

## HF-430NEO Series PROFIBUS for Communication option Model : P1-PB

### User's Guide



#### NOTICE

1. Make sure that this user's guide is delivered to the end user of inverter unit.
2. Read the instruction manual and user's guide before installing or operating the inverter unit, and store it in a safe place for reference.

**Copyright © 2020 Sumitomo Heavy Industries, Ltd. All rights reserved.**

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, mechanical, electronic, photocopying, recording, or otherwise, without the prior written permission of Sumitomo. No patent liability is assumed with respect to the use of the information contained herein. Moreover, because Sumitomo is constantly striving to improve its high-quality products, the information contained in this manual is subject to change without notice. Every precaution has been taken in the preparation of this manual. Sumitomo assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained in this publication.

## Introduction

Thank you for purchasing the P1-PB: communication option for HF-430NEO series inverter. This instruction manual describes how to handle and maintain the P1-PB. Please read this manual carefully before using the P1-PB, and keep it handy for those who operate, maintain and inspect it. For the purpose of reducing paper consumption and provision of the latest information, we enclose the instruction manual only, while providing the User's Guide for more detailed description through electronic data instead of CD or printed document.

### ■ User's Guide(this document)

The User's Guide provides detailed information necessary for handling the product.

Please make sure to read User's Guide for proper use.

If future updated descriptions differ from the Basic Guide, the description in the User's Guide will have higher priority. Always use the P1-PB strictly within the range described in the User's Guide and perform proper inspection and maintenance to prevent failures or accidents.

The latest version of the User's guide can be obtained through our website.

### ■ Instruction manual

The instruction manual provides the minimum information necessary for handling the product.

Please make sure to read the Instruction manual as well as the User's Guide for more detailed information.

### ■ Handling the inverter HF-430NEO

For handling the inverter, please make sure to read its Instruction manual and User's Guide.

### ■ For a proper use

Before using the inverter, please read carefully the inverter's Instruction manual and User's Guide, the P1-PB User's Guide and this manual.

In Addition any personnel handling or performing maintenance of the product must read carefully the inverter's Instruction manual and User's Guide, the P1-PB User's Guide and this manual.

Before any attempt to install, operate, maintain or inspect this equipment, a complete understanding of the equipment specifications, safety instructions, precautions, handling and operation instructions is required. Please follow all the specifications and instructions for a proper use. Additionally, periodically review the inverter's Instruction manual and User's Guide, the P1-PB User's Guide and this manual.

### ■ Precautions

It is prohibited to reproduce or reform this document partially or totally in any form without the publisher's permission.

The contents of the document are subject to change without prior notice.

Any handling, maintenance or operation method NOT described on the inverter's Instruction manual and User's Guide, the P1-PB User's Guide or this manual is not covered by the product warranty.

Please DO NOT perform any procedure NOT described on the HF-430NEO or the P1-PB manuals since it can be the cause of unexpected failures or accidents.

We are not responsible for any impact from operations regardless of unexpected failure or accident due to operation or handling of the product in a manner not specified on the inverter's Instruction manual and User's Guide, the P1-PB User's Guide or this manual. We appreciate your understanding.

Note that, in case the inverter's Instruction manual and User's Guide, the P1-PB User's Guide and this manual are enclosed, they should be delivered to the end user of the inverter. Also make sure to download and keep accessible any other related guides or instruction manuals for the end user.

## Table of Contents

- Introduction..... S-1
- Table of Contents ..... S-2

### Chapter 1 Safety Precautions

- |                                  |                                  |
|----------------------------------|----------------------------------|
| 1.1 About this chapter ..... 1-1 | 1.3 Symbol explanation ..... 1-2 |
| 1.2 Types of warnings..... 1-1   | 1.4 Precautions ..... 1-2        |

### Chapter 2 Overview

- |  |                               |
|--|-------------------------------|
| 2.1 About this chapter..... 2-1        | 2.4 Guide objectives..... 2-1 |
| 2.2 Applicable devices ..... 2-1       | 2.5 Guide outline ..... 2-2   |
| 2.3 Before reading this guide..... 2-1 | 2.6 Terminology ..... 2-2     |

### Chapter 3 Preparing for operation

- |                                 |                                 |
|---------------------------------|---------------------------------|
| 3.1 About this chapter..... 3-1 | 3.2 Preparation steps ..... 3-1 |
|---------------------------------|---------------------------------|

### Chapter 4 P1-PB

- |                                 |  |
|---------------------------------|--|
| 4.1 About this chapter..... 4-1 | 4.3 Name plate..... 4-3                  |
| 4.2 External features..... 4-1  | 4.4 Dimensions after installed ..... 4-3 |

### Chapter 5 Enclosed Items

- |  |  |
|--|--|
| 5.1 About this chapter..... 5-1        | 5.3 Verification after the purchase..... 5-1 |
| 5.2 About the enclosed items ..... 5-1 |  |

### Chapter 6 Installation and Connection

- |                                 |                          |
|---------------------------------|--------------------------|
| 6.1 About this chapter..... 6-1 | 6.3 Connection ..... 6-3 |
| 6.2 Installation..... 6-1       |                          |

### Chapter 7 Parameter Setting

- |                                 |                                 |
|---------------------------------|---------------------------------|
| 7.1 About this chapter..... 7-1 | 7.2 Parameter setting ..... 7-1 |
|---------------------------------|---------------------------------|

### Chapter 8 PROFIBUS

- |                                 |                           |
|---------------------------------|---------------------------|
| 8.1 About this chapter..... 8-1 | 8.3 PROFIBUS..... 8-1     |
| 8.2 GSD file ..... 8-1          | 8.4 Node address..... 8-2 |

### Chapter 9 PROFIdrive

- |  |                                   |
|--|-----------------------------------|
| 9.1 About this chapter..... 9-1          | 9.7 Telegram..... 9-8             |
| 9.2 PROFIdrive..... 9-1                  | 9.8 Parameter access ..... 9-10   |
| 9.3 State machine on PROFIdrive..... 9-2 | 9.9 Fault ..... 9-16              |
| 9.4 STW1 (Control word 1)..... 9-4       | 9.10 Warning ..... 9-17           |
| 9.5 ZSW1 (Status word 1) ..... 9-6       | 9.11 Operation example ..... 9-18 |
| 9.6 NSOLL_A / NIST_A ..... 9-7           |                                   |

**Chapter 10 PNU (Parameter number)**

|                                   |      |                                 |      |
|-----------------------------------|------|---------------------------------|------|
| 10.1 About this chapter .....     | 10-1 | 10.5 PROFIdrive area .....      | 10-2 |
| 10.2 PNU (Parameter number) ..... | 10-1 | 10.6 Device specific area       |      |
| 10.3 Data types .....             | 10-1 | (Inverter parameter area) ..... | 10-5 |
| 10.4 Access.....                  | 10-1 |                                 |      |

**Chapter 11 Troubleshooting**

|                               |      |                                    |      |
|-------------------------------|------|------------------------------------|------|
| 11.1 About this chapter ..... | 11-1 | 11.3 P1-PB troubleshooting.....    | 11-2 |
| 11.2 Self-diagnosis .....     | 11-1 | 11.4 Inverter troubleshooting..... | 11-4 |

**Chapter 12 Specifications**

|                               |      |                                 |      |
|-------------------------------|------|---------------------------------|------|
| 12.1 About this chapter ..... | 12-1 | 12.2 Device Specifications..... | 12-1 |
|-------------------------------|------|---------------------------------|------|

**Chapter 13 Parameter List**

|                               |      |                           |      |
|-------------------------------|------|---------------------------|------|
| 13.1 About this chapter ..... | 13-1 | 13.2 Parameter list ..... | 13-1 |
|-------------------------------|------|---------------------------|------|

- **Warranty.....** App.1-1

## 1

# Chapter 1 Safety Precautions

## 1.1 About this chapter

This chapter contains the information about Safety precautions during the installation, wiring, operation and inspection.

Before installation, wiring, operation, inspection, or usage please read completely and fully understand this guide.

## 1.2 Types of warnings

In this guide, the safety precautions as well as residual risks are categorized by degree of risk as “Danger” , “Warning” and “Caution” .

The definition of each category is described below.

### **Danger**


This category warns the user that in case of an incorrect or improper handling, it leads to a dangerous situation that have a high risk of causing death, serious injuries and/or major property damage.

### **Warning**


This category warns the user that in case of an incorrect or improper handling, it leads to a dangerous situation that may cause death, serious injuries and/or major property damage.

### **Caution**

This category warns the user that in case of an incorrect or improper handling, it leads to a dangerous situation that may cause physical injuries and/or property damage.

However, any content labeled with “Caution” and depending on the case, might have a possibility of leading to a highly dangerous situation.







It is extremely important that you follow the instructions and warnings.

Furthermore, content labeled with “” must be followed and paid special attention.

## 1.3 Symbol explanation

In this guide, there are some explanatory notes using different symbols. Please pay attention to this content and keep in mind its information.

### Symbol definition

|   |   |   |
|---|---|---|
|  | When handling this product, this symbol indicates danger, warning or caution about ignition, electric shock, high temperature or other dangers.<br>Inside or near the  symbol, the specific content will be shown. |   |
|   |    | This symbol indicates “General hazard not specified, be cautious” . |
|   |    | This symbol indicates “Electric shock hazard” .                     |
|  | This symbol indicates prohibited actions “Actions that should not be done” when handling this device.   |   |
|  | This symbol indicates actions that must be done based on the instructions.  |   |

## 1.4 Precautions

### 1.4.1 Please be careful!



## Danger



Caution

- If handled incorrectly or improperly, it might cause death, serious physical injuries, or damage to the inverter, motor or even the entire system.



Do

- Before installation, wiring, operation, inspection, or usage please read and fully understand this guide and other references.



Caution

- There will be additional warnings about hazards and failure causes in other chapters.



Do

- Before installation, wiring, operation, inspection, or usage please read and fully understand this guide.



Caution

- In order to explain this device details the illustrations in this guide might show this device without covers.



Do

- Before operating this device please return all the covers to the original position, and follow all the necessary regulations and instructions written in this guide.

### 1.4.2 Precautions during the installation !

## Danger



#### ● Risk of Fire!



Fire  
Hazard

- DO NOT place inflammable objects nearby
- DO NOT let scraps of wire, welding sputtering, irons scraps or other objects get inside the device.



Prohibited

- Avoid installing this device in places with high temperature, high humidity, Condensation-prone conditions, dusty conditions, corrosive gas, explosive gas, flammable gas, grinding fluid mist, hydrogen sulfide or salt damage prone conditions. Additionally, it is recommended to install this device in ventilated room not exposed to direct sunlight.



Do



#### ● Risk of Injury!



Injury

- DO NOT install or operate products with damage or missing parts.



Prohibited



#### ● Risk of an Inverter failure!



Failure

- This device is a precision equipment, DO NOT drop it, or give it a strong shock.
- DO NOT get on (step on) or place heavy objects on this device.
- When handling the object, avoid places prone to static electricity(like carpets).



Do

- Since the human body can get charged with static electricity, as a safety measure please touch a safe metallic surface before handling this device.

### 1.4.3 Precautions during the wiring!

## Danger



#### ● Risk of an electric shock and/or fire!

Electric  
shock  
and Fire  
hazard

- Be sure to ground the inverter.
- Entrust the wiring work only to a qualified electrician.
- Before the wiring work make sure to turn off the power supply and wait for more than 10 or 15 minutes depending on the inverter model \*. (Confirm that the charge lamp is OFF and the DC voltage between terminals P and N is 45 V or less.)



Do

\* For HF4322-5A5 to HF4322-022, HF4324-5A5 to HF4324-022 models the wait time is 10 minutes.  
For HF4322-030 to HF4322-055, HF4324-030 to HF4324-055 models the wait time is 15 minutes.



#### ● Risk of inverter failure!



Failure

- DO NOT pull any wire after wiring.



Prohibited





Electric  
shock  
and  
injury



Do

● Risk of an electric shock and/or injury!

- Perform the wiring only after installing the inverter.



## Warning



Electric  
shock  
and  
injury



Do

● Risk of an electric shock and/or injury!

- DO NOT operate/switch any of the switches from the 4 pole DIP switch on this device. When this device is shipped all switches are turned off.
- If any of the switches from the 4 pole DIP switch is operated/switched, this device will not work as intended and it might be the cause of failure.
- Please handle the cables properly and DO NOT let them get damaged. Using damaged cables will not only interfere with the correct operation of this device but also might be the cause of a system failure.



Fire  
hazard



Do

● Risk of Fire!

- Please tighten the screws and bolts with the specified torque.  
(Please refer to the inverter user's guide)
- Verify that none of the screws and bolts are loose.
- Make sure that the inverter and this device are fixed together with the securing screw.
- Make sure that the connectors are properly fixed.

### 1.4.4 Precautions during operation and trial operation!



## Danger



Electric  
shock  
and Fire  
hazard



Prohibited

● Risk of an electric shock or fire!

- DO NOT touch the inside of this device, check the signal, do any wiring or plug/unplug the connectors while it energized.
- DO NOT insert any sick or rod like objects inside this device while it is energized.



Injury  
and Fire  
hazard



Prohibited

● Risk of an injury and/or fire!

- DO NOT touch the inside of this device or the inverter while they are energized.



## ● Risk of an electric shock!

Electric shock

- Make sure to fasten all the screws of this device before turning it on. DO NOT detach this device while it is energized or the inverter capacitors are still charged.



Prohibited

- Additionally DO NOT touch the inside of the inverter while the inverter capacitors are still charged.
- DO NOT touch this device with wet hands.

**Warning**

## ● Risk of an injury and/or device damage!

Injury or device Damage

- By using this device it becomes easier to change the settings and the output frequency of the inverter. When changing the settings or the output frequency of the inverter please make sure that it is within the supported range by the gear motor and/or the equipment.



Do

- In case this device is being used to make the inverter produce high frequency outputs for a motor or other equipment, make sure with the respective manufacturer that the motor or the equipment can tolerate the high frequency output given by the inverter.

- During operation verify the motor rotation direction, and that there are no irregular sounds or vibrations.

**1.4.5 Precautions during Maintenance/ Inspection!****Danger**

## ● Risk of an electric shock!

Electric shock

- Before the wiring work make sure to turn off the power supply and wait for more than 10 or 15 minutes depending on the inverter model \*.



Do

(Confirm that the charge lamp is OFF and the DC voltage between terminals P and N is 45 V or less.)



Prohibited

- Entrust the maintenance, inspection and/or part replacement only to a specialized personnel. (Be sure to remove wristwatches and metal accessories, e.g., bracelets, before maintenance and inspection work and use insulated tools for the work).

\* For HF4322-5A5 to HF4322-022, HF4324-5A5 to HF4324-022 models the wait time is 10 minutes.  
For HF4322-030 to HF4322-055, HF4324-030 to HF4324-055 models the wait time is 15 minutes.

## 1.4.6 Precautions for disposal!

**Danger**

- Risk of an injury and/or an explosion!



Injury and  
explosion  
hazard

- Outsource to a qualified industrial waste disposal contractor when discarding this device. Disposing of this device on your own may result in the production of poisonous gas
- Contact your sales agent if you need to get this device fixed.



Do

- A qualified waste disposer includes industrial waste collector/transporter and industrial waste disposal operator. Follow all laws and decrees related to procedures of waste management and public cleansing when disposing of this device.

## 1.4.7 Other Precautions

**Danger**

Electric  
shock  
injury  
and Fire  
hazard

- Risk of an injury, an electric shock and/or fire!

- DO NOT modify this device.



Prohibited

\*In addition to the precautions described above, there are other precautions described in the chapter 8 of the inverter user's guide. Please read and follow those precautions as well.

## 2

## Chapter 2 Overview

### 2.1 About this chapter

This chapter specifies the devices that this guide will describe. Additionally, it contains information necessary to clearly understand this guide, the objectives of this guide and its terminology.

### 2.2 Applicable devices

The contents of this guide will apply to the P1-PB device. For information about the inverter please refer to the inverter's user's guide or the basic guide.

### 2.3 Before reading this guide

This guide is aimed for people who purchase, handle, install or connect control equipment, design systems or manage factories.

This guide units are based on the SI system.

### 2.4 Guide objectives

The objectives of this guide are:

- explain how to wire and connect the device.
- explain how to set the necessary parameters.

## 2.5 Guide outline

This guide has the following structure.

- The Chapter 1 “Safety Precautions” , contains the safety instructions for installing, wiring, operating, maintaining and inspecting this device.
- The Chapter 2 “Overview” , contains information necessary to clearly understand this guide, the objectives of this guide and its terminology.
- The Chapter 3 “Preparing for Operation” , contains the instructions step by step for operating this device successfully.
- The Chapter 4 “P1-PB” , contains the explanation about the product appearance and general features.
- The Chapter 5 “Enclosed Items” , contains information about the items enclosed with this device.
- The Chapter 6 “Installation and Connection” , contains information for installing the P1-PB on the inverter.
- The Chapter 7 “Parameter Settings” , contains the explanation of the inverter parameters that relate with the P1-PB.
- The Chapter 8 “PROFIBUS” , contains the PROFIBUS explanation.
- The Chapter 9 “PROFIdrive” , contains the PROFIdrive explanation.
- The Chapter 10 “PNU (Parameter number” , contains the explanation about the PNU (Parameter number).
- The Chapter 11 “Troubleshooting” , contains the explanation of the P1-PB LEDs lighting patterns, the explanation of inverter error (trip) status and its trouble shooting.
- The Chapter 12 “Specifications” , contains the specifications of the P1-PB.
- The Chapter 13 “Parameters List” , contains the list of PNU and Sub-index of inverter parameter.

## 2.6 Terminology

| Term         | Description  |
|--------------|--|
| GSD file     | General Station Description<br>It is the text file which contains the information of the PROFIBUS slave.   |
| MFG No.      | Manufacture number.  |
| Node         | The master or slave of PROFIBUS  |
| Node Address | This is the number to identify the node. In the case of PROFIBUS, the address from 0 to 126 is used.   |
| PNU          | Parameter number.<br>It is the parameter of PROFIdrive.<br>This data is identified with an index from 0 to 65535. Some have up to 255 sub-indexes.                         |
| PROFIBUS     | It is one of the open fieldbus for industrial use. Standardized by the IEC 61158 and 61784.<br>There are PROFIBUS DP for Factory automation and PA for Process automation. |
| PROFIdrive   | It is the profile used as a driver.  |
| STW          | Control word   |
| Telegram     | Communication data   |
| ZSW          | Status word  |

## 3

## Chapter 3 Preparing for Operation

### 3.1 About this chapter

This chapter contains the instructions step by step for operating this device successfully. This chapter will refer to others chapters for more detail explanation. Hence for installation, mounting, wiring, operation setting and function detailed explanation, refer to the indicated or corresponding chapter. Additionally, when doing any work or operation, always follow the safety instructions and cautions given in the chapter 1.

### 3.2 Preparation steps

#### **Step 1: Preparing the inverter**

Follow the steps written in HF-430NEO user's guide in order to prepare the inverter for operation. Furthermore, configure the parameters related to the motor.

#### **Step 2: Installing the P1-PB**

Turn OFF the inverter (refer to 1.4.3 for safety precautions), then install the P1-PB.

#### **Step 3: Parameter setting**

Configure the parameters related to the P1-PB.

When the parameters shown below are configured, P1-PB must be turned off and on to enable the configuration.

- [oH-20] Profibus Node address
- [oH-24] Set point telegram/Actual value telegram Gr. Selection
- [oJ-\*\*] Flexible command registration writing register \*, Gr.\*

The rest of the parameters can be configured without turning off and on P1-PB.

#### **Step 4: Communicate with PROFIBUS**

Install the P1-PB GSD file into the PROFIBUS master Configuration tool. Then configure this tool so the master and the P1-PB can communicate through PROFIBUS.

#### **Step 5: Operate the inverter**

The inverter can be operated by changing STW1 and NSOLL\_A settings.

If the steps described above were followed correctly, ZSW1, NIST\_A, and the inverter frequency output will change as shown in the table below

■ Parameter setting value and monitor values

(in case the Maximum frequency setting is 60.00 [Hz].)

| STW1   | NSOLL_A | ZSW1                     | NIST_A                         | Output Frequency[Hz]                              |
|--------|---------|--------------------------|--------------------------------|---|
| 0x0000 | 0       | 0x0240                   | 0                              | 0.00  |
| 0x0406 |         | 0x0231                   |                                |   |
| 0x0407 |         | 0x0233                   |                                |   |
| 0x047F |         | 0x0237                   |                                |   |
| 0x047F | 0x4000  | 0x0237                   | Accelerate from<br>0 to 0x4000 | Forward accelerate until 60.00                    |
| 0x047F |         | 0x0337                   | 0x4000                         | Forward 60.00                                     |
| 0x047F | 0       | 0x0237                   | Decelerate from<br>0x4000 to 0 | Decelerate until 0.00                             |
| 0x047F |         | 0x0337                   | 0                              | 0.00  |
| 0x047F | 0xC000  | 0x0237                   | Accelerate from<br>0 to 0xC000 | Reverse accelerate until 60.00                    |
| 0x047F |         | 0x0337                   | 0xC000                         | Reverse 60.00                                     |
| 0x0400 |         | After it stops<br>0x0240 | Decelerate from<br>0xC000 to 0 | Decelerate until 0.00 then it stops the operation |

## 4

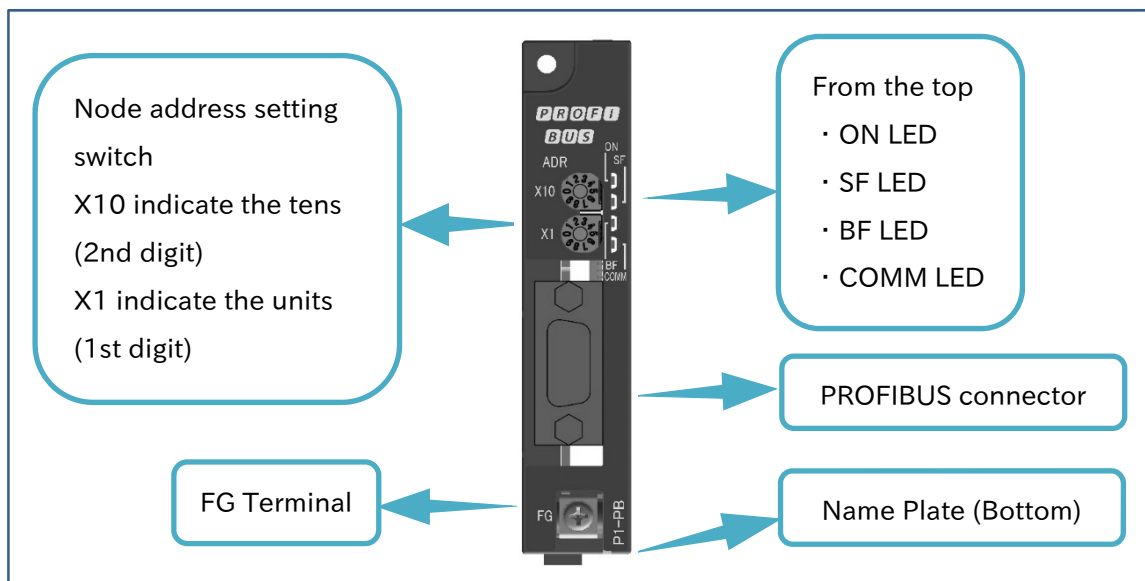
## Chapter 4 P1-PB

4.1 About this chapter

This chapter contains the explanation about this product external features and information on the name plate. It is recommended to check this chapter contents and verify the device after the purchase.

4.2 External features**4.2.1** P1-PB appearance and nomenclature

The P1-PB external view is shown below.

**4.2.2** Node address setting switch

- The node address can be set using oH-20 of the inverter parameter. When you use oH-20, the node address setting switch has to be set to 00. Please refer to the “8.4 Node address” for details.
- The upper rotary switch(X10) determine the tens(2nd digit) of the address while the lower rotary switch(X1) will determine the units (1st digit) of the address. Therefore, the range of the station address will be from 00 to 99.
- The address configured by node address setting switch will become effective after the device is turn on. While the power is on, any change on the node address setting switch will be ineffective. Thus, any change will only become effective after the device is turn on again.
- Additionally, if a node address is overlapped or repeated inside the same PROFIBUS network there will be an abnormality and the PROFIBUS will not transmit properly.



### 4.2.3 LED

The P1-PB LEDs are explained in the table below.

#### LED definition

| LED                    | Color | Lighting pattern | Description   |
|------------------------|-------|------------------|---|
| ON                     | Green | Light on         | Power on  |
|                        |       | Light off        | Power off   |
| SF<br>(System failure) | Red   | Light on         | Error about PROFIBUS has occurred in P1-PB.   |
|                        |       | Light off        | No error about PROFIBUS has occurred in P1-PB.  |
| BF<br>(Bus failure)    | Red   | Light on         | P1-PB isn't connected to master yet.  |
|                        |       | Blinking         | P1-PB is already connected to master, but P1-PB does not communicate with master by the set telegram. |
|                        |       | Light off        | P1-PB is communicating with master by the set telegram.   |
| COMM                   | Green | Light on         | P1-PB is communicating with master by the set telegram.   |
|                        |       | Light off        | P1-PB doesn't communicate with master by the set telegram.  |

- Blinking is 1 second switching on and 1 second switching off is repeated.

### 4.2.4 PROFIBUS connector

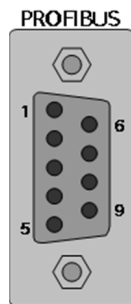
The P1-PB connector specifications are shown next page.

#### Connector Specifications

9 pin D-sub female connector

#### Pin arrangement

| Pin No | Signal Type |
|--------|-------------|
| 1      | NC          |
| 2      | NC          |
| 3      | B-Line      |
| 4      | NC          |
| 5      | GND         |
| 6      | +5V DC      |
| 7      | NC          |
| 8      | A-Line      |
| 9      | NC          |



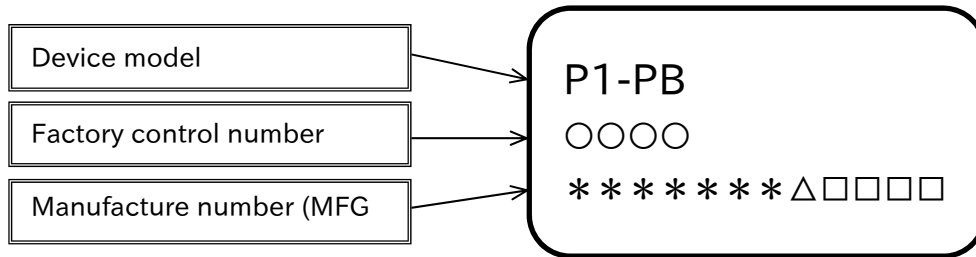
The bus cable is specified in EN 50170 part 8-2 as "Cable Type A", and should comply with The parameters in the table below. Cable type B, which is also described in EN 50170, is outdated and should no longer be used.

#### Cable type A specifications

| Item Name                | Description                                      |
|--------------------------|--|
| Characteristic impedance | 135 to 165 $\Omega$ at a frequency of 3 to 20MHz |
| Operating capacity       | < 30 pF/m  |
| Loop resistance          | $\leq$ 100 $\Omega$ /km                          |
| Core diameter            | > 0.64 mm  |
| Core cross-section *     | > 0.34mm <sup>2</sup>                            |

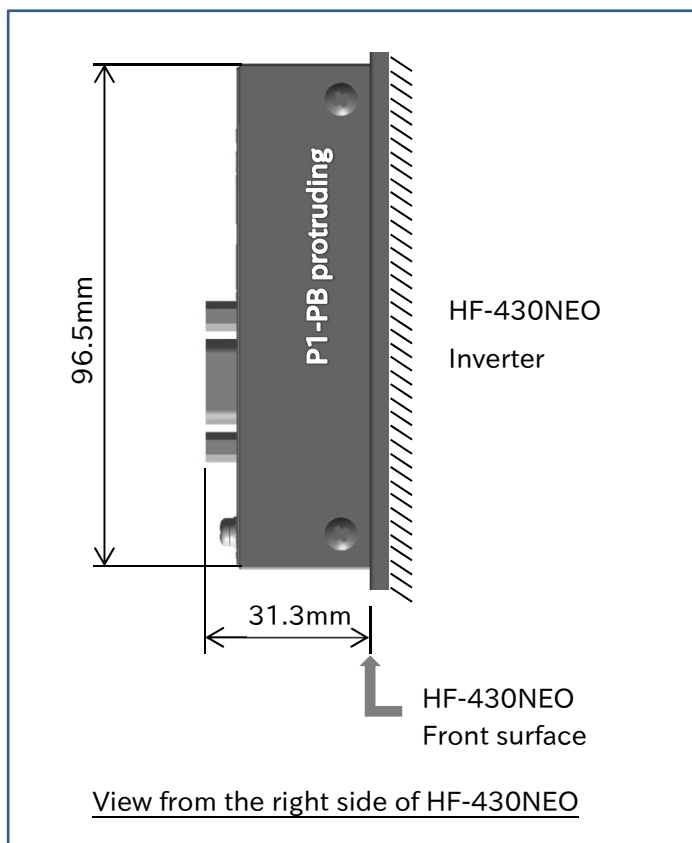
\*The cable cross-sections used should be compatible with the mechanical specifications of the bus interface connector.

### 4.3 Name plate



### 4.4 Dimensions after installed

The dimensions of the P1-PB after it is installed on HF-430NEO are shown in the image below. As shown on the image a part of the P1-PB will stand out from HF-430NEO. Please be cautious when installing the device.



## 5

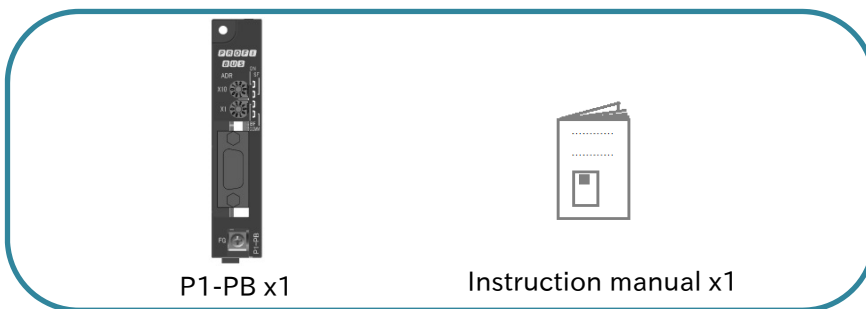
## Chapter 5 Enclosed Items

### 5.1 About this chapter

This chapter contains information about the items enclosed with the P1-PB. Additionally, it is explained how to inspect and verify this product after its purchase.

### 5.2 About the enclosed items

- Enclosed items



Contact your sales agent immediately in case there are defects or imperfections.

### 5.3 Verification after the purchase

#### 5.3.1 Verification when unpacking

- Please verify the items written on the right when unpacking.
- In case there is any doubt or trouble with the product please contact your sales agent as soon as possible.

✓ Check that the items were not smashed or damaged during the delivery.

✓ Check that  
There is a P1-PB, there is an Instruction manual, when unpacking.

✓ Please check again that your order match with the name plate of the device.

#### 5.3.2 Read this guide

- This guide contains the information necessary to handle the P1-PB correctly. Read it carefully and keep it safe.
- Also, use the inverter user's guide and basic guide as a reference.
- Please make sure that the P1-PB basic guide and the inverter basic guide reach the end user. Additionally, advice the end user to download and read the latest version of this guide.

## 6

# Chapter 6 Installation and Connection

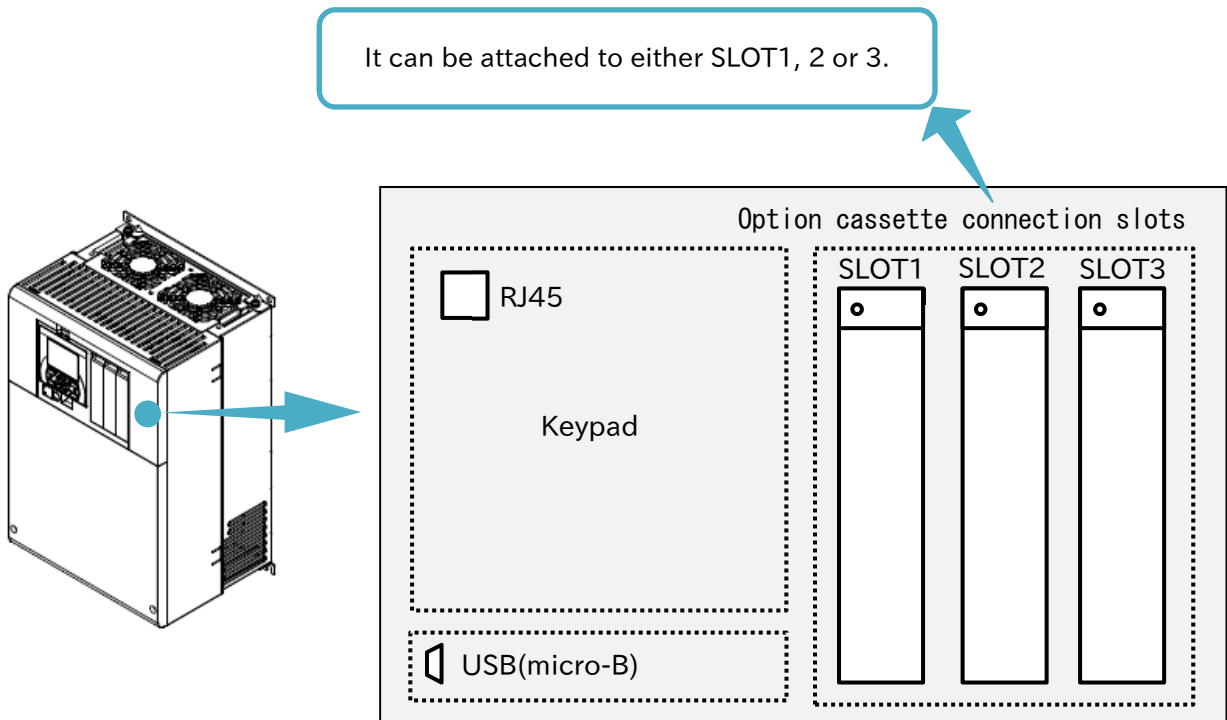
## 6.1 About this chapter

This chapter contains information for installing the P1-PB on the inverter.  
For information about the inverter installation please refer to HF-430NEO user's guide.

## 6.2 Installation

### 6.2.1 Installation

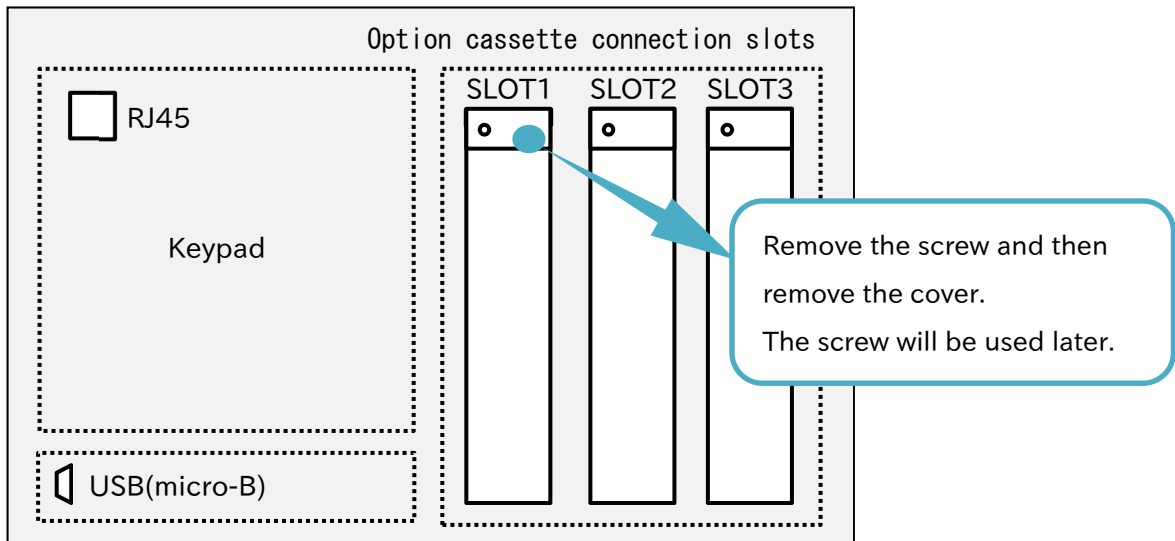
The P1-PB can be attached to any of the 3 option slots of HF-430NEO inverter.



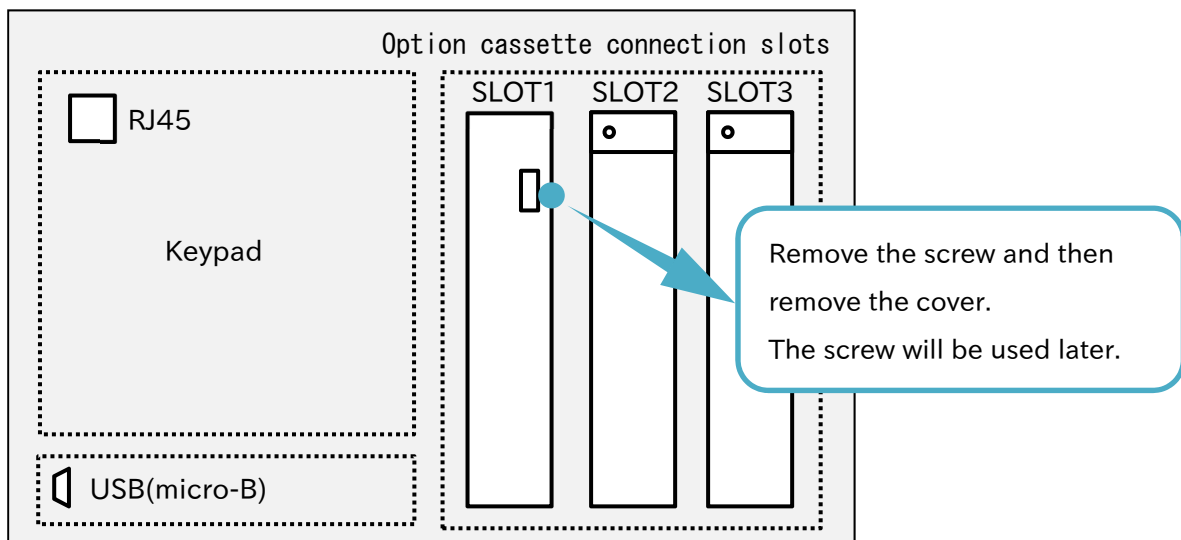
### 6.2.2 How to install

Before installing the P1-PB please refer to the chapter 7 “Inverter Setting” and configure the inverter. For explanation purposes, it will be assumed that the P1-PB is going to be installed in the SLOT1.

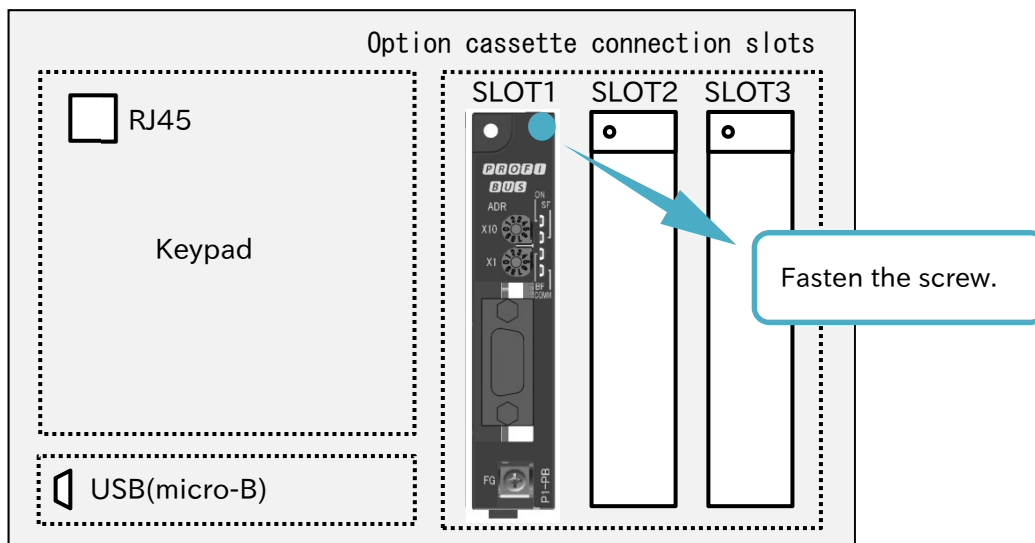
- (1) Remove the cover of the option cassette connection slot. Despite the removed cover will no longer be needed, it is recommended to keep it in a safe place. However the screw that secured the cover will be used to secure the P1-PB.



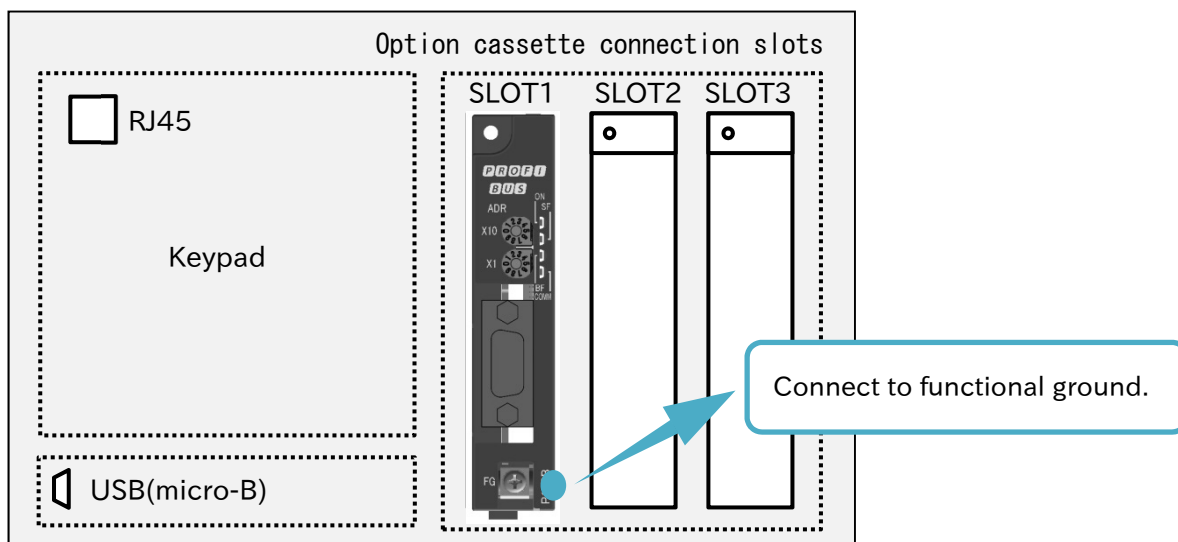
- (2) Attach the P1-PB. The slots 2 and 3 have one more connection in the lower side. However, the P1-PB will not need that connection.



(3) Secure the P1-PB with the screw removed in procedure (1).



(4) Connect the FG terminal to functional ground.



### 6.3 Connection

- Make sure that the communication line and the power line are placed as far as possible from each other. If the power line and the communication line are placed close to each other, the communication line will pick up noise from the power line that can interfere with the transmission.
- Make sure to set up the system, so that in an event of a network failure, the inverter output stops immediately.
  - (1) In case the master detects an abnormality in the connection, shut down the inverter primary power supply.
  - (2) Allocate functions such as "free run" or "reset" to the input terminals, so when the master detects a connection abnormality it is capable of turning on these terminals.
  - (3) Configure the inverter so in case of a connection abnormality, it stops, free run stops or trip. (When the operation command is received through PROFIBUS, the inverter shipment settings are configured so that if there is any abnormality in the connection the inverter will immediately stop)

Connect the communication cable (PROFIBUS cable), so it minimizes the tension and stress over the connector.

For other information concerning the installation, please refer to HF-430NEO user's guide.

## 7

# Chapter 7 Parameter Settings

## 7.1 About this chapter

This chapter contains the information about HF-430NEO settings that must be done when using the P1-PB.

## 7.2 Parameter settings

This chapter explains how to configure HF-430NEO inverter parameters in order to use the P1-PB.

- When [oH-20], [oH-24] and [oJ-\*\*] parameters are configured, P1-PB must be turned off and on to enable the configuration.  
The other parameters will be effective immediately after the change.


