
| 119 | Pr. 109 | Get/Set | V/F5 (fifth frequency voltage) |
| 120 | Pr. 110 | Get/Set | Third acceleration/deceleration time |
| 121 | Pr. 111 | Get/Set | Third deceleration time |
| 122 | Pr. 112 | Get/Set | Third torque boost |
| 123 | Pr. 113 | Get/Set | Third V/F (base frequency) |
| 124 | Pr. 114 | Get/Set | Third stall prevention operation current |
| 125 | Pr. 115 | Get/Set | Third stall prevention operation frequency |
| 126 | Pr. 116 | Get/Set | Third output frequency detection |
| 127 | Pr. 117 | Get/Set | PU communication station |
| 128 | Pr. 118 | Get/Set | PU communication speed |
| 129 | Pr. 119 | Get/Set | PU communication stop bit length |
| 130 | Pr. 120 | Get/Set | PU communication parity check |
| 131 | Pr. 121 | Get/Set | Number of PU communication retries |
| 132 | Pr. 122 | Get/Set | PU communication check time interval |
| 133 | Pr. 123 | Get/Set | PU communication waiting time setting |
| 134 | Pr. 124 | Get/Set | PU communication CR/LF presence/absence selection |


Class 0x66 Instance 1

| Attribute ID | Parameters | Access | Name |
|--------------|------------|---------|---|
| 135 | Pr. 125 | Get/Set | Terminal 2 frequency setting gain frequency |
| 136 | Pr. 126 | Get/Set | Terminal 4 frequency setting gain frequency |
| 137 | Pr. 127 | Get/Set | PID control automatic switchover frequency |
| 138 | Pr. 128 | Get/Set | PID action selection |
| 139 | Pr. 129 | Get/Set | PID proportional band |
| 140 | Pr. 130 | Get/Set | PID integral time |
| 141 | Pr. 131 | Get/Set | PID upper limit |
| 142 | Pr. 132 | Get/Set | PID lower limit |
| 143 | Pr. 133 | Get/Set | PID action set point |
| 144 | Pr. 134 | Get/Set | PID differential time |
| 145 | Pr. 135 | Get/Set | Commercial power-supply switchover sequence output terminal selection |
| 146 | Pr. 136 | Get/Set | MC switchover interlock time |
| 147 | Pr. 137 | Get/Set | Start waiting time |
| 148 | Pr. 138 | Get/Set | Commercial power-supply operation switchover selection at an alarm |
| 149 | Pr. 139 | Get/Set | Automatic switchover frequency between inverter and commercial power-supply operation |
| 150 | Pr. 140 | Get/Set | Backlash acceleration stopping frequency |

Class 0x66 Instance 1

| Attribute ID | Parameters | Access | Name |
|--------------|------------|---------|--|
| 151 | Pr. 141 | Get/Set | Backlash acceleration stopping time |
| 152 | Pr. 142 | Get/Set | Backlash deceleration stopping frequency |
| 153 | Pr. 143 | Get/Set | Backlash deceleration stopping time |
| 154 | Pr. 144 | Get/Set | Speed setting switchover |
| 155 | Pr. 145 | Get/Set | PU display language selection |
| 158 | Pr. 148 | Get/Set | Stall prevention level at 0V input |
| 159 | Pr. 149 | Get/Set | Stall prevention level at 10V input |
| 160 | Pr. 150 | Get/Set | Output current detection level |
| 161 | Pr. 151 | Get/Set | Output current detection signal delay time |
| 162 | Pr. 152 | Get/Set | Zero current detection level |
| 163 | Pr. 153 | Get/Set | Zero current detection period |
| 164 | Pr. 154 | Get/Set | Voltage reduction selection during stall prevention operation |
| 165 | Pr. 155 | Get/Set | RT signal reflection time selection |
| 166 | Pr. 156 | Get/Set | Stall prevention operation selection |
| 167 | Pr. 157 | Get/Set | OL signal output timer |
| 168 | Pr. 158 | Get/Set | AM terminal function selection |
| 169 | Pr. 159 | Get/Set | Automatic switchover ON range between commercial power-supply and inverter operation |

