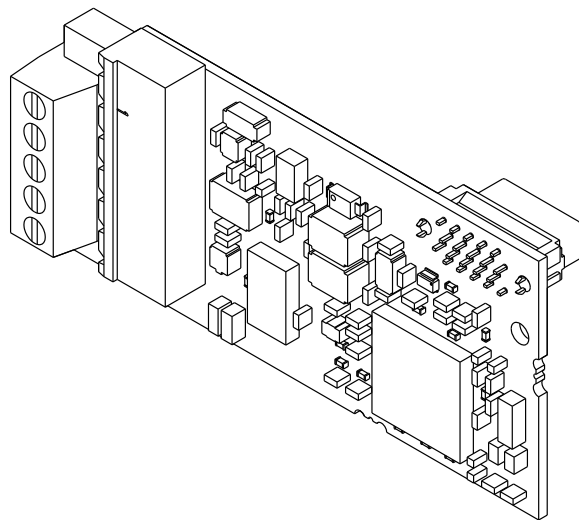# YASKAWA

YASKAWA AC Drive Option

DeviceNet
Technical Manual

Model   SI-N3

To correctly use the product, read this manual thoroughly and keep it for easy reference, inspection, and maintenance.
Make sure that the end user receives this manual.

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Table of Contents

1 Preface and Safety

YASKAWA Electric supplies component parts for use in a wide variety of industrial applications. The selection and application of YASKAWA products remain the responsibility of the equipment designer or end user.

YASKAWA accepts no responsibility for the way its products are incorporated into the final system design. Under no circumstances should any YASKAWA product be incorporated into any product or design as the exclusive or sole safety control. Without exception, all controls should be designed to detect faults dynamically and fail safely under all circumstances. All products designed to incorporate a component part manufactured by YASKAWA must be supplied to the end user with appropriate warnings and instructions as to the safe use and operation of that part. Any warnings provided by YASKAWA must be promptly provided to the end user. YASKAWA offers an express warranty only as to the quality of its products in conforming to standards and specifications published in the manual. NO OTHER WARRANTY, EXPRESS OR IMPLIED, IS OFFERED. YASKAWA assumes no liability for any personal injury, property damage, losses, or claims arising from misapplication of its products.

◆ Applicable Documentation

Document	Description
YASKAWA AC Drive Option DeviceNet Installation Manual	Read this manual first. The manual provides information about wiring, settings, functions, and troubleshooting. The manual is packaged together with the product.
YASKAWA AC Drive Option DeviceNet Technical Manual Manual No.: SIEP C730600 84 (This book)	The technical manual contains detailed information about the option. Access the following sites to obtain the technical manual: U.S.: http://www.yaskawa.com Europe: http://www.yaskawa.eu.com Japan: http://www.e-mechatronics.com Other areas: Check the back cover of these manuals. For questions, contact Yaskawa or a Yaskawa representative.
YASKAWA AC Drive Manuals	Refer to the drive manual to connect with the option. Drive manuals contain basic installation and wiring information in addition to detailed parameter setting, fault diagnostic, and maintenance information. The manuals also include important information about parameter settings and tuning the drive. The Quick Start Guides are packaged with the drive. The most recent versions of these manuals are available for download on our documentation websites: U.S.: http://www.yaskawa.com Europe: http://www.yaskawa.eu.com Japan: http://www.e-mechatronics.com Other areas: Check the back cover of these manuals. For questions, contact Yaskawa or a Yaskawa representative.

◆ Glossary

Terms	Definition
Option	YASKAWA AC Drive Option SI-N3 DeviceNet
Keypad	• HOA Operator • LCD Operator • LED Operator • HOA Keypad • LCD Keypad • LED Keypad
Hex. (Example: 900 (Hex.))	Identifies a unit for hexadecimal number format.

◆ Registered Trademarks

- DeviceNet is a registered trademark of Open DeviceNet Vendor Association, Inc. (ODVA).
- Trademarks are the property of their respective owners.

◆ Supplemental Safety Information

Read and understand this manual before installing, operating, or servicing this option. The option must be installed according to this manual and local codes.

The following conventions are used to indicate safety messages in this manual. Failure to heed these messages could result in serious or possibly even fatal injury or damage to the products or to related equipment and systems.

| **⚠ DANGER** | *This signal word identifies a hazard that will cause serious injury or death if you do not prevent it.* |

| **⚠ WARNING** | *This signal word identifies a hazard that can cause death or serious injuries if you do not prevent it.* |

| **⚠ CAUTION** | *This signal word identifies a hazardous situation, which, if not avoided, can cause minor or moderate injury.* |

| **NOTICE** | *This signal word identifies a property damage message that is not related to personal injury.* |

■ Section Safety

General Precautions
• The diagrams in this section may include options and drives without covers or safety shields to illustrate details. Be sure to reinstall covers or shields before operating any devices. The option should be used according to the instructions described in this manual.
• The diagrams in this manual are provided as examples only and may not pertain to all products covered by this manual.
• The products and specifications described in this manual or the content and presentation of the manual may be changed without notice to improve the product and/or the manual.
• Contact Yaskawa or a Yaskawa representative and provide the manual number shown on the front cover to order new copies of the manual.

⚠ DANGER *Do not ignore the safety messages in this manual. If you ignore the safety messages in this manual, it will cause serious injury or death. The manufacturer is not responsible for injuries or damage to equipment.*

⚠ WARNING *Electrical Shock Hazard. Do not modify the drive or option circuitry. Failure to obey can cause serious injury or death, or cause damage to the drive or option and will void warranty. Yaskawa is not responsible for modifications of the product made by the user.*

NOTICE *Damage to Equipment. Do not use steam or other disinfectants to fumigate wood for packaging the drive. Use alternative methods, for example heat treatment, before you package the components. Gas from wood packaging fumigated with halogen disinfectants, for example fluorine, chlorine, bromine, iodine or DOP gas (phthalic acid ester), can cause damage to the drive.*

2 Overview

This option provides a communications connection between the drive and an ODVA DeviceNet network. The option connects the drive to a DeviceNet network and facilitates the exchange of data.

DeviceNet is a communications link to connect industrial devices (for example limit switches, photoelectric switches, motor starters, smart motor controllers, operator interfaces, and variable frequency drives) and control devices (for example, programmable controllers and computers) to a network. DeviceNet is a simple networking solution. DeviceNet decreases the cost and time to wire and install factory automation devices, and it gives the option to interchange like components from other vendors.

DeviceNet is an open network standard.

Install the option/DeviceNet option on a drive to do these functions from a DeviceNet communication master device:

• Operate the drive
• Monitor the drive operation status
• Change drive parameter settings

Figure 2.1 DeviceNet Approved

◆ Compatible Products

You can use the option with these products:

Table 2.1 Compatible Products

Drive	Model
A1000	All
E1000	All
H1000	All
L1000A *1	All
U1000 *1	All
Z1000U *1	All
GA500	All

Drive	Model
GA700 *2	All
GA800 *2	All
FP605 *2	All

*1   Before you install the option on an L1000A, U1000 or Z1000U drive, make sure that the option software version is PRG: 1112 or later.

*2   Before you install the option on a GA500, GA700, GA800, or FP605 drive, make sure that the option software version is PRG: 1115 or later.

Note:

- Refer to the option package labeling in the field designated "PRG (four digit number)" or the option labeling in the field to identify the option software version.

- For Yaskawa customers in the North or South America region:
  If your product is not listed in Table 2.1, refer to the web page below to confirm this manual is correct for your product. The web page provides a list of option manuals by product, and a direct link to download a PDF of the manual.
  Scan QR code Or refer to:
  http://www.yaskawa.com/optionlookup

◆ Install the Option on a GA500 Drive

An option card mounting kit is necessary to install the option on a GA500 drive. The option card mounting kit model is: JOHB-GA50. This kit is sold separately.

Refer to the option card mounting kit manual for more information about installation.

A - **Option card mounting kit components (sold separately)**

B - **Option**

C - **Drive front cover**
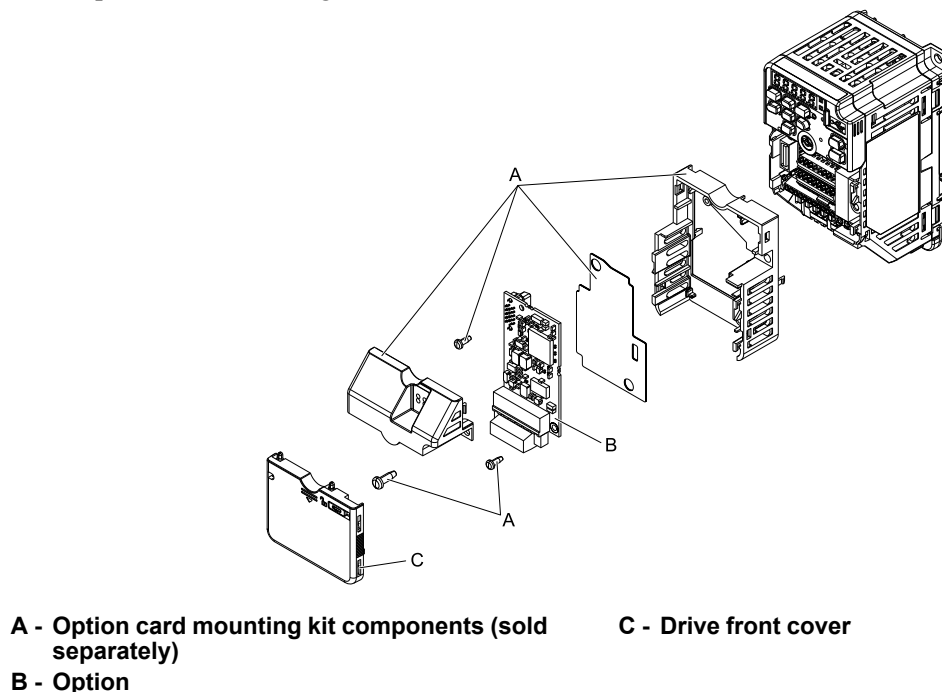
Figure 2.2   Option Card Mounting Kit (JOHB-GA50)

3   Receiving

After you receive the option package:
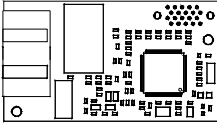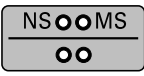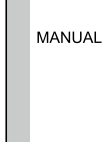
- Make sure that there is no damage to the option and no parts are missing.
  The Yaskawa warranty does not include damage from shipping. If there is damage to the option or other parts, contact the shipping company immediately.

  > **NOTICE**   *Damage to Equipment. Do not use damaged parts to connect the drive and the option. Failure to comply could damage the drive and option.*

- Make sure that the model number on the option nameplate and the model number on the purchase order are the same. Refer to Figure 4.1 for more information.
- Contact the distributor where you purchased the option or contact Yaskawa or a Yaskawa representative about any problems with the option.

◆ Option Package Contents

Table 3.1 Contents of Package

Option Contents			Quantity
Option			1
Ground wire *1			1
Screws (M3)			3 *2
LED label	1000-Series, Z1000U		1
	GA500, GA700, and GA800		1
Manuals			1

*1   GA700 and GA800 drives do not use the ground wire.
*2   Only two screws are necessary to install the option on GA700 and GA800 drives.

Note:

The LED label for FP605 drives is packaged with the FP605 drive.

Figure 3.1 LED Label for FP605

◆ Installation Tools

You can use these tools to install the option to the drive:

- A Phillips screwdriver or slotted screwdriver (M3 *1)
- A flat-blade screwdriver (blade depth: 0.4 mm (0.02 in.), width: 2.5 mm (0.1 in.)).
- A pair of diagonal cutting pliers.
- A small file or medium-grit sandpaper.

*1   Phillips screw sizes are different for different drive capacities. Prepare different screwdrivers for different screw sizes.