### 7.2.1 Parameters that must be configured

■ List of parameters.


| Item  | Parameter No | Data   | Description                                       |
|---|--------------|--|---|
| Main speed input source selection, 1st motor  | [AA101]      | 9 (Option-1)<br>10 (Option-2)<br>11 (Option-3) | Select the slot in which the P1-PB was installed. |
| Run-command input source selection, 1st motor | [AA111]      | 4 (Option-1)<br>5 (Option-2)<br>6 (Option-3)   |   |

### 7.2.2 Parameters that must be set as required by the application.

#### List of parameters.

| Item  | Parameter No                  | Data                | Description  | Caution   |
|---|-------------------------------|---------------------|--|---|
| Deceleration time setting 2, 1st motor                | [AC126]                       | 0.00~<br>3600.00(s) | Set the Quick stop deceleration time.<br>This parameter setting is needed in case the Quick stop function is going to be used.   |   |
| Jogging frequency                                     | [AG-20]                       | 0.00~<br>10.00(Hz)  | Set the jogging frequency.<br>This parameter setting is needed in case the Jogging function is going to be used.   |   |
| Jogging stop mode selection                           | [AG-21]                       | 00~05               | Set the jogging stop mode.<br>This parameter setting is needed in case the Jogging function is going to be used.<br>There is no difference between “Enable at run” and “Disable at run”, because [JOG] terminal becomes ON first. “00” and “03”, “01” and “04”, “02” and “05” are same action. |   |
| Arrival frequency setting during acceleration 1       | [CE-10]                       | 0.00~<br>590.00(Hz) | Set the arrival frequency to turn on ZSW1 bit10 (f Or n Reached Or Exceeded / f Or n Not Reached) during acceleration. When 0.00(Hz) is set, this bit doesn't turn on.   |   |
| Arrival frequency setting during deceleration 1       | [CE-11]                       |                     | Set the arrival frequency to turn off ZSW1 bit10 during deceleration 1.  |   |
| Communication Watch Dog Timer                         | [oA-11]<br>[oA-21]<br>[oA-31] | 0.00~<br>100.00(s)  | Set the communication watchdog timer of PROFIBUS.<br>This watchdog timer is to monitor non communication after watchdog that is set by PROFIBUS configuration tool to the PROFIBUS master occurs.<br>If 0.00(s) is set, P1-PB doesn't monitor non communication.                               |   |
| Action selection at communication error               | [oA-12]<br>[oA-22]<br>[oA-32] | 00~04               | Set inverter action on communication error.  |   |
| Profibus Node address                                 | [oH-20]                       | 0~125               | Set PROFIBUS node address.<br>The PROFIBUS node address can be set by the node address setting switch too.<br>When the node address setting switch is set “00”, this parameter enables<br>Please refer to “8.4 Node address” for details.  |  |
| Setpoint telegram/Actual value telegram Gr. Selection | [oH-24]                       | 00~02               | Set the group of Flexible command registration writing / reading register.<br>Gr.A [oJ-01] ~ [oJ-10], [oJ-11] ~ [oJ-20]<br>Gr.B [oJ-21] ~ [oJ-30], [oJ-31] ~ [oJ-40]<br>Gr.C [oJ-41] ~ [oJ-50], [oJ-51] ~ [oJ-60]  |   |
| Flexible command registration writing register, Gr.A  | [oJ-01]<br>~<br>[oJ-10]       | 0x0000~<br>0xFFFF   | Set the Modbus register number of parameters that P1-PB is received by Telegram 103, 104, and 105.<br>Please refer to “9.6 Telegram” for details.  |   |
| Flexible command registration writing register, Gr.B  | [oJ-21]<br>~<br>[oJ-30]       |                     |  |   |
| Flexible command registration writing register, Gr.C  | [oJ-41]<br>~<br>[oJ-50]       |                     |  |   |



| Item   | Parameter No            | Data              | Description   | Caution   |
|--|-------------------------|-------------------|---|---|
| Flexible command registration<br>Reading register,<br>Gr.A | [oJ-11]<br>~<br>[oJ-20] | 0x0000~<br>0xFFFF | Set the Modbus register number of parameters that P1-PB is sent by Telegram 103, 104, and 105.<br>Please refer to “9.6 Telegram” for details. |  |
| Flexible command registration<br>Reading register,<br>Gr.B | [oJ-31]<br>~<br>[oJ-40] |                   |   |   |
| Flexible command registration<br>Reading register,<br>Gr.C | [oJ-51]<br>~<br>[oJ-60] |                   |   |   |

| Symbol  | Definition  |
|---|-------------|
|  | Precautions |

### 7.2.3 Parameters correlating the Inverter and the P1-PB

The parameters described in the following table control the action taken by the inverter when there is a problem with the P1-PB or when the P1-PB is connected.

#### Parameter

| Code  | Parameter name                               | Selection                                    | Initial value |
|-------|--|--|---------------|
| oA-10 | Operation mode on option card error (SLOT-1) | 00(Error)<br>01(Ignore error (Keep running)) | 00            |
| oA-20 | Operation mode on option card error (SLOT-2) |  |               |
| oA-30 | Operation mode on option card error (SLOT-3) |  |               |

- [oA-10]: Operation mode on option card error (SLOT-1)
- [oA-20]: Operation mode on option card error (SLOT-2)
- [oA-30]: Operation mode on option card error (SLOT-3)

These parameters can select whether to ignore the option error trip or not in cases where there are connection failures between the P1-PB and the inverter.

Let the inverter trip: 00 (error).

Ignore the error and continue with the operation: 01 (Ignore error (Keep running)).

Please make sure to configure the parameter corresponding to the slot in which the P1-PB is attached.

In the event there is a communication failure between the inverter and the P1-PB, and the option 01 (Ignore error (Keep running)) is selected, the inverter operation will not stop.

Additionally, in case there is a communication failure between the P1-PB and the inverter, the higher-level device (master) stop command will not be received. Thus, safety measures and precautions are recommended.

### 7.2.4 Other parameters

In addition to the configurations explained in sections 7.2.2 and 7.2.3, please verify the configuration of the following parameters when using the P1-PB.

- [CF-11]: Function for transforming the register data from A, V to %  
When using the P1-PB please select the 00(A, V) setting.
- [oA-13]: Run command selection at start up (SLOT-1)
- [oA-23]: Run command selection at start up (SLOT-2)
- [oA-33]: Run command selection at start up (SLOT-3)  
Please do not change these settings

## 8

# Chapter 8 PROFIBUS

## 8.1 About this chapter

This chapter contains a general explanation about PROFIBUS.

## 8.2 GSD File

In order to use the P1-PB, it is necessary to install the P1-PB GSD file into the PROFIBUS master Configuration tool. The GSD file is a text file that has the specific information of the PROFIBUS slave device.

The GSD file can be obtained through our website. In case is not available or cannot be downloaded please contact the nearest sales office.

## 8.3 PROFIBUS

The P1-PB supports below function about PROFIBUS.

| Item                           | Specification   |
|--------------------------------|---|
| PROFIBUS protocol              | PROFIBUS DPV0<br>PROFIBUS DPV1  |
| Unit type                      | PROFIBUS DP Slave   |
| Supported communication        | MS0<br>MS1<br>MS2   |
| Supported service on MS0       | Data_Exchange.req/cnf<br>Rd_Inp.req/cnf<br>Rd_Outp.req/cnf<br>Set_Prm.req/cnf<br>Chk_Cfg.req/cnf<br>Slave_Diag.req/cnf<br>Global_Control.req/cnf<br>Get_Cfg.req/cnf |
| Supported service on MS1 / MS2 | Initiate.rsp<br>Abort.ind/rsp<br>Read.rsp<br>Write.rsp  |
| Function                       | Freeze mode<br>Sync mode<br>Automatic baudrate  |
| Baud rate                      | 9.6 kbit/s, 19.2 kbit/s, 45.45 kbit/s<br>93.75 kbit/s, 187.5 kbit/s, 500 kbit/s<br>1.5 Mbit/s, 3 Mbit/s, 6 Mbit/s, 12 Mbit/s  |
| Device ID                      | 0x0FEF  |
| GSD file                       | HITA0FEF.GSD  |

## 8.4 Node address

There are two ways of setting the node address to P1-PB.

- (1) The rotary switches  
(Node address setting switches)
- (2) oH-20 of HF-430NEO parameters

(1) is given priority.

When you set the rotary switches within the range from 01 to 99, the value is addressed.

When you set the rotary switches 00 and oH-20 is within the range from 1 to 125, the value of oH-20 is addressed.

Otherwise 126 is addressed.

The rotary switches and oH-20 are read at power-on. The node address isn't changed even if you change the rotary switches or oH-20 during power-on.

You need to set this node address to the same value that you set the master by the configuration tool. If not, P1-PB can't communicate.

## 9

## Chapter 9 PROFdrive

### 9.1 About this chapter

This chapter contains the explanation about the PROFdrive.

### 9.2 PROFdrive

The P1-PB supports below function about PROFdrive.

| Item                    | Specification  |
|-------------------------|--|
| Version                 | 4.2  |
| Application class       | AC1 (Standard Drive)   |
| Telegram                | Standard telegram 1<br>P1-PB telegram 103 (same as PPO3 of PROFdrive version 2)<br>P1-PB telegram 104 (same as PPO4 of PROFdrive version 2)<br>P1-PB telegram 105 (like PPO5 of PROFdrive version 2) |
| Configuring of telegram | Supported<br>From oJ-01 to oJ-60 of HF-430NEO parameters   |
| Operating mode          | Speed control mode   |
| Jogging                 | Only jogging 1 is supported.   |

The size of send and receive data of each telegram are the following.

P1-PB telegrams are the device specific telegrams and compatible with PPOs of PROFdrive version 2. However, P1-PB telegram doesn't have PKW (parameter area) and has only PZD (process data area).

| Telegram  | Set point | Actual value |
|---|-----------|--------------|
| Standard telegram 1   |           |              |
| P1-PB telegram 103<br>(same as PPO3 of PROFdrive version 2) | 2 word    | 2 word       |
| P1-PB telegram 104<br>(same as PPO4 of PROFdrive version 2) | 6 word    | 6 word       |
| P1-PB telegram 105<br>(like PPO5 of PROFdrive version 2)    | 10 word   | 10 word      |

Set point : data from Master to Slave

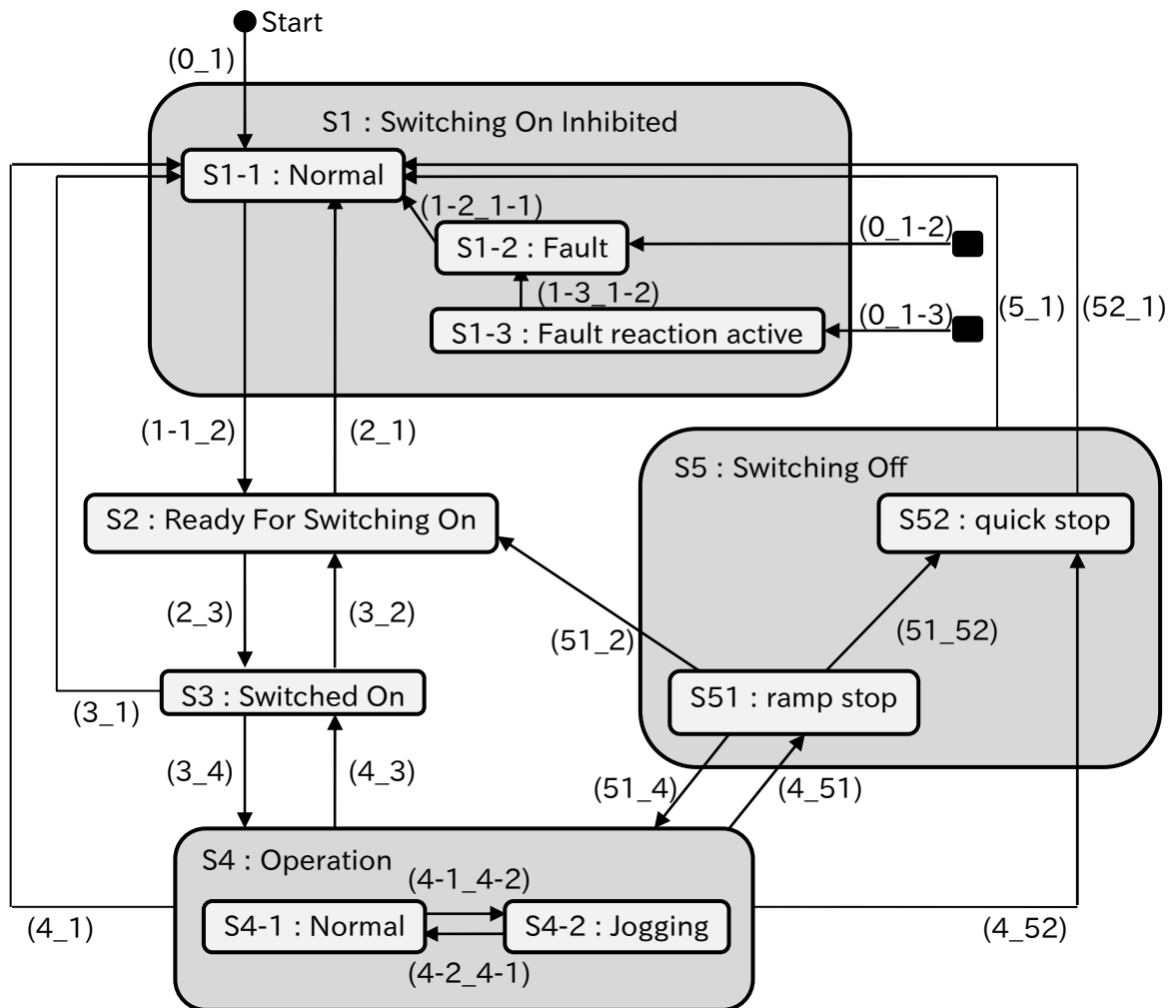
Actual value : data from Slave to Master

Please refer to “9.7 Telegram” for details of each telegram.

### 9.3 State machine on PROFdrive

#### 9.3.1 State diagram

The state diagram of P1-PB is below.



Note : The black rounded rectangles means every states.

The states of "S1-2 : Fault" and "S1-3 : Fault reaction active" can be transitioned from any states.

Each transition is the following. Upper transition is given priority.

| Transition source  | Transition      | Condition  |
|--------------------|-----------------|--|
| From initial state | (0_1)           | Power on, or reset.  |
| In case of error.  | (0_1-3)         | When HF-430NEO is on the operation and either of the following conditions are satisfied.<br>- The communication error is occurred between P1-PB and HF-430NEO.<br>- The communication timeout error that it has been the time of $\alpha A-11 / 21 / 31$ since previous communication occurs on PROFINET and $\alpha A-12 / 22 / 32 = 1$ . |
|                    | (0_1-2)         | When except the above error occurs.  |
| From S1-1          | (1-1_2)         | When all of the following conditions of STW1 are satisfied.<br>Bit0 = OFF, Bit1 = ON, Bit2 = ON  |
| From S1-2          | (1-2_1-1)       | When STW1 Bit7 becomes from OFF to ON and keeps ON for at least 20ms.  |
| From S1-3          | (1-3_1-2)       | When $\alpha A-11 / 21 / 31 = 1$ and any errors occur, HF-430NEO decelerates and the output frequency of HF-430NEO becomes 0.00 [Hz].  |
| From S2            | (2_1)           | When either of the following conditions of STW1 is satisfied.<br>Bit1 = OFF, Bit2 = OFF  |
|                    | (2_3)           | STW1 Bit0 = ON   |
| From S3            | (3_1)           | When either of the following conditions of STW1 is satisfied.<br>Bit1 = OFF, Bit2 = OFF  |
|                    | (3_2)           | STW1 Bit0 = OFF  |
|                    | (3_4)           | STW1 Bit3 = ON   |
| From S4            | (4_1)           | STW1 Bit1 = OFF  |
|                    | (4_52)          | When either of the following conditions are satisfied.<br>- STW1 Bit2 = OFF<br>- STW1 Bit0 = ON $\nabla$ Bit4 = OFF  |
|                    | (4_51)          | STW1 Bit0 = OFF  |
| (4_3)              | STW1 Bit3 = OFF |  |
| From S4-1          | (4-1_4-2)       | When all of the following conditions are satisfied.<br>- The output frequency of HF-430NEO is 0.00 [Hz].<br>- All of STW1 Bit 4- 6 are OFF.<br>- STW1 Bit 8 is ON  |
| From S4-2          | (4-2_4-1)       | When all of the following conditions are satisfied.<br>- The output frequency of HF-430NEO is 0.00 [Hz].<br>- Either of STW1 Bit 4- 6 is ON.<br>- STW1 Bit 8 is OFF  |
| From S5            | (5_1)           | STW1 Bit1 = OFF  |
| From S51           | (51_52)         | STW1 Bit2 = OFF  |
|                    | (51_2)          | When either of the following conditions are satisfied.<br>- The output frequency of HF-430NEO is 0.00 [Hz].<br>- STW1 Bit 3 = OFF.   |
|                    | (51_4)          | STW1 Bit0 = ON   |
| From S52           | (52_1)          | When either of the following conditions are satisfied.<br>- The output frequency of HF-430NEO is 0.00 [Hz].<br>- STW1 Bit 3 = OFF.   |

### 9.3.2 Description each state

| State |                        | Description   |
|-------|------------------------|---|
| S1    | Switching On Inhibited | Inverter is stopping.   |
| S1-1  | Normal                 | Errors don't occur in inverter.   |
| S1-2  | Fault                  | An error occurs in inverter and the error isn't cleared.  |
| S1-3  | Fault reaction active  | P1-PB detects an error, and inverter is during deceleration.<br>When inverter stops, P1-PB makes inverter trip and changes the state to S1-2. |
| S2    | Ready For Switching On | Inverter is stopping.   |
| S3    | Switched On            | Inverter is stopping.   |
| S4    | Operation              | Inverter can be operated.   |
| S4-1  | Normal                 | Inverter is running normally.   |
| S4-2  | Jogging                | Inverter is running by jogging.   |
| S5    | Switching Off          | Inverter is decelerating.   |
| S51   | ramp stop              | Inverter is decelerating by ramp stop.  |
| S52   | quick stop             | Inverter is decelerating by quick stop<br>(AD2 function of HF-430NEO).  |

The state S\*-\* aren't defined at the figure of General State Diagram in the PROFdrive specification.

## 9.4 STW1 (Control word 1)

The size of STW1 is 16 bits. The specification of each bit is the following.

Bit 11 is device specific.

| Bit | Value | Significance                | Description   |
|-----|-------|-----------------------------|---|
| 0   | 1     | ON                          | When the state is in "Ready For Switching On" , the state is changed to "Switched On" .<br>When the state is in "ramp stop" , the state is changed to "Operation" .   |
|     | 0     | OFF<br>(OFF 1)              | When the state is in "Switched On" , the state is changed to "Ready For Switching On" .<br>When the state is in "Operation" , the state is changed to "ramp stop" and inverter decelerates by ramp stop.  |
| 1   | 1     | No Coast Stop<br>(no OFF 2) | When the state is in "Switching On Inhibited" and STW1 bit2 is ON, the state is changed to "Ready For Switching On" .   |
|     | 0     | Coast Stop<br>(OFF 2)       | When the state is in "Ready For Switching On" or "Switched On" , the state is changed to "Switching On Inhibited" .<br>When the state is in "Operation" or "Switching Off (ramp stop or quick stop)" , the state is changed to "Switching On Inhibited" and inverter stops by coast stop. |
| 2   | 1     | No Quick Stop<br>(no OFF 3) | When the state is in "Switching On Inhibited" and STW1 bit1 is ON, the state is changed to "Ready For Switching On" .   |
|     | 0     | Quick Stop<br>(OFF 3)       | When the state is in "Ready For Switching On" or "Switched On" , the state is changed to "Switching On Inhibited" .<br>When the state is in "Operation" or "ramp stop" , the state is changed to "quick stop" and inverter decelerates by 2ch function of HF-430NEO.                      |
| 3   | 1     | Enable<br>Operation         | When the state is in "Switched On" , the state is changed to "Operation" .  |



| Bit           | Value | Significance               | Description   |
|---------------|-------|----------------------------|---|
| 3             | 0     | Disable Operation          | When the state is in "ramp stop", the state is changed to "Ready For Switching On".<br>When the state is in "quick stop", the state is changed to "Switching On Inhibited". |
| 4             | 1     | Enable Ramp Generator      | The output frequency is set Speed Set point A (NSOLL_A) and inverter accelerates.   |
|               | 0     | Reset Ramp Generator       | The output frequency is set 0.00 [Hz].<br>When inverter is running and both this bit and bit 0 are changed from 1 to 0, inverter decelerates by 2CH function of HF-430NEO.  |
| 5             | 1     | Unfreeze Ramp Generator    | The output frequency isn't held.  |
|               | 0     | Freeze Ramp Generator      | The output frequency is held.   |
| 6             | 1     | Enable Set point           | The output frequency is set Speed Set point A (NSOLL_A).  |
|               | 0     | Disable Set point          | The output frequency is set 0.00 [Hz].  |
| 7             | 1     | Fault Acknowledge (0 -> 1) | When this bit is changed from 0 to 1, errors are cleared.   |
|               | 0     | No significance            | Do nothing.   |
| 8             | 1     | Jog 1 ON                   | When the state is "Operation", the output frequency is 0.00 [Hz] and bit4 - 6 are 0, inverter runs by jogging.  |
|               | 0     | Jog 1 OFF                  | When inverter runs by jogging, Inverter stops.  |
| 9             | 1     | Jog 2 ON                   | Not supported   |
|               | 0     | Jog 2 OFF                  |   |
| 10            | 1     | Control By PLC             | Inverter can be controlled by PLC.  |
|               | 0     | No Control By PLC          | Inverter can't be controlled by PLC.  |
| 11            | 1     | Reverse                    | Inverter runs in reverse direction.   |
|               | 0     | Forward                    | Inverter runs in forward direction.   |
| 12<br>~<br>15 | -     | -                          | Reserved  |

## 9.5 ZSW1 (Status word 1)

The size of ZSW1 is 16 bits.

The specification of each bit is the following.

| Bit           | Value | Significance                        | Description   |
|---------------|-------|-------------------------------------|---|
| 0             | 1     | Ready To Switch On                  | When the state isn't "Switching On Inhibited", this bit is ON.  |
|               | 0     | Not Ready To Switch On              | When the state is "Switching On Inhibited", this bit is OFF.  |
| 1             | 1     | Ready To Operate                    | When the state is "Switched On", "Operation" or "Switching Off (ramp stop or quick stop)", this bit is ON.  |
|               | 0     | Not Ready To Operate                | When the state is "Switching On Inhibited" or "Ready For Switching On", this bit is OFF.  |
| 2             | 1     | Operation Enabled                   | When the state is "Operation", this bit is ON.  |
|               | 0     | Operation Disabled                  | When the state isn't "Operation", this bit is OFF.  |
| 3             | 1     | Fault Present                       | When error occurs in inverter or P1-PB, this bit is ON.   |
|               | 0     | No Fault                            | No error occurs in inverter or P1-PB.   |
| 4             | 1     | Coast Stop Not Activated (No OFF 2) | When STW1 bit1 is ON, this bit is ON.   |
|               | 0     | Coast Stop Activated (OFF 2)        | When STW1 bit1 is OFF, this bit is OFF.   |
| 5             | 1     | Quick Stop Not Activated (No OFF 3) | When STW2 bit1 is ON, this bit is ON.   |
|               | 0     | Quick Stop Activated (OFF 3)        | When STW2 bit1 is OFF, this bit is OFF.   |
| 6             | 1     | Switching On Inhibited              | When the state is "Switching On Inhibited", this bit is ON.   |
|               | 0     | Switching On Not Inhibit            | When the state isn't "Switching On Inhibited", this bit is OFF.   |
| 7             | 1     | Warning Present                     | When warning occurs in inverter or P1-PB, this bit is ON.   |
|               | 0     | No Warning                          | No warning occurs in inverter or P1-PB.   |
| 8             | 1     | Speed Error Within Tolerance Range  | When the output frequency reaches the set frequency, this bit is ON. This bit is same as UPF1 of HF-430NEO.   |
|               | 0     | Speed Error Out Of Tolerance Range  | When the output frequency doesn't reach the set frequency, this bit is OFF. This bit is same as UPF1 of HF-430NEO.  |
| 9             | 1     | Control Requested                   | P1-PB can accept data that is communicated by PROFINET.   |
|               | 0     | No Control Requested                | P1-PB can't accept data that is communicated by PROFINET.   |
| 10            | 1     | f Or n Reached Or Exceeded          | When the output frequency reaches or exceeds the set frequency, this bit is ON. This bit is same as UPF2 of HF-430NEO. You need to set CE-10 and CE-11.       |
|               | 0     | f Or n Not Reached                  | When the output frequency doesn't reach and exceed the set frequency, this bit is ON. This bit is same as UPF2 of HF-430NEO. You need to set CE-10 and CE-11. |
| 11<br>~<br>15 | -     | -                                   | Reserved  |

## 9.6 NSOLL\_A / NIST\_A

NSOLL\_A is Speed set point A, means the setting of output frequency. Inverter runs this setting at not jogging but normal operation. When inverter runs at jogging, inverter runs not NSOLL\_A but AG-20 of HF-43ONEO parameter.

NIST\_A is Speed actual value A, means the actual output frequency. This value means the actual output frequency at both normal and jogging operations.

The size of these is signed 16 bits data. The sign means direction. The positive value means forward, the negative value means reverse. However, the actual direction depends on both the sign of NSOLL\_A and STW1 bit11.

| NSOLL_A \ STW1 bit11 | ON      | OFF     |
|----------------------|---------|---------|
| Positive             | Reverse | Forward |
| Negative             | Forward | Reverse |

The data type of these is N2. The value of N2 means the following.

| Value                            | Significance                    |
|----------------------------------|---------------------------------|
| -32768<br>(0x8000)               | -200 %                          |
| -32767 ~ -1<br>(0x8001 ~ 0xFFFF) | -199.993896484375 % ~ -0.0061 % |
| -16384<br>(0xC000)               | -100 %                          |
| 0<br>(0x0)                       | 0 %                             |
| 16384<br>(0x4000)                | 100 %                           |
| 1 ~ 32766<br>(0x1 ~ 0x7FFE)      | 0.0061 % ~ 199.98779296875 %    |
| 32767<br>(0x7FFF)                | 199.993896484375 %              |

The base frequency of these is set Hb105 / Hd105 of HF-43ONEO parameter. The referenced parameter is determined by AA121 automatically.

(Example)

When AA121 = 00, Hb105 = 60.00 [Hz], NSOLL\_A = 8192 (0x2000 : 50%), HF-43ONEO runs 30.00 [Hz].

When the absolute value of NSOLL\_A is over 100%, inverter runs 100%.

NIST\_A always depends on A004 even if inverter runs at jogging operation. Therefore, when the output frequency reaches the jogging frequency (AG-20), NIST\_A doesn't equal NSOLL\_A. However, STW1 Bit8 becomes ON.

(Example)

When AA121 = 00, Hb105 = 60.00 [Hz], AG-20 = 6.00 [Hz], NSOLL\_A = 16384 (0x4000 : 100%), HF-43ONEO runs 6.00 [Hz] by Jogging and NIST\_A becomes 1638 (0x666 : 10%).

## 9.7 Telegram

### 9.7.1 Standard telegram 1

Set point and actual value of Standard telegram 1 are the Following.

| I/O Data No. | Set point | Actual value |
|--------------|-----------|--------------|
| 1            | STW1      | ZSW1         |
| 2            | NSOLL_A   | NIST_A       |

Set point : data from Master to Slave

Actual value : data from Slave to Master

### 9.7.2 P1-PB telegram 103 - 105

Set point and Actual value of P1-PB telegram 103 - 105 are the following. Send and receive data are the data that you set oJ-01 - oJ-60.

oJ-01 - oJ-60 are divided into 3 groups from Gr.A to Gr.C.

The group is set by oH-34.

| oH-34 | Gr.  | oJ-**         |
|-------|------|---------------|
| 0     | Gr.A | oJ-01 - oJ-20 |
| 1     | Gr.B | oJ-21 - oJ-40 |
| 2     | Gr.C | oJ-41 - oJ-60 |

| I/O Data No. | Set point             | Actual value          | P1-PB telegram |     |     |
|--------------|-----------------------|-----------------------|----------------|-----|-----|
|              |                       |                       | 103            | 104 | 105 |
| 1            | oJ-01 / oJ-21 / oJ-41 | oJ-11 / oJ-31 / oJ-51 | ○              | ○   | ○   |
| 2            | oJ-02 / oJ-22 / oJ-42 | oJ-12 / oJ-32 / oJ-52 | ○              | ○   | ○   |
| 3            | oJ-03 / oJ-23 / oJ-43 | oJ-13 / oJ-33 / oJ-53 | -              | ○   | ○   |
| 4            | oJ-04 / oJ-24 / oJ-44 | oJ-14 / oJ-34 / oJ-54 | -              | ○   | ○   |
| 5            | oJ-05 / oJ-25 / oJ-45 | oJ-15 / oJ-35 / oJ-55 | -              | ○   | ○   |
| 6            | oJ-06 / oJ-26 / oJ-46 | oJ-16 / oJ-36 / oJ-56 | -              | ○   | ○   |
| 7            | oJ-07 / oJ-27 / oJ-47 | oJ-17 / oJ-37 / oJ-57 | -              | -   | ○   |
| 8            | oJ-08 / oJ-28 / oJ-48 | oJ-18 / oJ-38 / oJ-58 | -              | -   | ○   |
| 9            | oJ-09 / oJ-29 / oJ-49 | oJ-19 / oJ-39 / oJ-59 | -              | -   | ○   |
| 10           | oJ-10 / oJ-30 / oJ-50 | oJ-20 / oJ-40 / oJ-60 | -              | -   | ○   |

Set point : data from Master to Slave

Actual value : data from Slave to Master

You need to set oJ-01 - oJ-60 to 0 or Modbus register number of HF-430NEO. If you don't use oJ-\*3 - oJ-\*0 (\* = 0 - 6), you need to set these to 0.

When you set oJ-01 / oJ-21 / oJ-41 to 0, set point data is STW1.

When you set oJ-02 / oJ-22 / oJ-42 to 0, set point data is NSOLL\_A.

When you set oJ-11 / oJ-31 / oJ-51 to 0, actual value data is ZSW1.

When you set oJ-12 / oJ-32 / oJ-52 to 0, actual value data is NIST\_A.

When you want to set 32bit length data to oJ-01 - oJ-60, you need to set consecutively.

The only row word of 32bit length data can be set, but the only high word of it can't be set.

If you don't set consecutively or the only high word, this parameters aren't sent and received, and PNU 954 bit 4 becomes ON.

The byte order of 32bit length data depends on the setting of oJ-01 - oJ-60.

When you set oJ-\*1 and oJ-\*2 (\* = 0 - 6) to the value that are non-existent Modbus register number, or oJ-\*3 - oJ-\*0 (\* = 0 - 6) to 0 or the value that are non-existent Modbus register number, P1-PB doesn't read and write data to HF-430NEO.

Therefore P1-PB received data from the master, but P1-PB doesn't set to HF-430NEO. Also, since P1-PB doesn't read data from HF-430NEO, P1-PB sends 0 to the master.

<How to send the high word of 32bit length data from the master first>

For example, when you want to send FA-10 (Modbus register number 0x2B02 and 0x2B03) on 3rd and 4th word of P1-PB telegram 105, please set the following.

oJ-03 = 0x2B02

oJ-04 = 0x2B03

<How to send the only row word of 32bit length data from P1-PB>

For example, when you want to send the row word of FA-10 (Modbus register number 0x2B03) on 3rd word of P1-PB telegram 105, please set the following.

oJ-03 = 0x2B03

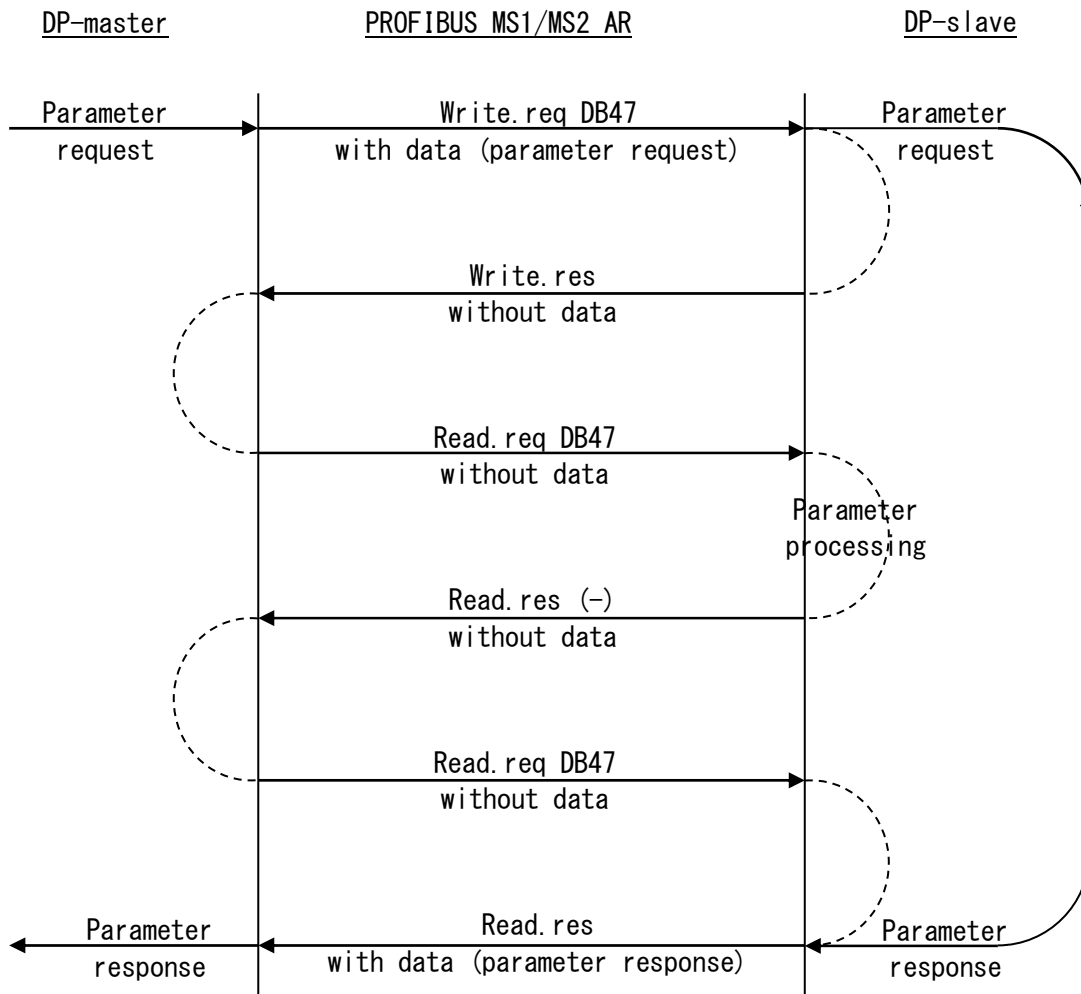
The only high word of 32bit length data can't be sent and received.

## 9.8 Parameter access

You can access the parameter by Write and Read services of MS1 / MS2 AR of PROFIBUS-DPV1. When you access the parameter, you need to set 47 to index.

### 9.8.1 Read / Write services on MS1 AR / MS2 AR

First you need to send a request of parameter read or write to P1-PB by Write service. Next you need to send a request to read the response to P1-PB by Read service. If there is an error, the reply to a Read or Write service is an error response.



Please refer to the PROFIdrive specification or a manual of PROFIBUS master that you use.

The Write request data frame that masters send is the following.

| Word offset  | Block        | Byte n  | Byte n+1                                     |
|--------------|--------------|---|--|
| 0            | Write header | Function_Num= 0x5F (Write)  | Slob_Number= *                               |
| 1            |              | Index= 47   | Length= The size of the following Data block |
| 2~Length + 2 | Data         | The request data of parameter access.<br>Please refer to “9.7.2 Parameter access on PROFIdrive” . |  |

\*You need to set here the address of a slave. Please refer to a manual of PROFIBUS master that you use.

The Write response data frame that P1-PB sends is the following.

| Word offset | Block        | Byte n                     | Byte n+1       |
|-------------|--------------|----------------------------|----------------|
| 0           | Write header | Function_Num= 0x5F (Write) | Slob_Number= * |
| 1           |              | Index= *                   | Length= *      |

\*These are same as the request.

The Read request data frame that masters send is the following.

| Word offset | Block       | Byte n                    | Byte n+1                                      |
|-------------|-------------|---------------------------|---|
| 0           | Read header | Function_Num= 0x5E (Read) | Slob_Number= *                                |
| 1           |             | Index= 47                 | Length= The maximum size that master can read |

\*You need to set here the address of a slave. Please refer to a manual of PROFIBUS master that you use.

The Read response data frame that P1-PB sends is the following.

| Word offset  | Block       | Byte n   | Byte n+1                                     |
|--------------|-------------|--|--|
| 0            | Read header | Function_Num= 0x5E (Read)  | Slob_Number= *                               |
| 1            |             | Index= *   | Length= The size of the following Data block |
| 2~Length + 2 | Data        | The response data of parameter access.<br>Please refer to “9.7.2 Parameter access on PROFIdrive” . |  |

\*These are same as the request.

The Write or Read error response data frame that P1-PB sends is the following.

| Word offset | Block | Byte n                                      | Byte n+1          |
|-------------|-------|---|-------------------|
| 0           | Error | Function_Num= 0xDF (Write)<br>= 0xDE (Read) | Error Decode= 128 |
| 1           |       | Error_Code_1                                | Error_Code_2= 0   |

The Error\_Code\_1 is the following.

| Error_Class<br>(from IEC 61158) | Error_Code<br>(from IEC 61158)  | Application PROFIdrive  |
|---------------------------------|---|---|
| 0x0..0x9 = reserved             | -   | -   |
| 0xA = application               | 0x0 = read error<br>0x1 = write error<br>0x2 = module failure<br>0x3 to 7 = reserved<br>0x8 = version conflict<br>0x9 = feature not supported<br>0xA to 0xF = user specific | -   |
| 0xB = access                    | 0x1 = write length error<br>0x2 = invalid slot<br>0x3 = type conflict<br>0x4 = invalid area   | 0x1 = Parameter request block is too long.  |
| -                               | 0x5 = state conflict  | 0xB5 = The write request is received while the other write request is processing. |
|                                 | 0x6 = access denied   |   |
|                                 | 0x7 = invalid range   |   |
|                                 | 0x8 = invalid parameter<br>0x9 = invalid type<br>0xA to 0xF = user specific   |   |
| 0xC = resource                  | 0x0 = read constraint conflict<br>0x1 = write constraint conflict   | -   |
| -                               | 0x2 = resource busy   |   |
|                                 | 0x3 = resource unavailable  |   |
|                                 | 0x4..0x7 = reserved<br>0x8..0xF = user specific   |   |
| 0xD...0xF = user specific       | -   |   |



### 9.8.2 Parameter access on PROFIdrive

The request data frame to parameter access on PROFIdrive is the following.

| Word offset | Block                 | Byte n            | Byte n+1                    |
|-------------|-----------------------|-------------------|-----------------------------|
| 0           | Request header        | Request reference | Request ID                  |
| 1           |                       | Axis-No. / DO-ID  | The number of parameters= i |
| 2           | 1st Parameter address | Attribute         | The number of elements      |
| 3           |                       | PNU               |                             |
| 4           |                       | Subindex          |                             |
| ~ 3i + 1    | ith Parameter address | -                 |                             |
| 3i + 2      | 1st Parameter value   | Format            | The number of values        |
| 3i + 3      |                       | value             |                             |
| -           | ith Parameter value   | -                 |                             |

Nth Parameter values need to be set only for request “Change parameter” .

These don't need to be set for request “Request parameter” .

The response data frame to parameter access on PROFIdrive is the following.

| Word offset | Block               | Byte n               | Byte n+1                    |
|-------------|---------------------|----------------------|-----------------------------|
| 0           | Response header     | Request reference= * | Request ID                  |
| 1           |                     | Axis-No. / DO-ID= *  | The number of parameters= i |
| 2           | 1st Parameter value | Format               | The number of values        |
| 3           |                     | Value or error code  |                             |
| -           |                     | -                    |                             |
| -           | ith Parameter value | -                    |                             |

\*These are same as the request.

Nth Parameter values exist only for request “Request parameter” .

You can access multi parameters at a request message. However, when an error occurs, there are cases that the process is stopped and returns the response. This depends on kind of errors. You need to resolve/investigate what process has been done by checking the returned message, because P1-PB will stop the internal transaction immediately and return the message when the requested command/address was wrong.

For example, when you set the wrong data type like the right column request, the process is stopped and returns the response. The following values are hexadecimal.

[The request] (\*) The underline part is the wrong data.

01 02 01 03 10 01 04 19 00 AF 10 01 07 FB 00 59 10 01 07 FB 00 5B 06 01 02 58 06 01 00 00 0B B8  
07 01 00 00 0B B8

[The response] (\*) The underline parts show error.

01 82 01 02 40 00 44 01 00 05.

| Block             | Field   | Data type  | Description  |   |
|-------------------|---|------------|--|---|
| Request Header    | Request Reference   | Unsigned8  | The message ID.<br>Unique ID of the request / response pair for the master.<br>Reserved : 0x00<br>ID : 0x01 - 0xFF   |   |
|                   | Request ID  |            | The type of request data.<br>Request parameter : 0x01<br>Change parameter : 0x02   |   |
|                   | Response ID   |            | The type of response data.<br>Request parameter (+) : 0x01<br>Request parameter (-) : 0x81<br>Change parameter (+) : 0x02<br>Change parameter (-) : 0x82<br>Unsupported service : 0x80<br>(Request ID is 0x00, 0x80 and more)      |   |
|                   | Axis-No.<br>DO-ID   |            | Axis-No. / DO-ID that you access.<br>You need to set 0x00 or 0x01 in P1-PB.  |   |
|                   | No. of Parameters   |            | The number of parameters.<br>You can set from 1 to 39 in PROFINET.   |   |
| Parameter Address | Attribute   | Unsigned8  | The type of parameter that you access.<br>Value : 0x10<br>Description : 0x20<br>Text : 0x30  |   |
|                   | Number of Elements  |            | When the parameter that you access is Array or String, this parameter means the number of elements.<br>You can set from 1 to 234.<br>When the parameter that you access is the other, you need to set 0.                           |   |
|                   | Parameter Number  | Unsigned16 | Parameter number<br>Reserved : 0x0000<br>Parameter number : 0x0001 - 0xFFFF  |   |
|                   | Subindex  |            | The subindex of parameter<br>: 0x0000 - 0xFFFE   |   |
| Parameter Value   | Format  | Unsigned8  | The data type of values.<br>Unsigned16 : 0x06<br>Unsigned32 : 0x07<br>Octet string : 0x0A<br>V2 * : 0x73<br>Zero : 0x40<br>(The response value doesn't exist.)<br>Byte : 0x41<br>Word : 0x42<br>Double word : 0x43<br>Error : 0x44 |   |
|                   | Number of Values  |            | Unsigned8  | The number of values.<br>This value is from 0 to 234.               |
|                   | Values  |            | Depend on data   | The value that you read or change.                                  |
|                   | Error value 1   |            | Unsigned16   | Error code : 0x0000 - 0x00FF<br>(The lower byte is the error code.) |
| Error value 2     | It depends on an error value 1 whether this data exist.<br>This value shows the subindex of the first array element where the error occurs. |            |  |   |

\*V2 is boolean variables are combined in two octets. Refer to the specification of PROFIdrive for detail.  
The error codes are the following.

| Error No.<br>= Error<br>value 1 | Meaning   | Used at  | Additional info<br>= Error value 2 |
|---------------------------------|---|--|------------------------------------|
| 0x00                            | Impermissible parameter number                        | Access to unavailable parameter  | 0                                  |
| 0x01                            | Parameter value cannot be changed                     | Change access to a parameter value that cannot be changed  | Subindex                           |
| 0x02                            | Low or high limit exceeded                            | Change access with value outside the value limits  |                                    |
| 0x03                            | Faulty subindex                                       | Access to unavailable sub index of array or string parameter. Shall not be used for single parameters  |                                    |
| 0x04                            | No array  | Access with subindex to non-indexed Parameter  | 0                                  |
| 0x05                            | Incorrect data type                                   | Change access with value that does not match the data type of the parameter  |                                    |
| 0x06                            | Setting not permitted (may only be reset)             | Change access with value unequal to 0 where this is not permitted  | Subindex                           |
| 0x07                            | Description element cannot be Changed                 | Change access to a description element that cannot be changed  |                                    |
| 0x09                            | No description data available                         | Access to unavailable description (parameter value is available.)  | 0                                  |
| 0x0B                            | No operation priority                                 | Change access without rights to change parameters.   |                                    |
| 0x0F                            | No text array available                               | Access to text array that is not available. (Parameter value is available.)  |                                    |
| 0x11                            | Request cannot be executed because of operating state | Access is temporarily not possible for reasons that are not specified in detail.<br>When the parameter of HF-430NEO is accessed, please check whether the inverter can accept change access.                           | 0                                  |
| 0x14                            | Value impermissible                                   | Change access with a value that is within the value limits, but is not permissible for other long-term reasons (parameter with defined single values)  |                                    |
| 0x15                            | Response too long                                     | The length of the current response exceeds the maximum transmittable length of the response transport block. In case of a multi parameter request, the response block was shortened by omitting of parameter requests. | 0                                  |
| 0x16                            | Parameter address impermissible                       | Illegal value (reserved) or value which is not supported for the attribute, illegal or not supported number of elements, illegal parameter number or illegal subindex or a combination                                 |                                    |
| 0x17                            | Illegal format  | Write request: Illegal format or format of the parameter data which is not supported   |                                    |
| 0x18                            | Number of values are not consistent                   | Write request: Number of the values of the parameter data do not match the number of elements in the parameter address   |                                    |
| 0x19                            | Axis/DO nonexistent                                   | Access to an Axis/DO which does not exist  | Subindex                           |
| 0x20                            | Parameter text element cannot be Changed              | Change access to a parameter text element that cannot be changed   |                                    |
| 0x21                            | Service not supported                                 | Illegal or unknown Request ID (Response ID = 0x80)   | -                                  |
| 0x22                            | Too much parameter requests                           | Multi parameter request: The response block does not contain all parameter responses because of maximum number of supported parameter requests per multi parameter request was exceeded.                               |                                    |
| 0x23                            | Multi parameter access not Supported                  | Device parameter manager does not support multi parameter requests.<br>Request is discarded.   |                                    |

| Error No.<br>= Error<br>value 1 | Meaning   | Used at  | Additional info<br>= Error value 2 |
|---------------------------------|---|--|------------------------------------|
| 0x65<br>0x67                    | Error of access to<br>HF-430NEO<br>Manufacturer-<br>specific) | It is an error of access to HF-430NEO.<br>You access while HF-430NEO is initializing or changing the<br>mode.<br>If P1-PB returns these values while HF-430NEO isn't initializing<br>or changing the mode, please contact the nearest business<br>contact. | -                                  |

## 9.9 Fault

When P1-PB detects a fault, P1-PB stores the fault code into the fault buffer.

[The sequence to store the fault code into the fault buffer]

- The fault code is stored into PNU 947's the smallest subindex that hasn't still been stored from 0 to 7. When subindex 0 - 7 have already been stored to, subindex 7 is overwritten.
- PNU 944 is increased by 1.
- ZSW1 bit3 is changed to ON.