Class 0x66 Instance 1

| Attribute ID | Parameters | Access | Name |
|--------------|------------|---------|---|
| 170 | Pr. 160 | Get/Set | User group read selection |
| 171 | Pr. 161 | Get/Set | Frequency setting/key lock operation selection |
| 172 | Pr. 162 | Get/Set | Automatic restart after instantaneous power failure selection |
| 173 | Pr. 163 | Get/Set | First cushion time for restart |
| 174 | Pr. 164 | Get/Set | First cushion voltage for restart |
| 175 | Pr. 165 | Get/Set | Stall prevention operation level for restart |
| 176 | Pr. 166 | Get/Set | Output current detection signal retention time |
| 177 | Pr. 167 | Get/Set | Output current detection operation selection |
| 178 | Pr. 168 | Get/Set | Parameter for manufacturer setting (Do not make setting.) |
| 179 | Pr. 169 | | |
| 180 | Pr. 170 | Get/Set | Watt-hour meter clear |
| 181 | Pr. 171 | Get/Set | Operation hour meter clear |
| 182 | Pr. 172 | Get/Set | User group registered display/batch clear |
| 183 | Pr. 173 | Get | User group registration |
| 184 | Pr. 174 | Get | User group clear |
| 188 | Pr. 178 | Get/Set | STF terminal function selection |
| 189 | Pr. 179 | Get/Set | STR terminal function selection |
| 190 | Pr. 180 | Get/Set | RL terminal function selection |
| 191 | Pr. 181 | Get/Set | RM terminal function selection |
| 192 | Pr. 182 | Get/Set | RH terminal function selection |

Class 0x66 Instance 1

| Attribute ID | Parameters | Access | Name |
|--------------|------------|---------|----------------------------------|
| 193 | Pr. 183 | Get/Set | RT terminal function selection |
| 194 | Pr. 184 | Get/Set | AU terminal function selection |
| 195 | Pr. 185 | Get/Set | JOG terminal function selection |
| 196 | Pr. 186 | Get/Set | CS terminal function selection |
| 197 | Pr. 187 | Get/Set | MRS terminal function selection |
| 198 | Pr. 188 | Get/Set | STOP terminal function selection |
| 199 | Pr. 189 | Get/Set | RES terminal function selection |
| 200 | Pr. 190 | Get/Set | RUN terminal function selection |
| 201 | Pr. 191 | Get/Set | SU terminal function selection |
| 202 | Pr. 192 | Get/Set | IPF terminal function selection |
| 203 | Pr. 193 | Get/Set | OL terminal function selection |
| 204 | Pr. 194 | Get/Set | FU terminal function selection |
| 205 | Pr. 195 | Get/Set | ABC1 terminal function selection |
| 206 | Pr. 196 | Get/Set | ABC2 terminal function selection |
| 212 | Pr. 232 | Get/Set | Multi-speed setting (speed 8) |
| 213 | Pr. 233 | Get/Set | Multi-speed setting (speed 9) |
| 214 | Pr. 234 | Get/Set | Multi-speed setting (speed 10) |
| 215 | Pr. 235 | Get/Set | Multi-speed setting (speed 11) |
| 216 | Pr. 236 | Get/Set | Multi-speed setting (speed 12) |
| 217 | Pr. 237 | Get/Set | Multi-speed setting (speed 13) |
| 218 | Pr. 238 | Get/Set | Multi-speed setting (speed 14) |



Class 0x66 Instance 1

| Attribute ID | Parameters | Access | Name |
|--------------|------------|---------|---|
| 219 | Pr. 239 | Get/Set | Multi-speed setting (speed 15) |
| 220 | Pr. 240 | Get/Set | Soft-PWM operation selection |
| 221 | Pr. 241 | Get/Set | Analog input display unit switchover |
| 222 | Pr. 242 | Get/Set | Terminal 1 added compensation amount (terminal 2) |
| 223 | Pr. 243 | Get/Set | Terminal 1 added compensation amount (terminal 4) |
| 224 | Pr. 244 | Get/Set | Cooling fan operation selection |
| 225 | Pr. 245 | Get/Set | Rated slip |
| 226 | Pr. 246 | Get/Set | Slip compensation time constant |
| 227 | Pr. 247 | Get/Set | Constant output range slip compensation selection |
| 230 | Pr. 250 | Get/Set | Stop selection |
| 231 | Pr. 251 | Get/Set | Output phase failure protection selection |
| 232 | Pr. 252 | Get/Set | Override bias |
| 233 | Pr. 253 | Get/Set | Override gain |
| 235 | Pr. 255 | Get | Life alarm status display |
| 236 | Pr. 256 | Get | Inrush current limit circuit life display |
| 237 | Pr. 257 | Get | Control circuit capacitor life display |
| 238 | Pr. 258 | Get | Main circuit capacitor life display |
| 239 | Pr. 259 | Get | Main circuit capacitor life measuring |