4 Option Components

◆ Option
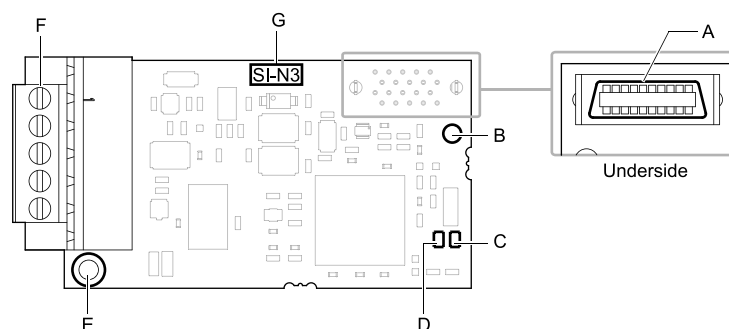
A - Connector (CN5)
B - Installation hole
C - LED (MS) *1
D - LED (NS) *1

E - Ground terminal (FE) and installation hole *2
F - Terminal block CN1
G - Option model number

Figure 4.1 Option

*1 Refer to *Option LED States on page 11* for more information about the LEDs.
*2 Connect the included ground wire during installation. The ground wire is not necessary for installation on GA700 and GA800 drives.

◆ Terminal block CN1

The communication terminal is a pluggable terminal block that serves as the connection point of the DeviceNet network communication cable to the option.

Table 4.1 Terminal Descriptions

Terminal	Pin	Color	Signal	Description
	1	Black	V-	Network common
	2	Blue	CAN_L	CAN data Low
	3	-	Shield	Cable shield
	4	White	CAN_H	CAN data High
	5	Red	V+	Communications network power DC +24V

◆ Option LED States

The option has two bicolor LEDs:

- Module status (MS)
- Network status (NS)
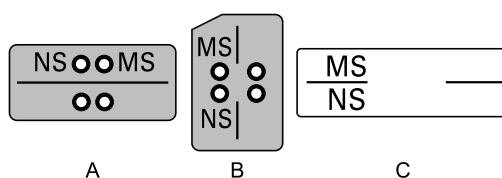
A - 1000-Series, Z1000U
B - GA500, GA700, and GA800

C - FP605 *1

Figure 4.2 Option LED Labels

*1 LED label has transparent background and white letters. Please make sure that you use the correct label for FP605. The LED label for FP605 drives is packaged with the FP605 drive.

Wait 2 seconds minimum for the power-up diagnostic process to complete before you verify the LED states.

The Table 4.2 shows the operating status of the option LEDs after the power-up diagnostic LED sequence is complete.

Refer to Table 4.3 for more information about the LEDs.

Table 4.2 Option LED States

LED Name	Indication		Operating State	Description
	Color	Display		
MS	OFF		Power supply off	There is no power to the drive.
	Green	ON	Option operating	The option is operating normally.
	Green	Flashing	Option initializing	There are defects or errors in the settings. • There is an incorrect baud rate setting. • MAC ID duplication
	Red	ON	Fatal error occurred	The option detected a fatal (unrecoverable) error. If the unit does not recover after you cycle power, you may need to replace the option.
	Red	Flashing	Non-fatal error occurred	The option detected a non-fatal (recoverable) error.
	Red/Green	Flashing	Option self-test	The option is in self-test mode.
NS	OFF		Power supply OFF or Offline	The drive is not on-line. • Duplicate MAC ID test has not been passed. • There is no power to the drive.
	Green	ON	Online communications established	The option is online and has established connections. • The option has established connections to other nodes.
	Green	Flashing	Online communications not established	The option is online without an established connection. • Duplicate MAC ID test was passed and is online but has no open connections to other nodes.
	Red	ON	Ring fault	The option detected a communications device error. • An error occurred disabling DeviceNet communications. (MAC ID duplication or Bus off detected)
	Red	Flashing	Communications time-out (non-fatal)	A communications time-out occurred.
	Red/Green	Flashing	Comm error	Specific communication faulted device. • The device detected a network access error and is in the communications faulted state. • The device then received and accepted an Identify communication fault request-long protocol message.

■ Power-Up Diagnostics

An LED test is performed each time the drive is powered up. The initial boot sequence can take several seconds. After the LEDs complete the diagnostic LED sequence, the option is successfully initialized. The LEDs then assume operational conditions as shown in Table 4.2.

Table 4.3 Power-Up Diagnostic LED Sequence

Sequence	Module Status (MS)	Network Status (NS)	Time (ms)
1	Green	OFF	250
2	Red	OFF	250
3	Green	Green	250
4	Green	Red	250
5	Green	OFF	-

5 Installation Procedure

◆ Section Safety

⚠ DANGER *Electrical Shock Hazard. Do not examine, connect, or disconnect wiring on an energized drive. Before servicing, disconnect all power to the equipment and wait for the time specified on the warning label at a minimum. The internal capacitor stays charged after the drive is de-energized. The charge indicator LED extinguishes when the DC bus voltage decreases below 50 Vdc. When all indicators are OFF, measure for dangerous voltages to make sure that the drive is safe. If you do work on the drive when it is energized, it will cause serious injury or death from electrical shock.*

⚠ WARNING *Electrical Shock Hazard. Do not operate the drive when covers are missing. Replace covers and shields before you operate the drive. Use the drive only as specified by the instructions. Some figures in this section include drives without covers or safety shields to more clearly show the inside of the drive. If covers or safety shields are missing from the drive, it can cause serious injury or death.*

⚠ WARNING *Electrical Shock Hazard. Only let approved personnel install, wire, maintain, examine, replace parts, and repair the drive. If personnel are not approved, it can cause serious injury or death.*

⚠ WARNING *Electrical Shock Hazard. Do not remove covers or touch circuit boards while the drive is energized. If you touch the internal components of an energized drive, it can cause serious injury or death.*

⚠ WARNING *Electrical Shock Hazard. Do not use damaged wires, put too much force on the wiring, or cause damage to the wire insulation. Damaged wires can cause serious injury or death.*

⚠ WARNING *Fire Hazard. Tighten all terminal screws to the correct tightening torque. Connections that are too loose or too tight can cause incorrect operation and damage to the drive. Incorrect connections can also cause death or serious injury from fire.*

NOTICE *Damage to Equipment. When you touch the option, make sure that you observe correct electrostatic discharge (ESD) procedures. If you do not follow procedures, it can cause ESD damage to the drive circuitry.*

NOTICE *Damage to Equipment. Do not de-energize the drive while the drive is outputting voltage. Incorrect equipment sequencing can cause damage to the drive.*

NOTICE *Do not operate a drive or connected equipment that has damaged or missing parts. You can cause damage to the drive and connected equipment.*

NOTICE *Use Yaskawa connection cables or recommended cables only. Incorrect cables can cause the drive or option to function incorrectly.*

NOTICE *Damage to Equipment. Correctly connect the connectors. Incorrect connections can cause malfunction or damage to the equipment.*

NOTICE *Damage to Equipment. Make sure that all connections are correct after you install the drive and connecting peripheral devices. Incorrect connections can cause damage to the option.*

◆ Procedures to Install and Wire Options on a Drive

Procedures to install and wire the option are different for different drive models.

Refer to the following table to check the procedures to install and wire the option on a drive.

Table 5.1 Procedures to Install and Wire Options on a Drive

Drive	Procedures to Install and Wire Options on a Drive	Reference Page
A1000	Procedure A	13
E1000	Procedure A	13
H1000	Procedure A	13
L1000A	Procedure A	13
U1000	Procedure A	13
Z1000U	Procedure A	13
GA500	*1 *2	-
GA700	Procedure B	16
GA800	Procedure B	16
FP605	Procedure C	19

*1   To install the option on GA500 drives, use the option mounting kit (JOHB-GA50) and manual.
*2   Before you install the option on a GA500 drive, make sure that the option software version is PRG: 1115 or later.

■ Procedure A

This section shows the procedure to install and wire the option on a 1000-series drive.

Prepare the Drive for the Option

Before you install the option on a YASKAWA AC Drive L1000A, U1000 or Z1000U, make sure that the option software version is PRG: 1112 or later.

Correctly wire the drive as specified by the manual packaged with the drive. Make sure that the drive functions correctly. Refer to the drive manuals for more information.
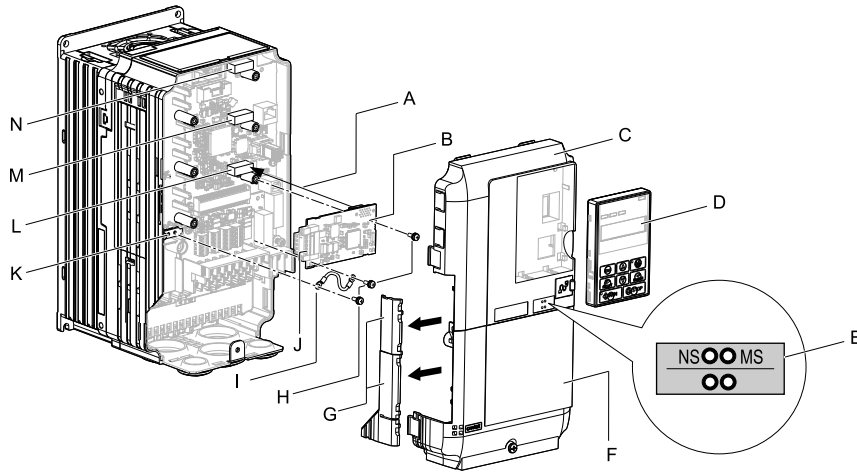
A - Insertion point for CN5 connector
B - Option
C - Drive front cover
D - Keypad
E - LED label
F - Drive terminal cover
G - Removable tabs for wire routing

H - Included screws
I - Ground wire
J - Terminal block (CN1)
K - Drive grounding terminal (FE)
L - Connector CN5-A
M - Connector CN5-B (Not available for communication option installation.)
N - Connector CN5-C (Not available for communication option installation.)

Figure 5.1 Drive Components with Option

Install the Option

Use this procedure to install the option.

⚠ DANGER   *Electrical Shock Hazard. Do not examine, connect, or disconnect wiring on an energized drive. Before servicing, disconnect all power to the equipment and wait for the time specified on the warning label at a minimum. The internal capacitor stays charged after the drive is de-energized. The charge indicator LED extinguishes when the DC bus voltage decreases below 50 Vdc. When all indicators are OFF, measure for dangerous voltages to make sure that the drive is safe. If you do work on the drive when it is energized, it will cause serious injury or death from electrical shock.*

1. Remove the keypad (B), front cover (A), and terminal cover (C).

   Shut off power to the drive and wait for the time specified on the drive warning label at a minimum. Make sure that the charge indicator LED is unlit, then remove the keypad and front cover. Refer to the drive manuals for more information.

   You can only install this option into the CN5-A connector on the drive control board.