[The sequence to acknowledge the fault buffer]

- When STW1 bit 7 is changed from OFF to ON and is ON for 20ms or more, to acknowledge the fault buffer starts.
- The data of subindex 48 - 55 of PNU 947 are copied to subindex 56 - 63.
- The data of subindex 40 - 47 of PNU 947 are copied to subindex 48 - 55.
- The data of subindex 32 - 39 of PNU 947 are copied to subindex 40 - 47.
- The data of subindex 24 - 31 of PNU 947 are copied to subindex 32 - 39.
- The data of subindex 16 - 23 of PNU 947 are copied to subindex 24 - 31.
- The data of subindex 8 - 15 of PNU 947 are copied to subindex 16 - 23.
- The data of subindex 0 - 7 of PNU 947 are copied to subindex 8 - 15.
- 0 is stored into subindex 0 - 7 of PNU 947.
- PNU 952 is increased by 1.
- PNU 944 is increased by 1.
- If trip is occurred in HF-430NEO, trip reset is sent to HF-430NEO.
- ZSW1 bit3 is changed to OFF.

[The sequence to clear the fault buffer]

- When PNU952 is written 0, to clear the fault buffer starts.
- The data of all subindices of PNU 947 are cleared to 0.
- PNU 944 is changed to 0.

The fault codes are the following.

| Fault  | Fault code                | Description  |
|--|---------------------------|--|
| Trip of HF-430NEO                                  | Trip code                 | Trip was occurred in HF-430NEO.                                  |
| Timeout error of PROFINET                          | Trip code<br>63 / 73 / 83 | The timeout error was occurred on PROFINET.                      |
| The rotary switches error                          | Trip code<br>65 / 75 / 85 | The rotary switches of P1-PB couldn't be read normally.          |
| Communication error between<br>P1-PB and HF-430NEO | 0xFF01                    | Communication error was occurred between P1-PB and<br>HF-430NEO. |

Please refer to the PROFIdrive specification for details of the fault mechanism.

## 9.10 Warning

When P1-PB detects warning, the warning code is stored to PNU 953 and PNU 954, and ZSW1 bit 7 is changed to ON.

The specification of PNU953 is same as dE-50 of HF-430NEO.

The specification that each bit of PNU954 becomes ON is the following.

| PNU 954 bit | Conditions   |
|-------------|--|
| 3           | The Modbus register number that doesn't exist is assigned in oJ-01 – oJ-60.  |
| 4           | The 32bit length Modbus register number isn't assigned in oJ-01 - oJ-60 consecutively, or the high word of 32bit length Modbus register number is assigned in oJ-01 - oJ-60. |
| 7           | oJ-11 / oJ-31 / oJ-51 = 0 (ZSW1), but oJ-01 / oJ-21 / oJ-41 ≠ 0 (STW1)   |
| 8           | The sequence of upper and lower of the 32bit length Modbus register No. differ in selected telegram.   |
| 9           | The read only parameter is assigned in oJ-01 - oJ-10 / oJ-21 - oJ-30 / oJ-41 - oJ-50.  |

Please refer to the user's guide of HF-430NEO about PNU953.

Even if the warning about PNU954 occurs, the inverter can run.

## 9.11 Operation example

The following is an example of operation with the following settings.

[AA121] = 00 (VF control (Constant torque))

[Hb105] = 60.00 [Hz] (Maximum frequency)

Telegram = Standard Telegram 1

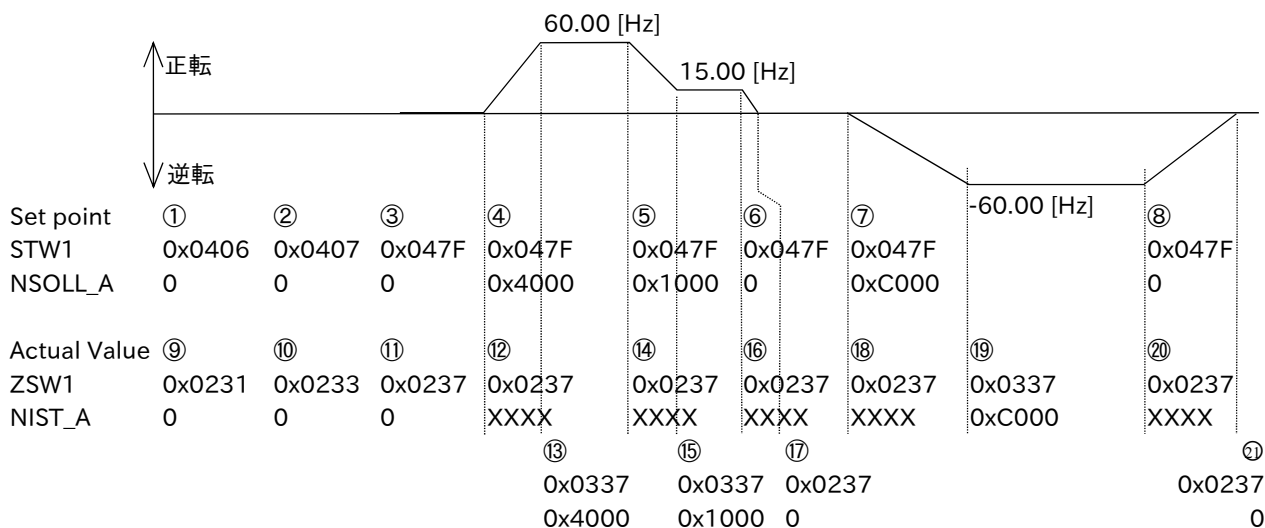
The others parameter = Default value

[Set point (Master -> Slave)]

- ① Setting STW1 to 0x0406.
- ② Setting STW1 to 0x0407.
- ③ Setting STW1 to 0x047F.
- ④ Setting NSOLL\_A to 0x4000 (100%).
- ⑤ Setting NSOLL\_A to 0x1000 (25%).
- ⑥ Setting NSOLL\_A to 0x0 (0%).
- ⑦ Setting NSOLL\_A to 0xC000 (-100%).
- ⑧ Setting NSOLL\_A to 0x0 (0%).

[Actual value (Slave -> Master)]

- ⑨ Stopping state, PROFIdrive transition to “Ready For switching On” .
- ⑩ Stopping state, PROFIdrive transition to “Switching On” .
- ⑪ Driving with 0x0 (0% : 0.00 [Hz]) state, PROFIdrive transition to “Operation” .
- ⑫ Accelerating in forward direction, “XXXX” indicates NIST\_A during acceleration.
- ⑬ Driving at a constant speed state, NIST\_A is equal to 0x4000 (100% : 60.00 [Hz]).
- ⑭ Deceleration state, “XXXX” indicates NIST\_A during deceleration.
- ⑮ Driving at a constant speed state, NIST\_A is equal to 0x1000 (25% : 15.00 [Hz]).
- ⑯ Deceleration state, “XXXX” indicates NIST\_A during deceleration.
- ⑰ Driving at a constant speed state, NIST\_A is equal to 0x0 (0% : 0.00 [Hz]).
- ⑱ Accelerating in reverse direction, “XXXX” indicates NIST\_A during deceleration.
- ⑲ Driving at a constant speed state, NIST\_A is equal to 0xC000 (-100% : -60.00 [Hz]).
- ⑳ Deceleration state, “XXXX” indicates NIST\_A during deceleration.
- ㉑ Driving at a constant speed state, NIST\_A is equal to 0x0 (0% : 0.00 [Hz]).



## 10

# Chapter 10 PNU (Parameter number)

## 10.1 About this chapter

This chapter contains information about the PNU (Parameter number).

## 10.2 PNU (Parameter number)

The parameter number is assigned to each parameter. The number range of the parameters is specified for 0 - 65535. The details are the following.

| PNU           | Area   | Description  |
|---------------|--|--|
| 0 – 899       | Device specific                              | Unused   |
| 900 – 999     | For PROFIdrive                               | Parameters for PROFIdrive  |
| 1000 – 59999  | Device specific<br>(inverter parameter area) | These are parameters to access the parameters of HF-430NEO in P1-PB. |
| 60000 – 60999 | Reserved for PROFIdrive                      | Unused   |
| 61000 – 63999 | Reserved for PROFIdrive<br>(PROFINET I/O)    |  |
| 64000 – 65535 | Reserved for PROFIdrive                      |  |

## 10.3 Data types

The data types shown in the following table are used in this profile.

| Data type    | Code  | Size    | Range              |
|--------------|-------|---------|--------------------|
| Unsigned16   | UINT  | 2 Bytes | 0 to 65,535        |
| Unsigned32   | UDINT | 4 Bytes | 0 to 4,294,967,295 |
| V2           | V2    | 2 Bytes | 0x0000 to 0xFFFF   |
| Octet string | STR   | -       | -                  |
| Array        | ARRAY |         |                    |

## 10.4 Access

The access methods shown in the following table are used in this profile. It indicates whether the object is read or write only, or read and write.

| Access | Description    |
|--------|----------------|
| R      | Read only      |
| W      | Write only     |
| RW     | Read and write |

## 10.5 PROFIdrive area

## ■ 915

| Sub-index | Item            | Description   |
|-----------|-----------------|---|
| -         | Name            | Selection switch for DO IO Data in the set point telegram                                 |
|           | Data type       | ARRAY of UINT   |
|           | Access          | R   |
|           | Default setting | 0   |
|           | Detail          | This area displays oJ-01 - oJ-10 / oJ-21 - oJ-30 / oJ-41 - oJ-50 of HF-430NEO parameters. |
| 0x00      | Detail          | 0x0000 : STW1<br>The others : Modbus register No. of HF-430NEO                            |
| 0x01      |                 | 0x0000 : NSOLL_A<br>The others : Modbus register No. of HF-430NEO                         |
| 0x02~0x09 |                 | 0x0000 : Unused<br>The others : Modbus register No. of HF-430NEO                          |

## ■ 916

| Sub-index | Item            | Description   |
|-----------|-----------------|---|
| -         | Name            | Selection switch for DO IO Data in the actual value telegram                              |
|           | Data type       | ARRAY of UINT   |
|           | Access          | R   |
|           | Default setting | 0   |
|           | Detail          | This area displays oJ-01 - oJ-10 / oJ-21 - oJ-30 / oJ-41 - oJ-50 of HF-430NEO parameters. |
| 0x00      | Detail          | 0x0000 : ZSW1<br>The others : Modbus register No. of HF-430NEO                            |
| 0x01      |                 | 0x0000 : NIST_A<br>The others : Modbus register No. of HF-430NEO                          |
| 0x02~0x09 |                 | 0x0000 : Unused<br>The others : Modbus register No. of HF-430NEO                          |

## ■ 918

| Sub-index | Item            | Description                                   |
|-----------|-----------------|---|
| -         | Name            | Node address                                  |
|           | Data type       | UINT  |
|           | Access          | R   |
|           | Default setting | 126   |
|           | Detail          | This area displays the node address of P1-PB. |

## ■ 922

| Sub-index | Item            | Description  |
|-----------|-----------------|--|
| -         | Name            | Telegram selection   |
|           | Data type       | UINT   |
|           | Access          | R  |
|           | Default setting | 1  |
|           | Detail          | This area displays telegram number that P1-PB is communicating.<br>1 : Standard telegram 1<br>103 : P1-PB telegram 103<br>104 : P1-PB telegram 104<br>105 : P1-PB telegram 105 |



## ■ 930

| Sub-index | Item            | Description  |
|-----------|-----------------|--|
| -         | Name            | Operating mode   |
|           | Data type       | UINT   |
|           | Access          | R  |
|           | Default setting | 1  |
|           | Detail          | This area displays the operating mode that P1-PB is supported.<br>1 : Speed control mode |

## ■ 944

| Sub-index | Item            | Description   |
|-----------|-----------------|---|
| -         | Name            | Fault message counter   |
|           | Data type       | UINT  |
|           | Access          | R   |
|           | Default setting | 0   |
|           | Detail          | This area displays the number of times that the fault buffer has been changed.<br>When the fault buffer is changed, this value is increased by 1.<br>When you write PNU952 0, the fault buffer is cleared and this value becomes 0. |

## ■ 947

| Sub-index | Item            | Description   |
|-----------|-----------------|---|
| 0x00~0x3F | Name            | Fault number  |
|           | Data type       | ARRAY of UINT   |
|           | Access          | R   |
|           | Default setting | 0   |
|           | Detail          | This area displays the fault number list that occurred in HF-430 and P1-PB. |

## ■ 950

| Sub-index | Item            | Description   |
|-----------|-----------------|---|
| -         | Name            | Scaling of the fault buffer   |
|           | Data type       | ARRAY of UINT   |
|           | Access          | R   |
|           | Detail          | This area displays about the fault buffer.                            |
| 0x00      | Name            | the number of fault situation   |
|           | Default setting | 8   |
|           | Detail          | This area displays the number of fault situation in the fault buffer. |
| 0x01      | Name            | the number of fault messages in a fault situation                     |
|           | Default setting | 8   |
|           | Detail          | This area displays the number of fault messages in a fault situation. |

## ■ 952

| Sub-index | Item            | Description  |
|-----------|-----------------|--|
| -         | Name            | Fault situation counter  |
|           | Data type       | UINT   |
|           | Access          | RW   |
|           | Default setting | 0  |
|           | Detail          | This area displays the number of fault situation since power on or the last reset. Fault situation isn't the number of times that error occurred but the number of times that you have acknowledged errors.<br>You can acknowledge some errors. Therefore, this value differs from the number of times that error occurred.<br>[Write]<br>This parameter can be written only 0.<br>When you write this PNU 0, PNU944, PNU952 and PNU947 are cleared. |

## ■ 953

| Sub-index | Item            | Description   |
|-----------|-----------------|---|
| -         | Name            | Warning parameters  |
|           | Data type       | V2  |
|           | Access          | R   |
|           | Default setting | 0   |
|           | Detail          | This area displays the warning of HF-430NEO.<br>This parameter is same as dE-50 of HF-430NEO. |

## ■ 954

| Sub-index | Item            | Description  |
|-----------|-----------------|--|
| -         | Name            | Warning parameters   |
|           | Data type       | V2   |
|           | Access          | R  |
|           | Default setting | 0  |
|           | Detail          | This area displays the warning of P1-PB.<br>Please refer to "9.9 Warning" for details. |

## ■ 963

| Sub-index | Item            | Description  |
|-----------|-----------------|--|
| -         | Name            | Actual baud rate   |
|           | Data type       | UINT   |
|           | Access          | R  |
|           | Default setting | 0  |
|           | Detail          | This area displays actual baud rate of PROFIBUS.<br>[Value]<br>0 : 9.6 kbit/s<br>1 : 19.2 kbit/s<br>2 : 93.75 kbit/s<br>3 : 187.5 kbit/s<br>4 : 500 kbit/s<br>6 : 1500 kbit/s<br>7 : 3000 kbit/s<br>8 : 6000 kbit/s<br>9 : 12000 kbit/s<br>11 : 45.45 kbit/s |

■ 964

| Sub-index | Item            | Description   |
|-----------|-----------------|---|
| -         | Name            | Drive Unit identification   |
|           | Data type       | ARRAY of UINT   |
|           | Access          | R   |
|           | Detail          | This area displays the information of P1-PB.  |
| 0x00      | Name            | Manufacturer  |
|           | Default setting | 617   |
|           | Detail          | This area displays the vendor code.   |
| 0x01      | Name            | Drive Unit type   |
|           | Default setting | 0x0FEF  |
|           | Detail          | This area displays drive unit type code that is the product code of P1-PB.                                |
| 0x02      | Name            | Version (Software)  |
|           | Default setting | This value depends on shipment time.  |
|           | Detail          | This area displays software version of P1-PB.<br>When version is xx.yy, this parameter is xxyy (decimal). |
| 0x03      | Name            | Firmware date (year)  |
|           | Default setting | This value depends on shipment time.  |
|           | Detail          | This area displays year (decimal) that firmware of P1-PB was created.                                     |
| 0x04      | Name            | Firmware date (day/month)   |
|           | Default setting | This value depends on shipment time.  |
|           | Detail          | This area displays day/month (ddmm:decimal) that firmware of P1-PB was created.                           |

■ 965

| Sub-index | Item            | Description   |
|-----------|-----------------|---|
| -         | Name            | Profile identification number   |
|           | Data type       | STR (2 characters)  |
|           | Access          | R   |
|           | Default setting | 0x032A  |
|           | Detail          | This area displays profile number and profile version that P1-PB supports.<br>The 1st byte means profile number and PROFdrive is 3.<br>The 2nd byte means profile version. This value is 42, because P1-PB supports PROFdrive Ver.4.2. Therefore, this value is 0x032A. |

## 10.6 Device specific area (Inverter parameter area)

Inverter parameters are allocated to objects 1003 to 1099 and 2003 to 2099. 1003 to 1099 are 2-byte parameters and 2003 to 2099 are 4-byte parameters.

PNU and Sub-index can be calculated from the Modbus register number.

$(\text{Modbus register number} / 254)$  is the Integer part after the inverter register number is divided by 254.

$(\text{Modbus register number} \% 254)$  is the remainder after the inverter register number is divided by 254.

$$\begin{aligned} \text{PNU} : & \quad 1000 + (\text{Modbus register number} / 254) \\ & \quad 2000 + (\text{Modbus register number} / 254) \end{aligned}$$

$$\text{Sub-Index} : \quad 1 + (\text{Modbus register number} \% 254)$$

[Example] dA-01

Modbus register number = 10001

$$\begin{aligned} \text{PNU} &= 1000 + (\text{Modbus register number} / 254) \\ &= 1000 + (10001 / 254) \\ &= 1000 + 39 \\ &= 1039 \end{aligned}$$

$$\begin{aligned} \text{Sub-index} &= 1 + (\text{Modbus register number} \% 254) \\ &= 1 + (10001 \% 254) \\ &= 1 + 95 \\ &= 96 \end{aligned}$$

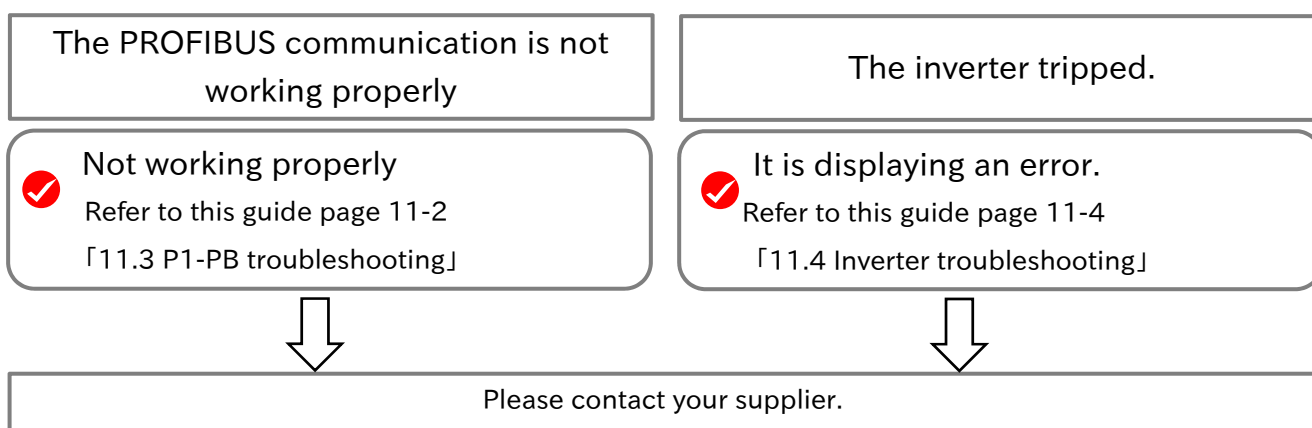
## 11

# Chapter 11 Troubleshooting

## 11.1 About this chapter

This chapter contains the troubleshooting of cases such as errors detected by the protection function, warnings given by the warning function, or some cases in which the device is not working properly.

## 11.2 Self-diagnosis



Before contacting the technical service, please confirm the items on the right.

- (1) Inverter model,
- (2) Inverter manufacture number (MFG No.)
- (3) Option device model (P1-PB)
- (4) P1-PB manufacture number (MFG No.)
- (5) Date of purchase
- (6) Inquiry contents

For information about how to check the inverter model and the manufacture number (MFG No.) please refer to the inverter user's manual.

For information about how to check the P1-PB model and the manufacture number (MFG No.) please refer to the chapter 4.

Furthermore, if the inquiry is about a P1-PB communication problem please provide us with the following additional information.

- (7) Current problem or abnormality
- (8) Frequency of occurrence
- (9) The PROFIBUS master being used
- (10) The PROFIBUS network configuration
- (11) A communication log when the problem occurs (if possible)

For further information regarding the communication log please refer to “11.3 P1-PB troubleshooting” .

## 11.3 P1-PB troubleshooting

## 11.3.1 Verify the LED

## ■ LED status

| abbreviation | Description · status                                |
|--------------|---|
| ON           | The LED is turned ON                                |
| OFF          | The LED is turned OFF                               |
| B            | Blinking<br>The LED turns ON (1[s]) and OFF (1[s]). |
| -            | Undefined   |

## ■ Probable cause and its solution

| ON              | SF   | BF  | COMM | Description                       | Probable cause   | Solution  |
|-----------------|--|---|------|-----------------------------------|--|---|
| ON              | OFF  | OFF   | ON   | Communicating by the set telegram | P1-PB is communicating by the set telegram.  | -   |
| OFF             | OFF  | OFF   | OFF  | Power supply fault                | The inverter power is not turned ON.   | Please turn on the inverter power supply.   |
|                 |  |   |      |                                   | The P1-PB is not correctly attached.   | Turn off the inverter, then detach and attach again the P1-PB. After this, turn on the inverter again.  |
|                 |  |   |      | P1-PB is Damaged.                 | P1-PB broke down   | Please exchange the P1-PB.  |
| ON              | ON   | OFF   | ON   | Fault in P1-PB                    | P1-PB is communicating with master by the set telegram, but some error about PROFIBUS has occurred in P1-PB. | Check the diagnosis message.  |
| ON              | -  | ON  | OFF  | Master not available              | P1-PB isn't connected to the master unit yet.  | Check that the master unit is operating correctly.  |
|                 |  |   |      |                                   |  | Check that the communications cable is connected correctly to the connector or wired correctly.   |
|                 |  |   |      | Cable failure                     | The cable does not meet the required specifications.   | Please exchange the cable for a cable that meets the specifications described in the section 4.2.4.   |
|                 |  |   |      |                                   | The cable is broken.   | Please exchange the cable.  |
| Parameter fault | The parameter (node address, etc.) of P1-PB that is set in the master unit is wrong. | Check that the parameter is set in the master unit. |      |                                   |  |   |
| -               | -  | B   | OFF  | PROFIBUS setting error            | There is a possibility that PROFIBUS master doesn't work properly.   | Please check the settings of the master unit.<br>When it occurs again, please contact us, and let us know the conditions when it occurred, the PROFIBUS master that is being used, other slaves being used and other equipment configuration. |
| -               | -  | -   | -    | Noise                             | There is an equipment close by that is generating noise.   | Please implement measures to prevent noise.   |

### 11.3.2 Verifying using PROFINET

- Inverter trips and warning notifications can be verified using ZSW1.
- In the event the inverter trips, the PROFIdrive state will shift to the Fault state. By using ZSW1 it can be checked if the state has shifted to the Fault state or not.
- In case there is an inverter warning notification, ZSW1 bit 7 will turn on.
- In case there is a PROFIBUS communication abnormality, if oA-12 / 22 / 32 = 0 (Error) or 1 (Trip after Deceleration stop), the status will shift to the Fault state. However, since the problem is the PROFIBUS communication, ZSW1 cannot be read until the communication gets restored.
- In case there are abnormalities between the inverter and the P1-PB communication, warning notifications cannot be verified.
- In case there are abnormalities between the inverter and the P1-PB communication, one of the trips between the E060,E069,E070,E079,E080 or E089 will occur.
- After the state have changed to the Fault state, it will remain in the Fault state even if the trip is restored by the trip reset. In order to change this status, perform the fault reset by turning on the bit 7 of STW1.
- PNU 944, 947, and 952 can be read by using the parameter access. In case the master can read this parameter, please refer to “9.8 parameter access” and the PROFIBUS master manual.
- Any failure can be verified with PNU944, 947, and 952. Please refer to “9.9 Fault” for details.

### 11.3.3 Capturing packet data

- You can capture and analyze PROFIBUS communication log using a PROFIBUS analyzer. It is useful to investigate the unexpected phenomenon.  
Recommended analyzers are the following. Please refer to each product manual about how to use them.

| Product name                             | Manufacturer                       | Type                    |
|--|------------------------------------|-------------------------|
| ProfiTrace2                              | PROCENTEC                          | -                       |
| Protocol Analyzer for PROFIBUS DP and PA | Softing Industrial Automation GmbH | BC-4x0-PB<br>(x = 0, 5) |

## 11.4 Inverter troubleshooting

### 11.4.1 Inverter error information

#### E060 / E069

#### Option 1 Error 0 / 9

#### E070 / E079

#### Option 2 Error 0 / 9

#### E080 / E089

#### Option 3 Error 0 / 9

When there is a communication error between the P1-PB and the inverter, an inverter error will occur.

In case the communication error was detected by the P1-PB, the error number will be E060, E070 or E080.

In case the communication error was detected by the inverter, the error number will be E069, E079 or E089.

The error code will depend on the slot in which the P1-PB is attached.

| Issue▶   | Possible cause▶   | Possible solution   |
|--|---|---|
| An error occurred in the communication between the P1-PB and the inverter. | <ul style="list-style-type: none"> <li>· The P1-PB is not correctly attached.</li> </ul>  | <ul style="list-style-type: none"> <li>· Turn off the inverter, then detach the P1-PB and attach it again. After this, turn on the inverter again.</li> </ul> |
|  | <ul style="list-style-type: none"> <li>· There is an intruding object in between the P1-PB and the inverter connector.</li> </ul> | <ul style="list-style-type: none"> <li>· Remove the intruding object.</li> </ul>  |

#### E063

#### Option 1 Error 3

#### E073

#### Option 2 Error 3

#### E083

#### Option 3 Error 3

The P1-PB detected a PROFIBUS communication failure.

The error code will depend on the slot in which the P1-PB is attached.

| Issue▶                                   | Possible cause▶  | Possible solution  |
|--|--|--|
| There is a PROFIBUS communication error. | <ul style="list-style-type: none"> <li>· The PROFIBUS master stopped.</li> </ul> | <ul style="list-style-type: none"> <li>· Verify that the PROFIBUS master did not stop.</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>· The cable got disconnected.</li> </ul>  | <ul style="list-style-type: none"> <li>· Verify that the cable is connected correctly.</li> <li>· Check if the cable specification meets the required specifications. If it doesn't, please exchange the cable.</li> </ul> |

## 12

## Chapter 12 Specifications

12.1 About this chapter

This chapter contains information about the P1-PB specifications.

12.2 Device specifications

## ■ Specifications

| Item               |  | Specification   |                                      |
|--------------------|--|---|--------------------------------------|
| Model              |  | P1-PB   |                                      |
| Weight             |  | 170g  |                                      |
| Environment        | Ambient operating temperature                      | -10~50°C  | No icing or condensation conditions. |
|                    | Ambient operating humidity                         | 20~90%RH  |                                      |
|                    | Storage temperature                                | -20~65°C  |                                      |
|                    | Vibration resistance                               | 5.9m/s <sup>2</sup> (0.6G)、10~55Hz  |                                      |
|                    | Conformance to EMC and electrical safety standards | IEC/EN61800-3<br>Second environment, Category C3<br>IEC/EN61800-5-1 SELV  |                                      |
|                    | Enclosure rating                                   | IP00  |                                      |
| PROFIBUS Interface | Communication protocol                             | PROFIBUS DPV0<br>PROFIBUS DPV1  |                                      |
|                    | Connector  | D-sub 9 pin   |                                      |
|                    | Cable  | PROFIBUS DP cable   |                                      |
|                    | Node address *                                     | From 0 to 99 : set by rotary switches<br>From 1 to 126 : set by oH-20 of HF-430NEO parameters   |                                      |
|                    | Profile  | PROFIdrive  |                                      |
| PROFIdrive         | PROFIdrive version                                 | 4.2   |                                      |
|                    | Application class                                  | AC1 (Standard Drive)  |                                      |
|                    | Telegram   | Standard telegram 1<br>P1-PB telegram 103 (PPO3 of PROFIdrive version 2)<br>P1-PB telegram 104 (PPO4 of PROFIdrive version 2)<br>P1-PB telegram 105 (like PPO5 of PROFIdrive version 2) |                                      |
|                    | Configuring of telegram                            | oH-24 and From oJ-01 to oJ-60 of HF-430NEO parameters   |                                      |
|                    | Operating mode                                     | Speed control mode  |                                      |
|                    | Jogging  | Only jogging 1 is supported.  |                                      |

\*When you set the rotary switches within the range from 01 to 99, the value is addressed.

When you set the rotary switches 00 and oH-20 is within the range from 1 to 125, the value of oH-20 is addressed. Otherwise 126 is addressed.



## 13

## Chapter 13 Parameter List

### 13.1 About this chapter

This chapter contains the list of PNU and Sub-index of inverter parameter.

### 13.2 Parameter list

This is the list of parameters of HF-430NEO.

Please check the instruction manual of HF-430NEO about the parameters.

#### ■ Items on the List

| Item                  | Description  |
|-----------------------|--|
| PNU                   | Parameter number<br>Necessary when accessing the parameter through PROFIBUS. |
| Sub-index             | PNU sub-index.<br>Necessary when accessing the parameter through PROFIBUS.   |
| Func. code            | Parameter function code.   |
| Function name         | Parameter name.  |
| Type                  | Parameter type<br>UINT : (16 bits)<br>UDINT : (32 bits)                      |
| Access                | R : Read only<br>W : Write only<br>RW : Read-Write                           |
| Setting Items         | Range of Values  |
| Data resolution·units | Resolution and units   |

## 13.2.1 Code-d

| Index | Sub-index          | Func. code           | Function name  | Type  | Access | Setting Items   | Data resolution units |
|-------|--------------------|----------------------|--|-------|--------|---|-----------------------|
| 1039  | 0x60               | dA-01                | Output frequency monitor                             | UINT  | R      | 0 ~ 59000   | 0.01Hz                |
| 1039  | 0x61               | dA-02                | Output current monitor                               | UINT  | R      | 0 ~ 65535   | 0.01A                 |
| 1039  | 0x62               | dA-03                | Rotation direction monitor                           | UINT  | R      | 0 ~ 3   | 1                     |
| 2039  | 0x63               | dA-04                | Frequency reference monitor<br>(After calculation)   | UDINT | R      | -59000 ~ 59000  | 0.01Hz                |
| 2039  | 0x65               | dA-06                | Output frequency scale conversion monitor            | UDINT | R      | 0 ~ 5900000   | 0.01                  |
| 2039  | 0x67               | dA-08                | Detect speed monitor                                 | UDINT | R      | -59000 ~ 59000  | 0.01Hz                |
| 2039  | 0x6B               | dA-12                | Output frequency (+/-)                               | UDINT | R      |   |                       |
| 1039  | 0x6D               | dA-14                | Frequency upper limit monitor                        | UINT  | R      | 0 ~ 59000   | 0.01Hz                |
| 1039  | 0x6E               | dA-15                | Torque reference monitor<br>(After calculation)      | UINT  | R      | -10000 ~ 10000  | 0.1%                  |
| 1039  | 0x6F               | dA-16                | Torque limit monitor                                 | UINT  | R      | 0 ~ 5000  |                       |
| 1039  | 0x70               | dA-17                | Output Torque monitor                                | UINT  | R      | -10000 ~ 10000  |                       |
| 1039  | 0x71               | dA-18                | Output Voltage monitor                               | UINT  | R      | 0 ~ 8000  | 0.1v                  |
| 2039  | 0x73               | dA-20                | Current position monitor                             | UDINT | R      | -26843545~268435455<br>High resolution mode :<br>-1073741823~1073741823 | 1pls                  |
| 2039  | 0x79               | dA-26                | Pulse train position deviation monitor               | UDINT | R      | -2147483647~2147483647  |                       |
| 2039  | 0x7B               | dA-28                | Pulse counter monitor                                | UDINT | R      | 0~2147483647  |                       |
| 1039  | 0x7D               | dA-30                | Input power monitor                                  | UINT  | R      | 0 ~ 60000   | 0.01kWh               |
| 2039  | 0x7F               | dA-32                | Accumulation input power monitor                     | UDINT | R      | 0 ~ 10000000  | 0.1kWh                |
| 1039  | 0x81               | dA-34                | Output power monitor                                 | UINT  | R      | 0 ~ 60000   | 0.01kWh               |
| 2039  | 0x83               | dA-36                | Accumulation output power monitor                    | UDINT | R      | 0 ~ 10000000  | 0.1kWh                |
| 1039  | 0x85               | dA-38                | Motor temperature monitor                            | UINT  | R      | -200 ~ 2000   | 0.1°C                 |
| 1039  | 0x87               | dA-40                | DC-bus voltage monitor                               | UINT  | R      | 0 ~ 10000   | 0.1Vdc                |
| 1039  | 0x88               | dA-41                | DBTR Load rating monitor                             | UINT  | R      |   |                       |
| 1039  | 0x89               | dA-42                | Electronic thermal Load rating monitor<br>(Motor)    | UINT  | R      |   |                       |
| 1039  | 0x8A               | dA-43                | Electronic thermal Load rating monitor<br>(Inverter) | UINT  | R      |   | 0.01%                 |
| 1039  | 0x8C               | dA-45                | Safety STO monitor                                   | UINT  | R      | 0 ~ 7   | 1                     |
| 1039  | 0x8D               | dA-46                | Reserved   | UINT  | R      | -   | -                     |
| 1039  | 0x8E               | dA-47                |  | UINT  | R      |   |                       |
| 1039  | 0x91               | dA-50                | Control terminal status                              | UINT  | R      | 0 ~ 15  | 1                     |
| 1039  | 0x92               | dA-51                | Input terminal monitor                               | UINT  | R      | 0 ~ 0xFFFF  |                       |
| 1039  | 0x95               | dA-54                | Output terminal monitor                              | UINT  | R      | 0 ~ 0xFF  |                       |
| 1039  | 0x9B               | dA-60                | Analog input/output status monitor                   | UINT  | R      | 0 ~ 10000   | 0.01%                 |
| 1039  | 0x9C               | dA-61                | Analog input VRF monitor                             | UINT  | R      |   |                       |
| 1039  | 0x9D               | dA-62                | Analog input IRF monitor                             | UINT  | R      |   |                       |
| 1039  | 0x9E               | dA-63                | Analog input VF2 monitor                             | UINT  | R      | -10000 ~ 10000  |                       |
| 1039  | 0x9F               | dA-64                | Extension Analog input [Ai4] monitor                 | UINT  | R      | 0 ~ 10000   |                       |
| 1039  | 0xA0               | dA-65                | Extension Analog input [Ai5] monitor                 | UINT  | R      |   |                       |
| 1039  | 0xA1               | dA-66                | Extension Analog input [Ai6] monitor                 | UINT  | R      | -10000 ~ 10000  |                       |
| 1039  | 0xA5               | dA-70                | Pulse train input monitor (internal)                 | UINT  | R      |   |                       |
| 1039  | 0xA6               | dA-71                | Pulse train input monitor (Option)                   | UINT  | R      |   |                       |
| 1039  | 0xB0               | dA-81                | Option slot-1 status                                 | UINT  | R      | 0 ~ 48  | 1                     |
| 1039  | 0xB1               | dA-82                | Option slot-2 status                                 | UINT  | R      |   |                       |
| 1039  | 0xB2               | dA-83                | Option slot-3 status                                 | UINT  | R      |   |                       |
| 1039  | 0xC4<br>to<br>0xDA | db-01<br>to<br>db-23 | Reserved   | UINT  | R      | -   | -                     |
| 2039  | 0xE1               | db-30                | PID1 Feedback value 1 monitor                        | UDINT | R      | -10000 ~ 10000  | Depends on AH-06      |
| 2039  | 0xE3               | db-32                | PID1 Feedback value 2 monitor                        | UDINT | R      |   |                       |
| 2039  | 0xE5               | db-34                | PID1 Feedback value 3 monitor                        | UDINT | R      |   |                       |
| 2039  | 0xE7               | db-36                | PID2 Feedback value monitor                          | UDINT | R      |   | Depends on AJ-06      |

| Index | Sub-index | Func. code | Function name                                  | Type  | Access | Setting Items                                      | Data resolution units |        |
|-------|-----------|------------|--|-------|--------|--|-----------------------|--------|
| 2039  | 0xE9      | db-38      | PID3 Feedback value monitor                    | UDINT | R      | -10000 ~ 10000                                     | Depends on AJ-26      |        |
| 2039  | 0xEB      | db-40      | PID4 Feedback value monitor                    | UDINT | R      |  | Depends on AJ-46      |        |
| 2039  | 0xED      | db-42      | PID1 SV  | UDINT | R      |  | Depends on AH-06      |        |
| 2039  | 0xEF      | db-44      | PID1 PV  | UDINT | R      |  |                       |        |
| 1039  | 0xF5      | db-50      | PID1 Output monitor                            | UINT  | R      |  |                       |        |
| 1039  | 0xF6      | db-51      | PID1 Deviation monitor                         | UINT  | R      |  |                       |        |
| 1039  | 0xF7      | db-52      | PID1 Deviation 1 monitor                       | UINT  | R      |  |                       |        |
| 1039  | 0xF8      | db-53      | PID1 Deviation 2 monitor                       | UINT  | R      |  |                       |        |
| 1039  | 0xF9      | db-54      | PID1 Deviation 3 monitor                       | UINT  | R      |  |                       |        |
| 1039  | 0xFA      | db-55      | PID2 Output monitor                            | UINT  | R      |  |                       |        |
| 1039  | 0xFB      | db-56      | PID2 Deviation monitor                         | UINT  | R      |  |                       |        |
| 1039  | 0xFC      | db-57      | PID3 Output monitor                            | UINT  | R      |  |                       |        |
| 1039  | 0xFD      | db-58      | PID3 Deviation monitor                         | UINT  | R      |  |                       |        |
| 1039  | 0xFE      | db-59      | PID4 Output monitor                            | UINT  | R      |  |                       |        |
| 1040  | 0x1       | db-60      | PID4 Deviation monitor                         | UINT  | R      |  |                       | 0.01%  |
| 1040  | 0x2       | db-61      | Current PID P-Gain monitor                     | UINT  | R      | 0 ~ 1000   | 0.1 times             |        |
| 1040  | 0x3       | db-62      | Current PID I-Gain monitor                     | UINT  | R      | 0 ~ 36000  | 0.1s                  |        |
| 1040  | 0x4       | db-63      | Current PID D-Gain monitor                     | UINT  | R      | 0 ~ 10000  | 0.01s                 |        |
| 1040  | 0x5       | db-64      | PID Feedforward monitor                        | UINT  | R      |  | 0.01%                 |        |
| 1040  | 0x2A      | dC-01      | Inverter Load type status                      | UINT  | R      | 0 ~ 2  | 1                     |        |
| 1040  | 0x2B      | dC-02      | Rated current monitor                          | UINT  | R      | 0 ~ 65535  | 0.1a                  |        |
| 1040  | 0x30      | dC-07      | Main speed input source monitor                | UINT  | R      | 0 ~ 34   | 1                     |        |
| 1040  | 0x31      | dC-08      | Sub speed input source monitor                 | UINT  | R      |  |                       |        |
| 1040  | 0x33      | dC-10      | RUN command input source monitor               | UINT  | R      |  |                       |        |
| 1040  | 0x38      | dC-15      | Cooling-fin temperature monitor                | UINT  | R      | -200 ~ 2000  | 0.1°C                 |        |
| 1040  | 0x39      | dC-16      | Life assessment monitor                        | UINT  | R      | 0 ~ 0xFF   | 1                     |        |
| 1040  | 0x3D      | dC-20      | Accumulation Start number monitor              | UINT  | R      | 1 ~ 65535  |                       |        |
| 1040  | 0x3E      | dC-21      | Accumulation Power-on number monitor           | UINT  | R      |  |                       |        |
| 2040  | 0x3F      | dC-22      | Accumulated time monitor in RUN status monitor | UDINT | R      | 0 ~ 1000000  | 1hr                   |        |
| 2040  | 0x41      | dC-24      | Accumulation power-on time monitor             | UDINT | R      |  |                       |        |
| 2040  | 0x43      | dC-26      | Cooling fan accumulation running time monitor  | UDINT | R      |  |                       |        |
| 1040  | 0x4E      | dC-37      | Icon2 LIM monitor                              | UINT  | R      | 0 ~ 6  | 1                     |        |
| 1040  | 0x4F      | dC-38      | Icon2 ALT monitor                              | UINT  | R      | 0 ~ 4  |                       |        |
| 1040  | 0x50      | dC-39      | Icon2 RETRY monitor                            | UINT  | R      | 0 ~ 2  |                       |        |
| 1040  | 0x51      | dC-40      | Icon2 NRDY monitor                             | UINT  | R      | 0 ~ 9  |                       |        |
| 1040  | 0x56      | dC-45      | IM/SM monitor                                  | UINT  | R      | 0 ~ 1  |                       |        |
| 1040  | 0x5B      | dC-50      | Firmware Ver. Monitor                          | UINT  | R      | 0 ~ 0xFFFF<br>Top byte : Major<br>Low Byte : Minor |                       |        |
| 1040  | 0x5E      | dC-53      | Firmware Gr.                                   | UINT  | R      | 0 ~ 1  |                       |        |
| 1040  | 0xF2      | dE-01      | Trip number monitor                            | UINT  | R      | 0 ~ 65535  | 1                     |        |
| 1003  | 0xF0      | dE-11      | Trip monitor 1 Factor                          | UINT  | R      | 1 ~ 255  |                       |        |
| 2003  | 0xF1      | dE-11      | Trip monitor 1 Output frequency (+/-)          | UDINT | R      | -59000 ~ 59000                                     |                       | 0.01Hz |
| 1003  | 0xF3      | dE-11      | Trip monitor 1 Output current                  | UINT  | R      | 0 ~ 65535  |                       | 0.01A  |
| 1003  | 0xF4      | dE-11      | Trip monitor 1 DC-bus voltage                  | UINT  | R      | 0 ~ 10000  |                       | 0.1Vdc |
| 1003  | 0xF5      | dE-11      | Trip monitor 1 Inverter status                 | UINT  | R      | 0 ~ 8  |                       |        |
| 1003  | 0xF6      | dE-11      | Trip monitor 1 LAD status                      | UINT  | R      | 0 ~ 5  |                       |        |
| 1003  | 0xF7      | dE-11      | Trip monitor 1 Control mode                    | UINT  | R      | 0 ~ 11   |                       |        |
| 1003  | 0xF8      | dE-11      | Trip monitor 1 Limit status                    | UINT  | R      | 0 ~ 6  |                       |        |
| 1003  | 0xF9      | dE-11      | Trip monitor 1 Specific status                 | UINT  | R      |  |                       |        |
| 2003  | 0xFB      | dE-11      | Trip monitor 1 Running time                    | UDINT | R      | 0 ~ 1000000  | 1hr                   |        |
| 2003  | 0xFD      | dE-11      | Trip monitor 1 Power-on time                   | UDINT | R      |  |                       |        |
| 1004  | 0x1       | dE-11      | Trip monitor 1 Time (Year/Month)               | UINT  | R      | 0~99, 0~12 (BCD code)                              | 1                     |        |
| 1004  | 0x2       | dE-11      | Trip monitor 1 Time (Day)                      | UINT  | R      | 01~31, 00~06(BCD code)                             |                       |        |
| 1004  | 0x3       | dE-11      | Trip monitor 1 Time (Hour/Minute)              | UINT  | R      | 00~23, 00~59 (BCD code)                            |                       |        |