Class 0x66 Instance 1

| Attribute ID | Parameters | Access | Name |
|--------------|------------|---------|---|
| 240 | Pr. 260 | Get/Set | PWM frequency automatic switchover |
| 241 | Pr. 261 | Get/Set | Power failure stop selection |
| 242 | Pr. 262 | Get/Set | Subtracted frequency at deceleration start |
| 243 | Pr. 263 | Get/Set | Subtraction starting frequency |
| 244 | Pr. 264 | Get/Set | Power-failure deceleration time 1 |
| 245 | Pr. 265 | Get/Set | Power-failure deceleration time 2 |
| 246 | Pr. 266 | Get/Set | Power failure deceleration time switchover frequency |
| 247 | Pr. 267 | Get/Set | Terminal 4 input selection |
| 248 | Pr. 268 | Get/Set | Monitor decimal digits selection |
| 249 | Pr. 269 | Get/Set | Parameter for manufacturer setting (Do not make setting.) |

REMARKS

Values "8888" and "9999" displayed on the parameter unit indicate 65520 (0xFFFF0) and 65535 (0xFFFF) respectively.

(2) Service

| Service Code | Description |
|--------------|----------------------|
| 0x0E | Get Attribute Single |
| 0x10 | Set Attribute Single |



7.11 Class 0x67 (Extended Object II)

7.11.1 Class 0x67 Instance 1

Set parameters of the inverter. Refer to the inverter manual for details of the parameters.

(1) Attribute

| Attribute ID | Parameters | Access | Name |
|--------------|------------|---------|--|
| 10 | Pr. 270 | Get/Set | Stop-on contact/load torque high-speed frequency control selection |
| 11 | Pr. 271 | Get/Set | High-speed setting maximum current |
| 12 | Pr. 272 | Get/Set | Middle-speed setting minimum current |
| 13 | Pr. 273 | Get/Set | Current averaging range |
| 14 | Pr. 274 | Get/Set | Current averaging filter time constant |
| 15 | Pr. 275 | Get/Set | Stop-on contact excitation current low-speed multiplying factor |
| 16 | Pr. 276 | Get/Set | PWM carrier frequency at stop-on contact |
| 18 | Pr. 278 | Get/Set | Brake opening frequency |
| 19 | Pr. 279 | Get/Set | Brake opening current |
| 20 | Pr. 280 | Get/Set | Brake opening current detection time |
| 21 | Pr. 281 | Get/Set | Brake operation time at start |
| 22 | Pr. 282 | Get/Set | Brake operation frequency |
| 23 | Pr. 283 | Get/Set | Brake operation time at stop |

| Attribute ID | Parameters | Access | Name |
|--------------|------------|---------|---|
| 24 | Pr. 284 | Get/Set | Deceleration detection function selection |
| 25 | Pr. 285 | Get/Set | Overspeed detection frequency |
| 26 | Pr. 286 | Get/Set | Droop gain |
| 27 | Pr. 287 | Get/Set | Droop filter time constant |
| 38 | Pr. 338 | Get/Set | Communication operation command source |
| 39 | Pr. 339 | Get/Set | Communication speed command source |
| 40 | Pr. 340 | Get/Set | Communication startup mode selection |
| 41 | Pr. 341 | Get/Set | RS-485 communication CR/LF selection |
| 42 | Pr. 342 | Get/Set | Communication EEPROM write selection |
| 45 | Pr. 345 | Get | DeviceNet address startup data |
| 46 | Pr. 346 | Get | DeviceNet / EtherNet/IP baud rate |
| 67 | Pr. 367 | Get/Set | Speed feedback range *1 |
| 68 | Pr. 368 | Get/Set | Feedback gain *1 |