   NOTICE   *Damage to Equipment. When you touch the option, make sure that you observe correct electrostatic discharge (ESD) procedures. If you do not follow procedures, it can cause ESD damage to the drive circuitry.*
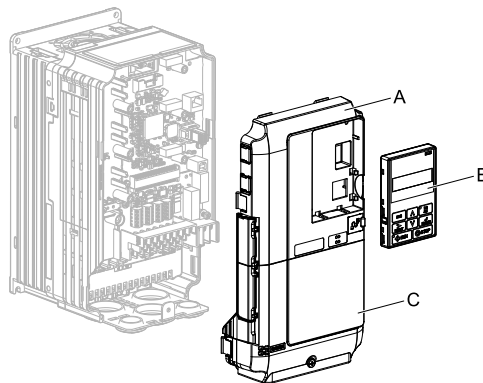
A - Drive front cover
B - Keypad

C - Drive terminal cover

Figure 5.2 Remove the Keypad, Front Cover, and Terminal Cover

2. Put the LED label (B) in the correct position on the drive front cover (A).
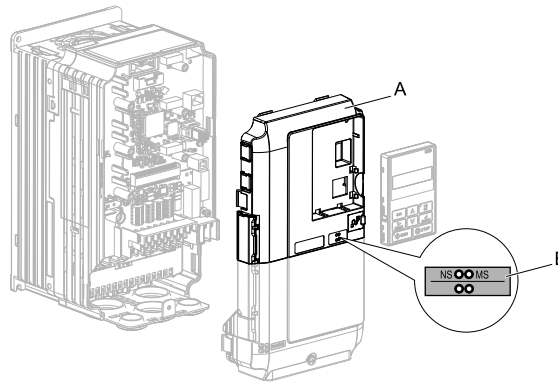
A - Drive front cover   **B - LED label**

Figure 5.3 Put the LED Label on the Drive Front Cover

3. Install the option (A) into the CN5-A connector (C) on the drive and use the included screws (B) to put it in place.
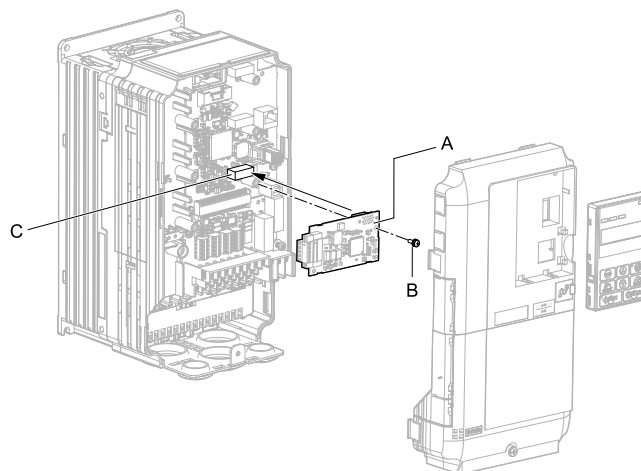
A - Option   **C - Connector CN5-A**
B - Included screw

Figure 5.4 Install the Option

4. Use one of the remaining included screws (B) to connect one end of the ground wire (C) to the ground terminal (D). Use the last remaining included screw (B) to connect the other end of the ground wire (C) to the remaining ground terminal and installation hole on the option (A).
    Tighten the screws to a correct tightening torque:

    • 0.5 N·m to 0.6 N·m (4.4 in·lb to 5.3 in·lb)
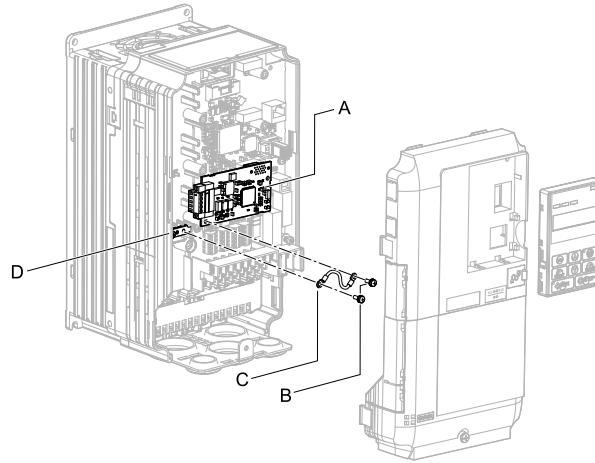
A - Option
B - Included screws

C - Ground wire
D - Drive grounding terminal (FE)

Figure 5.5 Connect the Ground Wire

Note:

The drive has only two ground terminal screw holes. When you connect three options, two options will share one ground terminal.

5. Route the option wiring.

Procedures to wire the option are different for different drive models.

Firmly connect the DeviceNet communication cable to option terminal block (CN1). Isolate communication cables from main circuit wiring and other electrical and power lines. Refer to *Communication Cable Wiring on page 25* for more information.

> **NOTICE** *Damage to Equipment. When you touch the option, make sure that you observe correct electrostatic discharge (ESD) procedures. If you do not follow procedures, it can cause ESD damage to the drive circuitry.*

6. Reattach the front cover (A), terminal cover (C), and keypad (B).

Refer to the drive manuals for more information.

> **NOTICE** *Do not pinch cables between the front covers and the drive. Failure to comply could cause erroneous operation.*
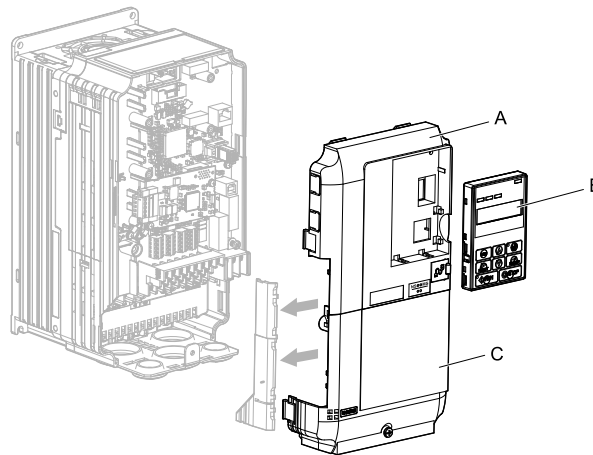
A - Drive front cover
B - Keypad

C - Drive terminal cover

Figure 5.6 Replace the Front Cover, Terminal Cover, and Keypad

7. Set drive parameters in *Related Drive Parameters on page 27* for correct option performance.

■ Procedure B

This section shows the procedure to install and wire the option on a GA700 or GA800 drive.

Prepare the Drive for the Option

Before you install the option on a YASKAWA AC Drive GA700 or GA800, make sure that the option software version is PRG: 1115 or later.

Correctly wire the drive as specified by the manual packaged with the drive. Make sure that the drive functions correctly. For information about drive connection and wiring, refer to the manuals for the drive on which you will use this option.

A - **Insertion point for CN5 connector**

B - **Option**

C - **Included screws**

D - **Drive front cover**

E - **LED label**

F - **Keypad**

G - **Terminal block (CN1)**

H - **LED status ring board**

I - **Connector CN5-A**

J - **Connector CN5-B (Not available for communication option installation.)**

K - **Connector CN5-C (Not available for communication option installation.)**

Figure 5.7 Drive Components with Option

Install the Option

Use this procedure to install the option.

⚠ **DANGER**   *Electrical Shock Hazard. Do not examine, connect, or disconnect wiring on an energized drive. Before servicing, disconnect all power to the equipment and wait for the time specified on the warning label at a minimum. The internal capacitor stays charged after the drive is de-energized. The charge indicator LED extinguishes when the DC bus voltage decreases below 50 Vdc. When all indicators are OFF, measure for dangerous voltages to make sure that the drive is safe. If you do work on the drive when it is energized, it will cause serious injury or death from electrical shock.*

1. Put the LED label (A) in the correct position on the drive front cover (B).
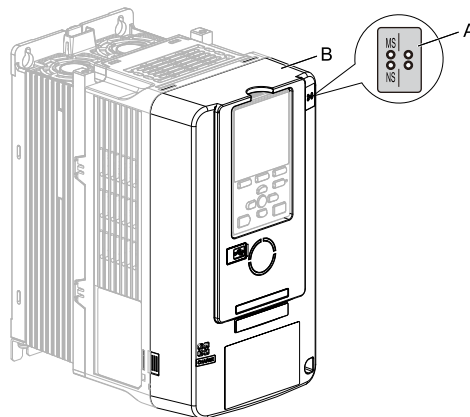
A - **LED label**

B - **Drive front cover**

Figure 5.8 Put the LED Label on the Drive Front Cover

2. Remove the keypad (E) and front cover (D).

   Shut off power to the drive and wait for the time specified on the drive warning label at a minimum. Make sure that the charge indicator LED is unlit, then remove the keypad and front cover. Refer to the drive manuals for more information.

   You can only install this option into the CN5-A connector on the drive control board.

> **NOTICE** *Damage to Equipment. When you touch the option, make sure that you observe correct electrostatic discharge (ESD) procedures. If you do not follow procedures, it can cause ESD damage to the drive circuitry.*

Note:

Remove the keypad, then move the keypad connector to the holder on the drive, then remove the front cover.
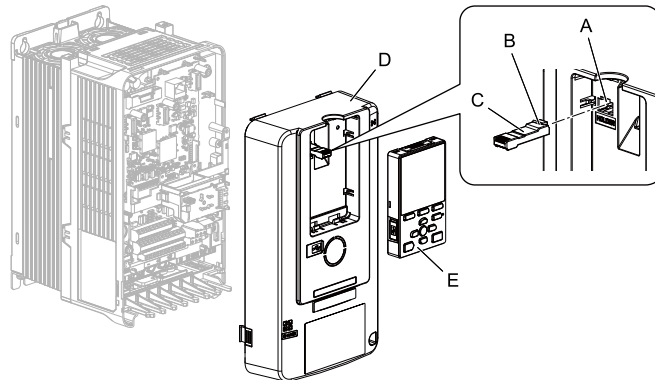
A - **Holder**
B - **Keypad connector tab**
C - **Keypad connector**

D - **Drive front cover**
E - **Keypad**

Figure 5.9 Remove the Front Cover and Keypad

3. Carefully remove the LED Status Ring board (A) and put it in the temporary placement holes (B) on the right side of the drive.

   Refer to the drive manuals for more information.

   > **NOTICE** *Do not remove the LED Status Ring board cable connector. If you disconnect the LED Status Ring board, it can cause incorrect operation and damage to the drive.*

Drive front view
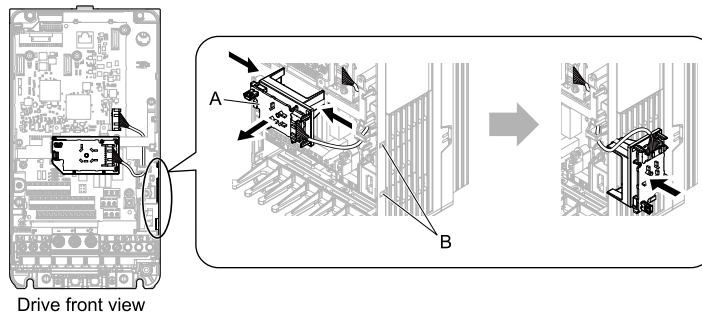
A - **LED Status Ring board**

B - **Temporary placement holes**

Figure 5.10 Remove the LED Status Ring Board

4. Install the option (A) into the CN5-A connector (C) on the drive and use the included screws (B) to put it in place.

   Tighten the screw to a correct tightening torque:

   • 0.5 N·m to 0.6 N·m (4.4 in·lb to 5.3 in·lb)

Note:

1. A ground wire is not necessary. Do not use the ground wire.
2. Only two screws are necessary to install the option on GA700 and GA800 drives.
3. The option package contains three screws and one ground wire.
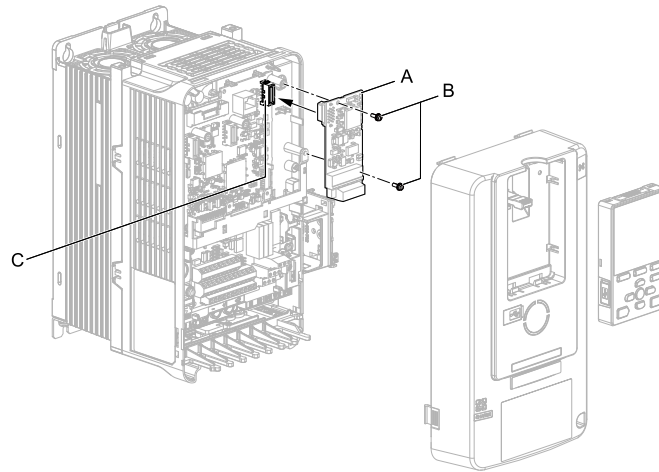
A - **Option**
B - **Included screws**

C - **Connector CN5-A**

Figure 5.11 Install the Option

5. Firmly connect the DeviceNet communication cable to option terminal block (CN1).

   Isolate communication cables from main circuit wiring and other electrical and power lines. Refer to *Communication Cable Wiring on page 25* for more information.

   > **NOTICE** *Damage to Equipment. When you touch the option, make sure that you observe correct electrostatic discharge (ESD) procedures. If you do not follow procedures, it can cause ESD damage to the drive circuitry.*

6. Reattach the LED Status Ring board (E), front cover (C), and keypad (D).

   Refer to the drive manuals for more information.