| Index | Sub-index | Func. code | Function name                         | Type  | Access | Setting Items           | Data resolution units |
|-------|-----------|------------|---------------------------------------|-------|--------|-------------------------|-----------------------|
| 1004  | 0x6       | dE-12      | Trip monitor 2 Factor                 | UINT  | R      | 1 ~ 255                 | 1                     |
| 2004  | 0x7       | dE-12      | Trip monitor 2 Output frequency (+/-) | UDINT | R      | -59000 ~ 59000          | 0.01Hz                |
| 1004  | 0x9       | dE-12      | Trip monitor 2 Output current         | UINT  | R      | 0 ~ 65535               | 0.01A                 |
| 1004  | 0xA       | dE-12      | Trip monitor 2 DC-bus voltage         | UINT  | R      | 0 ~ 10000               | 0.1Vdc                |
| 1004  | 0xB       | dE-12      | Trip monitor 2 Inverter status        | UINT  | R      | 0 ~ 8                   | 1                     |
| 1004  | 0xC       | dE-12      | Trip monitor 2 LAD status             | UINT  | R      | 0 ~ 5                   |                       |
| 1004  | 0xD       | dE-12      | Trip monitor 2 Control mode           | UINT  | R      | 0 ~ 11                  |                       |
| 1004  | 0xE       | dE-12      | Trip monitor 2 Limit status           | UINT  | R      | 0 ~ 6                   |                       |
| 1004  | 0xF       | dE-12      | Trip monitor 2 Specific status        | UINT  | R      |                         |                       |
| 2004  | 0x11      | dE-12      | Trip monitor 2 Running time           | UDINT | R      | 0 ~ 1000000             | 1hr                   |
| 2004  | 0x13      | dE-12      | Trip monitor 2 Power-on time          | UDINT | R      |                         |                       |
| 1004  | 0x15      | dE-12      | Trip monitor 2 Time (Year/Month)      | UINT  | R      | 00~99, 01~12 (BCD code) | 1                     |
| 1004  | 0x16      | dE-12      | Trip monitor 2 Time (Day)             | UINT  | R      | 01~31, 00~06 (BCD code) |                       |
| 1004  | 0x17      | dE-12      | Trip monitor 2 Time (Hour/Minute)     | UINT  | R      | 00~23, 00~59 (BCD code) |                       |
| 1004  | 0x1A      | dE-13      | Trip monitor 3 Factor                 | UINT  | R      | 1 ~ 255                 | 0.01Hz                |
| 2004  | 0x1B      | dE-13      | Trip monitor 3 Output frequency (+/-) | UDINT | R      | -59000 ~ 59000          |                       |
| 1004  | 0x1D      | dE-13      | Trip monitor 3 Output current         | UINT  | R      | 0 ~ 65535               |                       |
| 1004  | 0x1E      | dE-13      | Trip monitor 3 DC-bus voltage         | UINT  | R      | 0 ~ 10000               |                       |
| 1004  | 0x1F      | dE-13      | Trip monitor 3 Inverter status        | UINT  | R      | 0 ~ 8                   |                       |
| 1004  | 0x20      | dE-13      | Trip monitor 3 LAD status             | UINT  | R      | 0 ~ 5                   | 1                     |
| 1004  | 0x21      | dE-13      | Trip monitor 3 Control mode           | UINT  | R      | 0 ~ 11                  |                       |
| 1004  | 0x22      | dE-13      | Trip monitor 3 Limit status           | UINT  | R      | 0 ~ 6                   |                       |
| 1004  | 0x23      | dE-13      | Trip monitor 3 Specific status        | UINT  | R      |                         |                       |
| 2004  | 0x25      | dE-13      | Trip monitor 3 Running time           | UDINT | R      | 0 ~ 1000000             | 1hr                   |
| 2004  | 0x27      | dE-13      | Trip monitor 3 Power-on time          | UDINT | R      |                         |                       |
| 1004  | 0x29      | dE-13      | Trip monitor 3 Time (Year/Month)      | UINT  | R      | 00~99, 01~12 (BCD code) | 1                     |
| 1004  | 0x2A      | dE-13      | Trip monitor 3 Time (Day)             | UINT  | R      | 01~31, 00~06 (BCD code) |                       |
| 1004  | 0x2B      | dE-13      | Trip monitor 3 Time (Hour/Minute)     | UINT  | R      | 00~23, 00~59 (BCD code) |                       |
| 1004  | 0x2E      | dE-14      | Trip monitor 4 Factor                 | UINT  | R      | 1 ~ 255                 | 0.01Hz                |
| 2004  | 0x2F      | dE-14      | Trip monitor 4 Output frequency (+/-) | UDINT | R      | -59000 ~ 59000          |                       |
| 1004  | 0x31      | dE-14      | Trip monitor 4 Output current         | UINT  | R      | 0 ~ 65535               |                       |
| 1004  | 0x32      | dE-14      | Trip monitor 4 DC-bus voltage         | UINT  | R      | 0 ~ 10000               |                       |
| 1004  | 0x33      | dE-14      | Trip monitor 4 Inverter status        | UINT  | R      | 0 ~ 8                   |                       |
| 1004  | 0x34      | dE-14      | Trip monitor 4 LAD status             | UINT  | R      | 0 ~ 5                   | 1                     |
| 1004  | 0x35      | dE-14      | Trip monitor 4 Control mode           | UINT  | R      | 0 ~ 11                  |                       |
| 1004  | 0x36      | dE-14      | Trip monitor 4 Limit status           | UINT  | R      | 0 ~ 6                   |                       |
| 1004  | 0x37      | dE-14      | Trip monitor 4 Specific status        | UINT  | R      |                         |                       |
| 2004  | 0x39      | dE-14      | Trip monitor 4 Running time           | UDINT | R      | 0 ~ 1000000             | 1hr                   |
| 2004  | 0x3B      | dE-14      | Trip monitor 4 Power-on time          | UDINT | R      |                         |                       |
| 1004  | 0x3D      | dE-14      | Trip monitor 4 Time (Year/Month)      | UINT  | R      | 00~99, 01~12 (BCD code) | 1                     |
| 1004  | 0x3E      | dE-14      | Trip monitor 4 Time (Day)             | UINT  | R      | 01~31, 00~06 (BCD code) |                       |
| 1004  | 0x3F      | dE-14      | Trip monitor 4 Time (Hour/Minute)     | UINT  | R      | 00~23, 00~59 (BCD code) |                       |
| 1004  | 0x42      | dE-15      | Trip monitor 5 Factor                 | UINT  | R      | 1 ~ 255                 | 0.01Hz                |
| 2004  | 0x43      | dE-15      | Trip monitor 5 Output frequency (+/-) | UDINT | R      | -59000 ~ 59000          |                       |
| 1004  | 0x45      | dE-15      | Trip monitor 5 Output current         | UINT  | R      | 0 ~ 65535               |                       |
| 1004  | 0x46      | dE-15      | Trip monitor 5 DC-bus voltage         | UINT  | R      | 0 ~ 10000               |                       |
| 1004  | 0x47      | dE-15      | Trip monitor 5 Inverter status        | UINT  | R      | 0 ~ 8                   |                       |
| 1004  | 0x48      | dE-15      | Trip monitor 5 LAD status             | UINT  | R      | 0 ~ 5                   | 1                     |
| 1004  | 0x49      | dE-15      | Trip monitor 5 Control mode           | UINT  | R      | 0 ~ 11                  |                       |
| 1004  | 0x4A      | dE-15      | Trip monitor 5 Limit status           | UINT  | R      | 0 ~ 6                   |                       |
| 1004  | 0x4B      | dE-15      | Trip monitor 5 Specific status        | UINT  | R      |                         |                       |
| 2004  | 0x4D      | dE-15      | Trip monitor 5 Running time           | UDINT | R      | 0 ~ 1000000             | 1hr                   |
| 2004  | 0x4F      | dE-15      | Trip monitor 5 Power-on time          | UDINT | R      |                         |                       |
| 1004  | 0x51      | dE-15      | Trip monitor 5 Time (Year/Month)      | UINT  | R      | 00~99, 01~12 (BCD code) | 1                     |
| 1004  | 0x52      | dE-15      | Trip monitor 5 Time (Day)             | UINT  | R      | 01~31, 00~06 (BCD code) |                       |
| 1004  | 0x53      | dE-15      | Trip monitor 5 Time (Hour/Minute)     | UINT  | R      | 00~23, 00~59 (BCD code) |                       |

| Index | Sub-index | Func. code | Function name                         | Type  | Access | Setting Items           | Data resolution units |
|-------|-----------|------------|---------------------------------------|-------|--------|-------------------------|-----------------------|
| 1004  | 0x56      | dE-16      | Trip monitor 6 Factor                 | UINT  | R      | 1 ~ 255                 | 1                     |
| 2004  | 0x57      | dE-16      | Trip monitor 6 Output frequency (+/-) | UDINT | R      | -59000 ~ 59000          | 0.01Hz                |
| 1004  | 0x59      | dE-16      | Trip monitor 6 Output current         | UINT  | R      | 0 ~ 65535               | 0.01A                 |
| 1004  | 0x5A      | dE-16      | Trip monitor 6 DC-bus voltage         | UINT  | R      | 0 ~ 10000               | 0.1Vdc                |
| 1004  | 0x5B      | dE-16      | Trip monitor 6 Inverter status        | UINT  | R      | 0 ~ 8                   | 1                     |
| 1004  | 0x5C      | dE-16      | Trip monitor 6 LAD status             | UINT  | R      | 0 ~ 5                   |                       |
| 1004  | 0x5D      | dE-16      | Trip monitor 6 Control mode           | UINT  | R      | 0 ~ 11                  |                       |
| 1004  | 0x5E      | dE-16      | Trip monitor 6 Limit status           | UINT  | R      | 0 ~ 6                   |                       |
| 1004  | 0x5F      | dE-16      | Trip monitor 6 Specific status        | UINT  | R      |                         |                       |
| 2004  | 0x61      | dE-16      | Trip monitor 6 Running time           | UDINT | R      | 0 ~ 1000000             | 1hr                   |
| 2004  | 0x63      | dE-16      | Trip monitor 6 Power-on time          | UDINT | R      |                         |                       |
| 1004  | 0x65      | dE-16      | Trip monitor 6 Time (Year/Month)      | UINT  | R      | 00~99, 01~12 (BCD code) | 1                     |
| 1004  | 0x66      | dE-16      | Trip monitor 6 Time (Day)             | UINT  | R      | 01~31, 00~06 (BCD code) |                       |
| 1004  | 0x67      | dE-16      | Trip monitor 6 Time (Hour/Minute)     | UINT  | R      | 00~23, 00~59 (BCD code) |                       |
| 1004  | 0x6A      | dE-17      | Trip monitor 7 Factor                 | UINT  | R      | 1 ~ 255                 | 0.01Hz                |
| 2004  | 0x6B      | dE-17      | Trip monitor 7 Output frequency (+/-) | UDINT | R      | -59000 ~ 59000          |                       |
| 1004  | 0x6D      | dE-17      | Trip monitor 7 Output current         | UINT  | R      | 0 ~ 65535               |                       |
| 1004  | 0x6E      | dE-17      | Trip monitor 7 DC-bus voltage         | UINT  | R      | 0 ~ 10000               |                       |
| 1004  | 0x6F      | dE-17      | Trip monitor 7 Inverter status        | UINT  | R      | 0 ~ 8                   |                       |
| 1004  | 0x70      | dE-17      | Trip monitor 7 LAD status             | UINT  | R      | 0 ~ 5                   | 1                     |
| 1004  | 0x71      | dE-17      | Trip monitor 7 Control mode           | UINT  | R      | 0 ~ 11                  |                       |
| 1004  | 0x72      | dE-17      | Trip monitor 7 Limit status           | UINT  | R      | 0 ~ 6                   |                       |
| 1004  | 0x73      | dE-17      | Trip monitor 7 Specific status        | UINT  | R      |                         |                       |
| 2004  | 0x75      | dE-17      | Trip monitor 7 Running time           | UDINT | R      | 0 ~ 1000000             | 1hr                   |
| 2004  | 0x77      | dE-17      | Trip monitor 7 Power-on time          | UDINT | R      |                         |                       |
| 1004  | 0x79      | dE-17      | Trip monitor 7 Time (Year/Month)      | UINT  | R      | 00~99, 01~12 (BCD code) | 1                     |
| 1004  | 0x7A      | dE-17      | Trip monitor 7 Time (Day)             | UINT  | R      | 01~31, 00~06 (BCD code) |                       |
| 1004  | 0x7B      | dE-17      | Trip monitor 7 Time (Hour/Minute)     | UINT  | R      | 00~23, 00~59 (BCD code) |                       |
| 1004  | 0x7E      | dE-18      | Trip monitor 8 Factor                 | UINT  | R      | 1 ~ 255                 | 0.01Hz                |
| 2004  | 0x7F      | dE-18      | Trip monitor 8 Output frequency (+/-) | UDINT | R      | -59000 ~ 59000          |                       |
| 1004  | 0x81      | dE-18      | Trip monitor 8 Output current         | UINT  | R      | 0 ~ 65535               |                       |
| 1004  | 0x82      | dE-18      | Trip monitor 8 DC-bus voltage         | UINT  | R      | 0 ~ 10000               |                       |
| 1004  | 0x83      | dE-18      | Trip monitor 8 Inverter status        | UINT  | R      | 0 ~ 8                   |                       |
| 1004  | 0x84      | dE-18      | Trip monitor 8 LAD status             | UINT  | R      | 0 ~ 5                   | 1                     |
| 1004  | 0x85      | dE-18      | Trip monitor 8 Control mode           | UINT  | R      | 0 ~ 11                  |                       |
| 1004  | 0x86      | dE-18      | Trip monitor 8 Limit status           | UINT  | R      | 0 ~ 6                   |                       |
| 1004  | 0x87      | dE-18      | Trip monitor 8 Specific status        | UINT  | R      |                         |                       |
| 2004  | 0x89      | dE-18      | Trip monitor 8 Running time           | UDINT | R      | 0 ~ 1000000             | 1hr                   |
| 2004  | 0x8B      | dE-18      | Trip monitor 8 Power-on time          | UDINT | R      |                         |                       |
| 1004  | 0x8D      | dE-18      | Trip monitor 8 Time (Year/Month)      | UINT  | R      | 0~99, 01~12 (BCD code)  | 1                     |
| 1004  | 0x8E      | dE-18      | Trip monitor 8 Time (Day)             | UINT  | R      | 0~31, 00~06 (BCD code)  |                       |
| 1004  | 0x8F      | dE-18      | Trip monitor 8 Time (Hour/Minute)     | UINT  | R      | 00~23, 00~59 (BCD code) |                       |
| 1004  | 0x92      | dE-19      | Trip monitor 9 Factor                 | UINT  | R      | 1 ~ 255                 | 0.01Hz                |
| 2004  | 0x93      | dE-19      | Trip monitor 9 Output frequency (+/-) | UDINT | R      | -59000 ~ 59000          |                       |
| 1004  | 0x95      | dE-19      | Trip monitor 9 Output current         | UINT  | R      | 0 ~ 65535               |                       |
| 1004  | 0x96      | dE-19      | Trip monitor 9 DC-bus voltage         | UINT  | R      | 0 ~ 10000               |                       |
| 1004  | 0x97      | dE-19      | Trip monitor 9 Inverter status        | UINT  | R      | 0 ~ 8                   |                       |
| 1004  | 0x98      | dE-19      | Trip monitor 9 LAD status             | UINT  | R      | 0 ~ 5                   | 1                     |
| 1004  | 0x99      | dE-19      | Trip monitor 9 Control mode           | UINT  | R      | 0 ~ 11                  |                       |
| 1004  | 0x9A      | dE-19      | Trip monitor 9 Limit status           | UINT  | R      | 0 ~ 6                   |                       |
| 1004  | 0x9B      | dE-19      | Trip monitor 9 Specific status        | UINT  | R      |                         |                       |
| 2004  | 0x9D      | dE-19      | Trip monitor 9 Running time           | UDINT | R      | 0 ~ 1000000             | 1hr                   |
| 2004  | 0x9F      | dE-19      | Trip monitor 9 Power-on time          | UDINT | R      |                         |                       |
| 1004  | 0xA1      | dE-19      | Trip monitor 9 Time (Year/Month)      | UINT  | R      | 00~99, 01~12 (BCD code) | 1                     |
| 1004  | 0xA2      | dE-19      | Trip monitor 9 Time (Day)             | UINT  | R      | 01~31, 00~06 (BCD code) |                       |
| 1004  | 0xA3      | dE-19      | Trip monitor 9 Time (Hour/Minute)     | UINT  | R      | 00~23, 00~59 (BCD code) |                       |

| Index | Sub-index | Func. code | Function name                          | Type  | Access | Setting Items           | Data resolution units |
|-------|-----------|------------|--|-------|--------|-------------------------|-----------------------|
| 1004  | 0xA6      | dE-20      | Trip monitor 10 Factor                 | UINT  | R      | 1 ~ 255                 | 1                     |
| 2004  | 0xA7      | dE-20      | Trip monitor 10 Output frequency (+/-) | UDINT | R      | -59000 ~ 59000          | 0.01Hz                |
| 1004  | 0xA9      | dE-20      | Trip monitor 10 Output current         | UINT  | R      | 0 ~ 65535               | 0.01A                 |
| 1004  | 0xAA      | dE-20      | Trip monitor 10 DC-bus voltage         | UINT  | R      | 0 ~ 10000               | 0.1Vdc                |
| 1004  | 0xAB      | dE-20      | Trip monitor 10 Inverter status        | UINT  | R      | 0 ~ 8                   | 1                     |
| 1004  | 0xAC      | dE-20      | Trip monitor 10 LAD status             | UINT  | R      | 0 ~ 5                   |                       |
| 1004  | 0xAD      | dE-20      | Trip monitor 10 Control mode           | UINT  | R      | 0 ~ 11                  |                       |
| 1004  | 0xAE      | dE-20      | Trip monitor 10 Limit status           | UINT  | R      | 0 ~ 6                   |                       |
| 1004  | 0xAF      | dE-20      | Trip monitor 10 Specific status        | UINT  | R      |                         |                       |
| 2004  | 0xB1      | dE-20      | Trip monitor 10 Running time           | UDINT | R      | 0 ~ 1000000             | 1hr                   |
| 2004  | 0xB3      | dE-20      | Trip monitor 10 Power-on time          | UDINT | R      |                         |                       |
| 1004  | 0xB5      | dE-20      | Trip monitor 10 Time (Year/Month)      | UINT  | R      | 00~99, 01~12 (BCD code) | 1                     |
| 1004  | 0xB6      | dE-20      | Trip monitor 10 Time (Day)             | UINT  | R      | 01~31, 00~06 (BCD code) |                       |
| 1004  | 0xB7      | dE-20      | Trip monitor 10 Time (Hour/Minute)     | UINT  | R      | 00~23, 00~59 (BCD code) |                       |
| 1004  | 0xBA      | dE-31      | Retry monitor 1 Factor                 | UINT  | R      | 1 ~ 255                 | 0.01Hz                |
| 2004  | 0xBB      | dE-31      | Retry monitor 1 Output frequency (+/-) | UDINT | R      | -59000 ~ 59000          |                       |
| 1004  | 0xBD      | dE-31      | Retry monitor 1 Output current         | UINT  | R      | 0 ~ 65535               |                       |
| 1004  | 0xBE      | dE-31      | Retry monitor 1 DC-bus voltage         | UINT  | R      | 0 ~ 10000               |                       |
| 1004  | 0xBF      | dE-31      | Retry monitor 1 Inverter status        | UINT  | R      | 0 ~ 8                   |                       |
| 1004  | 0xC0      | dE-31      | Retry monitor 1 LAD status             | UINT  | R      | 0 ~ 5                   | 1                     |
| 1004  | 0xC1      | dE-31      | Retry monitor 1 Control mode           | UINT  | R      | 0 ~ 11                  |                       |
| 1004  | 0xC2      | dE-31      | Retry monitor 1 Limit status           | UINT  | R      | 0 ~ 6                   |                       |
| 1004  | 0xC3      | dE-31      | Retry monitor 1 Specific status        | UINT  | R      |                         |                       |
| 2004  | 0xC5      | dE-31      | Retry monitor 1 Running time           | UDINT | R      | 0 ~ 1000000             | 1hr                   |
| 2004  | 0xC7      | dE-31      | Retry monitor 1 Power-on time          | UDINT | R      |                         |                       |
| 1004  | 0xC9      | dE-31      | Retry monitor 1 Time (Year/Month)      | UINT  | R      | 00~99, 01~12 (BCD code) | 1                     |
| 1004  | 0xCA      | dE-31      | Retry monitor 1 Time (Day)             | UINT  | R      | 01~31, 00~06 (BCD code) |                       |
| 1004  | 0xCB      | dE-31      | Retry monitor 1 Time (Hour/Minute)     | UINT  | R      | 00~23, 00~59 (BCD code) |                       |
| 1004  | 0xCE      | dE-32      | Retry monitor 2 Factor                 | UINT  | R      | 1 ~ 255                 | 0.01Hz                |
| 2004  | 0xCF      | dE-32      | Retry monitor 2 Output frequency (+/-) | UDINT | R      | -59000 ~ 59000          |                       |
| 1004  | 0xD1      | dE-32      | Retry monitor 2 Output current         | UINT  | R      | 0 ~ 65535               |                       |
| 1004  | 0xD2      | dE-32      | Retry monitor 2 DC-bus voltage         | UINT  | R      | 0 ~ 10000               |                       |
| 1004  | 0xD3      | dE-32      | Retry monitor 2 Inverter status        | UINT  | R      | 0 ~ 8                   |                       |
| 1004  | 0xD4      | dE-32      | Retry monitor 2 LAD status             | UINT  | R      | 0 ~ 5                   | 1                     |
| 1004  | 0xD5      | dE-32      | Retry monitor 2 Control mode           | UINT  | R      | 0 ~ 11                  |                       |
| 1004  | 0xD6      | dE-32      | Retry monitor 2 Limit status           | UINT  | R      | 0 ~ 6                   |                       |
| 1004  | 0xD7      | dE-32      | Retry monitor 2 Specific status        | UINT  | R      |                         |                       |
| 2004  | 0xD9      | dE-32      | Retry monitor 2 Running time           | UDINT | R      | 0 ~ 1000000             | 1hr                   |
| 2004  | 0xDB      | dE-32      | Retry monitor 2 Power-on time          | UDINT | R      |                         |                       |
| 1004  | 0xDD      | dE-32      | Retry monitor 2 Time (Year/Month)      | UINT  | R      | 00~99, 01~12 (BCD code) | 1                     |
| 1004  | 0xDE      | dE-32      | Retry monitor 2 Time (Day)             | UINT  | R      | 01~31, 00~06 (BCD code) |                       |
| 1004  | 0xDF      | dE-32      | Retry monitor 2 Time (Hour/Minute)     | UINT  | R      | 00~23, 00~59 (BCD code) |                       |
| 1004  | 0xE2      | dE-33      | Retry monitor 3 Factor                 | UINT  | R      | 1 ~ 255                 | 0.01Hz                |
| 2004  | 0xE3      | dE-33      | Retry monitor 3 Output frequency (+/-) | UDINT | R      | -59000 ~ 59000          |                       |
| 1004  | 0xE5      | dE-33      | Retry monitor 3 Output current         | UINT  | R      | 0 ~ 65535               |                       |
| 1004  | 0xE6      | dE-33      | Retry monitor 3 DC-bus voltage         | UINT  | R      | 0 ~ 10000               |                       |
| 1004  | 0xE7      | dE-33      | Retry monitor 3 Inverter status        | UINT  | R      | 0 ~ 8                   |                       |
| 1004  | 0xE8      | dE-33      | Retry monitor 3 LAD status             | UINT  | R      | 0 ~ 5                   | 1                     |
| 1004  | 0xE9      | dE-33      | Retry monitor 3 Control mode           | UINT  | R      | 0 ~ 11                  |                       |
| 1004  | 0xEA      | dE-33      | Retry monitor 3 Limit status           | UINT  | R      | 0 ~ 6                   |                       |
| 1004  | 0xEB      | dE-33      | Retry monitor 3 Specific status        | UINT  | R      |                         |                       |
| 2004  | 0xED      | dE-33      | Retry monitor 3 Running time           | UDINT | R      | 0 ~ 1000000             | 1hr                   |
| 2004  | 0xEF      | dE-33      | Retry monitor 3 Power-on time          | UDINT | R      |                         |                       |
| 1004  | 0xF1      | dE-33      | Retry monitor 3 Time (Year/Month)      | UINT  | R      | 00~99, 01~12 (BCD code) | 1                     |
| 1004  | 0xF2      | dE-33      | Retry monitor 3 Time (Day)             | UINT  | R      | 01~31, 00~06 (BCD code) |                       |
| 1004  | 0xF3      | dE-33      | Retry monitor 3 Time (Hour/Minute)     | UINT  | R      | 00~23, 00~59 (BCD code) |                       |

| Index | Sub-index | Func. code | Function name                          | Type  | Access | Setting Items           | Data resolution units |
|-------|-----------|------------|--|-------|--------|-------------------------|-----------------------|
| 1004  | 0xF6      | dE-34      | Retry monitor 4 Factor                 | UINT  | R      | 1 ~ 255                 | 1                     |
| 2004  | 0xF7      | dE-34      | Retry monitor 4 Output frequency (+/-) | UDINT | R      | -59000 ~ 59000          | 0.01Hz                |
| 1004  | 0xF9      | dE-34      | Retry monitor 4 Output current         | UINT  | R      | 0 ~ 65535               | 0.01A                 |
| 1004  | 0xFA      | dE-34      | Retry monitor 4 DC-bus voltage         | UINT  | R      | 0 ~ 10000               | 0.1Vdc                |
| 1004  | 0xFB      | dE-34      | Retry monitor 4 Inverter status        | UINT  | R      | 0 ~ 8                   | 1                     |
| 1004  | 0xFC      | dE-34      | Retry monitor 4 LAD status             | UINT  | R      | 0 ~ 5                   |                       |
| 1004  | 0xFD      | dE-34      | Retry monitor 4 Control mode           | UINT  | R      | 0 ~ 11                  |                       |
| 1004  | 0xFE      | dE-34      | Retry monitor 4 Limit status           | UINT  | R      | 0 ~ 6                   |                       |
| 1005  | 0x1       | dE-34      | Retry monitor 4 Specific status        | UINT  | R      |                         |                       |
| 2005  | 0x3       | dE-34      | Retry monitor 4 Running time           | UDINT | R      | 0 ~ 1000000             | 1hr                   |
| 2005  | 0x5       | dE-34      | Retry monitor 4 Power-on time          | UDINT | R      |                         |                       |
| 1005  | 0x7       | dE-34      | Retry monitor 4 Time (Year/Month)      | UINT  | R      | 00~99, 01~12 (BCD code) | 1                     |
| 1005  | 0x8       | dE-34      | Retry monitor 4 Time (Day)             | UINT  | R      | 01~31, 00~06 (BCD code) |                       |
| 1005  | 0x9       | dE-34      | Retry monitor 4 Time (Hour/Minute)     | UINT  | R      | 00~23, 00~59 (BCD code) |                       |
| 1005  | 0xC       | dE-35      | Retry monitor 5 Factor                 | UINT  | R      | 1 ~ 255                 | 1                     |
| 2005  | 0xD       | dE-35      | Retry monitor 5 Output frequency (+/-) | UDINT | R      | -59000 ~ 59000          |                       |
| 1005  | 0xF       | dE-35      | Retry monitor 5 Output current         | UINT  | R      | 0 ~ 65535               |                       |
| 1005  | 0x10      | dE-35      | Retry monitor 5 DC-bus voltage         | UINT  | R      | 0 ~ 10000               |                       |
| 1005  | 0x11      | dE-35      | Retry monitor 5 Inverter status        | UINT  | R      | 0 ~ 8                   |                       |
| 1005  | 0x12      | dE-35      | Retry monitor 5 LAD status             | UINT  | R      | 0 ~ 5                   | 1                     |
| 1005  | 0x13      | dE-35      | Retry monitor 5 Control mode           | UINT  | R      | 0 ~ 11                  |                       |
| 1005  | 0x14      | dE-35      | Retry monitor 5 Limit status           | UINT  | R      | 0 ~ 6                   |                       |
| 1005  | 0x15      | dE-35      | Retry monitor 5 Specific status        | UINT  | R      |                         |                       |
| 2005  | 0x17      | dE-35      | Retry monitor 5 Running time           | UDINT | R      | 0 ~ 1000000             | 1hr                   |
| 2005  | 0x19      | dE-35      | Retry monitor 5 Power-on time          | UDINT | R      |                         |                       |
| 1005  | 0x1B      | dE-35      | Retry monitor 5 Time (Year/Month)      | UINT  | R      | 00~99, 01~12 (BCD code) | 1                     |
| 1005  | 0x1C      | dE-35      | Retry monitor 5 Time (Day)             | UINT  | R      | 01~31, 00~06 (BCD code) |                       |
| 1005  | 0x1D      | dE-35      | Retry monitor 5 Time (Hour/Minute)     | UINT  | R      | 00~23, 00~59 (BCD code) |                       |
| 1005  | 0x20      | dE-36      | Retry monitor 6 Factor                 | UINT  | R      | 1 ~ 255                 | 1                     |
| 2005  | 0x21      | dE-36      | Retry monitor 6 Output frequency (+/-) | UDINT | R      | -59000 ~ 59000          |                       |
| 1005  | 0x23      | dE-36      | Retry monitor 6 Output current         | UINT  | R      | 0 ~ 65535               |                       |
| 1005  | 0x24      | dE-36      | Retry monitor 6 DC-bus voltage         | UINT  | R      | 0 ~ 10000               |                       |
| 1005  | 0x25      | dE-36      | Retry monitor 6 Inverter status        | UINT  | R      | 0 ~ 8                   |                       |
| 1005  | 0x26      | dE-36      | Retry monitor 6 LAD status             | UINT  | R      | 0 ~ 5                   | 1                     |
| 1005  | 0x27      | dE-36      | Retry monitor 6 Control mode           | UINT  | R      | 0 ~ 11                  |                       |
| 1005  | 0x28      | dE-36      | Retry monitor 6 Limit status           | UINT  | R      | 0 ~ 6                   |                       |
| 1005  | 0x29      | dE-36      | Retry monitor 6 Specific status        | UINT  | R      |                         |                       |
| 2005  | 0x2B      | dE-36      | Retry monitor 6 Running time           | UDINT | R      | 0 ~ 1000000             | 1hr                   |
| 2005  | 0x2D      | dE-36      | Retry monitor 6 Power-on time          | UDINT | R      |                         |                       |
| 1005  | 0x2F      | dE-36      | Retry monitor 6 Time (Year/Month)      | UINT  | R      | 00~99, 01~12 (BCD code) | 1                     |
| 1005  | 0x30      | dE-36      | Retry monitor 6 Time (Day)             | UINT  | R      | 01~31, 00~06 (BCD code) |                       |
| 1005  | 0x31      | dE-36      | Retry monitor 6 Time (Hour/Minute)     | UINT  | R      | 00~23, 00~59 (BCD code) |                       |
| 1005  | 0x34      | dE-37      | Retry monitor 7 Factor                 | UINT  | R      | 1 ~ 255                 | 1                     |
| 2005  | 0x35      | dE-37      | Retry monitor 7 Output frequency (+/-) | UDINT | R      | -59000 ~ 59000          |                       |
| 1005  | 0x37      | dE-37      | Retry monitor 7 Output current         | UINT  | R      | 0 ~ 65535               |                       |
| 1005  | 0x38      | dE-37      | Retry monitor 7 DC-bus voltage         | UINT  | R      | 0 ~ 10000               |                       |
| 1005  | 0x39      | dE-37      | Retry monitor 7 Inverter status        | UINT  | R      | 0 ~ 8                   |                       |
| 1005  | 0x3A      | dE-37      | Retry monitor 7 LAD status             | UINT  | R      | 0 ~ 5                   | 1                     |
| 1005  | 0x3B      | dE-37      | Retry monitor 7 Control mode           | UINT  | R      | 0 ~ 11                  |                       |
| 1005  | 0x3C      | dE-37      | Retry monitor 7 Limit status           | UINT  | R      | 0 ~ 6                   |                       |
| 1005  | 0x3D      | dE-37      | Retry monitor 7 Specific status        | UINT  | R      |                         |                       |
| 2005  | 0x3F      | dE-37      | Retry monitor 7 Running time           | UDINT | R      | 0 ~ 1000000             | 1hr                   |
| 2005  | 0x41      | dE-37      | Retry monitor 7 Power-on time          | UDINT | R      |                         |                       |
| 1005  | 0x43      | dE-37      | Retry monitor 7 Time (Year/Month)      | UINT  | R      | 00~99, 01~12 (BCD code) | 1                     |
| 1005  | 0x44      | dE-37      | Retry monitor 7 Time (Day)             | UINT  | R      | 01~31, 00~06 (BCD code) |                       |
| 1005  | 0x45      | dE-37      | Retry monitor 7 Time (Hour/Minute)     | UINT  | R      | 00~23, 00~59 (BCD code) |                       |

| Index | Sub-index | Func. code | Function name                           | Type  | Access | Setting Items           | Data resolution units |
|-------|-----------|------------|---|-------|--------|-------------------------|-----------------------|
| 1005  | 0x48      | dE-38      | Retry monitor 8 Factor                  | UINT  | R      | 1 ~ 255                 | 1                     |
| 2005  | 0x49      | dE-38      | Retry monitor 8 Output frequency (+/-)  | UDINT | R      | -59000 ~ 59000          | 0.01Hz                |
| 1005  | 0x4B      | dE-38      | Retry monitor 8 Output current          | UINT  | R      | 0 ~ 65535               | 0.01A                 |
| 1005  | 0x4C      | dE-38      | Retry monitor 8 DC-bus voltage          | UINT  | R      | 0 ~ 10000               | 0.1Vdc                |
| 1005  | 0x4D      | dE-38      | Retry monitor 8 Inverter status         | UINT  | R      | 0 ~ 8                   | 1                     |
| 1005  | 0x4E      | dE-38      | Retry monitor 8 LAD status              | UINT  | R      | 0 ~ 5                   |                       |
| 1005  | 0x4F      | dE-38      | Retry monitor 8 Control mode            | UINT  | R      | 0 ~ 11                  |                       |
| 1005  | 0x50      | dE-38      | Retry monitor 8 Limit status            | UINT  | R      | 0 ~ 6                   |                       |
| 1005  | 0x51      | dE-38      | Retry monitor 8 Specific status         | UINT  | R      |                         |                       |
| 2005  | 0x53      | dE-38      | Retry monitor 8 Running time            | UDINT | R      | 0 ~ 1000000             | 1hr                   |
| 2005  | 0x55      | dE-38      | Retry monitor 8 Power-on time           | UDINT | R      |                         |                       |
| 1005  | 0x57      | dE-38      | Retry monitor 8 Time (Year/Month)       | UINT  | R      | 00~99, 01~12 (BCD code) | 1                     |
| 1005  | 0x58      | dE-38      | Retry monitor 8 Time (Day)              | UINT  | R      | 01~31, 00~06 (BCD code) |                       |
| 1005  | 0x59      | dE-38      | Retry monitor 8 Time (Hour/Minute)      | UINT  | R      | 00~23, 00~59 (BCD code) |                       |
| 1005  | 0x5C      | dE-39      | Retry monitor 9 Factor                  | UINT  | R      | 1 ~ 255                 | 1                     |
| 2005  | 0x5D      | dE-39      | Retry monitor 9 Output frequency (+/-)  | UDINT | R      | -59000 ~ 59000          |                       |
| 1005  | 0x5F      | dE-39      | Retry monitor 9 Output current          | UINT  | R      | 0 ~ 65535               |                       |
| 1005  | 0x60      | dE-39      | Retry monitor 9 DC-bus voltage          | UINT  | R      | 0 ~ 10000               |                       |
| 1005  | 0x61      | dE-39      | Retry monitor 9 Inverter status         | UINT  | R      | 0 ~ 8                   |                       |
| 1005  | 0x62      | dE-39      | Retry monitor 9 LAD status              | UINT  | R      | 0 ~ 5                   | 1                     |
| 1005  | 0x63      | dE-39      | Retry monitor 9 Control mode            | UINT  | R      | 0 ~ 11                  |                       |
| 1005  | 0x64      | dE-39      | Retry monitor 9 Limit status            | UINT  | R      | 0 ~ 6                   |                       |
| 1005  | 0x65      | dE-39      | Retry monitor 9 Specific status         | UINT  | R      |                         |                       |
| 2005  | 0x67      | dE-39      | Retry monitor 9 Running time            | UDINT | R      | 0 ~ 1000000             | 1hr                   |
| 2005  | 0x69      | dE-39      | Retry monitor 9 Power-on time           | UDINT | R      |                         |                       |
| 1005  | 0x6B      | dE-39      | Retry monitor 9 Time (Year/Month)       | UINT  | R      | 00~99, 01~12 (BCD code) | 1                     |
| 1005  | 0x6C      | dE-39      | Retry monitor 9 Time (Day)              | UINT  | R      | 01~31, 00~06 (BCD code) |                       |
| 1005  | 0x6D      | dE-39      | Retry monitor 9 Time (Hour/Minute)      | UINT  | R      | 00~23, 00~59 (BCD code) |                       |
| 1005  | 0x70      | dE-40      | Retry monitor 10 Factor                 | UINT  | R      | 1 ~ 255                 | 1                     |
| 2005  | 0x71      | dE-40      | Retry monitor 10 Output frequency (+/-) | UDINT | R      | -59000 ~ 59000          |                       |
| 1005  | 0x73      | dE-40      | Retry monitor 10 Output current         | UINT  | R      | 0 ~ 65535               |                       |
| 1005  | 0x74      | dE-40      | Retry monitor 10 DC-bus voltage         | UINT  | R      | 0 ~ 10000               |                       |
| 1005  | 0x75      | dE-40      | Retry monitor 10 Inverter status        | UINT  | R      | 0 ~ 8                   |                       |
| 1005  | 0x76      | dE-40      | Retry monitor 10 LAD status             | UINT  | R      | 0 ~ 5                   | 1                     |
| 1005  | 0x77      | dE-40      | Retry monitor 10 Control mode           | UINT  | R      | 0 ~ 11                  |                       |
| 1005  | 0x78      | dE-40      | Retry monitor 10 Limit status           | UINT  | R      | 0 ~ 6                   |                       |
| 1005  | 0x79      | dE-40      | Retry monitor 10 Specific status        | UINT  | R      |                         |                       |
| 2005  | 0x7B      | dE-40      | Retry monitor 10 Running time           | UDINT | R      | 0 ~ 1000000             | 1hr                   |
| 2005  | 0x7D      | dE-40      | Retry monitor 10 Power-on time          | UDINT | R      |                         |                       |
| 1005  | 0x7F      | dE-40      | Retry monitor 10 Time (Year/Month)      | UINT  | R      | 00~99, 01~12 (BCD code) | 1                     |
| 1005  | 0x80      | dE-40      | Retry monitor 10 Time (Day)             | UINT  | R      | 01~31, 00~06 (BCD code) |                       |
| 1005  | 0x81      | dE-40      | Retry monitor 10 Time (Hour/Minute)     | UINT  | R      | 00~23, 00~59 (BCD code) |                       |
| 1005  | 0xE7      | dE-50      | Warning monitor                         | UINT  | R      | 0 ~ 65535               |                       |



## 13.2.2 Code-F

| Index | Sub-index | Func. code | Function name                | type  | Access | Setting Items  | Data resolution units |
|-------|-----------|------------|------------------------------|-------|--------|--|-----------------------|
| 1043  | 0x50      | FA-01      | Main Speed reference monitor | UINT  | RW     | 0 ~ 59000  | 0.01Hz                |
| 2043  | 0x51      | FA-02      | Sub Speed reference monitor  | UDINT | RW     | -59000 ~ 59000 (monitor)<br>0 ~ 59000 (setting)                              |                       |
| 2043  | 0x59      | FA-10      | Acceleration time monitor    | UDINT | RW     | 0 ~ 360000   | 0.01s                 |
| 2043  | 0x5B      | FA-12      | Deceleration time monitor    | UDINT | RW     |  |                       |
| 1043  | 0x5E      | FA-15      | Torque reference monitor     | UINT  | RW     | -5000 ~ 5000   | 0.1%                  |
| 1043  | 0x5F      | FA-16      | Torque bias monitor          | UINT  | RW     |  |                       |
| 2043  | 0x63      | FA-20      | Position reference monitor   | UDINT | RW     | -268435455 ~ 268435455<br>High resolution mode :<br>-1073741823 ~ 1073741823 | 1                     |
| 2043  | 0x6D      | FA-30      | PID1 Set Value 1 monitor     | UDINT | RW     | -10000 ~ 10000   | Depends on AH-06      |
| 2043  | 0x6F      | FA-32      | PID1 Set Value 2 monitor     | UDINT | RW     |  |                       |
| 2043  | 0x71      | FA-34      | PID1 Set Value 3 monitor     | UDINT | RW     |  |                       |
| 2043  | 0x73      | FA-36      | PID2 Set Value monitor       | UDINT | RW     |  | Depends on AJ-06      |
| 2043  | 0x75      | FA-38      | PID3 Set Value monitor       | UDINT | RW     |  | Depends on AJ-26      |
| 2043  | 0x77      | FA-40      | PID4 Set Value monitor       | UDINT | RW     |  | Depends on AJ-46      |

## 13.2.3 Code-A

| Index | Sub-index | Func. code | Function name   | Type  | Access | Setting Items | Data resolution units |
|-------|-----------|------------|---|-------|--------|---------------|-----------------------|
| 1047  | 0x40      | AA101      | Main speed input source selection, 1st-motor                | UINT  | RW     | 1 ~ 16        | 1                     |
| 1047  | 0x41      | AA102      | Sub frequency input source selection, 1st-motor             | UINT  | RW     | 0 ~ 16        |                       |
| 1047  | 0x43      | AA104      | Sub speed setting, 1st-motor                                | UINT  | RW     | 0 ~ 59000     | 0.01Hz                |
| 1047  | 0x44      | AA105      | Calculation symbol selection for speed reference, 1st-motor | UINT  | RW     | 0 ~ 3         | 1                     |
| 2047  | 0x45      | AA106      | Add frequency setting, 1st-motor                            | UDINT | RW     | -59000~59000  | 0.01Hz                |
| 1047  | 0x4A      | AA111      | Run-command input source selection, 1st-motor               | UINT  | RW     | 0 ~ 6         | 1                     |
| 1047  | 0x4B      | AA-12      | RUN-key Direction of Keypad, 1st-motor                      | UINT  | RW     | 0 ~ 1         |                       |
| 1047  | 0x4C      | AA-13      | STOP-key enable at RUN-command from terminal, 1st-motor     | UINT  | RW     | 0 ~ 2         |                       |
| 1047  | 0x4D      | AA114      | RUN-direction restriction, 1st-motor                        | UINT  | RW     |               |                       |
| 1047  | 0x4E      | AA115      | STOP mode selection, 1st-motor                              | UINT  | RW     | 0 ~ 1         |                       |
| 1047  | 0x54      | AA121      | Control mode selection, 1st-motor                           | UINT  | RW     | 0 ~ 12        |                       |
| 1047  | 0x56      | AA123      | Vector control mode selection, 1st-motor                    | UINT  | RW     | 0 ~ 3         |                       |
| 1086  | 0x9E      | AA201      | Main speed input source selection, 2nd-motor                | UINT  | RW     | 1 ~ 16        |                       |
| 1086  | 0x9F      | AA202      | Sub speed input source selection, 2nd-motor                 | UINT  | RW     | 0 ~ 16        |                       |
| 1086  | 0xA1      | AA204      | Sub speed setting, 2nd-motor                                | UINT  | RW     | 0 ~ 59000     | 0.01Hz                |
| 1086  | 0xA2      | AA205      | Calculation symbol selection for speed reference, 2nd-motor | UINT  | RW     | 0 ~ 3         | 1                     |
| 2086  | 0xA3      | AA206      | Add frequency setting, 2nd-motor                            | UDINT | RW     | -59000~59000  | 0.01Hz                |
| 1086  | 0xA8      | AA211      | Run-command input source selection, 2nd-motor               | UINT  | RW     | 0 ~ 6         | 1                     |
| 1086  | 0xAB      | AA214      | RUN-direction restriction,1st-motor                         | UINT  | RW     | 0 ~ 2         |                       |
| 1086  | 0xAC      | AA215      | STOP mode selection, 1st-motor                              | UINT  | RW     | 0 ~ 1         |                       |
| 1086  | 0xB2      | AA221      | Control mode selection, 2nd-motor                           | UINT  | RW     | 0 ~ 11        |                       |
| 1086  | 0xB4      | AA223      | Vector control mode selection, 2nd-motor                    | UINT  | RW     | 0 ~ 3         |                       |
| 1047  | 0xA4      | Ab-01      | Frequency conversion gain                                   | UINT  | RW     | 1 ~ 10000     | 0.01                  |
| 1047  | 0xA6      | Ab-03      | Multispeed operation selection                              | UINT  | RW     | 0 ~ 1         | 1                     |
| 1047  | 0xAD      | Ab110      | Multispeed-0 setting, 1st-motor                             | UINT  | RW     | 0 ~ 59000     | 0.01Hz                |
| 1047  | 0xAE      | Ab-11      | Multispeed-1 setting  | UINT  | RW     |               |                       |
| 1047  | 0xAF      | Ab-12      | Multispeed-2 setting  | UINT  | RW     |               |                       |
| 1047  | 0xB0      | Ab-13      | Multispeed-3 setting  | UINT  | RW     |               |                       |
| 1047  | 0xB1      | Ab-14      | Multispeed-4 setting  | UINT  | RW     |               |                       |
| 1047  | 0xB2      | Ab-15      | Multispeed-5 setting  | UINT  | RW     |               |                       |