| Attribute ID | Parameters | Access | Name |
|--------------|----------------------|---------|--|
| 192 | Pr. 500 | Get/Set | Communication error recognition waiting time |
| 193 | Pr. 501 | Get/Set | Communication error occurrence count display |
| 194 | Pr. 502 | Get/Set | Stop mode selection at communication error |
| 202 | C2 (Pr. 902) | Get/Set | Terminal 2 frequency setting bias frequency |
| 203 | C3 (Pr. 902) | Get/Set | Terminal 2 frequency setting bias |
| 204 | Pr. 125 (Pr. 903) | Get/Set | Terminal 2 frequency setting gain frequency |

| Attribute ID | Parameters | Access | Name |
|--------------|----------------------|---------|---|
| 205 | C4 (Pr. 903) | Get/Set | Terminal 2 frequency setting gain |
| 206 | C5 (Pr. 904) | Get/Set | Terminal 4 frequency setting bias frequency |
| 207 | C6 (Pr. 904) | Get/Set | Terminal 4 frequency setting bias |
| 208 | Pr. 126 (Pr. 905) | Get/Set | Terminal 4 frequency setting gain frequency |
| 209 | C7 (Pr. 905) | Get/Set | Terminal 4 frequency setting gain |

*1 Setting can be made only when the FR-A7AP is mounted.

REMARKS

Values "8888" and "9999" displayed on the parameter unit indicate 65520 (0xFFFF0) and 65535 (0xFFFFF) respectively.

(2) Service

| Service Code | Description |
|--------------|----------------------|
| 0x0E | Get Attribute Single |
| 0x10 | Set Attribute Single |



7.12 Class 0x70 to 0x79 (Extended Object III)

7.12.1 Class 0x70 to 0x79 Instance 1, 2

Set parameters of the inverter. Refer to the inverter manual for details of the parameters.

(1) Attribute

| Class | Instance | Attribute | Parameters | Access | Description |
|-------|----------|-----------|--------------------|---------|--|
| 0x70 | 1 | 10 to 109 | Pr. 0 to Pr. 99 | Get/Set | |
| 0x71 | 1 | 10 to 109 | Pr. 100 to Pr. 199 | Get/Set | |
| 0x72 | 1 | 10 to 109 | Pr. 200 to Pr. 299 | Get/Set | |
| 0x73 | 1 | 10 to 109 | Pr. 300 to Pr. 399 | Get/Set | |
| 0x74 | 1 | 10 to 109 | Pr. 400 to Pr. 499 | Get/Set | |
| 0x75 | 1 | 10 to 109 | Pr. 500 to Pr. 599 | Get/Set | |
| 0x76 | 1 | 10 to 109 | Pr. 600 to Pr. 699 | Get/Set | |
| 0x77 | 1 | 10 to 109 | Pr. 700 to Pr. 799 | Get/Set | |
| 0x78 | 1 | 10 to 109 | Pr. 800 to Pr. 899 | Get/Set | |
| 0x79 | 1 | 10 to 109 | Pr. 900 to Pr. 999 | Get/Set | Parameter offset for calibration, gain |
| | 2 | 10 to 49 | Pr. 900 to Pr. 939 | Get/Set | Analog value of calibration parameter |

(2) Service

| Service Code | Description |
|--------------|----------------------|
| 0x0E | Get Attribute Single |
| 0x10 | Set Attribute Single |

7.13 Class 0x80 (Extended Object IV)

7.13.1 Class 0x80 Instance 1

Inverter monitored value can be read. Refer to the inverter manual for details of each monitor.

(1) Attribute

| Attribute ID | Access | Description (Increments) |
|--------------|--------|--|
| 11 | Get | Output frequency (0.01Hz) |
| 12 | Get | Output current (0.01A/0.1A *1) |
| 13 | Get | Output voltage (0.1V) |
| 15 | Get | Frequency setting (0.01Hz) |
| 16 | Get | Running speed (1r/min) |
| 17 | Get | Motor torque (0.1%) |
| 18 | Get | Converter output voltage (0.1V) |
| 19 | Get | Regenerative brake duty (0.1%) |
| 20 | Get | Electronic thermal relay function load factor (0.1%) |
| 21 | Get | Output current peak value (0.01A/0.1A *1) |
| 22 | Get | Converter output voltage peak value (0.1V) |
| 23 | Get | Input power (0.01kW/0.1kW *1) |
| 24 | Get | Output power (0.01kW/0.1kW *1) |
| 25 | Get | Input terminal status *3 (-) |
| 26 | Get | Output terminal status *4 (-) |