   > **NOTICE** *Do not pinch cables between the front cover or the LED Status Ring board and the drive. Failure to comply could cause erroneous operation.*

Note:
• Replace the keypad connector, then install the keypad.
• Put the keypad connector tab into the holder when you install the keypad connector to the holder.
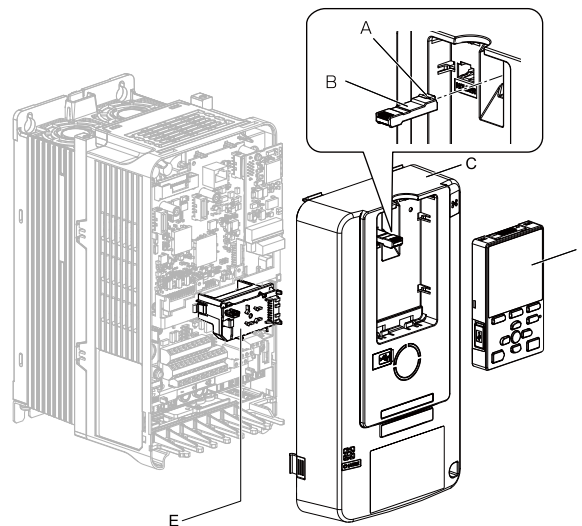
A - **Keypad connector tab**
B - **Keypad connector**
C - **Drive front cover**

D - **Keypad**
E - **LED Status Ring board**

Figure 5.12 Install the LED Status Ring board, Front Cover, and Keypad

7. Set drive parameters in *Related Drive Parameters on page 27* for correct option performance.

◼ Procedure C

This section shows the procedure to install and wire the option on an FP605 drive.

Prepare the Drive for the Option

Before you install the option on an FP605 drive, make sure that the option software version is PRG: 1115 or later.

Correctly wire the drive as specified by the manual packaged with the drive. Make sure that the drive functions correctly. Refer to the drive manuals for more information.
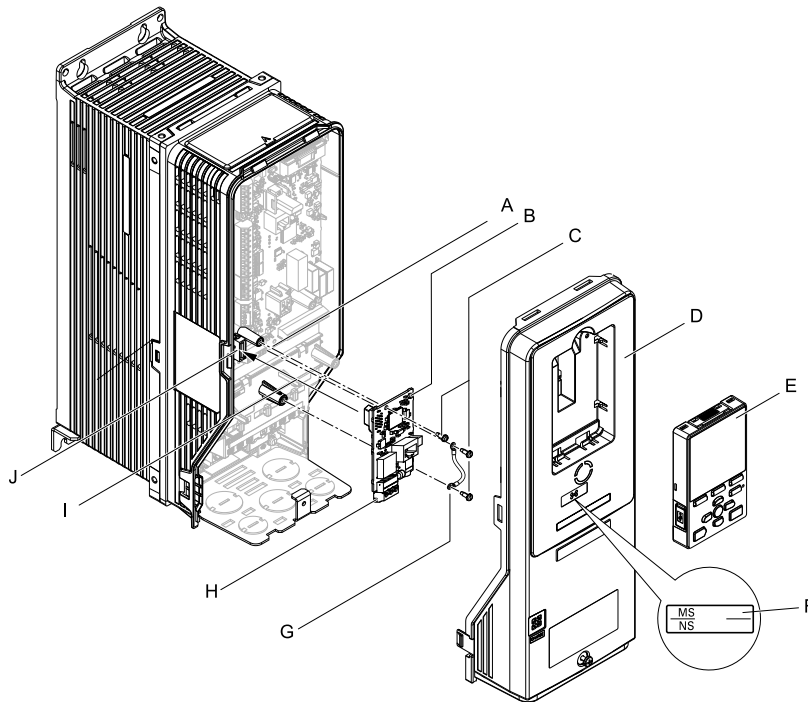
A - Drive grounding terminal (FE)   F - LED label
B - Option   G - Ground wire
C - Included screws   H - Option terminal block CN1
D - Drive front cover   I - Insertion point for connector CN5-A
E - Keypad   J - Connector CN5-A

Figure 5.13 Drive Components with Option

Install the Option

Use this procedure to install the option.

⚠ **DANGER**   *Electrical Shock Hazard. Do not examine, connect, or disconnect wiring on an energized drive. Before servicing, disconnect all power to the equipment and wait for the time specified on the warning label at a minimum. The internal capacitor stays charged after the drive is de-energized. The charge indicator LED extinguishes when the DC bus voltage decreases below 50 Vdc. When all indicators are OFF, measure for dangerous voltages to make sure that the drive is safe. If you do work on the drive when it is energized, it will cause serious injury or death from electrical shock.*

1.   Remove the keypad (B) and front cover (A).

Shut off power to the drive and wait for the time specified on the drive warning label at a minimum. Make sure that the charge indicator LED is unlit, then remove the keypad and front cover. Refer to the drive manuals for more information.

NOTICE   *Damage to Equipment. When you touch the option, make sure that you observe correct electrostatic discharge (ESD) procedures. If you do not follow procedures, it can cause ESD damage to the drive circuitry.*
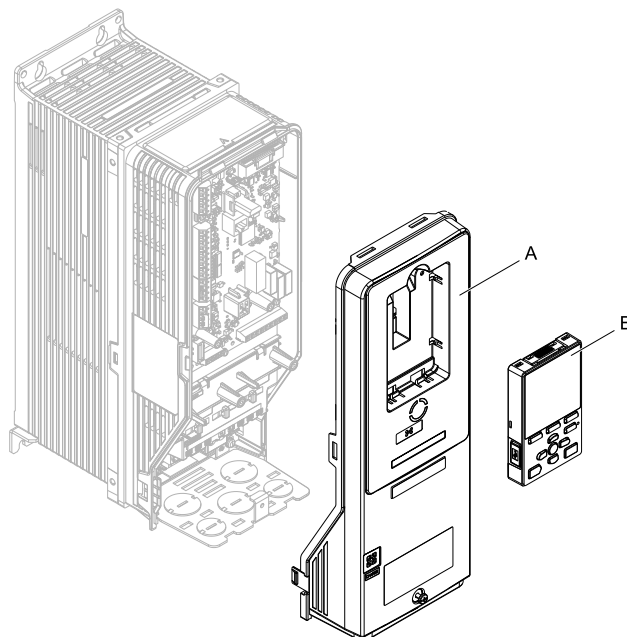
A - Drive front cover   **B - Keypad**

Figure 5.14 Remove the Front Cover and Keypad

2. Put the LED label (B) in the correct position on the drive front cover (A).
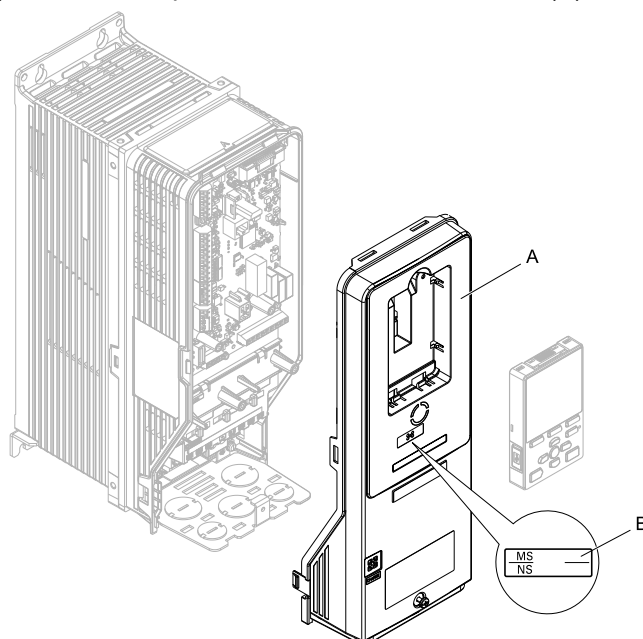
A - Drive front cover   **B - LED label**

Figure 5.15 Put the LED Label on the Drive Front Cover

Note:

On FP605 drive models 2143 to 2396 and 4156 to 4720, attach the LED label after you cut the drive face plate as shown in Figure 5.16.
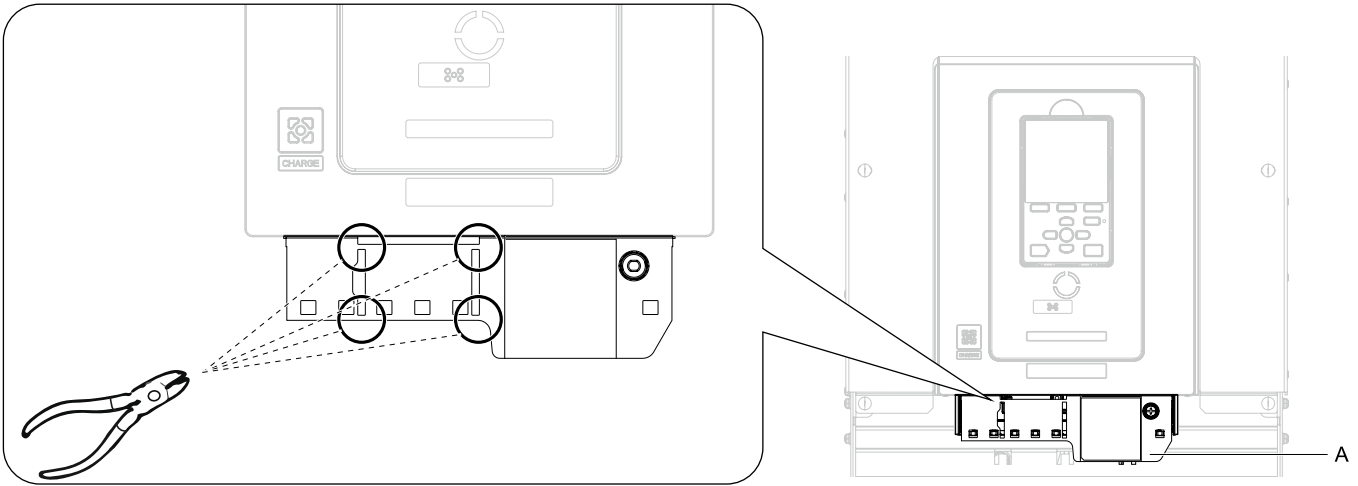
A - Drive face plate

Figure 5.16 Cut the Drive Face Plate on FP605 Models 2143 to 2396 and 4156 to 4720

3. Remove the screw (B) installed in the drive grounding terminal (A).
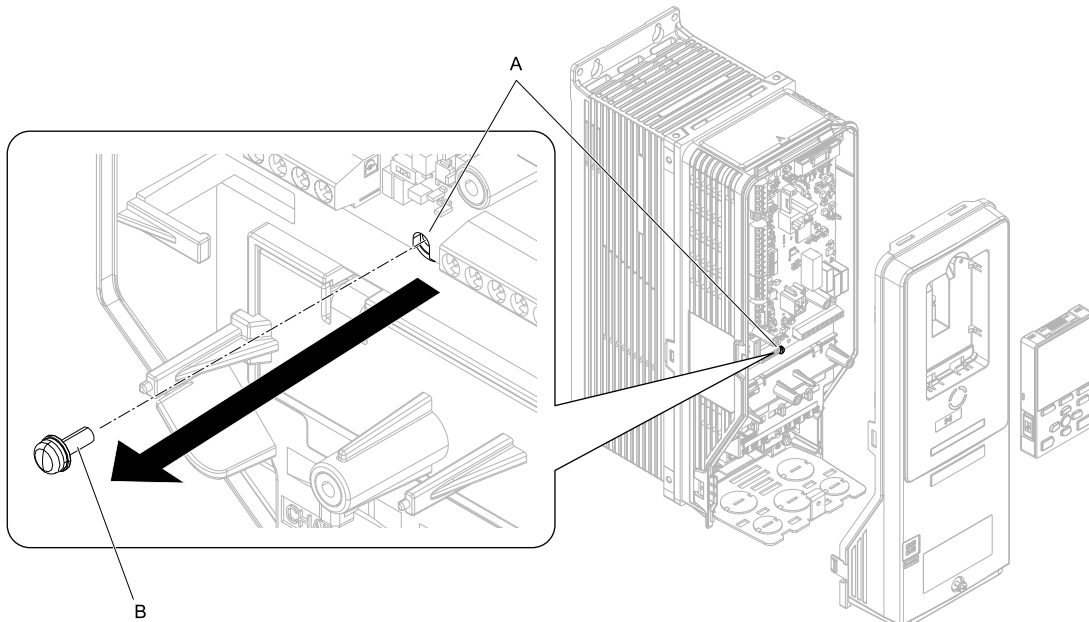
A - Drive grounding terminal (FE)   **B - Included screw**