| Index | Sub-index | Func. code | Function name   | Type  | Access | Setting Items | Data resolution units |       |   |
|-------|-----------|------------|---|-------|--------|---------------|-----------------------|-------|---|
| 1047  | 0xB3      | Ab-16      | Multispeed-6 setting  | UINT  | RW     | 0 ~ 59000     | 0.01Hz                |       |   |
| 1047  | 0xB4      | Ab-17      | Multispeed-7 setting  | UINT  | RW     |               |                       |       |   |
| 1047  | 0xB5      | Ab-18      | Multispeed-8 setting  | UINT  | RW     |               |                       |       |   |
| 1047  | 0xB6      | Ab-19      | Multispeed-9 setting  | UINT  | RW     |               |                       |       |   |
| 1047  | 0xB7      | Ab-20      | Multispeed-10 setting                                       | UINT  | RW     |               |                       |       |   |
| 1047  | 0xB8      | Ab-21      | Multispeed-11 setting                                       | UINT  | RW     |               |                       |       |   |
| 1047  | 0xB9      | Ab-22      | Multispeed-12 setting                                       | UINT  | RW     |               |                       |       |   |
| 1047  | 0xBA      | Ab-23      | Multispeed-13 setting                                       | UINT  | RW     |               |                       |       |   |
| 1047  | 0xBB      | Ab-24      | Multispeed-14 setting                                       | UINT  | RW     |               |                       |       |   |
| 1047  | 0xBC      | Ab-25      | Multispeed-15 setting                                       | UINT  | RW     |               |                       |       |   |
| 1087  | 0xD       | Ab210      | Multispeed-0 setting, 2nd-motor                             | UINT  | RW     |               |                       |       |   |
| 1048  | 0xA       | AC-01      | Acceleration/ Deceleration time input selection             | UINT  | RW     |               |                       | 0 ~ 4 | 1 |
| 1048  | 0xB       | AC-02      | Acceleration/ Deceleration selection                        | UINT  | RW     |               |                       | 0 ~ 1 |   |
| 1048  | 0xC       | AC-03      | Acceleration curve selection                                | UINT  | RW     |               |                       | 0 ~ 4 |   |
| 1048  | 0xD       | AC-04      | Deceleration curve selection                                | UINT  | RW     |               |                       |       |   |
| 1048  | 0xE       | AC-05      | Acceleration curve constant setting                         | UINT  | RW     | 1 ~ 10        |                       |       |   |
| 1048  | 0xF       | AC-06      | Deceleration curve constant setting                         | UINT  | RW     |               |                       |       |   |
| 1048  | 0x11      | AC-08      | EL-S-curve ratio start of acceleration                      | UINT  | RW     | 0 ~ 100       | 1%                    |       |   |
| 1048  | 0x12      | AC-09      | EL-S-curve ratio end of acceleration                        | UINT  | RW     |               |                       |       |   |
| 1048  | 0x13      | AC-10      | EL-S-curve ratio start of deceleration                      | UINT  | RW     |               |                       |       |   |
| 1048  | 0x14      | AC-11      | EL-S-curve ratio end of deceleration                        | UINT  | RW     |               |                       |       |   |
| 1048  | 0x18      | AC115      | Select method to switch to Accel2/Decel2 Profile, 1st-motor | UINT  | RW     | 0 ~ 2         | 1                     |       |   |
| 1048  | 0x19      | AC116      | Accel1 to Accel2 Frequency transition point,1st-motor       | UINT  | RW     | 0 ~ 59000     | 0.01Hz                |       |   |
| 1048  | 0x1A      | AC117      | Decel1 to Decel2 Frequency transition point, 1st-motor      | UINT  | RW     |               |                       |       |   |
| 2048  | 0x1D      | AC120      | Acceleration time setting 1, 1st-motor                      | UDINT | RW     | 0 ~ 360000    | 0.01s                 |       |   |
| 2048  | 0x1F      | AC122      | Deceleration time setting 1, 1st-motor                      | UDINT | RW     |               |                       |       |   |
| 2048  | 0x21      | AC124      | Acceleration time setting 2, 1st-motor                      | UDINT | RW     |               |                       |       |   |
| 2048  | 0x23      | AC126      | Deceleration time setting 2, 1st-motor                      | UDINT | RW     |               |                       |       |   |
| 2048  | 0x27      | AC-30      | Acceleration time setting for Multispeed-1                  | UDINT | RW     |               |                       |       |   |
| 2048  | 0x29      | AC-32      | Deceleration time setting for Multispeed-1                  | UDINT | RW     |               |                       |       |   |
| 2048  | 0x2B      | AC-34      | Acceleration time setting for Multispeed-2                  | UDINT | RW     |               |                       |       |   |
| 2048  | 0x2D      | AC-36      | Deceleration time setting for Multispeed-2                  | UDINT | RW     |               |                       |       |   |
| 2048  | 0x2F      | AC-38      | Acceleration time setting for Multispeed-3                  | UDINT | RW     |               |                       |       |   |
| 2048  | 0x31      | AC-40      | Deceleration time setting for Multispeed-3                  | UDINT | RW     |               |                       |       |   |
| 2048  | 0x33      | AC-42      | Acceleration time setting for Multispeed-4                  | UDINT | RW     |               |                       |       |   |
| 2048  | 0x35      | AC-44      | Deceleration time setting for Multispeed-4                  | UDINT | RW     |               |                       |       |   |
| 2048  | 0x37      | AC-46      | Acceleration time setting for Multispeed-5                  | UDINT | RW     |               |                       |       |   |
| 2048  | 0x39      | AC-48      | Deceleration time setting for Multispeed-5                  | UDINT | RW     |               |                       |       |   |
| 2048  | 0x3B      | AC-50      | Acceleration time setting for Multispeed-6                  | UDINT | RW     |               |                       |       |   |
| 2048  | 0x3D      | AC-52      | Deceleration time setting for Multispeed-6                  | UDINT | RW     |               |                       |       |   |
| 2048  | 0x3F      | AC-54      | Acceleration time setting for Multispeed-7                  | UDINT | RW     |               |                       |       |   |
| 2048  | 0x41      | AC-56      | Deceleration time setting for Multispeed-7                  | UDINT | RW     |               |                       |       |   |
| 2048  | 0x43      | AC-58      | Acceleration time setting for Multispeed-8                  | UDINT | RW     |               |                       |       |   |
| 2048  | 0x45      | AC-60      | Deceleration time setting for Multispeed-8                  | UDINT | RW     |               |                       |       |   |
| 2048  | 0x47      | AC-62      | Acceleration time setting for Multispeed-9                  | UDINT | RW     |               |                       |       |   |
| 2048  | 0x49      | AC-64      | Deceleration time setting for Multispeed-9                  | UDINT | RW     |               |                       |       |   |
| 2048  | 0x4B      | AC-66      | Acceleration time setting for Multispeed-10                 | UDINT | RW     |               |                       |       |   |
| 2048  | 0x4D      | AC-68      | Deceleration time setting for Multispeed-10                 | UDINT | RW     |               |                       |       |   |
| 2048  | 0x4F      | AC-70      | Acceleration time setting for Multispeed-11                 | UDINT | RW     |               |                       |       |   |
| 2048  | 0x51      | AC-72      | Deceleration time setting for Multispeed-11                 | UDINT | RW     |               |                       |       |   |
| 2048  | 0x53      | AC-74      | Acceleration time setting for Multispeed-12                 | UDINT | RW     |               |                       |       |   |
| 2048  | 0x55      | AC-76      | Deceleration time setting for Multispeed-12                 | UDINT | RW     |               |                       |       |   |
| 2048  | 0x57      | AC-78      | Acceleration time setting for Multispeed-13                 | UDINT | RW     |               |                       |       |   |
| 2048  | 0x59      | AC-80      | Deceleration time setting for Multispeed-13                 | UDINT | RW     |               |                       |       |   |
| 2048  | 0x5B      | AC-82      | Acceleration time setting for Multispeed-14                 | UDINT | RW     |               |                       |       |   |
| 2048  | 0x5D      | AC-84      | Deceleration time setting for Multispeed-14                 | UDINT | RW     |               |                       |       |   |

| Index | Sub-index | Func. code | Function name   | Type  | Access | Setting Items   | Data resolution units |
|-------|-----------|------------|---|-------|--------|---|-----------------------|
| 2048  | 0x5F      | AC-86      | Acceleration time setting for Multispeed-15                 | UDINT | RW     | 0 ~ 360000  | 0.01s                 |
| 2048  | 0x61      | AC-88      | Deceleration time setting for Multispeed-15                 | UDINT | RW     |   |                       |
| 1087  | 0x76      | AC215      | Select method to switch to Accel2/Decel2 profile, 2nd-motor | UINT  | RW     | 0 ~ 2   | 1                     |
| 1087  | 0x77      | AC216      | Accel1 to Accel2 Frequency transition point, 2nd-motor      | UINT  | RW     | 0 ~ 59000   | 0.01Hz                |
| 1087  | 0x78      | AC217      | Decel1 to Decel2 Frequency transition point, 2nd-motor      | UINT  | RW     |   |                       |
| 2087  | 0x7B      | AC220      | Acceleration time setting 1, 2nd-motor                      | UDINT | RW     | 0 ~ 360000  | 0.01s                 |
| 2087  | 0x7D      | AC222      | Deceleration time setting 1, 2nd-motor                      | UDINT | RW     |   |                       |
| 2087  | 0x7F      | AC224      | Acceleration time setting 2, 2nd-motor                      | UDINT | RW     |   |                       |
| 2087  | 0x81      | AC226      | Deceleration time setting 2, 2nd-motor                      | UDINT | RW     |   |                       |
| 1048  | 0x6E      | Ad-01      | Torque reference input source selection                     | UINT  | RW     | 1 ~ 15  | 1                     |
| 1048  | 0x6F      | Ad-02      | Torque reference value setting                              | UINT  | RW     | -5000 ~ 5000  | 0.1%                  |
| 1048  | 0x70      | Ad-03      | Polarity selection for torque reference                     | UINT  | RW     | 0 ~ 1   | 1                     |
| 1048  | 0x71      | Ad-04      | Switching time of Speed control to Torque control           | UINT  | RW     | 0 ~ 1000  | 1ms                   |
| 1048  | 0x78      | Ad-11      | Torque bias input source selection                          | UINT  | RW     | 0 ~ 15  | 1                     |
| 1048  | 0x79      | Ad-12      | Torque bias value setting                                   | UINT  | RW     | -5000 ~ 5000  | 0.1%                  |
| 1048  | 0x7A      | Ad-13      | Polarity selection for torque bias                          | UINT  | RW     | 0 ~ 1   | 1                     |
| 1048  | 0x7B      | Ad-14      | Term.[TBS] sel.   | UINT  | RW     |   |                       |
| 1048  | 0x95      | Ad-40      | Input selection for speed limit at torque control           | UINT  | RW     | 1 ~ 13  | 0.01Hz                |
| 1048  | 0x96      | Ad-41      | Speed limit at torque control (at Forward rotation)         | UINT  | RW     | 0 ~ 59000   |                       |
| 1048  | 0x97      | Ad-42      | Speed limit at torque control (at Reverse rotation)         | UINT  | RW     |   |                       |
| 1048  | 0xD2      | AE-01      | Electronic gear setting point selection                     | UINT  | RW     | 0 ~ 1   | 1                     |
| 1048  | 0xD3      | AE-02      | Electronic gear ratio numerator                             | UINT  | RW     | 1 ~ 10000   |                       |
| 1048  | 0xD4      | AE-03      | Electronic gear ratio denominator                           | UINT  | RW     |   |                       |
| 1048  | 0xD5      | AE-04      | Positioning complete range setting                          | UINT  | RW     | 0 ~ 10000   | 1pls                  |
| 1048  | 0xD6      | AE-05      | Positioning complete delay time setting                     | UINT  | RW     | 0 ~ 1000  | 0.01s                 |
| 1048  | 0xD7      | AE-06      | Position feed-forward gain setting                          | UINT  | RW     | 0 ~ 65535   | 0.01                  |
| 1048  | 0xD8      | AE-07      | Position loop gain setting                                  | UINT  | RW     | 0 ~ 10000   |                       |
| 1048  | 0xD9      | AE-08      | Position bias setting                                       | UINT  | RW     | -2048 ~ 2048  | 1pls                  |
| 1048  | 0xDB      | AE-10      | Stop position selection of Home search function             | UINT  | RW     | 0 ~ 3   | 1                     |
| 1048  | 0xDC      | AE-11      | Stop position of Home search function                       | UINT  | RW     | 0 ~ 4095  |                       |
| 1048  | 0xDD      | AE-12      | Speed reference of Home search function                     | UINT  | RW     | 0 ~ 12000   | 0.01Hz                |
| 1048  | 0xDE      | AE-13      | Direction of Home search function                           | UINT  | RW     | 0 ~ 1   | 1                     |
| 2048  | 0xE5      | AE-20      | Position reference 0 setting                                | UDINT | RW     | -268435455~<br>268435455<br>High resolution<br>mode :<br>-1073741823~<br>1073741823 | 1pls                  |
| 2048  | 0xE7      | AE-22      | Position reference 1 setting                                | UDINT | RW     |   |                       |
| 2048  | 0xE9      | AE-24      | Position reference 2 setting                                | UDINT | RW     |   |                       |
| 2048  | 0xEB      | AE-26      | Position reference 3 setting                                | UDINT | RW     |   |                       |
| 2048  | 0xED      | AE-28      | Position reference 4 setting                                | UDINT | RW     |   |                       |
| 2048  | 0xEF      | AE-30      | Position reference 5 setting                                | UDINT | RW     |   |                       |
| 2048  | 0xF1      | AE-32      | Position reference 6 setting                                | UDINT | RW     |   |                       |
| 2048  | 0xF3      | AE-34      | Position reference 7 setting                                | UDINT | RW     |   |                       |
| 2048  | 0xF5      | AE-36      | Position reference 8 setting                                | UDINT | RW     |   |                       |
| 2048  | 0xF7      | AE-38      | Position reference 9 setting                                | UDINT | RW     |   |                       |
| 2048  | 0xF9      | AE-40      | Position reference 10 setting                               | UDINT | RW     |   |                       |
| 2048  | 0xFB      | AE-42      | Position reference 11 setting                               | UDINT | RW     |   |                       |
| 2048  | 0xFD      | AE-44      | Position reference 12 setting                               | UDINT | RW     |   |                       |
| 2049  | 0x1       | AE-46      | Position reference 13 setting                               | UDINT | RW     |   |                       |
| 2049  | 0x3       | AE-48      | Position reference 14 setting                               | UDINT | RW     |   |                       |
| 2049  | 0x5       | AE-50      | Position reference 15 setting                               | UDINT | RW     |   |                       |
| 2049  | 0x7       | AE-52      | Position control range setting(forward)                     | UDINT | RW     | 0~268435455<br>High resolution<br>mode :<br>0~1073741823                            |                       |

| Index | Sub-index | Func. code | Function name   | Type  | Access | Setting Items  | Data resolution units |
|-------|-----------|------------|---|-------|--------|--|-----------------------|
| 2049  | 0x9       | AE-54      | Position control range setting(reverse)               | UDINT | RW     | -268435455~0<br>High resolution mode :<br>-1073741823~0                  | 1pls                  |
| 1049  | 0xB       | AE-56      | Position control mode selection                       | UINT  | RW     | 0 ~ 1  | 1                     |
| 1049  | 0xF       | AE-60      | Teach-in function target selection                    | UINT  | RW     | 0 ~ 15   | 1                     |
| 1049  | 0x10      | AE-61      | Current position saving at power-off                  | UINT  | RW     | 0 ~ 1  |                       |
| 2049  | 0x11      | AE-62      | Preset position data                                  | UDINT | RW     | -268435455~268435455<br>High resolution mode :<br>-1073741823~1073741823 | 1pls                  |
| 1049  | 0x13      | AE-64      | Deceleration stop distance calculation Gain           | UINT  | RW     | 5000 ~ 20000   | 0.01%                 |
| 1049  | 0x14      | AE-65      | Deceleration stop distance calculation Bias           | UINT  | RW     | 0 ~ 65535  |                       |
| 1049  | 0x15      | AE-66      | Speed Limit in APR control                            | UINT  | RW     | 0 ~ 10000  |                       |
| 1049  | 0x16      | AE-67      | APR start speed                                       | UINT  | RW     |  |                       |
| 1049  | 0x19      | AE-70      | Homing function selection                             | UINT  | RW     | 0 ~ 2  | 1                     |
| 1049  | 0x1A      | AE-71      | Direction of Homing function                          | UINT  | RW     | 0 ~ 1  |                       |
| 1049  | 0x1B      | AE-72      | Low-speed of homing function                          | UINT  | RW     | 0 ~ 1000   | 0.01Hz                |
| 1049  | 0x1C      | AE-73      | High-Speed of homing function                         | UINT  | RW     | 0 ~ 59000  |                       |
| 1049  | 0x38      | AF101      | DC braking selection, 1st-motor                       | UINT  | RW     | 0 ~ 2  | 1                     |
| 1049  | 0x39      | AF102      | Braking type selection, 1st-motor                     | UINT  | RW     |  |                       |
| 1049  | 0x3A      | AF103      | DC braking frequency, 1st-motor                       | UINT  | RW     | 0 ~ 59000  | 0.01Hz                |
| 1049  | 0x3B      | AF104      | DC braking delay time, 1st-motor                      | UINT  | RW     | 0 ~ 500  | 0.01s                 |
| 1049  | 0x3C      | AF105      | DC braking force setting, 1st-motor                   | UINT  | RW     | 0 ~ 100  | 1%                    |
| 1049  | 0x3D      | AF106      | DC braking active time at stop, 1st-motor             | UINT  | RW     | 0 ~ 6000   | 0.01s                 |
| 1049  | 0x3E      | AF107      | DC braking operation method selection, 1st-motor      | UINT  | RW     | 0 ~ 1  | 1                     |
| 1049  | 0x3F      | AF108      | DC braking force at start, 1st-motor                  | UINT  | RW     | 0 ~ 100  | 1%                    |
| 1049  | 0x40      | AF109      | DC braking active time at start, 1st-motor            | UINT  | RW     | 0 ~ 6000   | 0.01s                 |
| 1049  | 0x4B      | AF120      | Contactora Control Enable,1st-motor                   | UINT  | RW     | 0 ~ 2  | 1                     |
| 1049  | 0x4C      | AF121      | Run delay time, 1st-motor                             | UINT  | RW     | 0 ~ 200  | 0.01s                 |
| 1049  | 0x4D      | AF122      | Contactora off delay time, 1st-motor                  | UINT  | RW     |  |                       |
| 1049  | 0x4E      | AF123      | Contactora answer back check time, 1st-motor          | UINT  | RW     |  |                       |
| 1049  | 0x55      | AF130      | Brake Control Enable, 1st-motor                       | UINT  | RW     | 0 ~ 3  | 1                     |
| 1049  | 0x56      | AF131      | Brake Wait Time for Release, 1st-motor (Forward)      | UINT  | RW     | 0 ~ 500  | 0.01s                 |
| 1049  | 0x57      | AF132      | Brake Wait Time for Accel. , 1st-motor (Forward)      | UINT  | RW     |  |                       |
| 1049  | 0x58      | AF133      | Brake Wait Time for Stopping, 1st-motor (Forward)     | UINT  | RW     |  |                       |
| 1049  | 0x59      | AF134      | Brake Wait Time for Confirmation, 1st-motor (Forward) | UINT  | RW     |  |                       |
| 1049  | 0x5A      | AF135      | Brake Release Frequency Setting, 1st-motor (Forward)  | UINT  | RW     | 0 ~ 59000  | 0.01Hz                |
| 1049  | 0x5B      | AF136      | Brake Release Current Setting, 1st-motor (Forward)    | UINT  | RW     | (0~2.00)×<br>Inverter rated<br>current                                   | 0.1A                  |
| 1049  | 0x5C      | AF137      | Braking Frequency, 1st-motor (Forward)                | UINT  | RW     | 0 ~ 59000  | 0.01Hz                |
| 1049  | 0x5D      | AF138      | Brake Wait Time for Release, 1st-motor (Reverse)      | UINT  | RW     | 0 ~ 500  | 0.01s                 |
| 1049  | 0x5E      | AF139      | Brake Wait Time for Accel. , 1st-motor (Reverse)      | UINT  | RW     |  |                       |
| 1049  | 0x5F      | AF140      | Brake Wait Time for Stopping, 1st-motor (Reverse)     | UINT  | RW     |  |                       |
| 1049  | 0x60      | AF141      | Brake Wait Time for Confirmation, 1st-motor (Reverse) | UINT  | RW     |  |                       |
| 1049  | 0x61      | AF142      | Brake Release Frequency Setting, 1st-motor (Reverse)  | UINT  | RW     | 0 ~ 59000  | 0.01Hz                |
| 1049  | 0x62      | AF143      | Brake Release Current Setting, 1st-motor (Reverse)    | UINT  | RW     | (0~2.00)×<br>Inverter rated<br>current                                   | 0.1A                  |
| 1049  | 0x63      | AF144      | Braking Frequency, 1st-motor (Reverse)                | UINT  | RW     | 0 ~ 59000  | 0.01Hz                |
| 1049  | 0x69      | AF150      | Brake open delay time, 1st-motor                      | UINT  | RW     | 0 ~ 200  | 0.01s                 |
| 1049  | 0x6A      | AF151      | Brake close delay time, 1st-motor                     | UINT  | RW     |  |                       |
| 1049  | 0x6B      | AF152      | Brake answer back check time,1st-motor                | UINT  | RW     | 0 ~ 500  |                       |
| 1049  | 0x6C      | AF153      | Servo lock/ DC injection time at start,1st-motor      | UINT  | RW     | 0 ~ 1000   |                       |
| 1049  | 0x6D      | AF154      | Servo lock/ DC injection time at stop,1st-motor       | UINT  | RW     |  |                       |
| 1088  | 0x96      | AF201      | DC braking selection, 2nd-motor                       | UINT  | RW     | 0 ~ 2  |                       |

| Index | Sub-index | Func. code | Function name  | Type | Access | Setting Items                       | Data resolution units |
|-------|-----------|------------|--|------|--------|-------------------------------------|-----------------------|
| 1088  | 0x97      | AF202      | Braking type selection, 2nd-motor                          | UINT | RW     | 0 ~ 2                               | 1                     |
| 1088  | 0x98      | AF203      | DC braking frequency, 1st-motor                            | UINT | RW     | 0 ~ 59000                           | 0.01Hz                |
| 1088  | 0x99      | AF204      | DC braking delay time, 2nd-motor                           | UINT | RW     | 0 ~ 500                             | 0.01s                 |
| 1088  | 0x9A      | AF205      | DC braking force setting, 2nd-motor                        | UINT | RW     | 0 ~ 100                             | 1%                    |
| 1088  | 0x9B      | AF206      | DC braking active time at stop, 2nd-motor                  | UINT | RW     | 0 ~ 6000                            | 0.01s                 |
| 1088  | 0x9C      | AF207      | DC braking operation method selection, 2nd-motor           | UINT | RW     | 0 ~ 1                               | 1                     |
| 1088  | 0x9D      | AF208      | DC braking force at start, 2nd-motor                       | UINT | RW     | 0 ~ 100                             | 1%                    |
| 1088  | 0x9E      | AF209      | DC braking active time at start, 2nd-motor                 | UINT | RW     | 0 ~ 6000                            | 0.01s                 |
| 1088  | 0xA9      | AF220      | Contactorm Control Enable, 2nd-motor                       | UINT | RW     | 0 ~ 2                               | 1                     |
| 1088  | 0xAA      | AF221      | Run delay time, 2nd-motor                                  | UINT | RW     | 0 ~ 200                             | 0.01s                 |
| 1088  | 0xAB      | AF222      | Contactorm off delay time, 2nd-motor                       | UINT | RW     |                                     |                       |
| 1088  | 0xAC      | AF223      | Contactorm answer back check time, 2nd-motor               | UINT | RW     |                                     |                       |
| 1088  | 0xB3      | AF230      | Brake Control Enable, 2nd-motor                            | UINT | RW     | 0 ~ 3                               | 1                     |
| 1088  | 0xB4      | AF231      | Brake Wait Time for Release, 2nd-motor (Forward side)      | UINT | RW     | 0 ~ 500                             | 0.01s                 |
| 1088  | 0xB5      | AF232      | Brake Wait Time for Accel. , 2nd-motor (Forward side)      | UINT | RW     |                                     |                       |
| 1088  | 0xB6      | AF233      | Brake Wait Time for Stopping, 2nd-motor (Forward side)     | UINT | RW     |                                     |                       |
| 1088  | 0xB7      | AF234      | Brake Wait Time for Confirmation, 2nd-motor (Forward side) | UINT | RW     |                                     |                       |
| 1088  | 0xB8      | AF235      | Brake Release Frequency Setting, 2nd-motor (Forward side)  | UINT | RW     | 0 ~ 59000                           | 0.01Hz                |
| 1088  | 0xB9      | AF236      | Brake Release Current Setting, 2nd-motor (Forward side)    | UINT | RW     | (0~2.00)×<br>Inverter rated current | 0.1A                  |
| 1088  | 0xBA      | AF237      | Braking Frequency, 2nd-motor (Forward side)                | UINT | RW     | 0 ~ 59000                           | 0.01Hz                |
| 1088  | 0xBB      | AF238      | Brake Wait Time for Release, 2nd-motor (Reverse side)      | UINT | RW     | 0 ~ 500                             | 0.01s                 |
| 1088  | 0xBC      | AF239      | Brake Wait Time for Accel. , 2nd-motor (Reverse side)      | UINT | RW     |                                     |                       |
| 1088  | 0xBD      | AF240      | Brake Wait Time for Stopping, 2nd-motor (Reverse side)     | UINT | RW     |                                     |                       |
| 1088  | 0xBE      | AF241      | Brake Wait Time for Confirmation, 2nd-motor (Reverse side) | UINT | RW     |                                     |                       |
| 1088  | 0xBF      | AF242      | Brake Release Frequency Setting, 2nd-motor (Reverse side)  | UINT | RW     | 0 ~ 59000                           | 0.01Hz                |
| 1088  | 0xC0      | AF243      | Brake Release Current Setting, 2nd-motor (Reverse side)    | UINT | RW     | (0~2.00)×<br>Inverter rated current | 0.1A                  |
| 1088  | 0xC1      | AF244      | Braking Frequency, 2nd-motor (Reverse side)                | UINT | RW     | 0 ~ 59000                           | 0.01Hz                |
| 1088  | 0xC7      | AF250      | Brake open delay time, 2nd-motor                           | UINT | RW     | 0 ~ 200                             | 0.01s                 |
| 1088  | 0xC8      | AF251      | Brake close delay time, 2nd-motor                          | UINT | RW     |                                     |                       |
| 1088  | 0xC9      | AF252      | Brake answer back check time, 2nd-motor                    | UINT | RW     |                                     |                       |
| 1088  | 0xCA      | AF253      | Servo lock/ DC injection time at start, 2nd-motor          | UINT | RW     | 0 ~ 1000                            | 0.01s                 |
| 1088  | 0xCB      | AF254      | Servo lock/ DC injection time at stop, 2nd-motor           | UINT | RW     |                                     |                       |
| 1049  | 0x9C      | AG101      | Jump frequency 1, 1st-motor                                | UINT | RW     | 0 ~ 59000                           | 0.01Hz                |
| 1049  | 0x9D      | AG102      | Jump frequency width 1, 1st-motor                          | UINT | RW     | 0 ~ 1000                            |                       |
| 1049  | 0x9E      | AG103      | Jump frequency 2, 1st-motor                                | UINT | RW     | 0 ~ 59000                           |                       |
| 1049  | 0x9F      | AG104      | Jump frequency width 2, 1st-motor                          | UINT | RW     | 0 ~ 1000                            |                       |
| 1049  | 0xA0      | AG105      | Jump frequency 3, 1st-motor                                | UINT | RW     | 0 ~ 59000                           |                       |
| 1049  | 0xA1      | AG106      | Jump frequency width 3, 1st-motor                          | UINT | RW     | 0 ~ 1000                            |                       |
| 1049  | 0xA5      | AG110      | Acceleration stop frequency setting, 1st-motor             | UINT | RW     | 0 ~ 59000                           | 0.1s                  |
| 1049  | 0xA6      | AG111      | Acceleration stop time setting, 1st-motor                  | UINT | RW     | 0 ~ 600                             |                       |
| 1049  | 0xA7      | AG112      | Deceleration stop frequency setting, 1st-motor             | UINT | RW     | 0 ~ 59000                           | 0.01Hz                |
| 1049  | 0xA8      | AG113      | Deceleration stop time setting, 1st-motor                  | UINT | RW     | 0 ~ 600                             | 0.1s                  |
| 1049  | 0xAF      | AG-20      | Jogging frequency  | UINT | RW     | 0 ~ 1000                            | 0.01Hz                |
| 1049  | 0xB0      | AG-21      | Jogging stop mode selection                                | UINT | RW     | 0 ~ 5                               | 1                     |
| 1088  | 0xFA      | AG201      | Jump frequency 1, 2nd-motor                                | UINT | RW     | 0 ~ 59000                           | 0.01Hz                |
| 1088  | 0xFB      | AG202      | Jump frequency width 1, 2nd-motor                          | UINT | RW     | 0 ~ 1000                            |                       |
| 1088  | 0xFC      | AG203      | Jump frequency 2, 2nd-motor                                | UINT | RW     | 0 ~ 59000                           |                       |

| Index | Sub-index | Func. code | Function name   | Type  | Access | Setting Items | Data resolution units |
|-------|-----------|------------|---|-------|--------|---------------|-----------------------|
| 1088  | 0xFD      | AG204      | Jump frequency width 2, 2nd-motor                     | UINT  | RW     | 0 ~ 1000      | 0.01Hz                |
| 1088  | 0xFE      | AG205      | Jump frequency 3, 2nd-motor                           | UINT  | RW     | 0 ~ 59000     |                       |
| 1089  | 0x1       | AG206      | Jump frequency width 3, 2nd-motor                     | UINT  | RW     | 0 ~ 1000      |                       |
| 1089  | 0x5       | AG210      | Acceleration stop frequency setting, 2nd-motor        | UINT  | RW     | 0 ~ 59000     |                       |
| 1089  | 0x6       | AG211      | Acceleration stop time setting, 2nd-motor             | UINT  | RW     | 0 ~ 600       | 0.1s                  |
| 1089  | 0x7       | AG212      | Deceleration stop frequency setting, 2nd-motor        | UINT  | RW     | 0 ~ 59000     | 0.01Hz                |
| 1089  | 0x8       | AG213      | Deceleration stop time setting, 2nd-motor             | UINT  | RW     | 0 ~ 600       | 0.1s                  |
| 1050  | 0x2       | AH-01      | PID1 enable   | UINT  | RW     | 0 ~ 2         | 1                     |
| 1050  | 0x3       | AH-02      | PID1 deviation inverse                                | UINT  | RW     | 0 ~ 1         |                       |
| 1050  | 0x4       | AH-03      | Unit selection for PID1                               | UINT  | RW     | 0 ~ 58        |                       |
| 1050  | 0x5       | AH-04      | PID1 scale ( 0%) Adj.                                 | UINT  | RW     | -10000~10000  |                       |
| 1050  | 0x6       | AH-05      | PID1 scale (100%) Adj.                                | UINT  | RW     |               |                       |
| 1050  | 0x7       | AH-06      | PID1 scale (point)                                    | UINT  | RW     | 0 ~ 4         |                       |
| 1050  | 0x8       | AH-07      | Input source selection of Set-point for PID1          | UINT  | RW     | 0 ~ 13        |                       |
| 2050  | 0xB       | AH-10      | Set-point-1 setting for PID1                          | UDINT | RW     | -10000 -10000 |                       |
| 2050  | 0xD       | AH-12      | PID1 Multi stage set-point 1 setting                  | UDINT | RW     |               |                       |
| 2050  | 0xF       | AH-14      | PID1 Multi stage set-point 2 setting                  | UDINT | RW     |               |                       |
| 2050  | 0x11      | AH-16      | PID1 Multi stage set-point 3 setting                  | UDINT | RW     |               |                       |
| 2050  | 0x13      | AH-18      | PID1 Multi stage set-point 4 setting                  | UDINT | RW     |               |                       |
| 2050  | 0x15      | AH-20      | PID1 Multi stage set-point 5 setting                  | UDINT | RW     |               |                       |
| 2050  | 0x17      | AH-22      | PID1 Multi stage set-point 6 setting                  | UDINT | RW     |               |                       |
| 2050  | 0x19      | AH-24      | PID1 Multi stage set-point 7 setting                  | UDINT | RW     |               |                       |
| 2050  | 0x1B      | AH-26      | PID1 Multi stage set-point 8 setting                  | UDINT | RW     |               |                       |
| 2050  | 0x1D      | AH-28      | PID1 Multi stage set-point 9 setting                  | UDINT | RW     |               |                       |
| 2050  | 0x1F      | AH-30      | PID1 Multi stage set-point 10 setting                 | UDINT | RW     |               |                       |
| 2050  | 0x21      | AH-32      | PID1 Multi stage set-point 11 setting                 | UDINT | RW     |               |                       |
| 2050  | 0x23      | AH-34      | PID1 Multi stage set-point 12 setting                 | UDINT | RW     |               |                       |
| 2050  | 0x25      | AH-36      | PID1 Multi stage set-point 13 setting                 | UDINT | RW     |               |                       |
| 2050  | 0x27      | AH-38      | PID1 Multi stage set-point 14 setting                 | UDINT | RW     |               |                       |
| 2050  | 0x29      | AH-40      | PID1 Multi stage set-point 15 setting                 | UDINT | RW     |               |                       |
| 1050  | 0x2B      | AH-42      | Input source selection of Set-point 2 for PID1        | UINT  | RW     | 0 ~ 13        | 1                     |
| 2050  | 0x2D      | AH-44      | Set-point-2 setting for PID1                          | UDINT | RW     | -10000 -10000 | Depends on AH-06      |
| 1050  | 0x2F      | AH-46      | Input source selection of Set-point 3 for PID1        | UINT  | RW     | 0 ~ 13        | 1                     |
| 2050  | 0x31      | AH-48      | Set-point-2 setting for PID1                          | UDINT | RW     | -10000~10000  | Depends on AH-06      |
| 1050  | 0x33      | AH-50      | Calculation symbol selection of Set-point 1 for PID1  | UINT  | RW     | 1 ~ 6         | 1                     |
| 1050  | 0x34      | AH-51      | Input source selection of Process data 1 for PID1     | UINT  | RW     | 0 ~ 13        |                       |
| 1050  | 0x35      | AH-52      | Input source selection of Process data 2 for PID1     | UINT  | RW     |               |                       |
| 1050  | 0x36      | AH-53      | Input source selection of Process data 3 for PID1     | UINT  | RW     |               |                       |
| 1050  | 0x37      | AH-54      | Calculation symbol selection of Process data for PID1 | UINT  | RW     | 1 ~ 10        | 0.1                   |
| 1050  | 0x3D      | AH-60      | PID1 gain change method selection                     | UINT  | RW     | 0 ~ 1         |                       |
| 1050  | 0x3E      | AH-61      | PID1 proportional gain 1                              | UINT  | RW     | 0 ~ 1000      | 0.1                   |
| 1050  | 0x3F      | AH-62      | PID1 integral time constant 1                         | UINT  | RW     | 0 ~ 36000     | 0.1s                  |
| 1050  | 0x40      | AH-63      | PID1 derivative gain 1                                | UINT  | RW     | 0 ~ 10000     | 0.01s                 |
| 1050  | 0x41      | AH-64      | PID1 proportional gain 2                              | UINT  | RW     | 0 ~ 1000      | 0.1                   |
| 1050  | 0x42      | AH-65      | PID1 integral time constant 2                         | UINT  | RW     | 0 ~ 36000     | 0.1s                  |
| 1050  | 0x43      | AH-66      | PID1 derivative gain 2                                | UINT  | RW     | 0 ~ 10000     | 0.01s                 |
| 1050  | 0x44      | AH-67      | PID1 gain change time                                 | UINT  | RW     |               | 1ms                   |
| 1050  | 0x47      | AH-70      | PID feed-forward selection                            | UINT  | RW     | 0 ~ 6         | 1                     |
| 1050  | 0x48      | AH-71      | PID1 output range                                     | UINT  | RW     | 0 ~ 10000     | 0.01%                 |
| 1050  | 0x49      | AH-72      | PID1 Deviation over level                             | UINT  | RW     |               |                       |
| 1050  | 0x4A      | AH-73      | PID1 Feedback compare signal turn-off level           | UINT  | RW     |               |                       |
| 1050  | 0x4B      | AH-74      | PID1 Feedback compare signal turn-on level            | UINT  | RW     |               |                       |
| 1050  | 0x4C      | AH-75      | PID soft start function enable                        | UINT  | RW     | 0 ~ 1         | 1                     |
| 1050  | 0x4D      | AH-76      | PID soft start target level                           | UINT  | RW     | 0 ~ 10000     | 0.01%                 |
| 2050  | 0x4F      | AH-78      | Acceleration time setting for PID soft start function | UDINT | RW     | 0 ~ 360000    | 0.01s                 |
| 1050  | 0x51      | AH-80      | PID soft start time                                   | UINT  | RW     | 0 ~ 10000     |                       |

| Index | Sub-index | Func. code | Function name                                   | Type  | Access | Setting Items | Data resolution units |
|-------|-----------|------------|---|-------|--------|---------------|-----------------------|
| 1050  | 0x52      | AH-81      | PID soft start error detection enable           | UINT  | RW     | 0 ~ 2         | 1                     |
| 1050  | 0x53      | AH-82      | PID soft start error detection level            | UINT  | RW     | 0 ~ 10000     | 0.01%                 |
| 1050  | 0x56      | AH-85      | PID sleep trigger selection                     | UINT  | RW     | 0 ~ 2         | 1                     |
| 1050  | 0x57      | AH-86      | PID sleep start level                           | UINT  | RW     | 0 ~ 59000     | 0.01Hz                |
| 1050  | 0x58      | AH-87      | PID sleep active time                           | UINT  | RW     | 0 ~ 10000     | 0.01s                 |
| 1050  | 0x59      | AH-88      | Set point boost before PID sleep enable         | UINT  | RW     | 0 ~ 1         | 1                     |
| 1050  | 0x5A      | AH-89      | Set point boost time                            | UINT  | RW     | 0 ~ 10000     | 0.01s                 |
| 1050  | 0x5B      | AH-90      | Set point boost value                           | UINT  | RW     |               | 0.01%                 |
| 1050  | 0x5C      | AH-91      | Minimum RUN time before PID sleep               | UINT  | RW     |               | 0.01s                 |
| 1050  | 0x5D      | AH-92      | Minimum active time of PID sleep                | UINT  | RW     |               | 0.01s                 |
| 1050  | 0x5E      | AH-93      | PID sleep trigger selection                     | UINT  | RW     | 1 ~ 3         | 1                     |
| 1050  | 0x5F      | AH-94      | PID wake start level                            | UINT  | RW     | 0 ~ 10000     | 0.01%                 |
| 1050  | 0x60      | AH-95      | PID wake start time                             | UINT  | RW     |               | 0.01s                 |
| 1050  | 0x61      | AH-96      | PID wake start deviation value                  | UINT  | RW     |               | 0.01%                 |
| 1050  | 0x66      | AJ-01      | PID2 enable                                     | UINT  | RW     | 0 ~ 2         | 1                     |
| 1050  | 0x67      | AJ-02      | PID2 deviation inverse                          | UINT  | RW     | 0 ~ 1         |                       |
| 1050  | 0x68      | AJ-03      | PID2 unit selection                             | UINT  | RW     | 0 ~ 58        |                       |
| 1050  | 0x69      | AJ-04      | PID2 scale( 0%) Adj.                            | UINT  | RW     | -10000~10000  |                       |
| 1050  | 0x6A      | AJ-05      | PID2 scale(100%) Adj.                           | UINT  | RW     |               |                       |
| 1050  | 0x6B      | AJ-06      | PID2 scale (point)                              | UINT  | RW     | 0 ~ 4         |                       |
| 1050  | 0x6C      | AJ-07      | Input source selection of Set-point for PID2    | UINT  | RW     | 0 ~ 15        |                       |
| 2050  | 0x6F      | AJ-10      | Set-point setting for PID2                      | UDINT | RW     | -10000~10000  | Depends on AH-06      |
| 1050  | 0x71      | AJ-12      | Input source selection of Process data for PID2 | UINT  | RW     | 0 ~ 13        | 1                     |
| 1050  | 0x72      | AJ-13      | PID2 proportional gain                          | UINT  | RW     | 0 ~ 1000      | 0.1                   |
| 1050  | 0x73      | AJ-14      | PID2 integral time constant                     | UINT  | RW     | 0 ~ 36000     | 0.1s                  |
| 1050  | 0x74      | AJ-15      | PID2 derivative gain                            | UINT  | RW     | 0 ~ 10000     | 0.01s                 |
| 1050  | 0x75      | AJ-16      | PID2 output range                               | UINT  | RW     |               | 0.01%                 |
| 1050  | 0x76      | AJ-17      | PID2 Deviation over level                       | UINT  | RW     |               |                       |
| 1050  | 0x77      | AJ-18      | PID2 Feedback compare signal turn-off level     | UINT  | RW     |               |                       |
| 1050  | 0x78      | AJ-19      | PID2 Feedback compare signal turn-on level      | UINT  | RW     |               |                       |
| 1050  | 0x7A      | AJ-21      | PID3 enable                                     | UINT  | RW     | 0 ~ 2         |                       |
| 1050  | 0x7B      | AJ-22      | PID3 deviation inverse                          | UINT  | RW     | 0 ~ 1         |                       |
| 1050  | 0x7C      | AJ-23      | PID3 unit selection                             | UINT  | RW     | 0 ~ 58        |                       |
| 1050  | 0x7D      | AJ-24      | PID3 scale( 0%) Adj.                            | UINT  | RW     | -10000~10000  |                       |
| 1050  | 0x7E      | AJ-25      | PID3 scale(100%) Adj.                           | UINT  | RW     |               |                       |
| 1050  | 0x7F      | AJ-26      | PID3 scale (point)                              | UINT  | RW     | 0 ~ 4         |                       |
| 1050  | 0x80      | AJ-27      | Input source selection of Set-point for PID3    | UINT  | RW     | 0 ~ 13        |                       |
| 2050  | 0x83      | AJ-30      | Set-point setting for PID3                      | UDINT | RW     | -10000~10000  | Depends on AH-26      |
| 1050  | 0x85      | AJ-32      | Input source selection of Process data for PID3 | UINT  | RW     | 0 ~ 13        | 1                     |
| 1050  | 0x86      | AJ-33      | PID3 proportional gain                          | UINT  | RW     | 0 ~ 1000      | 0.1                   |
| 1050  | 0x87      | AJ-34      | PID3 derivative gain                            | UINT  | RW     | 0 ~ 36000     | 0.1s                  |
| 1050  | 0x88      | AJ-35      | PID3 derivative gain                            | UINT  | RW     | 0 ~ 10000     | 0.01s                 |
| 1050  | 0x89      | AJ-36      | PID3 output range                               | UINT  | RW     |               | 0.01%                 |
| 1050  | 0x8A      | AJ-37      | PID3 Deviation over level                       | UINT  | RW     |               |                       |
| 1050  | 0x8B      | AJ-38      | PID3 Feedback compare signal turn-off level     | UINT  | RW     |               |                       |
| 1050  | 0x8C      | AJ-39      | PID3 Feedback compare signal turn-on level      | UINT  | RW     |               |                       |
| 1050  | 0x8E      | AJ-41      | PID4 enable                                     | UINT  | RW     | 0 ~ 2         |                       |
| 1050  | 0x8F      | AJ-42      | PID4 deviation inverse                          | UINT  | RW     | 0 ~ 1         |                       |
| 1050  | 0x90      | AJ-43      | PID4 unit selection                             | UINT  | RW     | 0 ~ 58        |                       |
| 1050  | 0x91      | AJ-44      | PID4 scale( 0%) Adj.                            | UINT  | RW     | -10000~10000  |                       |
| 1050  | 0x92      | AJ-45      | PID4 scale(100%) Adj.                           | UINT  | RW     |               |                       |
| 1050  | 0x93      | AJ-46      | PID4 scale (point)                              | UINT  | RW     | 0 ~ 4         |                       |
| 1050  | 0x94      | AJ-47      | Input source selection of Set-point for PID4    | UINT  | RW     | 0 ~ 13        |                       |
| 2050  | 0x97      | AJ-50      | Set-point setting for PID4                      | UDINT | RW     | -10000~10000  | Depends on AH-46      |

| Index | Sub-index | Func. code | Function name                                   | Type | Access | Setting Items | Data resolution units |
|-------|-----------|------------|---|------|--------|---------------|-----------------------|
| 1050  | 0x99      | AJ-52      | Input source selection of Process data for PID4 | UINT | RW     | 0 ~ 13        | 1                     |
| 1050  | 0x9A      | AJ-53      | PID4 proportional gain                          | UINT | RW     | 0 ~ 1000      | 0.1                   |
| 1050  | 0x9B      | AJ-54      | PID4 derivative gain                            | UINT | RW     | 0 ~ 36000     | 0.1s                  |
| 1050  | 0x9C      | AJ-55      | PID4 derivative gain                            | UINT | RW     | 0 ~ 10000     | 0.01s                 |
| 1050  | 0x9D      | AJ-56      | PID4 output range                               | UINT | RW     |               |                       |
| 1050  | 0x9E      | AJ-57      | PID4 Deviation over level                       | UINT | RW     |               |                       |
| 1050  | 0x9F      | AJ-58      | PID4 Feedback compare signal turn-off level     | UINT | RW     |               |                       |
| 1050  | 0xA0      | AJ-59      | PID4 Feedback compare signal turn-on level      | UINT | RW     |               | 0.01%                 |