| Attribute ID | Access | Description (Increments) |
|--------------|--------|--|
| 27 | Get | Load meter (0.1%) |
| 28 | Get | Motor excitation current (0.01A/0.1A *1) |
| 29 | Get | Position pulse *2 (-) |
| 30 | Get | Cumulative energization time (1h) |
| 32 | Get | Orientation status *2 (-) |
| 33 | Get | Actual operation time (1h) |
| 34 | Get | Motor load factor (0.1%) |
| 35 | Get | Cumulative power (1kWh) |
| 42 | Get | Torque command (0.1%) |
| 43 | Get | Torque current command (0.1%) |
| 44 | Get | Motor output (0.01kW/0.1kW *1) |
| 45 | Get | Feedback pulse *2 (-) |
| 60 | Get | Power saving effect (variable) |
| 61 | Get | Cumulative saving power (variable) |
| 62 | Get | PID set point (0.1%) |
| 63 | Get | PID measured value (0.1%) |



| Attribute ID | Access | Description (Increments) |
|--------------|--------|---|
| 64 | Get | PID deviation (0.1%) |
| 68 | Get | Option input terminal status ^{*1} *5 (-) |

| Attribute ID | Access | Description (Increments) |
|--------------|--------|---|
| 69 | Get | Option input terminal status ^{*2} *6 (-) |
| 70 | Get | Option output terminal status ^{*7} (-) |

*1 The setting depends on the inverter capacity (FR-A720-02150-NA (FR-A740-01100-NA) or less / FR-A720-02880-NA (FR-A740-01440-NA) or more).

*2 Available only when the FR-A7AP is mounted.

*3 Input terminal monitor details

| | | | | | | | | | | | | | | | | |
|-----|---|---|---|----|-----|------|-----|-----|----|----|----|----|----|-----|-----|--|
| b15 | | | | | | | | | | | | | b0 | | | |
| — | — | — | — | CS | RES | STOP | MRS | JOG | RH | RM | RL | RT | AU | STR | STF | |

*4 Output terminal monitor details

| | | | | | | | | | | | | | | | | |
|-----|---|---|---|---|---|---|---|---|---|------|------|----|----|-----|----|-----|
| b15 | | | | | | | | | | | b0 | | | | | |
| — | — | — | — | — | — | — | — | — | — | ABC2 | ABC1 | FU | OL | IPF | SU | RUN |

*5 Details of option input terminal monitor 1 (input terminal status of FR-A7AX)

— all terminals are off when an option is not fitted.

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|--|
| b15 | | | | | | | | | | | | | | | b0 | |
| X15 | X14 | X13 | X12 | X11 | X10 | X9 | X8 | X7 | X6 | X5 | X4 | X3 | X2 | X1 | X0 | |

*6 Details of option input terminal monitor 2 (input terminal status of FR-A7AX)

— all terminals are off when an option is not fitted.

| | | | | | | | | | | | | | | | | |
|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|----|
| b15 | | | | | | | | | | | | | | | b0 | |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | DY |

*7 Details of option output terminal monitor (output terminal status of FR-A7AY/A7AR)

— all terminals are off when an option is not fitted.

| | | | | | | | | | | | | | | | | |
|-----|---|---|---|---|---|-----|-----|-----|----|----|----|----|----|----|----|--|
| b15 | | | | | | | | | | | | | b0 | | | |
| — | — | — | — | — | — | RA3 | RA2 | RA1 | Y6 | Y5 | Y4 | Y3 | Y2 | Y1 | Y0 | |

(2) Service

| Service Code | Description |
|--------------|----------------------|
| 0x0E | Get Attribute Single |

8 TROUBLESHOOTING

If a fault occurs and the inverter fails to operate properly, locate the cause of the fault and take proper corrective action by referring to the troubleshooting below. If the corresponding information is not found in the table, the inverter has problem, or the component parts are damaged, contact your sales representative.