Figure 5.17 Remove the Screw from the Drive Grounding Terminal

4. Use the screw (B) installed in the FE ground terminal of the drive (A) to connect one end of the included ground wire (C) to the ground terminal on the drive.
   Tighten the screw to a correct tightening torque:
   • 0.5 N·m to 0.6 N·m (4.4 in·lb to 5.3 in·lb)

Note:
Route ground wire on the right side of the stud (D).
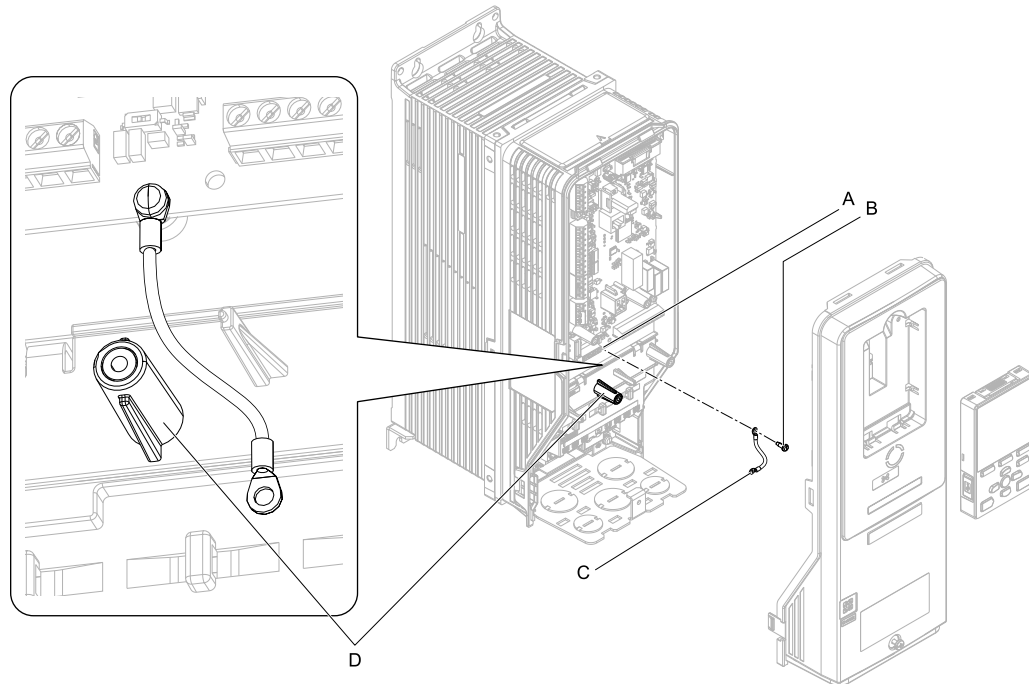
A - **Drive grounding terminal (FE)**
B - **Included screw**

C - **Ground wire**
D - **Stud**

Figure 5.18 Connect the Ground Wire

5. Install the option (A) into the CN5-A connector (C) on the drive and use one of the included screws (B) to put it in place.

   Tighten the screw to a correct tightening torque:

   • 0.5 N·m to 0.6 N·m (4.4 in·lb to 5.3 in·lb)

Note:

1. Only two screws are necessary to install the option on an FP605 drive.
2. The option package contains three screws and one ground wire.
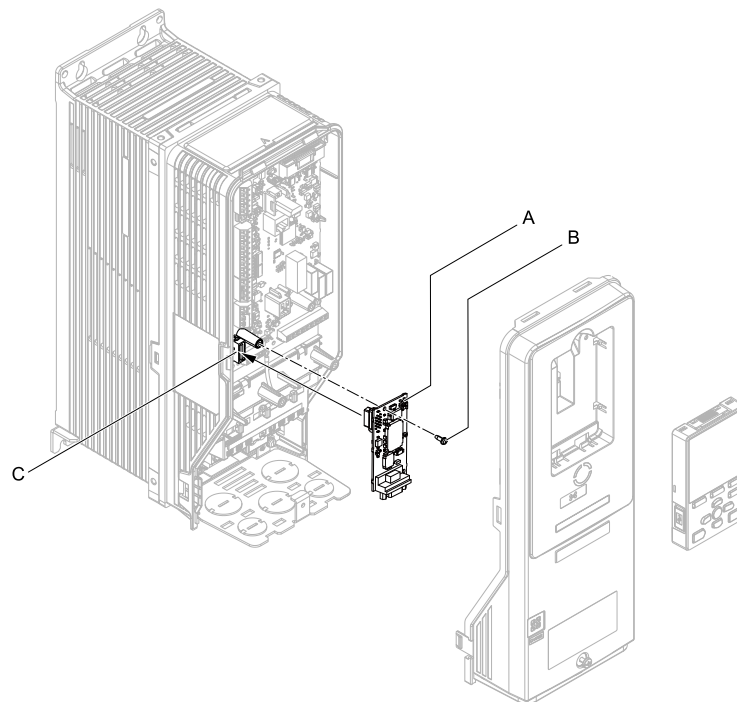
A - **Option**
B - **Included screw**

C - **Connector CN5**

Figure 5.19 Install the Option

6. Use one of the remaining included screws (B) to connect the ground wire (A) to the ground terminal and installation hole on the option.
   Tighten the screw to a correct tightening torque:
   • 0.5 N·m to 0.6 N·m (4.4 in·lb to 5.3 in·lb)

Note:

Refer to Figure 5.20 for instructions about crimp terminal orientation (C) and wire routing.
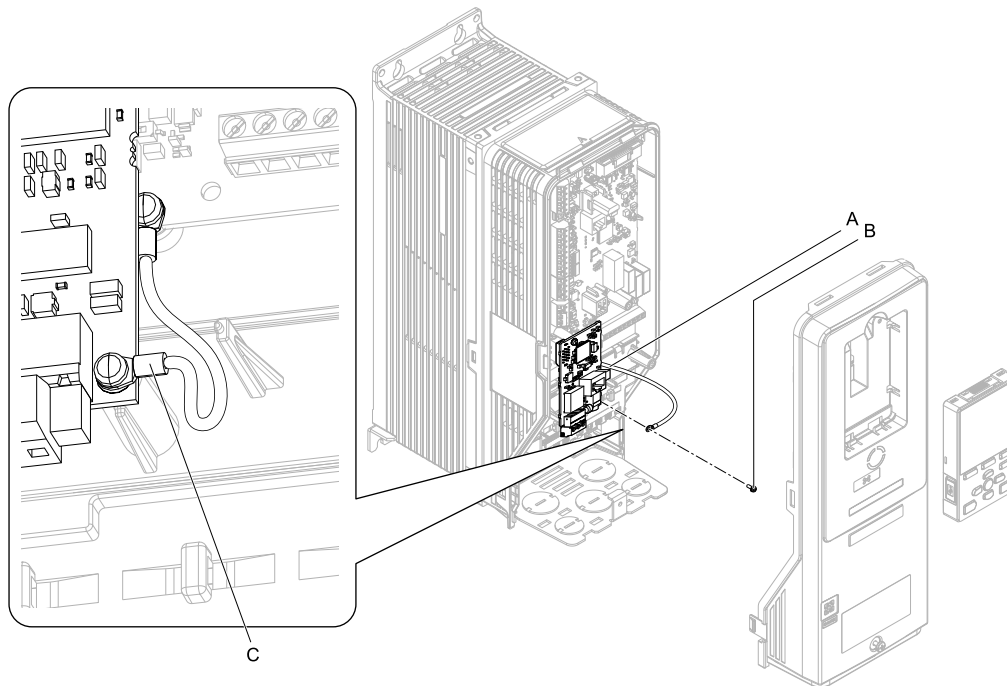
A - Ground wire   C - Crimp terminal
B - Included screw

Figure 5.20 Connect the Ground Wire

7. Firmly connect the DeviceNet communication cable to the option terminal block (CN1).

   Isolate communication cables from main circuit wiring and other electrical and power lines. Make sure that you firmly connect the cable end. (Refer to Figure 5.22). Refer to *Communication Cable Wiring on page 25* for more information.

   NOTICE   *Damage to Equipment. When you touch the option, make sure that you observe correct electrostatic discharge (ESD) procedures. If you do not follow procedures, it can cause ESD damage to the drive circuitry.*

8. Reattach the drive front cover (A) and the keypad (B).

   Refer to the drive manuals for more information.

   NOTICE   *Do not pinch cables between the front covers and the drive. Failure to comply could cause erroneous operation.*
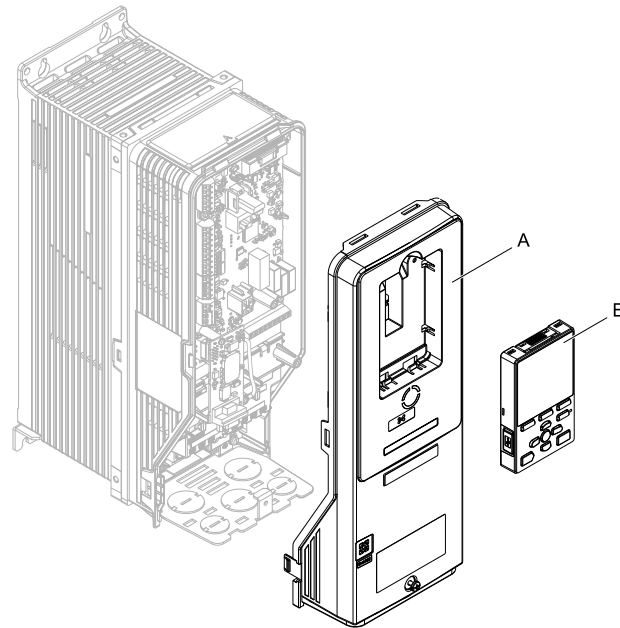
A - Drive front cover   B - Keypad

Figure 5.21 Replace the Front Cover and Keypad

9.   Set drive parameters in *Related Drive Parameters on page 27* for correct option performance.

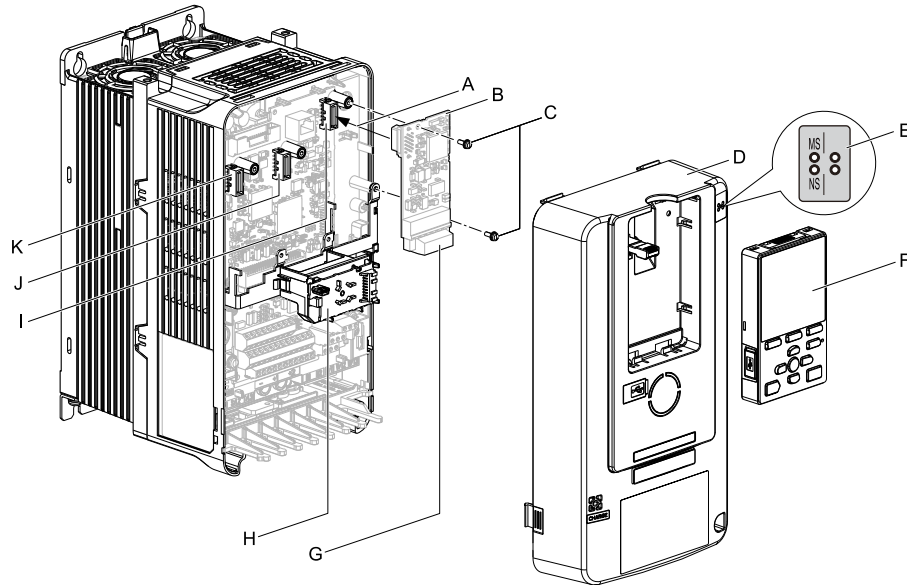## ◆ Option Connection Diagram
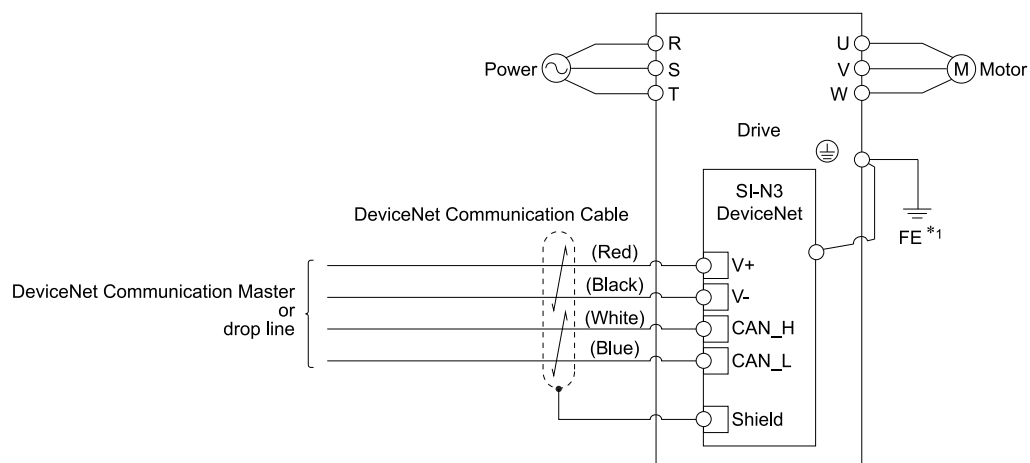
Figure 5.22 Option Connection Diagram

*1   Connect the included ground wire for installations on 1000-series, GA500, and FP605 drives. The ground wire is not necessary for installations on GA700 or GA800 drives.