## 13.2.4 Code-b

| Index | Sub-index | Func. code | Function name  | Type  | Access | Setting Items  | Data resolution units |
|-------|-----------|------------|--|-------|--------|--|-----------------------|
| 1051  | 0x30      | bA101      | Frequency limit selection, 1st-motor                               | UINT  | RW     | 0 ~ 13   | 1                     |
| 1051  | 0x31      | bA102      | Upper Frequency limit, 1st-motor                                   | UINT  | RW     | 0 ~ 59000  | 0.01Hz                |
| 1051  | 0x32      | bA103      | Lower Frequency limit, 1st-motor                                   | UINT  | RW     |  |                       |
| 1051  | 0x39      | bA110      | Torque limit selection, 1st-motor                                  | UINT  | RW     | 0 ~ 11   | 1                     |
| 1051  | 0x3A      | bA111      | TRQ limit mode 1st-motor   | UINT  | RW     | 0 ~ 1  |                       |
| 1051  | 0x3B      | bA112      | Torque limit 1 (Forward driving), 1st-motor                        | UINT  | RW     | 0 ~ 5000   | 0.1%                  |
| 1051  | 0x3C      | bA113      | Torque limit 2 (Reverse regenerative), 1st-motor                   | UINT  | RW     |  |                       |
| 1051  | 0x3D      | bA114      | Torque limit 3 (Reverse driving), 1st-motor                        | UINT  | RW     |  |                       |
| 1051  | 0x3E      | bA115      | Torque limit 4 (Forward regenerative), 1st-motor                   | UINT  | RW     |  |                       |
| 1051  | 0x3F      | bA116      | Torque limit LADSTOP selection, 1st-motor                          | UINT  | RW     | 0 ~ 1  | 1                     |
| 1051  | 0x43      | bA120      | Over current suppress enable, 1st-motor                            | UINT  | RW     |  |                       |
| 1051  | 0x44      | bA121      | Over current suppress Level, 1st-motor                             | UINT  | RW     | (0~2.50)<br>Inverter rated current                   | 0.1A                  |
| 1051  | 0x45      | bA122      | Stall prevention 1 selection, 1st-motor                            | UINT  | RW     | 0 ~ 3  | 1                     |
| 1051  | 0x46      | bA123      | Stall prevention 1 level, 1st-motor                                | UINT  | RW     | (0.20~2.50)<br>Inverter rated current                | 0.1A                  |
| 2051  | 0x47      | bA124      | Stall prevention 1 operation time, 1st-motor                       | UDINT | RW     | 10 ~ 360000  | 0.01s                 |
| 1051  | 0x49      | bA126      | Stall prevention 2 selection, 1st-motor                            | UINT  | RW     | 0 ~ 3  | 1                     |
| 1051  | 0x4A      | bA127      | Stall prevention 2 level, 1st-motor                                | UINT  | RW     | (0.20~2.50)<br>Inverter rated current                | 0.1A                  |
| 2051  | 0x4B      | bA128      | Stall prevention 2 operation time, 1st-motor                       | UDINT | RW     | 10 ~ 360000  | 0.01s                 |
| 1051  | 0x4D      | bA-30      | Deceleration-stop at power failure                                 | UINT  | RW     | 0 ~ 3  | 1                     |
| 1051  | 0x4E      | bA-31      | Decel-stop at power failure starting voltage                       | UINT  | RW     | 200V class:<br>0~4100<br>400V class:<br>0~8200       | 0.1Vdc                |
| 1051  | 0x4F      | bA-32      | Decel-stop at power failure control target level                   | UINT  | RW     |  |                       |
| 2051  | 0x51      | bA-34      | Decel-stop at power failure deceleration time                      | UDINT | RW     | 1 ~ 360000   | 0.01s                 |
| 1051  | 0x53      | bA-36      | Decel-stop at power failure freq. width at deceleration start      | UINT  | RW     | 0 ~ 1000   | 0.01Hz                |
| 1051  | 0x54      | bA-37      | Decel-stop at power failure DC-bus voltage constant control P-gain | UINT  | RW     | 0 ~ 500  | 0.01                  |
| 1051  | 0x55      | bA-38      | Decel-stop at power failure DC-bus voltage constant control I-gain | UINT  | RW     | 0 ~ 15000  | 0.01s                 |
| 1051  | 0x57      | bA140      | Over-voltage suppression enable, 1st-motor                         | UINT  | RW     | 0 ~ 3  | 1                     |
| 1051  | 0x58      | bA141      | Over-voltage suppression active level, 1st-motor                   | UINT  | RW     | 200V class:<br>3300~4000<br>400V class:<br>6600~8000 | 0.1Vdc                |
| 2051  | 0x59      | bA142      | Over-voltage suppression action time, 1st-motor                    | UDINT | RW     | 0 ~ 360000   | 0.01s                 |
| 1051  | 0x5B      | bA144      | DC bus constant control proportional gain, 1st-motor               | UINT  | RW     | 0 ~ 500  | 0.01                  |
| 1051  | 0x5C      | bA145      | DC bus constant control integral gain, 1st-motor                   | UINT  | RW     | 0 ~ 15000  | 0.01s                 |
| 1051  | 0x5D      | bA146      | Over-excitation function selection, 1st-motor                      | UINT  | RW     | 0 ~ 4  | 1                     |



| Index | Sub-index | Func. code | Function name  | Type  | Access | Setting Items  | Data resolution units |
|-------|-----------|------------|--|-------|--------|--|-----------------------|
| 1051  | 0x5E      | bA147      | Over-excitation output filter time constant, 1st-motor | UINT  | RW     | 0 ~ 100  | 0.01s                 |
| 1051  | 0x5F      | bA148      | Over-excitation voltage gain, 1st-motor                | UINT  | RW     | 50 ~ 400   | 1%                    |
| 1051  | 0x60      | bA149      | Over-excitation suppression level setting, 1st-motor   | UINT  | RW     | 200V class:<br>3300 ~ 4000<br>400V class:<br>6600 ~ 8000 | 0.1Vdc                |
| 1051  | 0x6B      | bA-60      | Dynamic brake usage rate                               | UINT  | RW     | 0 ~ 1000<br>Depend on bA-63                              | 0.1%                  |
| 1051  | 0x6C      | bA-61      | Dynamic brake selection                                | UINT  | RW     | 0 ~ 2  | 1                     |
| 1051  | 0x6D      | bA-62      | Dynamic brake active level                             | UINT  | RW     | 200V class:<br>3300 ~ 4000<br>400V class:<br>6600 ~ 8000 | 0.1Vdc                |
| 1051  | 0x6E      | bA-63      | Dynamic brake resister value                           | UINT  | RW     | Resistance<br>minimum value<br>~ 600.0                   | 0.1 Ω                 |
| 1051  | 0x75      | bA-70      | Cooling FAN control method selection                   | UINT  | RW     | 0 ~ 2  | 1                     |
| 1051  | 0x76      | bA-71      | Clear FAN time data                                    | UINT  | RW     | 0 ~ 1  |                       |
| 1090  | 0x8E      | bA201      | Frequency limit selection, 2nd motor                   | UINT  | RW     | 0 ~ 13   | 0.01Hz                |
| 1090  | 0x8F      | bA202      | Upper frequency limit, 2nd motor                       | UINT  | RW     | 0 ~ 59000  |                       |
| 1090  | 0x90      | bA203      | Lower frequency limit, 2nd motor                       | UINT  | RW     |  |                       |
| 1090  | 0x97      | bA210      | Torque limit selection, 2nd motor                      | UINT  | RW     | 0 ~ 11   | 1                     |
| 1090  | 0x98      | bA211      | TRQ limit mode_M2                                      | UINT  | RW     | 0 ~ 1  |                       |
| 1090  | 0x99      | bA212      | Torque limit 1 (Forward driving), 2nd-motor            | UINT  | RW     | 0 ~ 5000   | 0.1%                  |
| 1090  | 0x9A      | bA213      | Torque limit 2 (Reverse regenerative), 2nd-motor       | UINT  | RW     |  |                       |
| 1090  | 0x9B      | bA214      | Torque limit 3(Reverse driving), 2nd-motor             | UINT  | RW     |  |                       |
| 1090  | 0x9C      | bA215      | Torque limit 4 (Forward regenerative), 2nd motor       | UINT  | RW     |  |                       |
| 1090  | 0x9D      | bA216      | Torque limit LADSTOP selection, 2nd-motor              | UINT  | RW     | 0 ~ 1  | 1                     |
| 1090  | 0xA1      | bA220      | Over current suppress enable, 2nd-motor                | UINT  | RW     |  |                       |
| 1090  | 0xA2      | bA221      | Over current suppress Level, 2nd-motor                 | UINT  | RW     | (0~2.50)×<br>Inverter rated<br>current                   | 0.1A                  |
| 1090  | 0xA3      | bA222      | Stall prevention 1 selection, 2nd-motor                | UINT  | RW     | 0 ~ 3  | 1                     |
| 1090  | 0xA4      | bA223      | Stall prevention 1 level, 2nd-motor                    | UINT  | RW     | (0.20~2.50)×<br>Inverter rated<br>current                | 0.1A                  |
| 2090  | 0xA5      | bA224      | Stall prevention 1 operation time, 2nd-motor           | UDINT | RW     | 10 ~ 360000  | 0.01s                 |
| 1090  | 0xA7      | bA226      | Stall prevention 2 selection, 2nd-motor                | UINT  | RW     | 0 ~ 3  | 1                     |
| 1090  | 0xA8      | bA227      | Stall prevention 2 level, 2nd-motor                    | UINT  | RW     | (0.20~2.50)×<br>Inverter rated<br>current                | 0.1A                  |
| 2090  | 0xA9      | bA228      | Stall prevention 2 operation time, 2nd-motor           | UDINT | RW     | 10 ~ 360000  | 0.01s                 |
| 1090  | 0xB5      | bA240      | Over-voltage suppression enable, 2nd-motor             | UINT  | RW     | 0 ~ 3  | 1                     |
| 1090  | 0xB6      | bA241      | Over-voltage suppression active level, 2nd-motor       | UINT  | RW     | 200V class:<br>3300 ~ 4000<br>400V class:<br>6600 ~ 8000 | 0.1Vdc                |
| 2090  | 0xB7      | bA242      | Over-voltage suppression action time, 2nd-motor        | UDINT | RW     | 0 ~ 360000   | 0.01s                 |
| 1090  | 0xB9      | bA244      | DC bus constant control proportional gain, 2nd-motor   | UINT  | RW     | 0 ~ 500  | 0.01                  |
| 1090  | 0xBA      | bA245      | DC bus constant control integral gain, 2nd-motor       | UINT  | RW     | 0 ~ 15000  | 0.01s                 |
| 1090  | 0xBB      | bA246      | Over-excitation function selection, 2nd-motor          | UINT  | RW     | 0 ~ 4  | 1                     |
| 1090  | 0xBC      | bA247      | Over-excitation output filter time constant, 2nd-motor | UINT  | RW     | 0 ~ 100  | 0.01s                 |
| 1090  | 0xBD      | bA248      | Over-excitation voltage gain, 2nd-motor                | UINT  | RW     | 50 ~ 400   | 1%                    |
| 1090  | 0xBE      | bA249      | Over-excitation level setting, 2nd-motor               | UINT  | RW     | 200V class:<br>3300 ~ 4000<br>400V class:<br>6600 ~ 8000 | 0.1Vdc                |

| Index | Sub-index | Func. code | Function name   | Type | Access | Setting Items  | Data resolution units |
|-------|-----------|------------|---|------|--------|--|-----------------------|
| 1051  | 0x94      | bb101      | Carrier speed setting, 1st-motor                            | UINT | RW     | 5 ~ 160<br>Depend on the capacity and the load           | 0.1kHz                |
| 1051  | 0x95      | bb102      | Sprinkle carrier pattern selection, 1st-motor               | UINT | RW     | 0 ~ 3  | 1                     |
| 1051  | 0x96      | bb103      | Automatic-carrier reduction selection, 1st-motor            | UINT | RW     | 0 ~ 2  |                       |
| 1051  | 0x9D      | bb-10      | Automatic error reset selection                             | UINT | RW     |  |                       |
| 1051  | 0x9E      | bb-11      | Alarm signal selection at Automatic error reset is active   | UINT | RW     | 0 ~ 1  |                       |
| 1051  | 0x9F      | bb-12      | Automatic error reset wait time                             | UINT | RW     | 0 ~ 600  | 1s                    |
| 1051  | 0xA0      | bb-13      | Automatic error reset number                                | UINT | RW     | 0 ~ 10   | 1                     |
| 1051  | 0xA7      | bb-20      | The number of retries after instantaneous power failure     | UINT | RW     | 0 ~ 16 / 255   |                       |
| 1051  | 0xA8      | bb-21      | The number of retries after under voltage                   | UINT | RW     |  |                       |
| 1051  | 0xA9      | bb-22      | The number of retries after over current                    | UINT | RW     | 0 ~ 5  |                       |
| 1051  | 0xAA      | bb-23      | The number of retries after over voltage                    | UINT | RW     |  |                       |
| 1051  | 0xAB      | bb-24      | Selection of restart mode Instantaneous power failure       | UINT | RW     | 0 ~ 4  | 1                     |
| 1051  | 0xAC      | bb-25      | Allowable under-voltage power failure time                  | UINT | RW     | 3 ~ 250  | 0.1s                  |
| 1051  | 0xAD      | bb-26      | Retry wait time before motor restart                        | UINT | RW     | 3 ~ 1000   |                       |
| 1051  | 0xAE      | bb-27      | Instantaneous power failure/under-voltage trip alarm enable | UINT | RW     | 0 ~ 2  | 1                     |
| 1051  | 0xAF      | bb-28      | Selection of restart mode over-current                      | UINT | RW     | 0 ~ 4  |                       |
| 1051  | 0xB0      | bb-29      | Wait time of restart over-current                           | UINT | RW     | 3 ~ 1000   | 0.1s                  |
| 1051  | 0xB1      | bb-30      | Selection of restart mode over-voltage                      | UINT | RW     | 0 ~ 4  | 1                     |
| 1051  | 0xB2      | bb-31      | Wait time of restart over-voltage                           | UINT | RW     | 3 ~ 1000   | 0.1s                  |
| 1051  | 0xBB      | bb-40      | Restart mode after MBS release                              | UINT | RW     | 0 ~ 3  | 1                     |
| 1051  | 0xBC      | bb-41      | Restart mode after RST release                              | UINT | RW     |  |                       |
| 1051  | 0xBD      | bb-42      | Restart frequency threshold                                 | UINT | RW     | 0 ~ 59000  | 0.01Hz                |
| 1051  | 0xBE      | bb-43      | Level of frequency pull-in restart                          | UINT | RW     | (0.20~2.50)×<br>Inverter rated current                   | 0.1A                  |
| 1051  | 0xBF      | bb-44      | Constant(frequency) of frequency pull-in restart            | UINT | RW     | 10 ~ 3000  | 0.01s                 |
| 1051  | 0xC0      | bb-45      | Constant(Voltage) of frequency pull-in restart              | UINT | RW     |  |                       |
| 1051  | 0xC1      | bb-46      | Overcurrent suppression level of frequency pull-in restart  | UINT | RW     | (0~2.50)×<br>Inverter rated current                      | 0.1A                  |
| 1051  | 0xC2      | bb-47      | Start frequency selection of frequency pull-in restart      | UINT | RW     | 0 ~ 2  | 1                     |
| 1051  | 0xC5      | bb-50      | Frequency matching filter gain                              | UINT | RW     | 0 ~ 1000   | 1%                    |
| 1051  | 0xCF      | bb160      | Over current detection level, 1st-motor                     | UINT | RW     | Depend on the inverter model                             | 0.1A                  |
| 1051  | 0xD0      | bb-61      | Power supply over voltage selection                         | UINT | RW     | 0 ~ 1  | 1                     |
| 1051  | 0xD1      | bb-62      | Power supply over voltage level setting                     | UINT | RW     | 200V class:<br>3000 ~ 4100<br>400V class:<br>6000 ~ 8200 | 0.1Vdc                |
| 1051  | 0xD3      | bb-64      | Ground fault selection                                      | UINT | RW     | 0 ~ 1  | 1                     |
| 1051  | 0xD4      | bb-65      | Input phase loss enable                                     | UINT | RW     |  |                       |
| 1051  | 0xD5      | bb-66      | Output phase loss enable                                    | UINT | RW     |  |                       |
| 1051  | 0xD6      | bb-67      | Output phase loss detection sensitivity                     | UINT | RW     | 1 ~ 100  | 1%                    |
| 1051  | 0xD9      | bb-70      | Thermistor error level                                      | UINT | RW     | 0 ~ 10000  | 1Ω                    |
| 1051  | 0xE3      | bb-80      | Over speed detection level                                  | UINT | RW     | 0 ~ 1500   | 0.1%                  |
| 1051  | 0xE4      | bb-81      | Over speed detection time                                   | UINT | RW     | 0 ~ 50   | 0.1s                  |
| 1051  | 0xE5      | bb-82      | Speed deviation error mode selection                        | UINT | RW     | 0 ~ 1  | 1                     |
| 1051  | 0xE6      | bb-83      | Speed deviation error detection level                       | UINT | RW     | 0 ~ 1000   | 0.1%                  |
| 1051  | 0xE7      | bb-84      | Speed deviation error detection time                        | UINT | RW     | 0 ~ 50   | 0.1s                  |
| 1051  | 0xE8      | bb-85      | Position deviation error mode selection                     | UINT | RW     | 0 ~ 1  | 1                     |

| Index | Sub-index | Func. code | Function name   | Type | Access | Setting Items                              | Data resolution units |
|-------|-----------|------------|---|------|--------|--|-----------------------|
| 1051  | 0xE9      | bb-86      | Position deviation error detection level                  | UINT | RW     | 0 ~ 65535<br>(×100pls)                     | 1<br>(×100pls)        |
| 1051  | 0xEA      | bb-87      | Position deviation error detection level                  | UINT | RW     | 0 ~ 50                                     | 0.1s                  |
| 1090  | 0xF2      | bb201      | Carrier speed setting, 2nd-motor                          | UINT | RW     | 5 ~ 160<br>Depend on the capacity and load | 0.1kHz                |
| 1090  | 0xF3      | bb202      | Sprinkle carrier pattern selection, 2nd-motor             | UINT | RW     | 0 ~ 3                                      | 1                     |
| 1090  | 0xF4      | bb203      | Automatic-carrier reduction selection, 2nd-motor          | UINT | RW     | 0 ~ 2                                      |                       |
| 1091  | 0x2F      | bb260      | Over current detection level, 2nd-motor                   | UINT | RW     | Depend on the inverter model               | 0.1A                  |
| 1052  | 0x3       | bC110      | Electronic thermal level setting, 1st-motor               | UINT | RW     | (0~3.00)×<br>Inverter rated current        |                       |
| 1052  | 0x4       | bC111      | Electronic thermal characteristic selection, 1st-motor    | UINT | RW     | 0 ~ 2                                      | 1                     |
| 1052  | 0x5       | bC112      | Electronic thermal Subtraction function enable, 1st-motor | UINT | RW     | 0 ~ 1                                      |                       |
| 1052  | 0x6       | bC113      | Electronic thermal Subtraction time, 1st-motor            | UINT | RW     | 1 ~ 1000                                   | 1s                    |
| 1052  | 0x7       | bC-14      | Electronic thermal counter memory selection at Power-off  | UINT | RW     | 0 ~ 1                                      | 1                     |
| 1052  | 0xD       | bC120      | Free electronic thermal frequency-1, 1st-motor            | UINT | RW     | 0(bC122) ~ 59000                           | 0.01Hz                |
| 1052  | 0xE       | bC121      | Free electronic thermal current-1, 1st-motor              | UINT | RW     | (0~3.00)×<br>Inverter rated current        | 0.1A                  |
| 1052  | 0xF       | bC122      | Free electronic thermal frequency-2, 1st-motor            | UINT | RW     | 0 ~ 59000<br>(bC120~bC124)                 | 0.01Hz                |
| 1052  | 0x10      | bC123      | Free electronic thermal current-2, 1st-motor              | UINT | RW     | (0~3.00)×<br>Inverter rated current        | 0.1A                  |
| 1052  | 0x11      | bC124      | Free electronic thermal frequency-3, 1st-motor            | UINT | RW     | 0 ~ 59000<br>(bC122)                       | 0.01Hz                |
| 1052  | 0x12      | bC125      | Free electronic thermal current-3, 1st-motor              | UINT | RW     | (0~3.00)×<br>Inverter rated current        | 0.1A                  |
| 1091  | 0x61      | bC210      | Electronic thermal level setting, 2nd-motor               | UINT | RW     |  |                       |
| 1091  | 0x62      | bC211      | Electronic thermal characteristic selection, 2nd-motor    | UINT | RW     | 0 ~ 2                                      | 1                     |
| 1091  | 0x63      | bC212      | Electronic thermal Subtraction function enable, 2nd-motor | UINT | RW     | 0 ~ 1                                      |                       |
| 1091  | 0x64      | bC213      | Electronic thermal Subtraction time, 2nd-motor            | UINT | RW     | 1 ~ 1000                                   | 1s                    |
| 1091  | 0x6B      | bC220      | Free electronic thermal frequency-1, 2nd-motor            | UINT | RW     | 0 ~ 59000<br>(bC222)                       | 0.01Hz                |
| 1091  | 0x6C      | bC221      | Free electronic thermal current-1, 2nd-motor              | UINT | RW     | (0~3.00)×<br>Inverter rated current        | 0.1A                  |
| 1091  | 0x6D      | bC222      | Free electronic thermal frequency-2, 2nd-motor            | UINT | RW     | 0 ~ 59000<br>(bC220~bC224)                 | 0.01Hz                |
| 1091  | 0x6E      | bC223      | Free electronic thermal current-2, 2nd-motor              | UINT | RW     | (0~3.00)×<br>Inverter rated current        | 0.1A                  |
| 1091  | 0x6F      | bC224      | Free electronic thermal frequency-3, 2nd-motor            | UINT | RW     | 0 ~ 59000<br>(bC222)                       | 0.01Hz                |
| 1091  | 0x70      | bC225      | Free electronic thermal current-3, 2nd-motor              | UINT | RW     | (0~3.00)×<br>Inverter rated current        | 0.1A                  |
| 1052  | 0x5E      | bd-01      | STO input display selection                               | UINT | RW     | 0 ~ 2                                      | 1                     |
| 1052  | 0x5F      | bd-02      | STO input change time                                     | UINT | RW     | 0 ~ 6000                                   | 0.01s                 |
| 1052  | 0x60      | bd-03      | Display selection at STO input change time                | UINT | RW     | 0 ~ 1                                      | 1                     |
| 1052  | 0x61      | bd-04      | Action selection after STO input change time              | UINT | RW     | 0 ~ 2                                      |                       |

## 13.2.5 Code-C

| Index | Sub-index | Func. code | Function name  | Type  | Access | Setting Items | Data resolution units |
|-------|-----------|------------|--|-------|--------|---------------|-----------------------|
| 1055  | 0x20      | CA-01      | Input terminal [FR] function                         | UINT  | RW     | 0 ~ 110       | 1                     |
| 1055  | 0x21      | CA-02      | Input terminal [DR] function                         | UINT  | RW     |               |                       |
| 1055  | 0x22      | CA-03      | Input terminal [DFL] function                        | UINT  | RW     |               |                       |
| 1055  | 0x23      | CA-04      | Input terminal [DFM] function                        | UINT  | RW     |               |                       |
| 1055  | 0x24      | CA-05      | Input terminal [AUT] function                        | UINT  | RW     |               |                       |
| 1055  | 0x25      | CA-06      | Input terminal [MBS] function                        | UINT  | RW     |               |                       |
| 1055  | 0x26      | CA-07      | Input terminal [JOG] function                        | UINT  | RW     |               |                       |
| 1055  | 0x27      | CA-08      | Input terminal [ES] function                         | UINT  | RW     |               |                       |
| 1055  | 0x28      | CA-09      | Input terminal [RST] function                        | UINT  | RW     |               |                       |
| 1055  | 0x29      | CA-10      | Input terminal [DFH] function                        | UINT  | RW     |               |                       |
| 1055  | 0x2A      | CA-11      | Input terminal [DHH] function                        | UINT  | RW     |               |                       |
| 1055  | 0x34      | CA-21      | Input terminal [FR] active state                     | UINT  | RW     | 0 ~ 1         | 1                     |
| 1055  | 0x35      | CA-22      | Input terminal [RR] active state                     | UINT  | RW     |               |                       |
| 1055  | 0x36      | CA-23      | Input terminal [DFL] active state                    | UINT  | RW     |               |                       |
| 1055  | 0x37      | CA-24      | Input terminal [DFM] active state                    | UINT  | RW     |               |                       |
| 1055  | 0x38      | CA-25      | Input terminal [AUT] active state                    | UINT  | RW     |               |                       |
| 1055  | 0x39      | CA-26      | Input terminal [MBS] active state                    | UINT  | RW     |               |                       |
| 1055  | 0x3A      | CA-27      | Input terminal [JOG] active state                    | UINT  | RW     |               |                       |
| 1055  | 0x3B      | CA-28      | Input terminal [ES] active state                     | UINT  | RW     |               |                       |
| 1055  | 0x3C      | CA-29      | Input terminal [RST] active state                    | UINT  | RW     |               |                       |
| 1055  | 0x3D      | CA-30      | Input terminal [DFH] active state                    | UINT  | RW     |               |                       |
| 1055  | 0x3E      | CA-31      | Input terminal [DHH] active state                    | UINT  | RW     |               |                       |
| 1055  | 0x48      | CA-41      | Input terminal [FR] response time                    | UINT  | RW     | 0 ~ 400       | 1ms                   |
| 1055  | 0x49      | CA-42      | Input terminal [RR] response time                    | UINT  | RW     |               |                       |
| 1055  | 0x4A      | CA-43      | Input terminal [DFL] response time                   | UINT  | RW     |               |                       |
| 1055  | 0x4B      | CA-44      | Input terminal [DFM] response time                   | UINT  | RW     |               |                       |
| 1055  | 0x4C      | CA-45      | Input terminal [AUT] response time                   | UINT  | RW     |               |                       |
| 1055  | 0x4D      | CA-46      | Input terminal [MBS] response time                   | UINT  | RW     |               |                       |
| 1055  | 0x4E      | CA-47      | Input terminal [JOG] response time                   | UINT  | RW     |               |                       |
| 1055  | 0x4F      | CA-48      | Input terminal [ES] response time                    | UINT  | RW     |               |                       |
| 1055  | 0x50      | CA-49      | Input terminal [RST] response time                   | UINT  | RW     |               |                       |
| 1055  | 0x51      | CA-50      | Input terminal [DFH] response time                   | UINT  | RW     |               |                       |
| 1055  | 0x52      | CA-51      | Input terminal [DHH] response time                   | UINT  | RW     |               |                       |
| 1055  | 0x56      | CA-55      | Multistage speed/position determination time         | UINT  | RW     | 0 ~ 2000      | 1                     |
| 1055  | 0x5B      | CA-60      | UP/DWN overwrite target selection                    | UINT  | RW     | 0 ~ 1         |                       |
| 1055  | 0x5C      | CA-61      | UP/DWN data save enable                              | UINT  | RW     |               |                       |
| 1055  | 0x5D      | CA-62      | UP/DWN UDC selection                                 | UINT  | RW     |               |                       |
| 2055  | 0x5F      | CA-64      | Acceleration time setting for UP/DWN function        | UDINT | RW     | 0 ~ 360000    | 0.01s                 |
| 2055  | 0x61      | CA-66      | Deceleration time setting for UP/DWN function        | UDINT | RW     |               |                       |
| 1055  | 0x65      | CA-70      | Speed reference source selection at [F-OP] is active | UINT  | RW     | 1 ~ 16        | 1                     |
| 1055  | 0x66      | CA-71      | RUN command source selection at [F-OP] is active     | UINT  | RW     | 0 ~ 6         |                       |
| 1055  | 0x67      | CA-72      | Reset mode selection                                 | UINT  | RW     | 0 ~ 3         |                       |
| 1055  | 0x70      | CA-81      | Encoder constant setting                             | UINT  | RW     | 32 ~ 65535    | 1pls                  |
| 1055  | 0x71      | CA-82      | Encoder position selection                           | UINT  | RW     | 0 ~ 1         | 1                     |
| 1055  | 0x72      | CA-83      | Motor gear ratio Numerator                           | UINT  | RW     | 1 ~ 10000     |                       |
| 1055  | 0x73      | CA-84      | Motor gear ratio Denominator                         | UINT  | RW     |               |                       |
| 1055  | 0x79      | CA-90      | Pulse train detection object selection               | UINT  | RW     | 0 ~ 3         |                       |
| 1055  | 0x7A      | CA-91      | Mode selection of pulse train input                  | UINT  | RW     | 0 ~ 2         |                       |
| 1055  | 0x7B      | CA-92      | Pulse train frequency Scale                          | UINT  | RW     | 5 ~ 3200      | 0.01kHz               |
| 1055  | 0x7C      | CA-93      | Pulse train frequency Filter time constant           | UINT  | RW     | 1 ~ 200       | 0.01s                 |
| 1055  | 0x7D      | CA-94      | Pulse train frequency Bias value                     | UINT  | RW     | -1000 ~ 1000  | 0.1%                  |
| 1055  | 0x7E      | CA-95      | Pulse train frequency High Limit                     | UINT  | RW     | 0 ~ 1000      |                       |
| 1055  | 0x7F      | CA-96      | Pulse train frequency detection low level            | UINT  | RW     |               |                       |
| 1055  | 0x80      | CA-97      | Comparing match output ON-level for Pulse count      | UINT  | RW     | 0 ~ 65535     | 1                     |
| 1055  | 0x81      | CA-98      | Comparing match output OFF-level for Pulse count     | UINT  | RW     |               |                       |
| 1055  | 0x82      | CA-99      | Comparing match output Maximum value for Pulse count | UINT  | RW     |               |                       |

| Index | Sub-index    | Func. code     | Function name                            | Type | Access | Setting Items       | Data resolution units |
|-------|--------------|----------------|--|------|--------|---------------------|-----------------------|
| 1055  | 0x84         | Cb-01          | Filter time constant of Terminal VRF     | UINT | RW     | 1 ~ 500             | 1ms                   |
| 1055  | 0x86         | Cb-03          | Start value of Terminal VRF              | UINT | RW     | 0 ~ 10000           | 0.01%                 |
| 1055  | 0x87         | Cb-04          | End value of Terminal VRF                | UINT | RW     |                     |                       |
| 1055  | 0x88         | Cb-05          | Start rate of Terminal VRF               | UINT | RW     | 0~1000(Cb-06)       | 0.1%                  |
| 1055  | 0x89         | Cb-06          | End rate of Terminal VRF                 | UINT | RW     | (Cb-05) 0~1000      |                       |
| 1055  | 0x8A         | Cb-07          | Start point selection of Terminal VRF    | UINT | RW     | 0 ~ 1               | 1                     |
| 1055  | 0x8E         | Cb-11          | Filter time constant of Terminal IRF     | UINT | RW     | 1 ~ 500             | 1ms                   |
| 1055  | 0x90         | Cb-13          | Start value of Terminal IRF              | UINT | RW     | 0 ~ 10000           | 0.01%                 |
| 1055  | 0x91         | Cb-14          | End value of Terminal IRF                | UINT | RW     |                     |                       |
| 1055  | 0x92         | Cb-15          | Start rate of Terminal IRF               | UINT | RW     | 0~1000 (Cb-16)      | 0.1%                  |
| 1055  | 0x93         | Cb-16          | End rate of Terminal IRF                 | UINT | RW     | (Cb-15) 0~1000      |                       |
| 1055  | 0x94         | Cb-17          | Start point selection of Terminal IRF    | UINT | RW     | 0 ~ 1               | 1                     |
| 1055  | 0x98         | Cb-21          | Filter time constant of Terminal VF2     | UINT | RW     | 1 ~ 500             | 1ms                   |
| 1055  | 0x99         | Cb-22          | Terminal VF2 selection                   | UINT | RW     | 0 ~ 2               | 1                     |
| 1055  | 0x9A         | Cb-23          | Start value of Terminal VF2              | UINT | RW     | -10000~10000        | 0.01%                 |
| 1055  | 0x9B         | Cb-24          | End value of Terminal VF2                | UINT | RW     |                     |                       |
| 1055  | 0x9C         | Cb-25          | Start rate of Terminal VF2               | UINT | RW     | -1000 ~ 1000(Cb-26) | 0.1%                  |
| 1055  | 0x9D         | Cb-26          | End rate of Terminal VF2                 | UINT | RW     | (Cb-25)-1000 ~ 1000 |                       |
| 1055  | 0xA1         | Cb-30          | VRF Voltage/Current zero-gain adjustment | UINT | RW     | -10000~10000        | 0.01%                 |
| 1055  | 0xA2         | Cb-31          | VRF Voltage/Current gain adjustment      | UINT | RW     | 0 ~ 20000           |                       |
| 1055  | 0xA3         | Cb-32          | IRF Voltage/Current zero-gain adjustment | UINT | RW     | -10000~10000        |                       |
| 1055  | 0xA4         | Cb-33          | IRF Voltage/Current gain adjustment      | UINT | RW     | 0 ~ 20000           |                       |
| 1055  | 0xA5         | Cb-34          | VF2 Voltage/Current zero-gain adjustment | UINT | RW     | -10000~10000        |                       |
| 1055  | 0xA6         | Cb-35          | VF2 Voltage gain adjustment              | UINT | RW     | 0 ~ 20000           |                       |
| 1055  | 0xAB         | Cb-40          | Thermistor selection                     | UINT | RW     | 0 ~ 2               | 1                     |
| 1055  | 0xAC         | Cb-41          | Thermistor gain adjustment               | UINT | RW     | 0 ~ 10000           | 0.1                   |
| 1055  | 0xB6 to 0xBC | Cb-51 to Cb-57 | Reserved                                 | UINT | RW     | -                   | -                     |
| 1055  | 0xE8         | CC-01          | Output terminal [UPF] function           | UINT | RW     | 0 ~ 93              | 1                     |
| 1055  | 0xE9         | CC-02          | Output terminal [DRV] function           | UINT | RW     |                     |                       |
| 1055  | 0xEA         | CC-03          | Output terminal [X1] function            | UINT | RW     |                     |                       |
| 1055  | 0xEB         | CC-04          | Output terminal [X2] function            | UINT | RW     |                     |                       |
| 1055  | 0xEC         | CC-05          | Output terminal [X3] function            | UINT | RW     |                     |                       |
| 1055  | 0xED         | CC-06          | Relay output terminal [RL] function      | UINT | RW     |                     |                       |
| 1055  | 0xEE         | CC-07          | Relay output terminal [FL] function      | UINT | RW     |                     |                       |
| 1055  | 0xF2         | CC-11          | Output terminal [UPF] active state       | UINT | RW     | 0 ~ 1               |                       |
| 1055  | 0xF3         | CC-12          | Output terminal [DRV] active state       | UINT | RW     |                     |                       |
| 1055  | 0xF4         | CC-13          | Output terminal [X1] active state        | UINT | RW     |                     |                       |
| 1055  | 0xF5         | CC-14          | Output terminal [X2] active state        | UINT | RW     |                     |                       |
| 1055  | 0xF6         | CC-15          | Output terminal [X3] active state        | UINT | RW     |                     |                       |
| 1055  | 0xF7         | CC-16          | Output terminal [RL] active state        | UINT | RW     |                     |                       |
| 1055  | 0xF8         | CC-17          | Output terminal [FL] active state        | UINT | RW     |                     |                       |
| 1055  | 0xFB         | CC-20          | Output terminal [UPF] on-delay time      | UINT | RW     | 0 ~ 10000           | 0.01s                 |
| 1055  | 0xFC         | CC-21          | Output terminal [UPF] off-delay time     | UINT | RW     |                     |                       |
| 1055  | 0xFD         | CC-22          | Output terminal [DRV] on-delay time      | UINT | RW     |                     |                       |
| 1055  | 0xFE         | CC-23          | Output terminal [DRV] off-delay time     | UINT | RW     |                     |                       |
| 1056  | 0x1          | CC-24          | Output terminal [X1] on-delay time       | UINT | RW     |                     |                       |
| 1056  | 0x2          | CC-25          | Output terminal [X1] off-delay time      | UINT | RW     |                     |                       |
| 1056  | 0x3          | CC-26          | Output terminal [X2] on-delay time       | UINT | RW     |                     |                       |
| 1056  | 0x4          | CC-27          | Output terminal [X2] off-delay time      | UINT | RW     |                     |                       |
| 1056  | 0x5          | CC-28          | Output terminal [X3] on-delay time       | UINT | RW     |                     |                       |
| 1056  | 0x6          | CC-29          | Output terminal [X3] off-delay time      | UINT | RW     |                     |                       |
| 1056  | 0x7          | CC-30          | Output relay [RL] on-delay time          | UINT | RW     |                     |                       |
| 1056  | 0x8          | CC-31          | Output relay [RL] off-delay time         | UINT | RW     |                     |                       |
| 1056  | 0x9          | CC-32          | Output relay [FL] on-delay time          | UINT | RW     |                     |                       |

| Index | Sub-index | Func. code | Function name                                       | Type | Access | Setting Items                           | Data resolution units |       |
|-------|-----------|------------|---|------|--------|---|-----------------------|-------|
| 1056  | 0xA       | CC-33      | Output relay [FL] off-delay time                    | UINT | RW     | 0 ~ 10000                               | 0.01s                 |       |
| 1056  | 0x11      | CC-40      | Logical calculation target 1 selection of LOG1      | UINT | RW     | 0 ~ 93                                  | 1                     |       |
| 1056  | 0x12      | CC-41      | Logical calculation target 2 selection of LOG1      | UINT | RW     |   |                       |       |
| 1056  | 0x13      | CC-42      | Logical calculation symbol selection of LOG1        | UINT | RW     |   |                       | 0 ~ 2 |
| 1056  | 0x14      | CC-43      | Logical calculation target 1 selection of LOG2      | UINT | RW     | 0 ~ 93                                  |                       |       |
| 1056  | 0x15      | CC-44      | Logical calculation target 2 selection of LOG2      | UINT | RW     |   |                       |       |
| 1056  | 0x16      | CC-45      | Logical calculation symbol selection of LOG2        | UINT | RW     |   |                       | 0 ~ 2 |
| 1056  | 0x17      | CC-46      | Logical calculation target 1 selection of LOG3      | UINT | RW     | 0 ~ 93                                  |                       |       |
| 1056  | 0x18      | CC-47      | Logical calculation target 2 selection of LOG3      | UINT | RW     |   |                       |       |
| 1056  | 0x19      | CC-48      | Logical calculation symbol selection of LOG3        | UINT | RW     |   |                       | 0 ~ 2 |
| 1056  | 0x1A      | CC-49      | Logical calculation target 1 selection of LOG4      | UINT | RW     | 0 ~ 93                                  | 1                     |       |
| 1056  | 0x1B      | CC-50      | Logical calculation target 2 selection of LOG4      | UINT | RW     |   |                       |       |
| 1056  | 0x1C      | CC-51      | Logical calculation symbol selection of LOG4        | UINT | RW     |   |                       | 0 ~ 2 |
| 1056  | 0x1D      | CC-52      | Logical calculation target 1 selection of LOG5      | UINT | RW     | 0 ~ 93                                  |                       |       |
| 1056  | 0x1E      | CC-53      | Logical calculation target 2 selection of LOG5      | UINT | RW     |   |                       |       |
| 1056  | 0x1F      | CC-54      | Logical calculation symbol selection of LOG5        | UINT | RW     |   |                       | 0 ~ 2 |
| 1056  | 0x20      | CC-55      | Logical calculation target 1 selection of LOG6      | UINT | RW     | 0 ~ 93                                  |                       |       |
| 1056  | 0x21      | CC-56      | Logical calculation target 2 selection of LOG6      | UINT | RW     |   |                       |       |
| 1056  | 0x22      | CC-57      | Logical calculation symbol selection of LOG6        | UINT | RW     |   |                       | 0 ~ 2 |
| 1056  | 0x23      | CC-58      | Logical calculation target 1 selection of LOG7      | UINT | RW     | 0 ~ 93                                  |                       |       |
| 1056  | 0x24      | CC-59      | Logical calculation target 2 selection of LOG7      | UINT | RW     |   |                       |       |
| 1056  | 0x25      | CC-60      | Logical calculation symbol selection of LOG7        | UINT | RW     |   |                       | 0 ~ 2 |
| 1056  | 0x4E      | Cd-01      | FRQ monitor output wave form selection              | UINT | RW     | 0 ~ 1                                   |                       |       |
| 1056  | 0x4F      | Cd-02      | FRQ monitor output base frequency (at PWM output)   | UINT | RW     | 0 ~ 3600                                |                       | 1Hz   |
| 1056  | 0x50      | Cd-03      | FRQ monitor output selection                        | UINT | RW     | 0 ~ 65535<br>(d,F-code register number) |                       | 1     |
| 1056  | 0x51      | Cd-04      | AMV monitor output selection                        | UINT | RW     |   |                       |       |
| 1056  | 0x52      | Cd-05      | AMI monitor output selection                        | UINT | RW     |   |                       |       |
| 1056  | 0x57      | Cd-10      | Analog monitor adjust mode enable                   | UINT | RW     |   | 0 ~ 1                 |       |
| 1056  | 0x58      | Cd-11      | Filter time constant of FRQ monitor                 | UINT | RW     | 1 ~ 500                                 | 1ms                   |       |
| 1056  | 0x59      | Cd-12      | FRQ Data type selection                             | UINT | RW     | 0 ~ 1                                   | 1                     |       |
| 1056  | 0x5A      | Cd-13      | FRQ monitor bias adjustment                         | UINT | RW     | -1000 ~ 1000                            | 0.1%                  |       |
| 1056  | 0x5B      | Cd-14      | FRQ monitor gain adjustment                         | UINT | RW     | -10000~10000                            |                       |       |
| 1056  | 0x5C      | Cd-15      | Output level setting at FRQ monitor adjust mode     | UINT | RW     | -1000 ~ 1000                            |                       |       |
| 1056  | 0x62      | Cd-21      | Filter time constant of AMV monitor                 | UINT | RW     | 1 ~ 500                                 | 1ms                   |       |
| 1056  | 0x63      | Cd-22      | AMV Data type selection                             | UINT | RW     | 0 ~ 1                                   | 1                     |       |
| 1056  | 0x64      | Cd-23      | AMV monitor bias adjustment                         | UINT | RW     | -1000 ~ 1000                            | 0.1%                  |       |
| 1056  | 0x65      | Cd-24      | AMV monitor gain adjustment                         | UINT | RW     | -10000~10000                            |                       |       |
| 1056  | 0x66      | Cd-25      | Output level setting at AMV monitor adjust mode     | UINT | RW     | -1000 ~ 1000                            |                       |       |
| 1056  | 0x6C      | Cd-31      | Filter time constant of AMI monitor                 | UINT | RW     | 1 ~ 500                                 | 1ms                   |       |
| 1056  | 0x6D      | Cd-32      | AMI Data type selection                             | UINT | RW     | 0 ~ 1                                   | 1                     |       |
| 1056  | 0x6E      | Cd-33      | AMI monitor bias adjustment                         | UINT | RW     | -1000 ~ 1000                            | 0.1%                  |       |
| 1056  | 0x6F      | Cd-34      | AMI monitor gain adjustment                         | UINT | RW     | -10000~10000                            |                       |       |
| 1056  | 0x70      | Cd-35      | Output level setting at AMI monitor adjust mode     | UINT | RW     | -1000 ~ 1000                            |                       |       |
| 1056  | 0xB2      | CE101      | Low current signal output mode selection, 1st motor | UINT | RW     | 0 ~ 1                                   | 1                     |       |
| 1056  | 0xB3      | CE102      | Low current detection level 1, 1st motor            | UINT | RW     | (0~2.00)×<br>Inverter rated current     | 0.1A                  |       |
| 1056  | 0xB4      | CE103      | Low current detection level 2, 1st motor            | UINT | RW     |   |                       |       |
| 1056  | 0xB6      | CE105      | Over current signal output mode selection,1st motor | UINT | RW     | 0 ~ 1                                   | 1                     |       |
| 1056  | 0xB7      | CE106      | Over current detection level 1, 1st motor           | UINT | RW     | (0~2.00)×<br>Inverter rated current     | 0.1A                  |       |
| 1056  | 0xB8      | CE107      | Over current detection level 2, 1st motor           | UINT | RW     |   |                       |       |
| 1056  | 0xBB      | CE-10      | Arrival frequency setting during acceleration 1     | UINT | RW     | 0 ~ 59000                               | 0.01Hz                |       |
| 1056  | 0xBC      | CE-11      | Arrival frequency setting during deceleration 1     | UINT | RW     |   |                       |       |
| 1056  | 0xBD      | CE-12      | Arrival frequency setting during acceleration 2     | UINT | RW     |   |                       |       |
| 1056  | 0xBE      | CE-13      | Arrival frequency setting during deceleration 2     | UINT | RW     |   |                       |       |

| Index | Sub-index | Func. code | Function name  | Type  | Access | Setting Items                          | Data resolution units |
|-------|-----------|------------|--|-------|--------|--|-----------------------|
| 1056  | 0xC5      | CE120      | Over torque level (Forward driving), 1st motor       | UINT  | RW     | 0 ~ 5000                               | 0.1%                  |
| 1056  | 0xC6      | CE121      | Over torque level (Reverse regenerative), 1st motor  | UINT  | RW     |  |                       |
| 1056  | 0xC7      | CE122      | Over torque level(Reverse driving), 1st motor        | UINT  | RW     |  |                       |
| 1056  | 0xC8      | CE123      | Over torque level (Forward regenerative), 1st motor  | UINT  | RW     |  |                       |
| 1056  | 0xCF      | CE-30      | Electronic thermal warning level (MTR)               | UINT  | RW     | 0 ~ 10000                              | 0.01%                 |
| 1056  | 0xD0      | CE-31      | Electronic thermal warning level (CTL)               | UINT  | RW     |  |                       |
| 1056  | 0xD2      | CE-33      | Zero speed detection level                           | UINT  | RW     |  |                       |
| 1056  | 0xD3      | CE-34      | Cooling FAN over-heat warning level                  | UINT  | RW     | 0 ~ 200                                | 1°C                   |
| 2056  | 0xD5      | CE-36      | Accum.RUN(RNT)/Accum.Power-on(ONT) time setting      | UDINT | RW     | 0 ~ 100000                             | 1hr                   |
| 1056  | 0xD9      | CE-40      | Window comparator for VRF higher level               | UINT  | RW     | 0 ~ 100                                | 1%                    |
| 1056  | 0xDA      | CE-41      | Window comparator for VRF lower level                | UINT  | RW     |  |                       |
| 1056  | 0xDB      | CE-42      | Window comparator for VRF hysteresis width           | UINT  | RW     | 0 ~ 10                                 | 1%                    |
| 1056  | 0xDC      | CE-43      | Window comparator for IRF higher level               | UINT  | RW     | 0 ~ 100                                |                       |
| 1056  | 0xDD      | CE-44      | Window comparator for IRF lower level                | UINT  | RW     |  |                       |
| 1056  | 0xDE      | CE-45      | Window comparator for IRF hysteresis width           | UINT  | RW     | 0 ~ 10                                 |                       |
| 1056  | 0xDF      | CE-46      | Window comparator for VF2 higher level               | UINT  | RW     | -100 ~ 100                             |                       |
| 1056  | 0xE0      | CE-47      | Window comparator for VF2 lower level                | UINT  | RW     |  |                       |
| 1056  | 0xE1      | CE-48      | Window comparator for VF2 hysteresis width           | UINT  | RW     | 0 ~ 10                                 |                       |
| 1056  | 0xE3      | CE-50      | Operation level at VRF disconnection                 | UINT  | RW     | 0 ~ 100                                |                       |
| 1056  | 0xE4      | CE-51      | Operation level selection at VRF disconnection       | UINT  | RW     | 0 ~ 2                                  | 1                     |
| 1056  | 0xE5      | CE-52      | Operation level at IRF disconnection                 | UINT  | RW     | 0 ~ 100                                | 1%                    |
| 1056  | 0xE6      | CE-53      | Operation level selection at IRF disconnection       | UINT  | RW     | 0 ~ 2                                  | 1                     |
| 1056  | 0xE7      | CE-54      | Operation level at VF2 disconnection                 | UINT  | RW     | -100 ~ 100                             | 1%                    |
| 1056  | 0xE8      | CE-55      | Operation level selection at VF2 disconnection       | UINT  | RW     | 0 ~ 2                                  | 1                     |
| 1096  | 0x12      | CE201      | Low current signal output mode selection,2nd-motor   | UINT  | RW     | 0 ~ 1                                  |                       |
| 1096  | 0x13      | CE202      | Low current detection level 1, 2nd-motor             | UINT  | RW     | (0~2.00)×<br>Inverter rated<br>current | 0.1A                  |
| 1096  | 0x14      | CE203      | Low current detection level 2, 2nd-motor             | UINT  | RW     |  |                       |
| 1096  | 0x16      | CE205      | Over current signal output mode selection, 2nd-motor | UINT  | RW     | 0 ~ 1                                  | 1                     |
| 1096  | 0x17      | CE206      | Over current detection level 1, 2nd-motor            | UINT  | RW     | (0~2.00)×<br>Inverter rated<br>current | 0.1A                  |
| 1096  | 0x18      | CE207      | Over current detection level 2, 2nd-motor            | UINT  | RW     |  |                       |
| 1096  | 0x25      | CE220      | Over torque level (Forward driving), 2nd-motor       | UINT  | RW     | 0 ~ 5000                               | 0.1%                  |
| 1096  | 0x26      | CE221      | Over torque level (Reverse regenerative), 2nd-motor  | UINT  | RW     |  |                       |
| 1096  | 0x27      | CE222      | Over torque level(Reverse driving), 2nd-motor        | UINT  | RW     |  |                       |
| 1096  | 0x28      | CE223      | Over torque level (Forward regenerative), 2nd motor  | UINT  | RW     |  |                       |
| 1057  | 0x18      | CF-01      | RS485 communication baud rate selection              | UINT  | RW     | 3 ~ 10                                 | 1                     |
| 1057  | 0x19      | CF-02      | RS485 communication Node allocation                  | UINT  | RW     | 1 ~ 247                                |                       |
| 1057  | 0x1A      | CF-03      | RS485 communication parity selection                 | UINT  | RW     | 0 ~ 2                                  |                       |
| 1057  | 0x1B      | CF-04      | RS485 communication stop-bit selection               | UINT  | RW     | 1 ~ 2                                  |                       |
| 1057  | 0x1C      | CF-05      | RS485 communication error selection                  | UINT  | RW     | 0 ~ 4                                  |                       |
| 1057  | 0x1D      | CF-06      | RS485 communication timeout setting                  | UINT  | RW     | 0 ~ 10000                              | 0.01s                 |
| 1057  | 0x1E      | CF-07      | RS485 communication wait time setting                | UINT  | RW     | 0 ~ 1000                               | 1ms                   |
| 1057  | 0x1F      | CF-08      | RS485 communication mode selection                   | UINT  | RW     | 1 ~ 3                                  | 1                     |
| 1057  | 0x22      | CF-11      | Register data AVI⇄% conversion function              | UINT  | RW     | 0 ~ 1                                  |                       |
| 1057  | 0x2B      | CF-20      | EzCOM Start node No.                                 | UINT  | RW     | 1 ~ 8                                  |                       |
| 1057  | 0x2C      | CF-21      | EzCOM End node No.                                   | UINT  | RW     |  |                       |
| 1057  | 0x2D      | CF-22      | EzCOM Start method selection                         | UINT  | RW     | 0 ~ 1                                  |                       |
| 1057  | 0x2E      | CF-23      | EzCOM data size                                      | UINT  | RW     | 1 ~ 5                                  |                       |
| 1057  | 0x2F      | CF-24      | EzCOM destination address 1                          | UINT  | RW     | 1 ~ 247                                |                       |
| 1057  | 0x30      | CF-25      | EzCOM destination resister 1                         | UINT  | RW     | 0 ~ 65535                              |                       |
| 1057  | 0x31      | CF-26      | EzCOM source resister 1                              | UINT  | RW     | 0 ~ 65535                              |                       |
| 1057  | 0x32      | CF-27      | EzCOM destination address 2                          | UINT  | RW     | 1 ~ 247                                |                       |
| 1057  | 0x33      | CF-28      | EzCOM destination resister 2                         | UINT  | RW     | 0 ~ 65535                              |                       |
| 1057  | 0x34      | CF-29      | EzCOM source resister 2                              | UINT  | RW     |  |                       |

| Index | Sub-index | Func. code | Function name                     | Type | Access | Setting Items | Data resolution units |
|-------|-----------|------------|-----------------------------------|------|--------|---------------|-----------------------|
| 1057  | 0x35      | CF-30      | EzCOM destination address 3       | UINT | RW     | 1 ~ 247       | 1                     |
| 1057  | 0x36      | CF-31      | EzCOM destination register 3      | UINT | RW     | 0 ~ 65535     |                       |
| 1057  | 0x37      | CF-32      | EzCOM source register 3           | UINT | RW     | 1 ~ 247       |                       |
| 1057  | 0x38      | CF-33      | EzCOM destination address 4       | UINT | RW     |               |                       |
| 1057  | 0x39      | CF-34      | EzCOM destination register 4      | UINT | RW     | 0 ~ 65535     |                       |
| 1057  | 0x3A      | CF-35      | EzCOM source register 4           | UINT | RW     |               |                       |
| 1057  | 0x3B      | CF-36      | EzCOM destination address 5       | UINT | RW     | 1 ~ 247       |                       |
| 1057  | 0x3C      | CF-37      | EzCOM destination register 5      | UINT | RW     | 0 ~ 65535     |                       |
| 1057  | 0x3D      | CF-38      | EzCOM source register 5           | UINT | RW     |               |                       |
| 1057  | 0x49      | CF-50      | USB communication Node allocation | UINT | RW     |               |                       |