| Display | | Possible Causes | Check Point | Corrective Action |
|-----------------------------|---|---|--|---|
| Operation panel of inverter | LED of FR-A7NE | | | |
| E.OP3 | Network Status LED blinks in red | Connection time-out | <ol style="list-style-type: none"> 1. Master sends messages within time limit. 2. Check for a break in the cable and a disconnected connector. | <ol style="list-style-type: none"> 1. Shorten the send time interval of master. 2. Check for a cable and connector. |
| 0.00 | Off | <ol style="list-style-type: none"> 1. No good contact between inverter and FR-A7NE 2. Network power is off. | <ol style="list-style-type: none"> 1. FR-A7NE is plugged firmly. 2. Network power is on. | Plug in FR-A7NE. <i>(Refer to page 8.)</i> After checking required items at left box, reset the inverter and restart the network. |
| | Network Status LED is off | IP address is not set. | Check that IP address is set. <i>(Refer to page 15.)</i> | |
| | Link/Activity LED is off | Communication setting (communication speed, transmission direction) is not correct | Check that the communication setting is correct. <i>(Refer to page 15.)</i> | |
| 0.00 | Steady Red | <ol style="list-style-type: none"> 1. Duplicate IP address 2. Network cable offline | <ol style="list-style-type: none"> 1. No duplicate IP address 2. Check that all cables are connected properly. | After checking required items at left box, reset the inverter and restart the network. |
| E.3 | Please contact your sales representative. | | | |

APPENDIX

EDS file

Contact your sales representative for details.



Error Code List

| Error Code | Name | Description |
|------------|-------------------------------------|---|
| 0x00 | Success | Service was successfully performed by the object specified. |
| 0x02 | Resource unavailable | Resources needed for the object to perform the requested service were unavailable. |
| 0x04 | Path segment error | The path segment identifier or the segment syntax was not understood by the processing node. |
| 0x05 | Path destination unknown | The path referencing an object class and instance or structure element is not known or is not contained in the processing node. |
| 0x07 | Connection lost | The messaging connection was lost. |
| 0x08 | Service not supported | The requested service was not implemented or was not defined for this Object Class/Instance. |
| 0x09 | Invalid attribute value | The requested service has an error in attribute data. |
| 0x0A | Attribute list error | An attribute in the Get_Attribute_List or Set_Attribute_List response has a non-zero status. |
| 0x0B | Already in requested mode/ state | The object is already in the mode/state being requested by service. |
| 0x0C | Object state conflict | The object cannot perform the requested service in its current mode/ state. |
| 0x0D | Object already exist | The requested instance of object to be created already exists. |
| 0x0E | Attribute not settable | A request to modify a non-modifiable attribute was received. |
| 0x0F | Privilege violation | A permission /privilege check failed |
| 0x10 | Device state conflict | The device's current mode/state prohibits the execution of the requested service. |

| Error Code | Name | Description |
|------------|-------------------------------------|---|
| 0x11 | Reply data too large | The data to be transmitted in the response buffer is larger than the allocated response buffer. |
| 0x13 | Not enough data | The service did not supply enough data to perform the specified. |
| 0x14 | Attribute not supported | The attribute specified in the request is not supported. |
| 0x15 | Too much data | The service supplied more data than was expected. |
| 0x16 | Object does not exist | The object specified does not exist in the device. |
| 0x18 | No stored attribute data | The attribute data of this object was not saved prior to the requested service. |
| 0x19 | Store operation failure | The attribute data of this object was not saved due to a failure during the attempt. |
| 0x1C | Missing attribute list entry data | The service did not supply an attribute in a list of attributes that was needed by service to perform the requested behaviour. |
| 0x1D | Invalid attribute value list | The service is returning the list of attributes supplied with status information for those attributes that was invalid. |
| 0x1F | Vender specific error | A vender specific error has been encountered. |
| 0x20 | Invalid parameter | A parameter associated with the request was invalid. |
| 0x27 | Unexpected attribute in list | An attempt was made to set an attribute that is not able to be set at this time. |
| 0x28 | Invalid Member ID | The Member ID specified in the request does not exist in the specified Class/ Instance/Attribute. |
| 0x29 | Member not settable | A request to modify a non-modifiable attribute was received. |
| 0x2A | Group 2 only server general failure | This error code may only be reported by group 2 only servers with 4K or less code space and only in place of Service not supported, Attribute not supported and Attribute not settable. |

REVISIONS

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

| Print Date | *Manual Number | Revision |
|-------------------|-----------------------|---|
| Jan., 2006 | IB(NA)-0600266ENG-A | First edition |
| Feb., 2006 | IB(NA)-0600266ENG-B | <u>Modification</u> Conformance Tested |
| | | |