◆ Communication Cable Wiring

Route the option wiring as specified by these procedures.

Note:

Use only a DeviceNet dedicated communication cable. Refer to *Trunk Line and Drop Line Length on page 95* for more information about selecting trunk line and drop line lengths. Refer to the ODVA website (www.odva.org) for more information on network cabling.

1. Prepare the communication cables as shown in Figure 5.23.
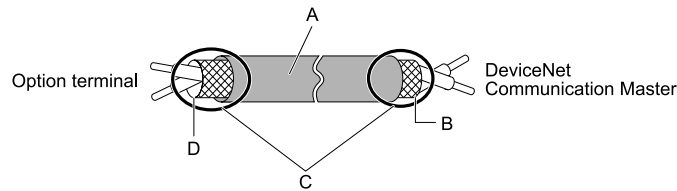
A - Sheath
B - Shield

C - Use electrical tape or shrink tubing to insulate the cable.
D - Shield

Figure 5.23 Prepare Ends of Shielded Cable

2. Connect the communication cables to the terminal block as shown in Figure 5.24.

    When you attach the CN1 connector plug on the terminal block to the socket, make sure that you tighten the screws on the left and right sides of the plug.

    Tighten the screw to a correct tightening torque:

    • 0.5 N·m to 0.6 N·m (4.4 in·lb to 5.3 in·lb)

3. Make sure that you correctly connect the wires and that you did not accidentally pinch wire insulation in the terminals.

    Trim any frayed wires.

    ⚠ **WARNING** *Fire Hazard. Tighten all terminal screws to the correct tightening torque. Connections that are too loose or too tight can cause incorrect operation and damage to the drive. Incorrect connections can also cause death or serious injury from fire.*

    NOTICE *Do not let wire shields touch other signal lines or equipment. Insulate the wire shields with electrical tape or shrink tubing. If you do not insulate the wire shields, it can cause a short circuit and damage the drive.*
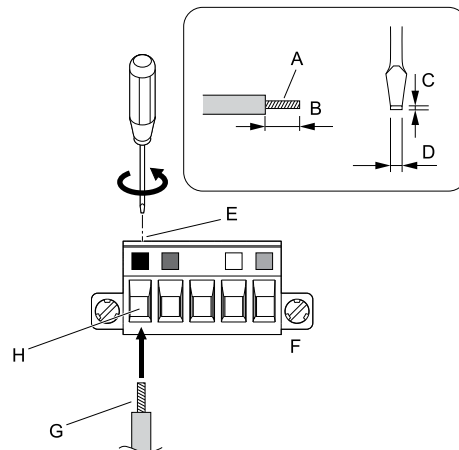
A - Pull back the shielding and lightly twist the end with your fingers to keep the ends from fraying.
B - When you do not use crimp ferrules, remove approximately 5.5 mm (0.21 in) of the covering at the end of the wire.
C - Blade thickness of 0.4 mm (0.01 in) or less
D - Up to 2.5 mm

E - Tightening torque: 0.5 N·m to 0.6 N·m (4.4 in·lb to 5.3 in·lb)
F - Terminal block CN1
G - DeviceNet Communication Cable (do not solder ends)
H - Loosen the screws and put the wire into the opening on the terminal block.

Figure 5.24 Communication Cable Wiring

◆ **Termination Resistor Connection**

Only connect network termination resistors (121 Ω, ±1%, 1/4 W) to nodes of the two ends of trunk line. Refer to the ODVA website (www.odva.org) for more information on network cabling.

◆ **Option MAC ID**

■ **Parameter F6-50 [DeviceNet MAC Address] (MAC ID Setting)**

Setting range: 0 - 64

Parameter *F6-50* sets the option MAC ID. MAC ID settings between 0 to 63 are valid MAC IDs; setting 64 identifies a network-settable MAC ID.

The option reads the MAC ID value from *F6-50* upon power-up and upon a network reset.

◆ Communication Speed

Parameter *F6-51 [DeviceNet Baud Rate]* sets the option baud rate. The option supports standard baud rates of 125 kbps, 250 kbps, and 500 kbps.

Table 5.2 Parameter *F6-51 [DeviceNet Baud Rate]* Settings

Description	Value
125 kbps	0
250 kbps	1
500 kbps	2
Adjustable from Network	3
Detect Automatically	4

■ Auto Baud Rate Sensing (F6-51 = 4 [DeviceNet Baud Rate = Detect Automatically])

Set *F6-51 = 4 [DeviceNet Baud Rate = Detect Automatically]* to enable automatic baud rate detection and to allow the option to automatically determine the baud rate of the DeviceNet network.

Note:

Auto baud rate sensing is valid only when there is more than one node physically on the DeviceNet network segment. If the auto baud rate sensing does not detect the baud rate, the drive keypad will show "bUS" and the option LEDs will be OFF (NS) and solid green (MS).

◆ EDS Files

For easy network implementation of drives equipped with the option, an EDS file can be obtained from:

U.S.: http://www.yaskawa.com

Europe: http://www.yaskawa.eu.com

Japan: http://www.e-mechatronics.com

Other areas: Check the back cover of these manuals.

For questions, contact Yaskawa or a Yaskawa representative.

Note:

Download the EDS file for SI-N3 option. The SI-N3 will not function as a slave in the network without the appropriate EDS file.

6   Related Drive Parameters

These parameters set the drive for operation with the option. Make sure that the parameter settings in this table are correct before you start network communications.

Note:

Hex.: MEMOBUS addresses that you can use to change parameters over network communication are represented in hexadecimal numbers.

No. (Hex.)	Name	Description	Default (Range)
b1-01 (0180)	Frequency Reference Selection 1	Selects the input method for frequency reference. 0 : Keypad 1 : Analog Input 2 : Memobus/Modbus Communications 3 : Option PCB 4 : Pulse Train Input **Note:** • To start and stop the drive with the DeviceNet master device using serial communications, set *b1-02 = 3 [Run Command Selection 1 = Option PCB]* or set the Net Control bit in the assemblies or Control Supervisor Object. To control the frequency reference of the drive via the master device, set *b1-01 = 3* or set the Net Reference bit in the assemblies or AC/DC object. • The default setting is different for different drives. Refer to the instruction manual of your specific drive for more information.	1 (0 - 4)
b1-02	Run Command Selection 1	Sets the input method for the Run command.	1

No. (Hex.)	Name	Description	Default (Range)
(0181)		0 : Keypad 1 : Digital Input 2 : Memobus/Modbus Communications 3 : Option PCB **Note:** To start and stop the drive with the DeviceNet master device using serial communications, set *b1-02 = 3* or set the Net Control bit in the assemblies or Control Supervisor Object. To control the frequency reference of the drive via the master device, set *b1-01 = 3 [Frequency Reference Selection 1 = Option PCB]* or set the Net Reference bit in the assemblies or AC/DC object.	(0 - 3)
F6-01 (03A2)	Communication Error Selection	Selects drive response when the drive detects a *bUS [Option Communication Error]* error during communications with the option. 0 : Ramp to Stop 1 : Coast to Stop 2 : Fast Stop (Use C1-09) 3 : Alarm Only 4 : Alarm (Run at d1-04) 5 : Alarm - Ramp Stop **Note:** • When you set this parameter to *3* or *4*, the drive will continue operation after it detects a fault. Separately prepare safety protection equipment and systems, for example fast-stop switches. • Refer to the drive manual to know if settings *4* and *5* are available. Settings 4 and 5 are available in A1000 software versions PRG: 1021 and later. • The setting range for 1000-Series drives is different for different software versions. Refer to the Peripheral Devices & Options section of the drive instruction manual for more information.	1 (0 - 5)
F6-02 (03A3)	Comm External Fault (EF0) Detect	Selects the conditions at which *EF0 [Option Card External Fault]* is detected. 0 : Always Detected 1 : Detected during RUN Only	0 (0, 1)
F6-03 (03A4)	Comm External Fault (EF0) Select	Sets the method to stop the motor or let the motor continue operating when the drive detects an *EF0 [Option Card External Fault]*. 0 : Ramp to Stop 1 : Coast to Stop 2 : Fast Stop (Use C1-09) 3 : Alarm Only **Note:** When you set this parameter to *3*, the drive will continue operation after it detects a fault. If you set this parameter to 3, make sure that you install an emergency stop switch.	1 (0 - 3)
F6-06 (03A7)	Torque Reference/Limit by Comm	Sets the function that enables and disables the torque reference and torque limit received from the communication option. 0 : Disabled 1 : Enabled **Note:** • Control method availability of this parameter is different for different product series. −1000-Series Parameter is available in *A1-02 = 3, 6, 7 [Control Method Selection = Closed Loop Vector, PM Advanced Open Loop Vector, PM Closed Loop Vector]*. When you enable this parameter, *d5-01 [Torque Control Selection]* sets the drive to read the value as the Torque Limit value or the Torque Reference value. *d5-01 = 0 [Torque Control Selection = Speed Control]*: Torque Limit *d5-01 = 1 [Torque Control Selection = Torque Control]*: Torque Reference In *A1-02 = 6*, this value is read as the Torque Limit. −GA500 Parameter is available in *A1-02 = 2, 6, 8 [Control Method Selection = Open Loop Vector, PM Advanced Open Loop Vector, EZ Vector Control]*. The drive reads this value as the Torque Limit. −GA700, GA800 Parameter is available in *A1-02 = 2, 3, 4, 6, 7, 8 [Control Method Selection = Open Loop Vector, Closed Loop Vector, Advanced Open Loop Vector, PM Advanced Open Loop Vector, PM Closed Loop Vector, EZ Vector Control]*. When you enable this parameter, *d5-01 [Torque Control Selection]* sets the drive to read the value as the Torque Limit value or the Torque Reference value. *d5-01 = 0 [Torque Control Selection = Speed Control]*: Torque Limit *d5-01 = 1 [Torque Control Selection = Torque Control]*: Torque Reference In *A1-02 = 2, 8*, these values are read as the Torque Limit. −FP605 Torque Limit is enabled when *A1-02 = 8 [Control Method Selection = EZ Vector Control]*. • If the PLC does not supply a torque reference or torque limit when *F6-06 = 1 [Torque Reference/Limit by Comm = Enabled]*, the motor cannot rotate.	0 (0, 1)
F6-07 (03A8)	Multi-Step Ref @ NetRef/ComRef	0 : Disable Multi-Step References 1 : Enable Multi-Step References **Note:** Default setting of *F6-07* is *1* for GA500.	0 (0, 1)
F6-08 (036A)	Comm Parameter Reset @Initialize	Selects whether communication-related parameters *F6-xx and F7-xx* are set back to original default values when you use parameter *A1-03 [Initialize Parameters]* to initialize the drive. 0 : No Reset - Parameters Retained 1 : Reset - Back to Factory Default	0 (0, 1)