## 13.2.6 Code-H

| Index | Sub-index | Func. code | Function name                                      | Type | Access | Setting Items | Data resolution units |
|-------|-----------|------------|--|------|--------|---------------|-----------------------|
| 1059  | 0x10      | HA-01      | Auto-tuning selection                              | UINT | RW     | 0 ~ 3         | 1                     |
| 1059  | 0x11      | HA-02      | RUN command selection at Auto-tuning               | UINT | RW     | 0 ~ 1         |                       |
| 1059  | 0x12      | HA-03      | Online auto-tuning selection                       | UINT | RW     |               |                       |
| 1059  | 0x19      | HA110      | Stabilization constant, 1st-motor                  | UINT | RW     | 0 ~ 1000      | 1%                    |
| 1059  | 0x1E      | HA112      | Stabilization ramp function end ratio, 1st-motor   | UINT | RW     | 0 ~ 100       |                       |
| 1059  | 0x1E      | HA113      | Stabilization ramp function start ratio, 1st-motor | UINT | RW     |               |                       |
| 1059  | 0x1E      | HA115      | Speed response, 1st-motor                          | UINT | RW     | 0 ~ 1000      |                       |
| 1059  | 0x23      | HA120      | ASR gain switching mode selection, 1st-motor       | UINT | RW     | 00 ~ 01       | 1                     |
| 1059  | 0x24      | HA121      | ASR gain switching time setting, 1st-motor         | UINT | RW     | 0 ~ 10000     | 1ms                   |
| 1059  | 0x25      | HA122      | ASR gain mapping intermediate speed 1, 1st-motor   | UINT | RW     | 0 ~ 59000     | 0.01Hz                |
| 1059  | 0x26      | HA123      | ASR gain mapping intermediate speed 2, 1st-motor   | UINT | RW     |               |                       |
| 1059  | 0x27      | HA124      | ASR gain mapping Maximum speed, 1st-motor          | UINT | RW     |               |                       |
| 1059  | 0x28      | HA125      | ASR gain mapping P-gain 1, 1st-motor               | UINT | RW     |               |                       |
| 1059  | 0x29      | HA126      | ASR gain mapping I-gain 1, 1st-motor               | UINT | RW     | 0 ~ 10000     | 0.1%                  |
| 1059  | 0x2A      | HA127      | ASR gain mapping P-gain 1 at P-control, 1st-motor  | UINT | RW     |               |                       |
| 1059  | 0x2B      | HA128      | ASR gain mapping P-gain 2, 1st-motor               | UINT | RW     |               |                       |
| 1059  | 0x2C      | HA129      | ASR gain mapping I-gain 2, 1st-motor               | UINT | RW     |               |                       |
| 1059  | 0x2D      | HA130      | ASR gain mapping P-gain 2 at P-control, 1st-motor  | UINT | RW     |               |                       |
| 1059  | 0x2E      | HA131      | ASR gain mapping P-gain 3, 1st-motor               | UINT | RW     |               |                       |
| 1059  | 0x2F      | HA132      | ASR gain mapping I-gain 3, 1st-motor               | UINT | RW     |               |                       |
| 1059  | 0x30      | HA133      | ASR gain mapping P-gain 4, 1st-motor               | UINT | RW     |               |                       |
| 1059  | 0x31      | HA134      | ASR gain mapping I-gain 4, 1st-motor               | UINT | RW     |               |                       |
| 1098  | 0x77      | HA210      | Stabilization constant, 2nd-motor                  | UINT | RW     |               |                       |
| 1098  | 0x7C      | HA212      | Stabilization ramp function end ratio, 2nd-motor   | UINT | RW     | 0 ~ 100       |                       |
| 1098  | 0x7C      | HA213      | Stabilization ramp function start ratio, 2nd-motor | UINT | RW     |               |                       |
| 1098  | 0x7C      | HA215      | Speed response, 2nd-motor                          | UINT | RW     | 0 ~ 1000      | 1                     |
| 1098  | 0x81      | HA220      | ASR gain switching mode selection, 2nd-motor       | UINT | RW     | 0 ~ 1         | 1ms                   |
| 1098  | 0x82      | HA221      | ASR gain switching time setting, 2nd-motor         | UINT | RW     | 0 ~ 10000     | 0.01Hz                |
| 1098  | 0x83      | HA222      | ASR gain mapping intermediate speed 1, 2nd-motor   | UINT | RW     | 0 ~ 59000     |                       |
| 1098  | 0x84      | HA223      | ASR gain mapping intermediate speed 2, 2nd-motor   | UINT | RW     |               |                       |
| 1098  | 0x85      | HA224      | ASR gain mapping Maximum speed, 2nd-motor          | UINT | RW     | 0 ~ 10000     | 0.1%                  |
| 1098  | 0x86      | HA225      | ASR gain mapping P-gain 1, 2nd-motor               | UINT | RW     |               |                       |
| 1098  | 0x87      | HA226      | ASR gain mapping I-gain 1, 2nd-motor               | UINT | RW     |               |                       |
| 1098  | 0x88      | HA227      | ASR gain mapping P-gain 1 at P-control, 2nd-motor  | UINT | RW     |               |                       |
| 1098  | 0x89      | HA228      | ASR gain mapping P-gain 2, 2nd-motor               | UINT | RW     |               |                       |
| 1098  | 0x8A      | HA229      | ASR gain mapping I-gain 2, 2nd-motor               | UINT | RW     |               |                       |
| 1098  | 0x8B      | HA230      | ASR gain mapping P-gain 2 at P-control, 2nd-motor  | UINT | RW     |               |                       |
| 1098  | 0x8C      | HA231      | ASR gain mapping P-gain 3, 2nd-motor               | UINT | RW     |               |                       |
| 1098  | 0x8D      | HA232      | ASR gain mapping I-gain 3, 2nd-motor               | UINT | RW     |               |                       |
| 1098  | 0x8E      | HA233      | ASR gain mapping P-gain 4, 2nd-motor               | UINT | RW     |               |                       |
| 1098  | 0x8F      | HA234      | ASR gain mapping I-gain 4, 2nd-motor               | UINT | RW     |               |                       |
| 1059  | 0x74      | Hb101      | Async.Motor setting, 1st-motor                     | UINT | RW     | 0 ~ 3         | 1                     |



| Index | Sub-index | Func. code | Function name   | Type  | Access | Setting Items              | Data resolution units     |
|-------|-----------|------------|---|-------|--------|----------------------------|---------------------------|
| 1059  | 0x75      | Hb102      | Async.Motor capacity setting, 1st-motor                   | UINT  | RW     | 1 ~ 16000                  | 0.01kW                    |
| 1059  | 0x76      | Hb103      | Async.Motor Pole number setting, 1st-motor                | UINT  | RW     | 0 ~ 23                     | 1                         |
| 1059  | 0x77      | Hb104      | Async.Motor Base frequency setting, 1st-motor             | UINT  | RW     | 1000 ~ 59000               | 0.01Hz                    |
| 1059  | 0x78      | Hb105      | Async.Motor Maximum frequency setting, 1st-motor          | UINT  | RW     | 1000 ~ 59000               | 0.01Hz                    |
| 1059  | 0x79      | Hb106      | Async.Motor rated voltage, 1st-motor                      | UINT  | RW     | 1 ~ 1000                   | 1V                        |
| 2059  | 0x7B      | Hb108      | Async.Motor rated current, 1st-motor                      | UDINT | RW     | 1 ~ 1000000                | 0.01A                     |
| 2059  | 0x7D      | Hb110      | Async.Motor constant R1, 1st-motor                        | UDINT | RW     | 1~1000000000               | 0.000001Ω                 |
| 2059  | 0x7F      | Hb112      | Async.Motor constant R2, 1st-motor                        | UDINT | RW     |                            | 0.000001mH                |
| 2059  | 0x81      | Hb114      | Async.Motor constant L, 1st-motor                         | UDINT | RW     |                            |                           |
| 2059  | 0x83      | Hb116      | Async.Motor constant lo, 1st-motor                        | UDINT | RW     |                            | 1 ~ 1000000               |
| 2059  | 0x85      | Hb118      | Async.Motor constant J, 1st-motor                         | UDINT | RW     | 1~1000000000               | 0.00001 kg·m <sup>2</sup> |
| 1059  | 0x91      | Hb130      | Minimum frequency adjustment, 1st-motor                   | UINT  | RW     | 10 ~ 1000                  | 0.01Hz                    |
| 1059  | 0x92      | Hb131      | Reduced voltage start time setting, 1st-motor             | UINT  | RW     | 0 ~ 2000                   | 1ms                       |
| 1059  | 0x9B      | Hb140      | Manual torque boost operational mode selection, 1st-motor | UINT  | RW     | 0 ~ 3                      | 1                         |
| 1059  | 0x9C      | Hb141      | Manual torque boost value, 1st-motor                      | UINT  | RW     | 0 ~ 200                    | 0.1%                      |
| 1059  | 0x9D      | Hb142      | Manual torque boost Peak speed, 1st-motor                 | UINT  | RW     | 0 ~ 500                    |                           |
| 1059  | 0xA0      | Hb145      | Eco drive enable, 1st-motor                               | UINT  | RW     | 0 ~ 1                      | 1                         |
| 1059  | 0xA1      | Hb146      | Eco drive response adjustment, 1st-motor                  | UINT  | RW     | 0 ~ 100                    | 1%                        |
| 1059  | 0xA5      | Hb150      | Free-V/f frequency 1 setting, 1st-motor                   | UINT  | RW     | 0~59000(Hb152)             | 0.01Hz                    |
| 1059  | 0xA6      | Hb151      | Free-V/f Voltage 1 setting, 1st-motor                     | UINT  | RW     | 0 ~ 10000                  | 0.1V                      |
| 1059  | 0xA7      | Hb152      | Free-V/f frequency 2 setting, 1st-motor                   | UINT  | RW     | 0 ~ 59000<br>(Hb150~Hb154) | 0.01Hz                    |
| 1059  | 0xA8      | Hb153      | Free-V/f Voltage 2 setting, 1st-motor                     | UINT  | RW     | 0 ~ 10000                  | 0.1V                      |
| 1059  | 0xA9      | Hb154      | Free-V/f frequency 3 setting, 1st-motor                   | UINT  | RW     | 0 ~ 59000<br>(Hb152~Hb156) | 0.01Hz                    |
| 1059  | 0xAA      | Hb155      | Free-V/f Voltage 3 setting, 1st-motor                     | UINT  | RW     | 0 ~ 10000                  | 0.1V                      |
| 1059  | 0xAB      | Hb156      | Free-V/f frequency 4 setting, 1st-motor                   | UINT  | RW     | 0 ~ 59000<br>(Hb154~Hb158) | 0.01Hz                    |
| 1059  | 0xAC      | Hb157      | Free-V/f Voltage 4 setting, 1st-motor                     | UINT  | RW     | 0 ~ 10000                  | 0.1V                      |
| 1059  | 0xAD      | Hb158      | Free-V/f frequency 5 setting, 1st-motor                   | UINT  | RW     | 0 ~ 59000<br>(Hb156~Hb160) | 0.01Hz                    |
| 1059  | 0xAE      | Hb159      | Free-V/f Voltage 5 setting, 1st-motor                     | UINT  | RW     | 0 ~ 10000                  | 0.1V                      |
| 1059  | 0xAF      | Hb160      | Free-V/f frequency 6 setting, 1st-motor                   | UINT  | RW     | 0 ~ 59000<br>(Hb158~Hb162) | 0.01Hz                    |
| 1059  | 0xB0      | Hb161      | Free-V/f Voltage 6 setting, 1st-motor                     | UINT  | RW     | 0 ~ 10000                  | 0.1V                      |
| 1059  | 0xB1      | Hb162      | Free-V/f frequency 7 setting, 1st-motor                   | UINT  | RW     | 0 ~ 59000<br>(Hb160~Hb164) | 0.01Hz                    |
| 1059  | 0xB2      | Hb163      | Free-V/f Voltage 7 setting, 1st-motor                     | UINT  | RW     | 0 ~ 10000                  | 0.1V                      |
| 1059  | 0xB9      | Hb170      | Slip Compensation P-gain with encoder, 1st-motor          | UINT  | RW     | 0 ~ 1000                   | 1%                        |
| 1059  | 0xBA      | Hb171      | Slip Compensation I-gain with encoder, 1st-motor          | UINT  | RW     |                            |                           |
| 1059  | 0xC3      | Hb180      | Output voltage gain, 1st-motor                            | UINT  | RW     |                            |                           |
| 1098  | 0xD2      | Hb201      | Async.Motor setting, 2nd-motor                            | UINT  | RW     | 0 ~ 3                      | 1                         |
| 1098  | 0xD3      | Hb202      | Async.Motor capacity setting, 2nd-motor                   | UINT  | RW     | 1 ~ 16000                  | 0.01kW                    |
| 1098  | 0xD4      | Hb203      | Async.Motor Pole number setting, 2nd-motor                | UINT  | RW     | 0 ~ 23                     | 1                         |
| 1098  | 0xD5      | Hb204      | Async.Motor Base frequency setting, 2nd-motor             | UINT  | RW     | 1000 ~ 59000               | 0.01Hz                    |
| 1098  | 0xD6      | Hb205      | Async.Motor Maximum frequency setting, 2nd-motor          | UINT  | RW     |                            |                           |
| 1098  | 0xD7      | Hb206      | Async.Motor rated voltage, 2nd-motor                      | UINT  | RW     | 1 ~ 1000                   | 1V                        |
| 2098  | 0xD9      | Hb208      | Async.Motor rated current, 2nd-motor                      | UDINT | RW     | 1 ~ 1000000                | 0.01A                     |
| 2098  | 0xDB      | Hb210      | Async.Motor constant R1, 2nd-motor                        | UDINT | RW     | 1~1000000000               | 0.000001Ω                 |
| 2098  | 0xDD      | Hb212      | Async.Motor constant R2, 2nd-motor                        | UDINT | RW     |                            | 0.000001mH                |
| 2098  | 0xDF      | Hb214      | Async.Motor constant L, 2nd-motor                         | UDINT | RW     |                            |                           |
| 2098  | 0xE1      | Hb216      | Async.Motor constant lo, 2nd-motor                        | UDINT | RW     | 1 ~ 1000000                | 0.01A                     |

| Index | Sub-index | Func. code | Function name   | Type  | Access | Setting Items           | Data resolution units     |
|-------|-----------|------------|---|-------|--------|-------------------------|---------------------------|
| 2098  | 0xE3      | Hb218      | Async.Motor constant J, 2nd-motor                           | UDINT | RW     | 1~1000000000            | 0.00001 kg·m <sup>2</sup> |
| 1098  | 0xEF      | Hb230      | Minimum frequency adjustment, 2nd-motor                     | UINT  | RW     | 10 ~ 1000               | 0.01Hz                    |
| 1098  | 0xF0      | Hb231      | Reduced voltage start time setting, 2nd-motor               | UINT  | RW     | 0 ~ 2000                | 1ms                       |
| 1098  | 0xF9      | Hb240      | Manual torque boost operational mode selection, 2nd-motor   | UINT  | RW     | 0 ~ 3                   | 1                         |
| 1098  | 0xFA      | Hb241      | Manual torque boost value, 2nd-motor                        | UINT  | RW     | 0 ~ 200                 | 0.1%                      |
| 1098  | 0xFB      | Hb242      | Manual torque boost Peak speed, 2nd-motor                   | UINT  | RW     | 0 ~ 500                 |                           |
| 1098  | 0xFE      | Hb245      | Eco drive enable, 2nd-motor                                 | UINT  | RW     | 0 ~ 1                   | 1                         |
| 1099  | 0x1       | Hb246      | Eco drive response adjustment, 2nd-motor                    | UINT  | RW     | 0 ~ 100                 | 1%                        |
| 1099  | 0x5       | Hb250      | Free-V/f frequency 1 setting, 2nd-motor                     | UINT  | RW     | 0~59000 (Hb252)         | 0.01Hz                    |
| 1099  | 0x6       | Hb251      | Free-V/f Voltage 1 setting, 2nd-motor                       | UINT  | RW     | 0 ~ 10000               | 0.1V                      |
| 1099  | 0x7       | Hb252      | Free-V/f frequency 2 setting, 2nd-motor                     | UINT  | RW     | 0 ~ 59000 (Hb250~Hb254) | 0.01Hz                    |
| 1099  | 0x8       | Hb253      | Free-V/f Voltage 2 setting, 2nd-motor                       | UINT  | RW     | 0 ~ 10000               | 0.1V                      |
| 1099  | 0x9       | Hb254      | Free-V/f frequency 3 setting, 2nd-motor                     | UINT  | RW     | 0 ~ 59000 (Hb252~Hb256) | 0.01Hz                    |
| 1099  | 0xA       | Hb255      | Free-V/f Voltage 3 setting, 2nd-motor                       | UINT  | RW     | 0 ~ 10000               | 0.1V                      |
| 1099  | 0xB       | Hb256      | Free-V/f frequency 4 setting, 2nd-motor                     | UINT  | RW     | 0 ~ 59000 (Hb254~Hb258) | 0.01Hz                    |
| 1099  | 0xC       | Hb257      | Free-V/f Voltage 4 setting, 2nd-motor                       | UINT  | RW     | 0 ~ 10000               | 0.1V                      |
| 1099  | 0xD       | Hb258      | Free-V/f frequency 5 setting, 2nd-motor                     | UINT  | RW     | 0 ~ 59000 (Hb256~Hb260) | 0.01Hz                    |
| 1099  | 0xE       | Hb259      | Free-V/f Voltage 5 setting, 2nd-motor                       | UINT  | RW     | 0 ~ 10000               | 0.1V                      |
| 1099  | 0xF       | Hb260      | Free-V/f frequency 6 setting, 2nd-motor                     | UINT  | RW     | 0 ~ 59000 (Hb258~Hb262) | 0.01Hz                    |
| 1099  | 0x10      | Hb261      | Free-V/f Voltage 6 setting, 2nd-motor                       | UINT  | RW     | 0 ~ 10000               | 0.1V                      |
| 1099  | 0x11      | Hb262      | Free-V/f frequency 7 setting, 2nd-motor                     | UINT  | RW     | 0 ~ 59000 (Hb260~Hb204) | 0.01Hz                    |
| 1099  | 0x12      | Hb263      | Free-V/f Voltage 7 setting, 2nd-motor                       | UINT  | RW     | 0 ~ 10000               | 0.1V                      |
| 1099  | 0x19      | Hb270      | Slip Compensation P-gain with encoder, 2nd-motor            | UINT  | RW     | 0 ~ 1000                | 1%                        |
| 1099  | 0x1A      | Hb271      | Slip Compensation I-gain with encoder, 2nd-motor            | UINT  | RW     |                         |                           |
| 1099  | 0x23      | Hb280      | Output voltage gain, 2nd-motor                              | UINT  | RW     |                         |                           |
| 1059  | 0xD8      | HC101      | Automatic torque boost voltage compensation gain, 1st-motor | UINT  | RW     | 0 ~ 255                 | 1%                        |
| 1059  | 0xD9      | HC102      | Automatic torque boost slip compensation gain, 1st-motor    | UINT  | RW     |                         |                           |
| 1059  | 0xE1      | HC110      | Zero speed area limit for Async.M-OSLV, 1st-motor           | UINT  | RW     |                         |                           |
| 1059  | 0xE2      | HC111      | Boost value at start, 1st-motor                             | UINT  | RW     | 0 ~ 50                  | 1                         |
| 1059  | 0xE3      | HC112      | Boost value at start for Async.M-OSLV, 1st-motor            | UINT  | RW     |                         |                           |
| 1059  | 0xE4      | HC113      | Secondary resistance correction, 1st-motor                  | UINT  | RW     | 0 ~ 1                   | 1                         |
| 1059  | 0xE5      | HC114      | Counter direction run protection selection, 1st-motor       | UINT  | RW     |                         |                           |
| 1059  | 0xE6      | HC115      | Selection for the torque transformation, 1st-motor          | UINT  | RW     | 0 ~ 1                   | 1                         |
| 1059  | 0xEB      | HC120      | Torque current reference filter time constant, 1st-motor    | UINT  | RW     | 0 ~ 100                 | 1ms                       |
| 1059  | 0xEC      | HC121      | Speed feedforward compensation gain, 1st-motor              | UINT  | RW     | 0 ~ 1000                | 1%                        |
| 1059  | 0xFC      | HC137      | Flux setting level, 1st-motor                               | UINT  | RW     | 0.0 ~ 100.0             | 0.1%                      |
| 1059  | 0xFF      | HC140      | Forcing level, 1st-motor                                    | UINT  | RW     | 0 ~ 1000                | 1%                        |
| 1059  | 0x00      | HC141      | Modulation threshold 1, 1st-motor                           | UINT  | RW     | 0 ~ 133                 |                           |
| 1059  | 0x01      | HC142      | Modulation threshold 2, 1st-motor                           | UINT  | RW     |                         |                           |
| 1099  | 0x38      | HC201      | Automatic torque boost voltage compensation gain, 2nd-motor | UINT  | RW     | 0 ~ 255                 | 1%                        |
| 1099  | 0x39      | HC202      | Automatic torque boost slip compensation gain, 2nd-motor    | UINT  | RW     |                         |                           |
| 1099  | 0x41      | HC210      | Zero speed area limit for Async.M-OSLV, 2nd-motor           | UINT  | RW     | 0 ~ 100                 | 1                         |
| 1099  | 0x42      | HC211      | Boost value at start, 2nd-motor                             | UINT  | RW     | 0 ~ 50                  | 1                         |
| 1099  | 0x43      | HC212      | Boost value at start for Async.M-OSLV, 2nd-motor            | UINT  | RW     |                         |                           |

| Index | Sub-index | Func. code | Function name  | Type  | Access | Setting Items | Data resolution units     |        |
|-------|-----------|------------|--|-------|--------|---------------|---------------------------|--------|
| 1099  | 0x44      | HC213      | Secondary resistance correction, 2nd-motor                       | UINT  | RW     | 0 ~ 1         | 1                         |        |
| 1099  | 0x45      | HC214      | Counter direction run protection selection, 2nd-motor            | UINT  | RW     |               |                           |        |
| 1099  | 0x46      | HC215      | Selection for the torque transformation, 2nd-motor               | UINT  | RW     |               |                           |        |
| 1099  | 0x4B      | HC220      | Torque current reference filter time constant, 2nd-motor         | UINT  | RW     | 0 ~ 100       | 1ms                       |        |
| 1099  | 0x4C      | HC221      | Speed feedforward compensation gain, 2nd-motor                   | UINT  | RW     | 0 ~ 1000      | 1%                        |        |
| 1099  | 0x5C      | HC237      | Flux setting level, 2nd-motor                                    | UINT  | RW     | 0.0 ~ 100.0   | 0.1%                      |        |
| 1099  | 0x5F      | HC240      | Forcing level, 2nd-motor   | UINT  | RW     | 0 ~ 1000      | 1%                        |        |
| 1099  | 0x60      | HC241      | Modulation threshold 1, 2nd-motor                                | UINT  | RW     | 0 ~ 133       |                           |        |
| 1099  | 0x61      | HC242      | Modulation threshold 2, 2nd-motor                                | UINT  | RW     |               |                           |        |
| 1060  | 0x3F      | Hd102      | Sync.Motor capacity setting, 1st-motor                           | UINT  | RW     | 1 ~ 16000     | 0.01kW                    |        |
| 1060  | 0x40      | Hd103      | Sync.Motor Pole number setting, 1st-motor                        | UINT  | RW     | 0 ~ 23        | 1                         |        |
| 1060  | 0x41      | Hd104      | Sync.Base frequency setting, 1st-motor                           | UINT  | RW     | 1000 ~ 59000  | 0.01Hz                    |        |
| 1060  | 0x42      | Hd105      | Sync.Maximum frequency setting, 1st-motor                        | UINT  | RW     |               |                           |        |
| 1060  | 0x43      | Hd106      | Sync.Motor rated voltage, 1st-motor                              | UINT  | RW     | 1 ~ 1000      | 1V                        |        |
| 2060  | 0x45      | Hd108      | Sync.Motor rated current, 1st-motor                              | UDINT | RW     | 1 ~ 1000000   | 0.01A                     |        |
| 2060  | 0x47      | Hd110      | Sync.Motor constant R, 1st-motor                                 | UDINT | RW     | 1~1000000000  | 0.000001Ω                 |        |
| 2060  | 0x49      | Hd112      | Sync.Motor constant Ld, 1st-motor                                | UDINT | RW     |               | 0.000001mH                |        |
| 2060  | 0x4B      | Hd114      | Sync.Motor constant Lq, 1st-motor                                | UDINT | RW     |               |                           |        |
| 2060  | 0x4D      | Hd116      | Sync.Motor constant Ke, 1st-motor                                | UDINT | RW     | 1 ~ 1000000   | 0.1mVs/rad                |        |
| 2060  | 0x4F      | Hd118      | Sync.Motor constant J, 1st-motor                                 | UDINT | RW     | 1~1000000000  | 0.00001 kg·m <sup>2</sup> |        |
| 1060  | 0x5B      | Hd130      | Minimum Frequency for Sync.M-SLV, 1st-motor                      | UINT  | RW     | 0 ~ 50        | 1%                        |        |
| 1060  | 0x5C      | Hd131      | No-Load current for Sync.M-SLV, 1st-motor                        | UINT  | RW     | 0 ~ 100       |                           |        |
| 1060  | 0x5D      | Hd132      | Starting Method for Sync.M, 1st-motor                            | UINT  | RW     | 0 ~ 1         | 1                         |        |
| 1060  | 0x5E      | Hd133      | IMPE OV wait number for Sync.M, 1st-motor                        | UINT  | RW     | 0 ~ 255       |                           |        |
| 1060  | 0x5F      | Hd134      | IMPE detect wait number for Sync.M, 1st-motor                    | UINT  | RW     |               |                           |        |
| 1060  | 0x60      | Hd135      | IMPE detect number for Sync.M, 1st-motor                         | UINT  | RW     |               |                           |        |
| 1060  | 0x61      | Hd136      | IMPE voltage gain for Sync.M, 1st-motor                          | UINT  | RW     | 0 ~ 200       | 1%                        |        |
| 1060  | 0x62      | Hd137      | IMPE Mg-pole position offset, 1st-motor                          | UINT  | RW     | 0 ~ 359       | 1deg                      |        |
| 1060  | 0x66      | Hd-41      | Carrier frequency at IVMS *                                      | UINT  | RW     | 5 ~ 160       | 0.1kHz                    |        |
| 1060  | 0x67      | Hd-42      | Filter gain of current detection at IVMS *                       | UINT  | RW     | 0 ~ 1000      | 1                         |        |
| 1060  | 0x68      | Hd-43      | Open phase voltage detection gain, 1st-motor *                   | UINT  | RW     | 0 ~ 3         |                           |        |
| 1060  | 0x69      | Hd-44      | Open phase switching threshold compensation *                    | UINT  | RW     | 0 ~ 1         |                           |        |
| 1060  | 0x6A      | Hd-45      | P-Gain for speed control, SM(PMM)-IVMS *                         | UINT  | RW     | 0 ~ 1000      |                           |        |
| 1060  | 0x6B      | Hd-46      | I-Gain for speed control, SM(PMM)-IVMS *                         | UINT  | RW     | 0 ~ 10000     |                           |        |
| 1060  | 0x6C      | Hd-47      | Wait time for open phase switching, SM(PMM)-IVM *                | UINT  | RW     | 0 ~ 1000      |                           |        |
| 1060  | 0x6D      | Hd-48      | Limitation of decision about the drive direction, SM(PMM)-IVMS * | UINT  | RW     | 0 ~ 1         |                           |        |
| 1060  | 0x6E      | Hd-49      | Open phase voltage detection timing adjustment, SM(PMM)-IVMS *   | UINT  | RW     | 0 ~ 1000      |                           |        |
| 1060  | 0x6F      | Hd-50      | Minimum pulse width adjustment, SM(PMM)-IVMS *                   | UINT  | RW     | 0 ~ 255       |                           |        |
| 1060  | 0x70      | Hd-51      | IVMS Current Limit *   | UINT  | RW     |               |                           |        |
| 1060  | 0x71      | Hd-52      | IVMS Threshold Gain *  | UINT  | RW     |               |                           |        |
| 1060  | 0x77      | Hd-58      | IVMSfc start/end point *   | UINT  | RW     | 0 ~ 50        |                           | 1%     |
| 1099  | 0x9D      | Hd202      | Sync.Motor capacity setting, 2nd-motor                           | UINT  | RW     | 1 ~ 16000     |                           | 0.01kW |
| 1099  | 0x9E      | Hd203      | Sync.Motor Pole number setting, 2nd-motor                        | UINT  | RW     | 0 ~ 23        | 1                         |        |
| 1099  | 0x9F      | Hd204      | Sync.Base frequency setting, 2nd-motor                           | UINT  | RW     | 1000 ~ 59000  | 0.01Hz                    |        |
| 1099  | 0xA0      | Hd205      | Sync.Maximum frequency setting, 2nd-motor                        | UINT  | RW     |               |                           |        |
| 1099  | 0xA1      | Hd206      | Sync.Motor rated voltage, 2nd-motor                              | UINT  | RW     | 1 ~ 1000      | 1V                        |        |
| 2099  | 0xA3      | Hd208      | Sync.Motor rated current, 2nd-motor                              | UDINT | RW     | 1 ~ 1000000   | 0.01A                     |        |
| 2099  | 0xA5      | Hd210      | Sync.Motor constant R, 2nd-motor                                 | UDINT | RW     | 1~1000000000  | 0.000001Ω                 |        |
| 2099  | 0xA7      | Hd212      | Sync.Motor constant Ld, 2nd-motor                                | UDINT | RW     |               | 0.000001mH                |        |
| 2099  | 0xA9      | Hd214      | Sync.Motor constant Lq, 2nd-motor                                | UDINT | RW     |               |                           |        |
| 2099  | 0xAB      | Hd216      | Sync.Motor constant Ke, 2nd-motor                                | UDINT | RW     | 1 ~ 1000000   | 0.1mVs/rad                |        |

| Index | Sub-index | Func. code | Function name                                 | Type  | Access | Setting Items | Data resolution units     |
|-------|-----------|------------|---|-------|--------|---------------|---------------------------|
| 2099  | 0xAD      | Hd218      | Sync.Motor constant J, 2nd-motor              | UDINT | RW     | 1~1000000000  | 0.00001 kg·m <sup>2</sup> |
| 1099  | 0xB9      | Hd230      | Minimum Frequency for Sync.M-SLV, 2nd-motor   | UINT  | RW     | 0 ~ 50        | 1%                        |
| 1099  | 0xBA      | Hd231      | No-Load current for Sync.M-SLV, 2nd-motor     | UINT  | RW     | 0 ~ 100       |                           |
| 1099  | 0xBB      | Hd232      | Starting Method for Sync.M, 2nd-motor         | UINT  | RW     | 0 ~ 1         | 1                         |
| 1099  | 0xBC      | Hd233      | IMPE OV wait number for Sync.M, 2nd-motor     | UINT  | RW     | 0 ~ 255       |                           |
| 1099  | 0xBD      | Hd234      | IMPE detect wait number for Sync.M, 2nd-motor | UINT  | RW     |               |                           |
| 1099  | 0xBE      | Hd235      | IMPE detect number for Sync.M, 2nd-motor      | UINT  | RW     |               |                           |
| 1099  | 0xBF      | Hd236      | IMPE voltage gain for Sync.M, 2nd-motor       | UINT  | RW     | 0 ~ 200       | 1%                        |
| 1099  | 0xC0      | Hd237      | IMPE Mg-pole position offset, 2nd-motor       | UINT  | RW     | 0 ~ 359       | 1deg                      |

\*Hd-41 to Hd-58 are reserved parameters.

### 13.2.7 Code-o

| Index                | Sub-index          | Func. code           | Function name                                    | Type | Access | Setting Items  | Data resolution units |
|----------------------|--------------------|----------------------|--|------|--------|----------------|-----------------------|
| 1063                 | 0x9                | oA-10                | Operation mode on option card error (SLOT-1)     | UINT | RW     | 0 ~ 1          | 1                     |
| 1063                 | 0xA                | oA-11                | Communication Watch Dog Timer (SLOT-1)           | UINT | RW     | 0 ~ 10000      | 0.01s                 |
| 1063                 | 0xB                | oA-12                | Action selection at communication error (SLOT-1) | UINT | RW     | 0 ~ 4          | 1                     |
| 1063                 | 0xC                | oA-13                | Run command sel (OP)1                            | UINT | RW     | 0 ~ 1          |                       |
| 1063                 | 0x13               | oA-20                | Operation mode on option card error(SLOT-2)      | UINT | RW     | 0 ~ 1          | 0.01s                 |
| 1063                 | 0x14               | oA-21                | Communication Watch Dog Timer (SLOT-2)           | UINT | RW     | 0 ~ 10000      |                       |
| 1063                 | 0x15               | oA-22                | Action selection at communication error (SLOT-2) | UINT | RW     | 0 ~ 4          | 1                     |
| 1063                 | 0x16               | oA-23                | Run command sel (OP)2                            | UINT | RW     | 0 ~ 1          |                       |
| 1063                 | 0x1D               | oA-30                | Operation mode on option card error(SLOT-3)      | UINT | RW     | 0 ~ 1          | 0.01s                 |
| 1063                 | 0x1E               | oA-31                | Communication Watch Dog Timer (SLOT-3)           | UINT | RW     | 0 ~ 10000      |                       |
| 1063                 | 0x1F               | oA-32                | Action selection at communication error (SLOT-3) | UINT | RW     | 0 ~ 4          | 1                     |
| 1063                 | 0x20               | oA-33                | Run command sel (OP)3                            | UINT | RW     | 0 ~ 1          |                       |
| 1063                 | 0x64               | ob-01                | Encoder constant setting                         | UINT | RW     | 32 ~ 65535     | 1pls                  |
| 1063                 | 0x65               | ob-02                | Encoder position selection                       | UINT | RW     | 0 ~ 1          | 1                     |
| 1063                 | 0x66               | ob-03                | CH1 Motor gear ratio Numerator                   | UINT | RW     | 1 ~ 10000      |                       |
| 1063                 | 0x67               | ob-04                | CH1 Motor gear ratio Denominator                 | UINT | RW     |                |                       |
| 1063                 | 0x6D               | ob-10                | Pulse train detection object selection           | UINT | RW     | 0 ~ 1          |                       |
| 1063                 | 0x6E               | ob-11                | Mode selection of pulse train input              | UINT | RW     | 0 ~ 2          | 0.01kHz               |
| 1063                 | 0x6F               | ob-12                | Pulse train frequency Scale                      | UINT | RW     | 5 ~ 20000      |                       |
| 1063                 | 0x70               | ob-13                | Pulse train frequency Filter time constant       | UINT | RW     | 1 ~ 200        | 0.01s                 |
| 1063                 | 0x71               | ob-14                | Pulse train frequency Bias value                 | UINT | RW     | -1000 ~ 1000   | 0.1%                  |
| 1063                 | 0x72               | ob-15                | Pulse train frequency High Limit                 | UINT | RW     | 0 ~ 1000       |                       |
| 1063                 | 0x73               | ob-16                | Pulse train frequency detection low level        | UINT | RW     |                |                       |
| 1063<br>2063<br>1063 | 0xC8<br>to<br>0xE3 | oC-01<br>to<br>oC-28 | Reserved   | UINT | RW     | -              | -                     |
| 1064                 | 0x92               | oE-01                | Filter time constant of Terminal [Ai4]           | UINT | RW     | 1 ~ 500        | 1ms                   |
| 1064                 | 0x94               | oE-03                | Start value of Terminal [Ai4]                    | UINT | RW     | 0 ~ 10000      | 0.01%                 |
| 1064                 | 0x95               | oE-04                | End value of Terminal [Ai4]                      | UINT | RW     |                |                       |
| 1064                 | 0x96               | oE-05                | Start rate of Terminal [Ai4]                     | UINT | RW     | 0~1000 (oE-06) | 0.1%                  |
| 1064                 | 0x97               | oE-06                | End rate of Terminal [Ai4]                       | UINT | RW     | (oE-05) 0~1000 |                       |
| 1064                 | 0x98               | oE-07                | Start point selection of Terminal [Ai6]          | UINT | RW     | 0 ~ 1          | 1                     |
| 1064                 | 0x9C               | oE-11                | Filter time constant of Terminal [Ai5]           | UINT | RW     | 1 ~ 500        | 1ms                   |
| 1064                 | 0x9E               | oE-13                | Start value of Terminal [Ai5]                    | UINT | RW     | 0 ~ 10000      | 0.01%                 |
| 1064                 | 0x9F               | oE-14                | End value of Terminal [Ai5]                      | UINT | RW     |                |                       |
| 1064                 | 0xA0               | oE-15                | Start rate of Terminal [Ai5]                     | UINT | RW     | 0~1000 (oE-16) | 0.1%                  |
| 1064                 | 0xA1               | oE-16                | End rate of Terminal [Ai5]                       | UINT | RW     | 0~1000 (oE-15) |                       |
| 1064                 | 0xA2               | oE-17                | Start point selection of Terminal [Ai5]          | UINT | RW     | 0 ~ 1          | 1                     |
| 1064                 | 0xA6               | oE-21                | Filter time constant of Terminal [Ai6]           | UINT | RW     | 1 ~ 500        | 1ms                   |
| 1064                 | 0xA8               | oE-23                | Start value of Terminal [Ai6]                    | UINT | RW     | -10000~10000   | 0.01%                 |

| Index | Sub-index | Func. code | Function name  | Type | Access | Setting Items                  | Data resolution units |
|-------|-----------|------------|--|------|--------|--------------------------------|-----------------------|
| 1064  | 0xA9      | oE-24      | End value of Terminal [Ai6]                                  | UINT | RW     | -10000~10000                   | 0.01%                 |
| 1064  | 0xAA      | oE-25      | Start rate of Terminal [Ai6]                                 | UINT | RW     | -1000 ~ 1000 (oE-26)           | 0.1%                  |
| 1064  | 0xAB      | oE-26      | End rate of Terminal [Ai6]                                   | UINT | RW     | -1000 ~ 1000(oE-25)            |                       |
| 1064  | 0xAD      | oE-28      | Ai4 Voltage/Current zero-gain adjustment                     | UINT | RW     | -10000~10000                   | 0.01%                 |
| 1064  | 0xAE      | oE-29      | Ai4 Voltage/Current gain adjustment                          | UINT | RW     | 0 ~ 20000                      |                       |
| 1064  | 0xAF      | oE-30      | Ai5 Voltage/Current zero-gain adjustment                     | UINT | RW     | -10000~10000                   |                       |
| 1064  | 0xB0      | oE-31      | Ai5 Voltage/Current gain adjustment                          | UINT | RW     | 0 ~ 20000                      |                       |
| 1064  | 0xB1      | oE-32      | Ai6 Voltage zero-gain adjustment                             | UINT | RW     | -10000~10000                   |                       |
| 1064  | 0xB2      | oE-33      | Ai6 Voltage gain adjustment                                  | UINT | RW     | 0 ~ 20000                      |                       |
| 1064  | 0xB4      | oE-35      | Window comparator for [Ai4] higher level                     | UINT | RW     | 0 ~ 100                        | 1%                    |
| 1064  | 0xB5      | oE-36      | Window comparator for [Ai4] lower level                      | UINT | RW     |                                |                       |
| 1064  | 0xB6      | oE-37      | Window comparator for [Ai4] hysteresis width                 | UINT | RW     | 0 ~ 10                         |                       |
| 1064  | 0xB7      | oE-38      | Window comparator for [Ai5] higher level                     | UINT | RW     | 0 ~ 100                        |                       |
| 1064  | 0xB8      | oE-39      | Window comparator for [Ai5] lower level                      | UINT | RW     |                                |                       |
| 1064  | 0xB9      | oE-40      | Window comparator for [Ai5] hysteresis width                 | UINT | RW     | 0 ~ 10                         |                       |
| 1064  | 0xBA      | oE-41      | Window comparator for [Ai6] higher level                     | UINT | RW     | -100 ~ 100                     |                       |
| 1064  | 0xBB      | oE-42      | Window comparator for [Ai6] lower level                      | UINT | RW     |                                |                       |
| 1064  | 0xBC      | oE-43      | Window comparator for [Ai6] hysteresis width                 | UINT | RW     | 0 ~ 10                         |                       |
| 1064  | 0xBD      | oE-44      | Operation level at [Ai4] disconnection                       | UINT | RW     | 0 ~ 100                        |                       |
| 1064  | 0xBE      | oE-45      | Operation level selection at [Ai4] disconnection             | UINT | RW     | 0 ~ 2                          | 1                     |
| 1064  | 0xBF      | oE-46      | Operation level at [Ai5] disconnection                       | UINT | RW     | 0 ~ 100                        | 1%                    |
| 1064  | 0xC0      | oE-47      | Operation level selection at [Ai5] disconnection             | UINT | RW     | 0 ~ 2                          | 1                     |
| 1064  | 0xC1      | oE-48      | Operation level at [Ai6] disconnection                       | UINT | RW     | -100 ~ 100                     | 1%                    |
| 1064  | 0xC2      | oE-49      | Operation level selection at [Ai6] disconnection             | UINT | RW     | 0 ~ 2                          | 1                     |
| 1064  | 0xC3      | oE-50      | Ao3 monitor output selection                                 | UINT | RW     | 0 ~ 65535<br>(register number) |                       |
| 1064  | 0xC4      | oE-51      | Ao4 monitor output selection                                 | UINT | RW     |                                |                       |
| 1064  | 0xC5      | oE-52      | Ao5 monitor output selection                                 | UINT | RW     |                                |                       |
| 1064  | 0xC9      | oE-56      | Filter time constant of [Ao3] monitor                        | UINT | RW     | 1 ~ 500                        | 1ms                   |
| 1064  | 0xCA      | oE-57      | Ao3 Data type selection                                      | UINT | RW     | 0 ~ 1                          | 1                     |
| 1064  | 0xCB      | oE-58      | Ao3 monitor bias adjustment                                  | UINT | RW     | -1000 ~ 1000                   | 0.1%                  |
| 1064  | 0xCC      | oE-59      | Ao3 monitor gain adjustment                                  | UINT | RW     | -10000~10000                   |                       |
| 1064  | 0xCD      | oE-60      | Output level setting at [Ao3] monitor adjust mode            | UINT | RW     | -1000 ~ 1000                   |                       |
| 1064  | 0xCE      | oE-61      | Filter time constant of [Ao4] monitor                        | UINT | RW     | 1 ~ 500                        | 1ms                   |
| 1064  | 0xCF      | oE-62      | Ao4 Data type selection                                      | UINT | RW     | 0 ~ 1                          | 1                     |
| 1064  | 0xD0      | oE-63      | Ao4 monitor bias adjustment                                  | UINT | RW     | -1000 ~ 1000                   | 0.1%                  |
| 1064  | 0xD1      | oE-64      | Ao4 monitor gain adjustment                                  | UINT | RW     | -10000~10000                   |                       |
| 1064  | 0xD2      | oE-65      | Output level setting at [Ao4] monitor adjust mode            | UINT | RW     | -1000 ~ 1000                   |                       |
| 1064  | 0xD3      | oE-66      | Filter time constant of [Ao5] monitor                        | UINT | RW     | 1 ~ 500                        | 1ms                   |
| 1064  | 0xD4      | oE-67      | Ao5 Data type selection                                      | UINT | RW     | 0 ~ 1                          | 1                     |
| 1064  | 0xD5      | oE-68      | Ao5 monitor bias adjustment                                  | UINT | RW     | -1000 ~ 1000                   | 0.1%                  |
| 1064  | 0xD6      | oE-69      | Ao5 monitor gain adjustment                                  | UINT | RW     | -10000~10000                   |                       |
| 1064  | 0xD7      | oE-70      | Output level setting at [Ao5] monitor adjust mode            | UINT | RW     | -1000 ~ 1000                   |                       |
| 1065  | 0xC0      | oH-01      | IP-Address selection(P1-EN)                                  | UINT | RW     | 0 ~ 1                          | 1                     |
| 1065  | 0xC1      | oH-02      | Communication speed (port-1)(P1-EN)                          | UINT | RW     | 0 ~ 4                          |                       |
| 1065  | 0xC2      | oH-03      | Communication speed (port-2)(P1-EN)                          | UINT | RW     |                                |                       |
| 1065  | 0xC3      | oH-04      | Ethernet communication timeout(P1-EN)                        | UINT | RW     | 1 ~ 65535                      | 1(×10ms)              |
| 1065  | 0xC4      | oH-05      | Modbus TCP Port No.(IPv4)                                    | UINT | RW     | 502,1024~65535                 | 1                     |
| 1065  | 0xC5      | oH-06      | Modbus TCP Port No.(IPv6)                                    | UINT | RW     |                                |                       |
| 1065  | 0xD3      | oH-20      | Profibus Node address  | UINT | RW     | 0 ~ 125                        |                       |
| 1065  | 0xD4      | oH-21      | Profibus clear mode selection                                | UINT | RW     | 0 ~ 1                          |                       |
| 1065  | 0xD5      | oH-22      | Profibus Map selection                                       | UINT | RW     | 0 ~ 2                          |                       |
| 1065  | 0xD6      | oH-23      | Setting enable from Profi master                             | UINT | RW     | 0 ~ 1                          |                       |
| 1065  | 0xD7      | oH-24      | Setpoint telegram/Actual value telegram Gr.selection (P1-PB) | UINT | RW     | 0 ~ 2                          |                       |