No. (Hex.)	Name	Description	Default (Range)
		Note: When you set *F6-08* to *1* and you then use *A1-03* to initialize the drive, the drive will not change this setting value.	
F6-15 (0B5B)	Comm. Option Parameters Reload	Sets how the drive will enable the *F6-xx/F7-xx* communication-related parameters that you changed. 0 : Reload at Next Power Cycle 1 : Reload Now 2 : Cancel Reload Request **Note:** • *F6-15* is reset to *0* after setting *1* or *2*. • Available in option software versions 1115 and later. Not available on 1000-series drives.	0 (0 - 2)
F6-50 (03C1)	DeviceNet MAC Address	Selects the drive MAC address. **Note:** • All MAC addresses must be unique. Make sure that you do not use the setting MAC address for another node. • Cycle power for setting changes to take effect. • The default setting depends on region code. Default by region code (Example: CIMR-Vx or GA70x): −0: A (Japan), B (China), C (Europe), D (India), K (Korea), T (Asia) −64: U (The Americas)	0 (0 - 64)
F6-51 (03C2)	DeviceNet Baud Rate	0 : 125 kbps 1 : 250 kbps 2 : 500 kbps 3 : Adjustable from Network 4 : Detect Automatically **Note:** • Cycle power for setting changes to take effect. • The default setting depends on region code. Default by region code (Example: CIMR-Vx or GA70x): −0: A (Japan), B (China), C (Europe), D (India), K (Korea), T (Asia) −64: U (The Americas)	0 (0 - 4)
F6-52 (03C3)	DeviceNet PCA Setting	Sets the format of data that the DeviceNet communication master sends to the drive. **Note:** If *F6-52 [DeviceNet PCA Setting]* and *F6-53 [DeviceNet PPA Setting]* are not correct, the value is reset to default.	21 (0 - 255)
F6-53 (03C4)	DeviceNet PPA Setting	Sets the format of data that the drive sends to the DeviceNet communication master. **Note:** If *F6-52 [DeviceNet PCA Setting]* and *F6-53 [DeviceNet PPA Setting]* are not correct, the value is reset to default.	71 (0 - 255)
F6-54 (03C5)	Net Idle Fault Detection	Determines what the drive should do when communication goes into idle mode. 0 : Enabled 1 : Disabled, No Fault Detection 2 : Vendor Specific 3 : RUN Forward 4 : RUN Reverse **Note:** • Cycle power for setting changes to take effect. • When setting *2*, drive will use to *F6-01 [Communication Error Selection]* to determine whether it should stop or continue.	0 (0 - 4)
F6-55 (03C6)	DeviceNet Baud Rate Monitor	Displays the baud rate currently being used for network communications. F6-55 is used only as a monitor. 0 : 125 kbps 1 : 250 kbps 2 : 500 kbps	0 (0 - 2)
F6-56 (03D7)	DeviceNet Speed Scaling	Sets the scaling factor for the Speed Monitor in the DeviceNet Object Class 2A hex.	0 (-15 - +15)
F6-57 (03D8)	DeviceNet Current Scaling	Sets the current scale of the DeviceNet communication master.	0 (-15 - +15)
F6-58 (03D9)	DeviceNet Torque Scaling	Sets the torque scale of the DeviceNet communication master.	0 (-15 - +15)
F6-59 (03DA)	DeviceNet Power Scaling	Sets the power scale of the DeviceNet communication master.	0 (-15 - +15)
F6-60 (03DB)	DeviceNet Voltage Scaling	Sets the voltage scale of the DeviceNet communication master.	0 (-15 - +15)
F6-61 (03DC)	DeviceNet Time Scaling	Sets the time scale of the DeviceNet communication master.	0 (-15 - +15)
F6-62 (03DD)	DeviceNet Heartbeat Interval	Sets the heartbeat interval. A setting of 0 disables the heartbeat function.	0 (0 - 10)

No. (Hex.)	Name	Description	Default (Range)
F6-63 (03DE)	DeviceNet Network MAC ID	Sets the function to see the actual DeviceNet MAC address using the keypad. This parameter functions as a monitor only. **Note:** The default setting depends on region code. Default by region code (Example: CIMR-Vx or GA70x): • 0: A (Japan), B (China), C (Europe), D (India), K (Korea), T (Asia) • 64: U (The Americas)	0 (0 - 63)
F6-64 (03DF)	Dynamic Out Assembly 109 Param1	Sets Configurable Output 1 written to the MEMOBUS register. **Note:** The drive is compatible with option software versions 1111 and later.	0 (0 - FFFF)
F6-65 (03E0)	Dynamic Out Assembly 109 Param2	Sets Configurable Output 2 written to the MEMOBUS register. **Note:** The drive is compatible with option software versions 1111 and later.	0 (0 - FFFF)
F6-66 (03E1)	Dynamic Out Assembly 109 Param3	Sets Configurable Output 3 written to the MEMOBUS register. **Note:** The drive is compatible with option software versions 1111 and later.	0 (0 - FFFF)
F6-67 (03E2)	Dynamic Out Assembly 109 Param4	Sets Configurable Output 4 written to the MEMOBUS register. **Note:** The drive is compatible with option software versions 1111 and later.	0 (0 - FFFF)
F6-68 (03E3)	Dynamic In Assembly 159 Param 1	Sets Configurable Input 1 read from the MEMOBUS register. **Note:** The drive is compatible with option software versions 1111 and later.	0 (0 - FFFF)
F6-69 (03E4)	Dynamic In Assembly 159 Param 2	Sets Configurable Input 2 read from the MEMOBUS register. **Note:** The drive is compatible with option software versions 1111 and later.	0 (0 - FFFF)
F6-70 (03C7)	Dynamic In Assembly 159 Param 3	Sets Configurable Input 3 read from the MEMOBUS register. **Note:** The drive is compatible with option software versions 1111 and later.	0 (0 - FFFF)
F6-71 (03C8)	Dynamic In Assembly 159 Param 4	Sets Configurable Input 4 read from the MEMOBUS register. **Note:** The drive is compatible with option software versions 1111 and later.	0 (0 - FFFF)
U6-97 (07F7)	OPT SPARE 4	Shows option software version.	-
U6-98 (07F8)	First Fault	Shows first option fault. 0 : No Fault 1 : Option Failure 2 : PLC in Idle State 3 : Force Fault 1000 : Network Power Loss 1001 : Connection Timeout 1002 : Duplicate MAC ID 1003 : Bus-off	-
U6-99 (07F9)	Current Fault	Shows current option fault. 0 : No Fault 1 : Option Failure 2 : PLC in Idle State 3 : Force Fault 1000 : Network Power Loss 1001 : Connection Timeout 1002 : Duplicate MAC ID 1003 : Bus-off	-

7   Configuring DeviceNet Messaging

This section provides information on the methods used to control the drive on DeviceNet.

◆ Drive Polled Configuration on DeviceNet

You must configure the drive DeviceNet polled connection before you can receive commands from a master device. Set these two parameters:

• *F6-52 [Polled Consuming Assembly]* (PCA)

    Note:
    This is the output assembly consumed by the drive.

- *F6-53 [Polled Producing Assembly]* (PPA)

  Note:

  This is the input assembly produced by the drive.

The default connection paths for the option are set for Extended Speed Control.

There are two ways to access PCA and PPA parameters:

- A software configuration tool (not supplied) and Yaskawa Electronic Data Sheet (EDS)

  Note:

  You can access the PCA and PPA parameters from the "DN: Polled Config" parameter group.

- A software configuration tool (not supplied) via a DeviceNet message path, for example, Extended Speed Control

  Note:

  Use a DeviceNet Connection Object to change the PCA or PPA if necessary for the application (Class 5, Instance 1, Attributes 14 and 16)

You must select one of each PCA and PPA assembly from Table 7.1 to configure the drive for polled operation.

Table 7.1 Supported Polled Assemblies (PCA and PPA)

Assembly Number (Hex.)	Description	Type	Bytes
20 (14)	DeviceNet Basic Speed Control Output	PCA	4
21 (15)	DeviceNet Extended Speed Control Output (Default Setting)	PCA	4
22 (16)	DeviceNet Speed and Torque Control Output	PCA	6
23 (17)	DeviceNet Extended Speed and Torque Control Output	PCA	6
70 (46)	DeviceNet Basic Speed Control Input	PPA	4
71 (47)	DeviceNet Extended Speed Control Input (Default Setting)	PPA	4
72 (48)	DeviceNet Speed and Torque Control Input	PPA	6
73 (49)	DeviceNet Extended Speed and Torque Control Input	PPA	6
100 (64)	MEMOBUS Message Command (Vendor Specific Yaskawa Electric (YE) Assy)	PCA	5
101 (65)	Standard Control (Vendor Specific Yaskawa Electric (YE) Assy)	PCA	8
102 (66)	Accel/Decel Time (Vendor Specific Yaskawa Electric (YE) Assy)	PCA	8
103 (67) *1	3-Wire Control 1 (Vendor Specific Yaskawa Electric (YE) Assy)	PCA	4
104 (68) *1	3-Wire Control Status 1 (Vendor Specific Yaskawa Electric (YE) Assy)	PPA	4
105 (69)	Enhanced Speed Control, Dynamic (Vendor Specific Yaskawa Electric (YE) Assy)	PCA	8
106 (6A)	Enhanced Control (Vendor Specific Yaskawa Electric (YE) Assy)	PCA	8
107 (6B)	Standard DI/DO Control (Vendor Specific Yaskawa Electric (YE) Assy)	PCA	8
108 (6C)	Enhanced Torque Control, Dynamic (Vendor Specific Yaskawa Electric (YE) Assy)	PCA	8
109 (6D) *2	Dynamic Output Assembly (Vendor Specific Yaskawa Electric (YE) Assy)	PCA	8
110 (6E) *3	3-Wire Control2 (Vendor Specific Yaskawa Electric (YE) Assy)	PCA	4
120 (78)	Speed Command 1 (Vendor Specific Yaskawa Electric (YE) Assy)	PCA	4
121 (79)	Torque Command 1 (Vendor Specific Yaskawa Electric (YE) Assy)	PCA	4
122 (7A)	Speed Command 2 (Vendor Specific Yaskawa Electric (YE) Assy)	PCA	6
123 (7B)	Torque Command 2 (Vendor Specific Yaskawa Electric (YE) Assy)	PCA	6
124 (7C)	Speed Dynamic Assy (Vendor Specific Yaskawa Electric (YE) Assy)	PCA	8
125 (7D)	Torque Dynamic Assy (Vendor Specific Yaskawa Electric (YE) Assy)	PCA	8
126 (7E)	Speed/Torque Assy (Vendor Specific Yaskawa Electric (YE) Assy)	PCA	8
130 (82)	Speed Status (Vendor Specific Yaskawa Electric (YE) Assy)	PPA	4
131 (83)	Current Status (Vendor Specific Yaskawa Electric (YE) Assy)	PPA	4
132 (84)	Current & Speed Status (Vendor Specific Yaskawa Electric (YE) Assy)	PPA	6
134 (86)	Speed Status Dynamic Assy (Vendor Specific Yaskawa Electric (YE) Assy)	PPA	8
135 (87)	Current Status Dynamic Assy (Vendor Specific Yaskawa Electric (YE) Assy)	PPA	8
136 (88)	Torque and Speed Status (Vendor Specific Yaskawa Electric (YE) Assy)	PPA	8

Assembly Number (Hex.)	Description	Type	Bytes
150 (96)	MEMOBUS Message Reply (Vendor Specific Yaskawa Electric (YE) Assy)	PPA	5
151 (97)	Standard Status 1 (Vendor Specific Yaskawa Electric (YE) Assy)	PPA	8
152 (98)	Standard Status 2 (Vendor Specific Yaskawa Electric (YE) Assy)	PPA	8
155 (9B)	Enhanced Speed Status, Dynamic (Vendor Specific Yaskawa Electric (YE) Assy)	PPA	8
156 (9C)	Enhanced Control Status (Vendor Specific Yaskawa Electric (YE) Assy)	PPA	8
157 (9D)	Standard DI/DO Status (Vendor Specific Yaskawa Electric (YE) Assy)	PPA	8
158 (9E)	Enhanced Torque Status, Dynamic (Vendor Specific Yaskawa Electric (YE) Assy)	PPA	8
159 (9F) *2	Dynamic Input Assembly (Vendor Specific Yaskawa Electric (YE) Assy)	PPA	8
160 (A0) *3	3-Wire Control Status2 (Vendor Specific Yaskawa Electric (YE) Assy)	PPA	4
199 (C7) *1	Change of State Response (Vendor Specific Yaskawa Electric (YE) Assy)	PPA	8

*1   The drive is compatible with option software versions 1107 and later.
*2   The drive is compatible with option software versions 1111 and later.
*3   The drive is compatible with option software versions 1114 and later.