| Index | Sub-index | Func. code | Function name   | Type | Access | Setting Items | Data resolution units |
|-------|-----------|------------|---|------|--------|---------------|-----------------------|
| 1065  | 0xDD      | oH-30      | IP-Address selection(P1-PN)                                   | UINT | RW     | 0 ~ 1         | 1                     |
| 1065  | 0xDE      | oH-31      | Communication speed (port-1)(P1-PN)                           | UINT | RW     | 0 ~ 4         |                       |
| 1065  | 0xDF      | oH-32      | Communication speed (port-2)(P1-PN)                           | UINT | RW     |               |                       |
| 1065  | 0xE0      | oH-33      | Ethernet communication timeout(P1-PN)                         | UINT | RW     | 1 ~ 65535     | 1(×10ms)              |
| 1065  | 0xE1      | oH-34      | Set point telegram/Actual value telegram Gr.selection (P1-PN) | UINT | RW     | 0 ~ 2         | 1                     |
| 1066  | 0x26      | oJ-01      | Flexible command registration writing register 1, Gr.A        | UINT | RW     | 0 ~ 65535     |                       |
| 1066  | 0x27      | oJ-02      | Flexible command registration writing register 2, Gr.A        | UINT | RW     |               |                       |
| 1066  | 0x28      | oJ-03      | Flexible command registration writing register 3, Gr.A        | UINT | RW     |               |                       |
| 1066  | 0x29      | oJ-04      | Flexible command registration writing register 4, Gr.A        | UINT | RW     |               |                       |
| 1066  | 0x2A      | oJ-05      | Flexible command registration writing register 5, Gr.A        | UINT | RW     |               |                       |
| 1066  | 0x2B      | oJ-06      | Flexible command registration writing register 6, Gr.A        | UINT | RW     |               |                       |
| 1066  | 0x2C      | oJ-07      | Flexible command registration writing register 7, Gr.A        | UINT | RW     |               |                       |
| 1066  | 0x2D      | oJ-08      | Flexible command registration writing register 8, Gr.A        | UINT | RW     |               |                       |
| 1066  | 0x2E      | oJ-09      | Flexible command registration writing register 9, Gr.A        | UINT | RW     |               |                       |
| 1066  | 0x2F      | oJ-10      | Flexible command registration writing register 10, Gr.A       | UINT | RW     |               |                       |
| 1066  | 0x30      | oJ-11      | Flexible command registration Reading register 1, Gr.A        | UINT | RW     |               |                       |
| 1066  | 0x31      | oJ-12      | Flexible command registration Reading register 2, Gr.A        | UINT | RW     |               |                       |
| 1066  | 0x32      | oJ-13      | Flexible command registration Reading register 3, Gr.A        | UINT | RW     |               |                       |
| 1066  | 0x33      | oJ-14      | Flexible command registration Reading register 4, Gr.A        | UINT | RW     |               |                       |
| 1066  | 0x34      | oJ-15      | Flexible command registration Reading register 5, Gr.A        | UINT | RW     |               |                       |
| 1066  | 0x35      | oJ-16      | Flexible command registration Reading register 6, Gr.A        | UINT | RW     |               |                       |
| 1066  | 0x36      | oJ-17      | Flexible command registration Reading register 7, Gr.A        | UINT | RW     |               |                       |
| 1066  | 0x37      | oJ-18      | Flexible command registration Reading register 8, Gr.A        | UINT | RW     |               |                       |
| 1066  | 0x38      | oJ-19      | Flexible command registration Reading register 9, Gr.A        | UINT | RW     |               |                       |
| 1066  | 0x39      | oJ-20      | Flexible command registration Reading register 10, Gr.A       | UINT | RW     |               |                       |
| 1066  | 0x3A      | oJ-21      | Flexible command registration writing register 1, Gr.B        | UINT | RW     |               |                       |
| 1066  | 0x3B      | oJ-22      | Flexible command registration writing register 2, Gr.B        | UINT | RW     |               |                       |
| 1066  | 0x3C      | oJ-23      | Flexible command registration writing register 3, Gr.B        | UINT | RW     |               |                       |
| 1066  | 0x3D      | oJ-24      | Flexible command registration writing register 4, Gr.B        | UINT | RW     |               |                       |
| 1066  | 0x3E      | oJ-25      | Flexible command registration writing register 5, Gr.B        | UINT | RW     |               |                       |
| 1066  | 0x3F      | oJ-26      | Flexible command registration writing register 6, Gr.B        | UINT | RW     |               |                       |
| 1066  | 0x40      | oJ-27      | Flexible command registration writing register 7, Gr.B        | UINT | RW     |               |                       |
| 1066  | 0x41      | oJ-28      | Flexible command registration writing register 8, Gr.B        | UINT | RW     |               |                       |
| 1066  | 0x42      | oJ-29      | Flexible command registration writing register 9, Gr.B        | UINT | RW     |               |                       |
| 1066  | 0x43      | oJ-30      | Flexible command registration writing register 10, Gr.B       | UINT | RW     |               |                       |
| 1066  | 0x44      | oJ-31      | Flexible command registration Reading register 1, Gr.B        | UINT | RW     |               |                       |
| 1066  | 0x45      | oJ-32      | Flexible command registration Reading register 2, Gr.B        | UINT | RW     |               |                       |
| 1066  | 0x46      | oJ-33      | Flexible command registration Reading register 3, Gr.B        | UINT | RW     |               |                       |
| 1066  | 0x47      | oJ-34      | Flexible command registration Reading register 4, Gr.B        | UINT | RW     |               |                       |
| 1066  | 0x48      | oJ-35      | Flexible command registration Reading register 5, Gr.B        | UINT | RW     |               |                       |
| 1066  | 0x49      | oJ-36      | Flexible command registration Reading register 6, Gr.B        | UINT | RW     |               |                       |
| 1066  | 0x4A      | oJ-37      | Flexible command registration Reading register 7, Gr.B        | UINT | RW     |               |                       |
| 1066  | 0x4B      | oJ-38      | Flexible command registration Reading register 8, Gr.B        | UINT | RW     |               |                       |
| 1066  | 0x4C      | oJ-39      | Flexible command registration Reading register 9, Gr.B        | UINT | RW     |               |                       |
| 1066  | 0x4D      | oJ-40      | Flexible command registration Reading register 10, Gr.B       | UINT | RW     |               |                       |
| 1066  | 0x4E      | oJ-41      | Flexible command registration writing register 1, Gr.C        | UINT | RW     |               |                       |
| 1066  | 0x4F      | oJ-42      | Flexible command registration writing register 2, Gr.C        | UINT | RW     |               |                       |
| 1066  | 0x50      | oJ-43      | Flexible command registration writing register 3, Gr.C        | UINT | RW     |               |                       |
| 1066  | 0x51      | oJ-44      | Flexible command registration writing register 4, Gr.C        | UINT | RW     |               |                       |
| 1066  | 0x52      | oJ-45      | Flexible command registration writing register 5, Gr.C        | UINT | RW     |               |                       |
| 1066  | 0x53      | oJ-46      | Flexible command registration writing register 6, Gr.C        | UINT | RW     |               |                       |
| 1066  | 0x54      | oJ-47      | Flexible command registration writing register 7, Gr.C        | UINT | RW     |               |                       |
| 1066  | 0x55      | oJ-48      | Flexible command registration writing register 8, Gr.C        | UINT | RW     |               |                       |
| 1066  | 0x56      | oJ-49      | Flexible command registration writing register 9, Gr.C        | UINT | RW     |               |                       |
| 1066  | 0x57      | oJ-50      | Flexible command registration writing register 10, Gr.C       | UINT | RW     |               |                       |
| 1066  | 0x58      | oJ-51      | Flexible command registration Reading register 1,Gr.C         | UINT | RW     |               |                       |
| 1066  | 0x59      | oJ-52      | Flexible command registration Reading register 2,Gr.C         | UINT | RW     |               |                       |
| 1066  | 0x5A      | oJ-53      | Flexible command registration Reading register 3,Gr.C         | UINT | RW     |               |                       |

| Index | Sub-index | Func. code | Function name   | Type | Access | Setting Items | Data resolution units |         |
|-------|-----------|------------|---|------|--------|---------------|-----------------------|---------|
| 1066  | 0x5B      | oJ-54      | Flexible command registration Reading register 4,Gr.C   | UINT | RW     | 0 ~ 65535     | 1                     |         |
| 1066  | 0x5C      | oJ-55      | Flexible command registration Reading register 5,Gr.C   | UINT | RW     |               |                       |         |
| 1066  | 0x5D      | oJ-56      | Flexible command registration Reading register 6,Gr.C   | UINT | RW     |               |                       |         |
| 1066  | 0x5E      | oJ-57      | Flexible command registration Reading register 7,Gr.C   | UINT | RW     |               |                       |         |
| 1066  | 0x5F      | oJ-58      | Flexible command registration Reading register 8,Gr.C   | UINT | RW     |               |                       |         |
| 1066  | 0x60      | oJ-59      | Flexible command registration Reading register 9,Gr.C   | UINT | RW     |               |                       |         |
| 1066  | 0x61      | oJ-60      | Flexible command registration Reading register 10, Gr.C | UINT | RW     |               |                       |         |
| 1066  | 0x8A      | oL-01      | IPv4 IP address (1), Gr.1                               | UINT | RW     |               |                       | 0 ~ 255 |
| 1066  | 0x8B      | oL-02      | IPv4 IP address (2), Gr.1                               | UINT | RW     |               |                       |         |
| 1066  | 0x8C      | oL-03      | IPv4 IP address (3), Gr.1                               | UINT | RW     |               |                       |         |
| 1066  | 0x8D      | oL-04      | IPv4 IP address (4), Gr.1                               | UINT | RW     |               |                       |         |
| 1066  | 0x8E      | oL-05      | IPv4 Sub-net mask (1), Gr.1                             | UINT | RW     |               |                       |         |
| 1066  | 0x8F      | oL-06      | IPv4 Sub-net mask (2), Gr.1                             | UINT | RW     |               |                       |         |
| 1066  | 0x90      | oL-07      | IPv4 Sub-net mask (3), Gr.1                             | UINT | RW     |               |                       |         |
| 1066  | 0x91      | oL-08      | IPv4 Sub-net mask (4), Gr.1                             | UINT | RW     |               |                       |         |
| 1066  | 0x92      | oL-09      | IPv4 Default gateway (1), Gr.1                          | UINT | RW     |               |                       |         |
| 1066  | 0x93      | oL-10      | IPv4 Default gateway (2), Gr.1                          | UINT | RW     |               |                       |         |
| 1066  | 0x94      | oL-11      | IPv4 Default gateway (3), Gr.1                          | UINT | RW     |               |                       |         |
| 1066  | 0x95      | oL-12      | IPv4 Default gateway (4), Gr.1                          | UINT | RW     |               |                       |         |
| 1066  | 0x9D      | oL-20      | IPv6 IP address (1), Gr.1                               | UINT | RW     | 0 ~ 65535     |                       |         |
| 1066  | 0x9E      | oL-21      | IPv6 IP address (2), Gr.1                               | UINT | RW     |               |                       |         |
| 1066  | 0x9F      | oL-22      | IPv6 IP address (3), Gr.1                               | UINT | RW     |               |                       |         |
| 1066  | 0xA0      | oL-23      | IPv6 IP address (4), Gr.1                               | UINT | RW     |               |                       |         |
| 1066  | 0xA1      | oL-24      | IPv6 IP address (5), Gr.1                               | UINT | RW     |               |                       |         |
| 1066  | 0xA2      | oL-25      | IPv6 IP address (6), Gr.1                               | UINT | RW     |               |                       |         |
| 1066  | 0xA3      | oL-26      | IPv6 IP address (7), Gr.1                               | UINT | RW     |               |                       |         |
| 1066  | 0xA4      | oL-27      | IPv6 IP address (8), Gr.1                               | UINT | RW     |               |                       |         |
| 1066  | 0xA5      | oL-28      | IPv6 Prefix of Sub-net, Gr.1                            | UINT | RW     | 0 ~ 127       |                       |         |
| 1066  | 0xA6      | oL-29      | IPv6 Default gateway (1), Gr.1                          | UINT | RW     | 0 ~ 65535     |                       |         |
| 1066  | 0xA7      | oL-30      | IPv6 Default gateway (2), Gr.1                          | UINT | RW     |               |                       |         |
| 1066  | 0xA8      | oL-31      | IPv6 Default gateway (3), Gr.1                          | UINT | RW     |               |                       |         |
| 1066  | 0xA9      | oL-32      | IPv6 Default gateway (4), Gr.1                          | UINT | RW     |               |                       |         |
| 1066  | 0xAA      | oL-33      | IPv6 Default gateway (5), Gr.1                          | UINT | RW     |               |                       |         |
| 1066  | 0xAB      | oL-34      | IPv6 Default gateway (6), Gr.1                          | UINT | RW     |               |                       |         |
| 1066  | 0xAC      | oL-35      | IPv6 Default gateway (7), Gr.1                          | UINT | RW     |               |                       |         |
| 1066  | 0xAD      | oL-36      | IPv6 Default gateway (8), Gr.1                          | UINT | RW     |               |                       |         |
| 1066  | 0xB1      | oL-40      | IPv4 IP address (1), Gr.2                               | UINT | RW     | 0 ~ 255       |                       |         |
| 1066  | 0xB2      | oL-41      | IPv4 IP address (2), Gr.2                               | UINT | RW     |               |                       |         |
| 1066  | 0xB3      | oL-42      | IPv4 IP address (3), Gr.2                               | UINT | RW     |               |                       |         |
| 1066  | 0xB4      | oL-43      | IPv4 IP address (4), Gr.2                               | UINT | RW     |               |                       |         |
| 1066  | 0xB5      | oL-44      | IPv4 Sub-net mask (1), Gr.2                             | UINT | RW     |               |                       |         |
| 1066  | 0xB6      | oL-45      | IPv4 Sub-net mask (2), Gr.2                             | UINT | RW     |               |                       |         |
| 1066  | 0xB7      | oL-46      | IPv4 Sub-net mask (3), Gr.2                             | UINT | RW     |               |                       |         |
| 1066  | 0xB8      | oL-47      | IPv4 Sub-net mask (4), Gr.2                             | UINT | RW     |               |                       |         |
| 1066  | 0xB9      | oL-48      | IPv4 Default gateway (1), Gr.2                          | UINT | RW     |               |                       |         |
| 1066  | 0xBA      | oL-49      | IPv4 Default gateway (2), Gr.2                          | UINT | RW     |               |                       |         |
| 1066  | 0xBB      | oL-50      | IPv4 Default gateway (3), Gr.2                          | UINT | RW     |               |                       |         |
| 1066  | 0xBC      | oL-51      | IPv4 Default gateway (4), Gr.2                          | UINT | RW     |               |                       |         |
| 1066  | 0xC5      | oL-60      | IPv6 IP address (1), Gr.2                               | UINT | RW     | 0 ~ 6553      |                       |         |
| 1066  | 0xC6      | oL-61      | IPv6 IP address (2), Gr.2                               | UINT | RW     |               |                       |         |
| 1066  | 0xC7      | oL-62      | IPv6 IP address (3), Gr.2                               | UINT | RW     |               |                       |         |
| 1066  | 0xC8      | oL-63      | IPv6 IP address (4), Gr.2                               | UINT | RW     |               |                       |         |
| 1066  | 0xC9      | oL-64      | IPv6 IP address (5), Gr.2                               | UINT | RW     |               |                       |         |
| 1066  | 0xCA      | oL-65      | IPv6 IP address (6), Gr.2                               | UINT | RW     |               |                       |         |
| 1066  | 0xCB      | oL-66      | IPv6 IP address (7), Gr.2                               | UINT | RW     |               |                       |         |
| 1066  | 0xCC      | oL-67      | IPv6 IP address (8), Gr.2                               | UINT | RW     |               |                       |         |
| 1066  | 0xCD      | oL-68      | IPv6 Prefix of Sub-net, Gr.2                            | UINT | RW     | 0 ~ 127       |                       |         |
| 1066  | 0xCE      | oL-69      | IPv6 Default gateway (1), Gr.2                          | UINT | RW     | 0 ~ 65535     |                       |         |

| Index | Sub-index | Func. code | Function name                  | Type | Access | Setting Items | Data resolution units |
|-------|-----------|------------|--------------------------------|------|--------|---------------|-----------------------|
| 1066  | 0xCF      | oL-70      | IPv6 Default gateway (2), Gr.2 | UINT | RW     | 0 ~ 65535     | 1                     |
| 1066  | 0xD0      | oL-71      | IPv6 Default gateway (3), Gr.2 | UINT | RW     |               |                       |
| 1066  | 0xD1      | oL-72      | IPv6 Default gateway (4), Gr.2 | UINT | RW     |               |                       |
| 1066  | 0xD2      | oL-73      | IPv6 Default gateway (5), Gr.2 | UINT | RW     |               |                       |
| 1066  | 0xD3      | oL-74      | IPv6 Default gateway (6), Gr.2 | UINT | RW     |               |                       |
| 1066  | 0xD4      | oL-75      | IPv6 Default gateway (7), Gr.2 | UINT | RW     |               |                       |
| 1066  | 0xD5      | oL-76      | IPv6 Default gateway (8), Gr.2 | UINT | RW     |               |                       |

## 13.2.8 Code-P

| Index | Sub-index | Func. code | Function name   | Type | Access | Setting Items                            | Data resolution units |
|-------|-----------|------------|---|------|--------|--|-----------------------|
| 1066  | 0xEE      | PA-01      | Mode selection for Emergency-force drive              | UINT | RW     | 0 ~ 1                                    | 1                     |
| 1066  | 0xEF      | PA-02      | Frequency reference setting at Emergency-force drive  | UINT | RW     | 0 ~ 59000                                | 0.01Hz                |
| 1066  | 0xF0      | PA-03      | Direction command at Emergency-force drive            | UINT | RW     | 0 ~ 1                                    | 1                     |
| 1066  | 0xF1      | PA-04      | Commercial power supply bypass function selection     | UINT | RW     |  |                       |
| 1066  | 0xF2      | PA-05      | Delay time of Bypass function                         | UINT | RW     | 0 ~ 10000                                | 0.1s                  |
| 1067  | 0x3       | PA-20      | Simulation mode enable                                | UINT | RW     | 0 ~ 1                                    | 1                     |
| 1067  | 0x4       | PA-21      | Error code selection for Alarm test                   | UINT | RW     | 0 ~ 255                                  |                       |
| 1067  | 0x5       | PA-22      | Output current monitor optional output enable         | UINT | RW     | 0 ~ 7                                    |                       |
| 1067  | 0x6       | PA-23      | Output current monitor optional output value setting  | UINT | RW     | (0~3.00)×<br>Inverter rated current      | 0.1A                  |
| 1067  | 0x7       | PA-24      | DC-bus voltage monitor optional output enable         | UINT | RW     | 0 ~ 7                                    | 1                     |
| 1067  | 0x8       | PA-25      | DC-bus voltage monitor optional value output          | UINT | RW     | 200V class: 0~4500<br>400V class: 0~9000 | 0.1Vdc                |
| 1067  | 0x9       | PA-26      | Output voltage monitor optional output enable         | UINT | RW     | 0 ~ 7                                    | 1                     |
| 1067  | 0xA       | PA-27      | Output voltage monitor optional output value setting  | UINT | RW     | 200V class: 0~3000<br>400V class: 0~6000 | 0.1V                  |
| 1067  | 0xB       | PA-28      | Output torque monitor optional output enable          | UINT | RW     | 0 ~ 7                                    | 1                     |
| 1067  | 0xC       | PA-29      | Output torque monitor optional output value setting   | UINT | RW     | -5000 ~ 5000                             | 0.1%                  |
| 1067  | 0xD       | PA-30      | Start with frequency matching optional Setting enable | UINT | RW     | 0 ~ 7                                    | 1                     |
| 1067  | 0xE       | PA-31      | Start with frequency matching optional value setting  | UINT | RW     | 0 ~ 59000                                | 0.01Hz                |

## 13.2.9 Code-U

| Index | Sub-index | Func. code | Function name                                      | Type | Access | Setting Items                  | Data resolution units |
|-------|-----------|------------|--|------|--------|--------------------------------|-----------------------|
| 1070  | 0xDE      | UA-01      | Password for Display                               | UINT | RW     | 0 ~ 65535                      | 1                     |
| 1070  | 0xDF      | UA-02      | Password for Soft Lock                             | UINT | RW     |                                |                       |
| 1070  | 0xE7      | UA-10      | Display restriction selection                      | UINT | RW     | 0 ~ 4                          |                       |
| 1070  | 0xE9      | UA-12      | Accumulation input power monitor clear             | UINT | RW     | 0 ~ 1                          |                       |
| 1070  | 0xEA      | UA-13      | Display gain for Accumulation input power monitor  | UINT | RW     | 1 ~ 1000                       |                       |
| 1070  | 0xEB      | UA-14      | Accumulation output power monitor clear            | UINT | RW     | 0 ~ 1                          |                       |
| 1070  | 0xEC      | UA-15      | Display gain for Accumulation output power monitor | UINT | RW     | 1 ~ 1000                       |                       |
| 1070  | 0xED      | UA-16      | Soft Lock selection                                | UINT | RW     | 0 ~ 1                          |                       |
| 1070  | 0xEE      | UA-17      | Soft Lock target selection                         | UINT | RW     |                                |                       |
| 1070  | 0xEF      | UA-18      | Data R/W selection                                 | UINT | RW     |                                |                       |
| 1070  | 0xF0      | UA-19      | Low battery warning enable                         | UINT | RW     | 0 ~ 2                          |                       |
| 1070  | 0xF1      | UA-20      | Action selection at keypad disconnection           | UINT | RW     | 0 ~ 4                          |                       |
| 1070  | 0xF2      | UA-21      | 2nd-motor parameter display selection              | UINT | RW     | 0 ~ 1                          |                       |
| 1070  | 0xF3      | UA-22      | Option parameter display selection at full display | UINT | RW     |                                |                       |
| 1070  | 0xFB      | UA-30      | User parameter auto setting function enable        | UINT | RW     | 0 ~ 65535<br>(register number) |                       |
| 1070  | 0xFC      | UA-31      | User parameter 1 selection                         | UINT | RW     |                                |                       |
| 1070  | 0xFD      | UA-32      | User parameter 2 selection                         | UINT | RW     |                                |                       |
| 1070  | 0xFE      | UA-33      | User parameter 3 selection                         | UINT | RW     |                                |                       |
| 1071  | 0x1       | UA-34      | User parameter 4 selection                         | UINT | RW     |                                |                       |



| Index | Sub-index          | Func. code           | Function name                            | Type | Access | Setting Items                           | Data resolution units |       |   |
|-------|--------------------|----------------------|--|------|--------|---|-----------------------|-------|---|
| 1071  | 0x2                | UA-35                | User parameter 5 selection               | UINT | RW     | 0 ~ 65535<br>(register number)          | 1                     |       |   |
| 1071  | 0x3                | UA-36                | User parameter 6 selection               | UINT | RW     |   |                       |       |   |
| 1071  | 0x4                | UA-37                | User parameter 7 selection               | UINT | RW     |   |                       |       |   |
| 1071  | 0x5                | UA-38                | User parameter 8 selection               | UINT | RW     |   |                       |       |   |
| 1071  | 0x6                | UA-39                | User parameter 9 selection               | UINT | RW     |   |                       |       |   |
| 1071  | 0x7                | UA-40                | User parameter 10 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0x8                | UA-41                | User parameter 11 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0x9                | UA-42                | User parameter 12 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0xA                | UA-43                | User parameter 13 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0xB                | UA-44                | User parameter 14 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0xC                | UA-45                | User parameter 15 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0xD                | UA-46                | User parameter 16 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0xE                | UA-47                | User parameter 17 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0xF                | UA-48                | User parameter 18 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0x10               | UA-49                | User parameter 19 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0x11               | UA-50                | User parameter 20 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0x12               | UA-51                | User parameter 21 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0x13               | UA-52                | User parameter 22 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0x14               | UA-53                | User parameter 23 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0x15               | UA-54                | User parameter 24 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0x16               | UA-55                | User parameter 25 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0x17               | UA-56                | User parameter 26 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0x18               | UA-57                | User parameter 27 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0x19               | UA-58                | User parameter 28 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0x1A               | UA-59                | User parameter 29 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0x1B               | UA-60                | User parameter 30 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0x1C               | UA-61                | User parameter 31 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0x1D               | UA-62                | User parameter 32 selection              | UINT | RW     |   |                       |       |   |
| 1071  | 0x39<br>to<br>0x3D | UA-90<br>to<br>UA-94 | Reserved                                 | UINT | RW     |   |                       | -     | - |
| 1071  | 0x44               | Ub-01                | Initialize Mode selection                | UINT | RW     |   |                       | 0 ~ 8 | 1 |
| 1071  | 0x45               | Ub-02                | Initialize Data selection                | UINT | RW     |   |                       | 0 ~ 3 |   |
| 1071  | 0x46               | Ub-03                | Load type selection                      | UINT | RW     |   |                       | 0 ~ 2 |   |
| 1071  | 0x48               | Ub-05                | Initialize Enable                        | UINT | RW     | 0 ~ 1                                   |                       |       |   |
| 1071  | 0xA8               | UC-01                | Debug mode enable                        | UINT | RW     | 0 ~ 3                                   |                       |       |   |
| 1072  | 0xE                | Ud-01                | Trace function enable                    | UINT | RW     | 0 ~ 1                                   |                       |       |   |
| 1072  | 0xF                | Ud-02                | Trace start                              | UINT | RW     |   |                       |       |   |
| 1072  | 0x10               | Ud-03                | Trace data number setting                | UINT | RW     | 0 ~ 8                                   |                       |       |   |
| 1072  | 0x11               | Ud-04                | Trace signal number setting              | UINT | RW     |   |                       |       |   |
| 1072  | 0x17               | Ud-10                | Trace data 0 selection                   | UINT | RW     | 0 ~ 65535<br>(d,F code register number) |                       |       |   |
| 1072  | 0x18               | Ud-11                | Trace data 1 selection                   | UINT | RW     |   |                       |       |   |
| 1072  | 0x19               | Ud-12                | Trace data 2 selection                   | UINT | RW     |   |                       |       |   |
| 1072  | 0x1A               | Ud-13                | Trace data 3 selection                   | UINT | RW     |   |                       |       |   |
| 1072  | 0x1B               | Ud-14                | Trace data 4 selection                   | UINT | RW     |   |                       |       |   |
| 1072  | 0x1C               | Ud-15                | Trace data 5 selection                   | UINT | RW     |   |                       |       |   |
| 1072  | 0x1D               | Ud-16                | Trace data 6 selection                   | UINT | RW     |   |                       |       |   |
| 1072  | 0x1E               | Ud-17                | Trace data 7 selection                   | UINT | RW     |   |                       |       |   |
| 1072  | 0x21               | Ud-20                | Trace signal 0 Input/Output selection    | UINT | RW     |   | 0 ~ 1                 |       |   |
| 1072  | 0x22               | Ud-21                | Trace signal 0 Input Terminal selection  | UINT | RW     | 0 ~ 110                                 |                       |       |   |
| 1072  | 0x23               | Ud-22                | Trace signal 0 Output Terminal selection | UINT | RW     | 0 ~ 93                                  |                       |       |   |
| 1072  | 0x24               | Ud-23                | Trace signal 1 Input/Output selection    | UINT | RW     | 0 ~ 1                                   |                       |       |   |
| 1072  | 0x25               | Ud-24                | Trace signal 1 Input Terminal selection  | UINT | RW     | 0 ~ 110                                 |                       |       |   |
| 1072  | 0x26               | Ud-25                | Trace signal 1 Output Terminal selection | UINT | RW     | 0 ~ 93                                  |                       |       |   |
| 1072  | 0x27               | Ud-26                | Trace signal 2 Input/Output selection    | UINT | RW     | 0 ~ 1                                   |                       |       |   |
| 1072  | 0x28               | Ud-27                | Trace signal 2 Input Terminal selection  | UINT | RW     | 0 ~ 110                                 |                       |       |   |
| 1072  | 0x29               | Ud-28                | Trace signal 2 Output Terminal selection | UINT | RW     | 0 ~ 93                                  |                       |       |   |
| 1072  | 0x2A               | Ud-29                | Trace signal 3 Input/Output selection    | UINT | RW     | 0 ~ 1                                   |                       |       |   |

| Index | Sub-index          | Func. code           | Function name                                      | Type | Access | Setting Items | Data resolution units |
|-------|--------------------|----------------------|--|------|--------|---------------|-----------------------|
| 1072  | 0x2B               | Ud-30                | Trace signal 3 Input Terminal selection            | UINT | RW     | 0 ~ 110       | 1                     |
| 1072  | 0x2C               | Ud-31                | Trace signal 3 Output Terminal selection           | UINT | RW     | 0 ~ 93        |                       |
| 1072  | 0x2D               | Ud-32                | Trace signal 4 Input/Output selection              | UINT | RW     | 0 ~ 1         |                       |
| 1072  | 0x2E               | Ud-33                | Trace signal 4 Input Terminal selection            | UINT | RW     | 0 ~ 110       |                       |
| 1072  | 0x2F               | Ud-34                | Trace signal 4 Output Terminal selection           | UINT | RW     | 0 ~ 93        |                       |
| 1072  | 0x30               | Ud-35                | Trace signal 5 Input/Output selection              | UINT | RW     | 0 ~ 1         |                       |
| 1072  | 0x31               | Ud-36                | Trace signal 5 Input Terminal selection            | UINT | RW     | 0 ~ 110       |                       |
| 1072  | 0x32               | Ud-37                | Trace signal 5 Output Terminal selection           | UINT | RW     | 0 ~ 93        |                       |
| 1072  | 0x33               | Ud-38                | Trace signal 6 Input/Output selection              | UINT | RW     | 0 ~ 1         |                       |
| 1072  | 0x34               | Ud-39                | Trace signal 6 Input Terminal selection            | UINT | RW     | 0 ~ 110       |                       |
| 1072  | 0x35               | Ud-40                | Trace signal 6 Output Terminal selection           | UINT | RW     | 0 ~ 93        |                       |
| 1072  | 0x36               | Ud-41                | Trace signal 7 Input/Output selection              | UINT | RW     | 0 ~ 1         |                       |
| 1072  | 0x37               | Ud-42                | Trace signal 7 Input Terminal selection            | UINT | RW     | 0 ~ 110       |                       |
| 1072  | 0x38               | Ud-43                | Trace signal 7 Output Terminal selection           | UINT | RW     | 0 ~ 93        |                       |
| 1072  | 0x3F               | Ud-50                | Trace trigger 1 selection                          | UINT | RW     | 0 ~ 16        |                       |
| 1072  | 0x40               | Ud-51                | Trigger 1 action selection at trace data trigger   | UINT | RW     | 0 ~ 1         |                       |
| 1072  | 0x41               | Ud-52                | Trigger 1 level setting at trace data trigger      | UINT | RW     | 0 ~ 100       |                       |
| 1072  | 0x42               | Ud-53                | Trigger 1 action selection at trace signal trigger | UINT | RW     | 0 ~ 1         | 1                     |
| 1072  | 0x43               | Ud-54                | Trace trigger 2 selection                          | UINT | RW     | 0 ~ 16        |                       |
| 1072  | 0x44               | Ud-55                | Trigger 2 action selection at trace data trigger   | UINT | RW     | 0 ~ 1         | 1%                    |
| 1072  | 0x45               | Ud-56                | Trigger 2 level setting at trace data trigger      | UINT | RW     | 0 ~ 100       |                       |
| 1072  | 0x46               | Ud-57                | Trigger 2 action selection at trace signal trigger | UINT | RW     | 0 ~ 1         | 1                     |
| 1072  | 0x47               | Ud-58                | Trigger condition selection                        | UINT | RW     | 0 ~ 3         |                       |
| 1072  | 0x48               | Ud-59                | Trigger point setting                              | UINT | RW     | 0 ~ 100       | 1%                    |
| 1072  | 0x49               | Ud-60                | Sampling time selection                            | UINT | RW     | 1 ~ 10        | 1                     |
| 1072  | 0x72<br>to<br>0xF5 | UE-01<br>to<br>UF-32 | Reserved   | UINT | RW     | -             | -                     |

### 13.2.10 Others

| Index | Sub-index | Func. code | Function name                 | Type | Access | Setting Items                             | Data resolution units |
|-------|-----------|------------|-------------------------------|------|--------|---|-----------------------|
| 1035  | 0x6F      | -          | EEPROM Write                  | UINT | W      | 01 : Write all parameters<br>01 : enabled | 1                     |
| 1035  | 0x71      | -          | EEPROM Write Mode Selection   | UINT | W      |   |                       |
| 1035  | 0x79      | -          | Motor Constant Re-computation | UINT | W      |   |                       |

# Warranty

## Warranty

|                    |   |
|--------------------|---|
| Warranty period    | The warranty shall be 18 months from date of shipment or 12 months after initial operation, whichever is shorter.   |
| Warranty condition | In the event that any problem or damage to the Product arises during the "Warranty Period" from defects in the Product whenever the Product is properly installed and combined with the Buyer's equipment or machines maintained as specified in the maintenance manual, and properly operated under the conditions described in the catalog or as otherwise agreed upon in writing between the Seller and Buyer or its customers; the Seller will provide, at its sole discretion, appropriate repair or replacement of the Product without charge at a designated facility, except as stipulated in the "Warranty Exclusions" as described below.<br>However, if the Product is installed or integrated into the Buyer's equipment or machines, the Seller shall not reimburse the cost of: removal or re-installation of the Product or other incidental costs related thereto, any lost opportunity, any profit loss or other incidental or consequential losses or damages incurred by the Buyer or its customers.   |
| Warranty exclusion | Notwithstanding the above warranty, the warranty as set forth herein shall not apply to any problem or damage to the Product that is caused by: <ol style="list-style-type: none"> <li>1. Installation, connection, combination or integration of the Product in or to the other equipment or machine that rendered by any person or entity other than the Seller.</li> <li>2. Insufficient maintenance or improper operation by the Buyer or its customers such that the Product is not maintained in accordance with the maintenance manual provided or designated by the Seller;</li> <li>3. Improper use or operation of the Product by the Buyer or its customers that is not informed to the Seller, including, without limitation, the Buyer's or its customers' operation of the Product not in conformity with the specifications;</li> <li>4. Any problem or damage on any equipment or machine to which the Product is installed, connected or combined or any specifications particular to the buyer or its customers;</li> <li>5. Any changes, modifications, improvements or alterations to the Product or those functions that are rendered on the Product by any person or entity other than the Seller;</li> <li>6. Any parts in the Product that are supplied or designated by the Buyer or its customers;</li> <li>7. Earthquake, fire, flood, salt air, gas, lightning, acts of God or any other reasons beyond the control of the Seller;</li> <li>8. Normal wear and tear, or deterioration of the Product's parts, such as the cooling fan bearings;</li> <li>9. Any other troubles, problems or damage to the Product that are not attributable to the Seller.</li> </ol> |
| Others             | The Seller will not be responsibility for the installation and removal of the inverter. Any inverter transportation cost shall be born by both Seller and Buyer.  |

# Worldwide Locations

- U.S.A**  
**Sumitomo Machinery Corporation of America (SMA)**  
1453 Cornwall Blvd. Chesapeake, VA 23323, U.S.A.  
TEL (1)757-485-3355 FAX (1)757-485-7490
- Canada**  
**SM Cyclo of Canada, Ltd. (SMC)**  
1453 Cornwall Road, Oakville, Canada ON L6J 7T5  
TEL (1)905-469-1050 FAX (1)905-469-1055
- Mexico**  
**SM Cyclo de Mexico, S.A. de C.V. (SMME)**  
Av. Desarrollo 541, Col. Finsa, Guadalupe, Nuevo León, México, CP67132  
TEL (52)81-8144-5130 FAX (52)81-8144-5130
- Brazil**  
**Sumitomo Industrias Pesadas do Brasil Ltda. (SHIB)**  
Rodovia do Acucar (SP-075) Km 26  
Itu, Sao Paulo, Brasil  
TEL (55)11-4886-1000 FAX (55)11-4886-1000
- Chile**  
**SM-Cyclo de Chile Ltda. (SMCH)**  
Camino Lo Echevers 550, Bodegas 5 y 6, Quilicura, Región Metropolitana, Chile  
TEL (56)2-892-7000 FAX (56)2-892-7001
- Argentina**  
**SM-Cyclo de Argentina S.A. (SMAR)**  
Ing Delpini 2230, B1615KGB Grand Bourg, Malvinas Argentinas, Buenos Aires, Argentina  
TEL (54)3327-45-4095 FAX (54)3327-45-4099
- Guatemala**  
**SM Cyclo de Guatemala Ensambladora, Ltda. (SMGT)**  
Parque Industrial Unisur, 0 Calle B 19-50 Zona 3, Bodega D-1 Delta Bárcenas en Villa Nueva, Guatemala  
TEL (502)6648-0500 FAX (502)6631-9171
- Colombia**  
**SM Cyclo Colombia, S.A.S. (SMCO)**  
Parque Industrial Celta, Km 7.0 Autopista Medellín, Costado Occidental, Funza, Cundinamarca, Colombia  
TEL (57)1-826-9766
- Peru**  
**SM Cyclo de Perú, S.A.C (SMPE)**  
Jr. Monte Rosa 255, Oficina 702, Lima, Santiago de Surco, Perú  
TEL (51)1-713-0342 FAX (51)1-715-0223
- Germany**  
**Sumitomo (SHI) Cyclo Drive Germany GmbH (SCG)**  
Cyclostraße 92, 85229 Markt Indersdorf, Germany  
TEL (49)8136-66-0 FAX (49)8136-5771
- Austria**  
**Sumitomo (SHI) Cyclo Drive Germany GmbH (SCG)**  
**SCG Branch Austria Office**  
Grüntalerstraße 30A, 4020 Linz, Austria  
TEL (43)732-330958 FAX (43)732-331978
- Belgium**  
**Hansen Industrial Transmissions NV (HIT)**  
Leonardo da Vincilaan 1, Edegem, Belgium  
TEL (32)34-50-12-11 FAX (32)34-50-12-20
- France**  
**SM-Cyclo France SAS (SMFR)**  
8 Avenue Christian Doppler, 77700 Serris, France  
TEL (33)164171717 FAX (33)164171718
- Italy**  
**SM-Cyclo Italy Srl (SMIT)**  
Via dell' Artigianato 23, 20010 Cornaredo (MI), Italy  
TEL (39)293-481101 FAX (39)293-481103
- Spain**  
**SM-Cyclo Iberia, S.L.U. (SMIB)**  
C/Gran Vía Nº 63 Bis, Planta 1, Departamento 1B  
48011 Bilbao-Vizcaya, Spain  
TEL (34)9448-05389 FAX (34)9448-01550
- United Kingdom**  
**SM-Cyclo UK Ltd. (SMUK)**  
Unit 29, Bergen Way, Sutton Fields Industrial Estate, Kingston upon Hull, HU7 0YQ, East Yorkshire, United Kingdom  
TEL (44)1482-790340 FAX (44)1482-790321
- Turkey**  
**SM Cyclo Turkey Güç Aktarım Sis. Tic. Ltd. Sti. (SMTR)**  
Barbaros Mh. Çiğdem Sk. Ağaoğlu, Office Mrk. No:1 Kat:4 D.18 Ataşehir, Istanbul, Turkey  
TEL (90)216-250-6069 FAX (90)216-250-5556
- India**  
**Sumi-Cyclo Drive India Private Limited (SDI)**  
Gat No. 186, Raisoni Industrial Park, Alandi Markal Road, Fulgaon-Pune, Maharashtra, India  
TEL (91)96-0774-5353
- China**  
**Sumitomo (SHI) Cyclo Drive China, Ltd. (SCT)**  
11F, SMEG Plaza, No. 1386 Hongqiao Road, Changning District, Shanghai, China (P.C. 200336)  
TEL (86)21-3462-7877 FAX (86)21-3462-7922
- Hong Kong**  
**SM-Cyclo of Hong Kong Co., Ltd. (SMHK)**  
Rm 1301, CEO Tower, 77 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong  
TEL (852)2460-1881 FAX (852)2460-1882
- Korea**  
**Sumitomo (SHI) Cyclo Drive Korea, Ltd. (SCK)**  
Royal Bldg. 19 Rm. 913, 5 Saemunan-ro 5-Gil Jongro-Gu Seoul, Korea 03173  
TEL (82)2-730-0151 FAX (82)2-730-0156
- Taiwan**  
**Tatung SM-Cyclo Co., Ltd. (TSC)**  
22 Chungshan N. Road 3rd., Sec. Taipei, Taiwan 104, R.O.C.  
TEL (886)2-2595-7275 FAX (886)2-2595-5594
- Singapore**  
**Sumitomo (SHI) Cyclo Drive Asia Pacific Pte. Ltd. (SCA)**  
15 Kwong Min Road, Singapore 628718  
TEL (65)6591-7800 FAX (65)6863-4238
- Philippines**  
**Sumitomo (SHI) Cyclo Drive Asia Pacific Pte. Ltd. Philippines Branch Office (SMPH)**  
C4 & C5 Buildings Granville Industrial Complex, Carmona, Cavite 4116, Philippines  
TEL (63)2-584-4921 FAX (63)2-584-4922
- Vietnam**  
**SM-Cyclo (Vietnam) Co., Ltd. (SMVN)**  
Factory 2B, Lot K1-2-5, Road No. 2-3-5A, Le Minh Xuan Industrial Park, Binh Chanh Dist., HCMC, Vietnam  
TEL (84)8-3766-3709 FAX (84)8-3766-3710
- Malaysia**  
**SM-Cyclo (Malaysia) Sdn. Bhd. (SMMA)**  
No.7C, Jalan Anggerik Mokara 31/56, Kota Kemuning, Seksyen 31, 40460 Shah Alam, Selangor Darul Ehsan, Malaysia  
TEL (60)3-5121-0455 FAX (60)3-5121-0578
- Indonesia**  
**PT. SM-Cyclo Indonesia (SMID)**  
Jalan Sungkai Blok F 25 No. 09 K, Delta Silicon III, Lippo Cikarang, Bekasi 17530, Indonesia  
TEL (62)21-2961-2100 FAX (62)21-2961-2211
- Thailand**  
**SM-Cyclo (Thailand) Co., Ltd. (SMTH)**  
195 Empire Tower, Unit 2103-4, 21st Floor, South Sathorn Road, Yannawa, Sathorn, Bangkok 10120, Thailand  
TEL (66)2670-0998 FAX (66)2670-0999
- Australia**  
**Sumitomo (SHI) Hansen Australia Pty. Ltd. (SHAU)**  
181 Power St, Glendenning, NSW 2761, Australia  
TEL (61)2-9208-3000 FAX (61)2-9208-3050
- Japan**  
**Sumitomo Heavy Industries, Ltd. (SHI)**  
ThinkPark Tower, 1-1 Osaki 2-chome, Shinagawa-ku, Tokyo 141-6025, Japan  
TEL (81)3-6737-2511 FAX (81)3-6866-5160

Specifications, dimensions, and other items are subject to change without prior notice.



Power Transmission & Controls Group

Headquarter ThinkPark Tower, 1-1 Osaki 2-chome, Shinagawa-ku, Tokyo 141-6025, Japan

No.DM3406E-1.0

EA10 Printed 2020.01