◆ **Additional Support for Setting Connection Path Types**

The option can set the produced connection path and the consumed connection path with supported application tools.

Class 5, Instance 2, Attributes (100, 101) allow setting connection path with a single byte.

For instance, to set the consumed connection path to 100, write 100 (0x64) to Attribute 101. See appendix C of "The CIP Networks Library, Volume 1" for more information on CIP segments.

8 Output Assemblies (Drive Consumes)

The convention in this manual is from the PLC perspective. An assembly is called an "Output Assembly" when outputted from the PLC and received by this node. An "Input Assembly" is outputted from this node and read by the PLC. This section details "Output Assemblies" that are "Consumed" by the drive.

◆ **Basic Speed Control Output - 20 (0x14)**

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
20	0	-	-	-	-	-	Fault Reset	-	Run Fwd
	1	-							
	2	Speed Reference (Low Byte)							
	3	Speed Reference (High Byte)							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward run
Fault Reset	Fault Reset 0: - 1: Fault Reset
Speed Reference	Speed Reference Sets drive speed reference. Speed reference data: Frequency reference/2^{SS} (SS: Speed scale) Setting range: 0 - 0xFFFF For example, when setting a reference of 1024 with a speed scale of 2 Speed reference data = $1024/2^2$ = 256 = 0x0100 Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*.

◆ Extended Speed Control Output - 21 (0x15)

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
21	0	-	NetRef	NetCtrl	-	-	Fault Reset	Run Rev	Run Fwd
	1	-							
	2	Speed Reference (Low Byte)							
	3	Speed Reference (High Byte)							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Fault Reset	Fault Reset 0: - 1: Fault Reset
NetCtrl	Run command is from network 0: Depends on b1-02 1: Enables the Run command from network
NetRef	Speed reference is from network 0: Depends on b1-01 1: Enables the speed reference from network
Speed Reference	Speed Reference Sets drive speed reference. Speed reference data: Frequency reference/2^{SS} (SS: Speed scale) Setting range: 0 - 0xFFFF For example, when setting a reference of 1024 with a speed scale of 2 Speed reference data = $1024/2^2$ = 256 = 0x0100 Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*.

◆ Speed and Torque Control Output - 22 (0x16)

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
22	0	-	-	-	-	-	Fault Reset	-	Run Fwd
	1	-							
	2	Speed Reference (Low Byte)							
	3	Speed Reference (High Byte)							
	4	Torque Reference/Torque Limit (Low Byte)							
	5	Torque Reference/Torque Limit (High Byte)							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward run
Fault Reset	Fault Reset 0: - 1: Fault Reset

Name	Description
Speed Reference	Speed Reference Sets drive speed reference. Speed reference data: Frequency reference/2^{SS} (SS: Speed scale) Setting range: 0 - 0xFFFF For example, when setting a reference of 1024 with a speed scale of 2 Speed reference data = 1024/2^2 = 256 = 0x0100 Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*.
Torque Reference/Torque Limit	Torque Reference/Torque Limit Sets the Torque Reference/Torque Limit. Sets in units of 0.1%. Sets the Torque Reference when using *d5-01 = 1 [Torque Control Selection = Torque Control]*. Sets the Torque Limit when using *d5-01 = 0 [Torque Control Selection = Speed Control]*. The Torque Reference/Torque Limit are disabled when *F6-06 = 0 [Torque Reference/Limit by Comm = Disabled]*.

◆ Extended Speed and Torque Control Output - 23 (0x17)

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
23	0	-	NetRef	NetCtrl	-	-	Fault Reset	Run Rev	Run Fwd
	1	-							
	2	Speed Reference (Low Byte)							
	3	Speed Reference (High Byte)							
	4	Torque Reference/Torque Limit (Low Byte)							
	5	Torque Reference/Torque Limit (High Byte)							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Fault Reset	Fault Reset 0: - 1: Fault Reset
NetCtrl	Run command is from network 0: Depends on b1-02 1: Enables the Run command from network
NetRef	Speed reference is from network 0: Depends on b1-01 1: Enables the speed reference from network
Speed Reference	Speed Reference Sets drive speed reference. Speed reference data: Frequency reference × 2^{SS} (SS: Speed scale) Setting range: 0 - 0xFFFF For example, when setting a reference of 1024 with a speed scale of 2 Speed reference data = 1024 × 2^2 = 4096 = 0x1000 Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*.
Torque Reference/Torque Limit	Torque Reference/Torque Limit Sets the Torque Reference/Torque Limit. Sets in units of 0.1%. Sets the Torque Reference when using *d5-01 = 1 [Torque Control Selection = Torque Control]*. Sets the Torque Limit when using *d5-01 = 0 [Torque Control Selection = Speed Control]*. The Torque Reference/Torque Limit are disabled when *F6-06 = 0 [Torque Reference/Limit by Comm = Disabled]*.

◆ MEMOBUS/Modbus Message Command (Vendor Specific Yaskawa Electric (YE) Assy) - 100 (0x64)

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
100	0	Function Code							
	1	Register Number (High Byte)							
	2	Register Number (Low Byte)							

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	3	Register Data (High Byte)							
	4	Register Data (Low Byte)							

Note:

This is a paired assembly (100/150).

Name	Description
Function Code	MEMOBUS/Modbus Function Code Refer to Table 8.1.
Register Number	MEMOBUS/Modbus Register Number
Register Data	MEMOBUS/Modbus Register Data

Table 8.1 Function Code Decode Table

Function code	MEMOBUS/Modbus Function
0x00	No Operation
0x03	Read Register
0x10	Write Register

Note:

Refer to the MEMOBUS/Modbus Data Table in the drive Technical Manual for a list of monitor data using the MEMOBUS/Modbus message area.

◆ Standard Control (Vendor Specific Yaskawa Electric (YE) Assy) - 101 (0x65)

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
101	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
	1	1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	-	-	-	Fault Reset	External Fault
	2	Speed Reference (Low Byte)							
	3	Speed Reference (High Byte)							
	4	Torque Reference/Torque Limit (Low Byte)							
	5	Torque Reference/Torque Limit (High Byte)							
	6	Torque Compensation (Low Byte)							
	7	Torque Compensation (High Byte)							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON

Name	Description
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	1000-Series, GA700, GA800, FP605: Terminal M1/M2 0: M1/M2 OFF 1: M1/M2 ON GA500: Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON This function is enabled only when H2-01 = F.
1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Terminal P1 *1 0: P1 OFF 1: P1 ON GA700, GA800, FP605: Terminal M3/M4 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 = F.
1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Terminal P2 *1 0: P2 OFF 1: P2 ON GA700, GA800: Terminal P1 *1 0: P1 OFF 1: P1 ON FP605 0: MD/MF OFF 1: MD/MF ON This function is enabled only when H2-03 = F.
Multi-Function Digital Output 4 *2	Terminal P2 *1 0: P2 OFF 1: P2 ON This function is enabled only when H2-04 = F.
Speed Reference	Speed Reference Sets drive speed reference. Units are determined by parameter o1-03 [Frequency Display Unit Selection]. Unit is not affected by Speed Scale SS.
Torque Reference/Torque Limit	Torque Reference/Torque Limit Sets the Torque Reference/Torque Limit. Sets in units of 0.1%. Sets the Torque Reference when using d5-01 = 1 [Torque Control Selection = Torque Control]. Sets the Torque Limit when using d5-01 = 0 [Torque Control Selection = Speed Control]. The Torque Reference/Torque Limit are disabled when F6-06 = 0 [Torque Reference/Limit by Comm = Disabled].
Torque Compensation	Torque Compensation Sets the amount of Torque Compensation Sets in units of 0.1%.

*1 Terminals are different for different drive models. Refer to *Terminals that Change depending on the Model of the Drive on page 52* for more information.

*2 Multi-function digital output 4 is not available for 1000-Series, GA500, GA800, or FP605 drives.

◆ Accel/Decel Time (Vendor Specific Yaskawa Electric (YE) Assy) - 102 (0x66)

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
102	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
	1	1000-Series, GA500: Multi-Function Photocoupler 2	1000-Series, GA500: Multi-Function Photocoupler 1	1000-Series, GA500: Multi-Function Digital Output	-	-	-	Fault Reset	External Fault

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
		GA700, GA800, FP605: Multi-Function Digital Output 3	GA700, GA800, FP605: Multi-Function Digital Output 2	GA700, GA800, FP605: Multi-Function Digital Output 1					
	2	Speed Reference (Low Byte)							
	3	Speed Reference (High Byte)							
	4	Acceleration Time 1 (Low Byte)							
	5	Acceleration Time 1 (High Byte)							
	6	Deceleration Time 1 (Low Byte)							
	7	Deceleration Time 1 (High Byte)							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	1000-Series, GA700, GA800, FP605: Terminal M1/M2 0: M1/M2 OFF 1: M1/M2 ON GA500: Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON This function is enabled only when *H2-01 = F*.
1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Terminal P1 *1* 0: P1 OFF 1: P1 ON GA700, GA800, FP605: Terminal M3/M4 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when *H2-02 = F*.
1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Terminal P2 *1* 0: P2 OFF 1: P2 ON GA700, GA800: Terminal P1 *1* 0: P1 OFF 1: P1 ON FP605

Name	Description
	0: MD/MF OFF 1: MD/MF ON This function is enabled only when *H2-03 = F*.
Multi-Function Digital Output 4 *2*	Terminal P2 *1* 0: P2 OFF 1: P2 ON This function is enabled only when *H2-04 = F*.
Speed Reference	Speed Reference Sets drive speed reference. Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*. Unit is not affected by Speed Scale SS.
Acceleration Time 1	C1-01 [Acceleration Time 1] Units set in *C1-10 [Accel/Decel Time Setting Units]*. Unit is not affected by Time Scale TS.
Deceleration Time 1	C1-02 [Deceleration Time 1] Units set in *C1-10*. Unit is not affected by Time Scale TS.

*1   Terminals are different for different drive models. Refer to *Terminals that Change depending on the Model of the Drive on page 52* for more information.

*2   Multi-function digital output 4 is not available for 1000-Series, GA500, GA800, or FP605 drives.

◆ 3-Wire Control1 (Vendor Specific Yaskawa Electric (YE) Assy) - 103 (0x67)

Note:

The drive is compatible with option software versions 1107 and later.

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
103	0	-	-	Direction		Fault Reset	-	Start	Stop
	1	-	Reference Selection			-	-	-	-
	2	Speed Reference (Low Byte)							
	3	Speed Reference (High Byte)							

Name	Description
Stop	Stop Command 0: No command 1: Stop Command
Start	Start Command 0: No command 1: Start Command
Fault Reset	Fault Reset 0: - 1: Fault Reset
Direction	Direction Command Refer to Table 8.2 for information.
Reference Selection	Reference Selection Command Refer to Table 8.3 for information.
Speed Reference	Speed Reference Sets drive speed reference. Speed reference data: Frequency reference/2^{SS} (SS: Speed scale) Setting range: 0 - 0xFFFF For example, when setting a reference of 1024 with a speed scale of 2 Speed reference data = $1024/2^2 = 256 = 0x0100$ Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*.

Table 8.2 Direction Command

Behavior	Bit 5	Bit 4
No Change	0	0
Forward	0	1
Reverse	1	0
No Change	1	1

Table 8.3 Reference Selection Command

Speed Reference Source Selection	Bit 6	Bit 5	Bit 4
No command Speed Reference (Bytes 2, 3) not used	0	0	0
Analog Input A2	0	0	1
From Network (Bytes 2, 3)	0	1	0
Preset 3 (value in parameter d1-03 [Reference 3])	0	1	1
Preset 4 (value in parameter d1-04 [Reference 4])	1	0	0
Preset 5 (value in parameter d1-05 [Reference 5])	1	0	1
Preset 6 (value in parameter d1-06 [Reference 6])	1	1	0
Preset 7 (value in parameter d1-07 [Reference 7])	1	1	1

◆ Enhanced Speed Control, Dynamic (Vendor Specific Yaskawa Electric (YE) Assy) - 105 (0x69)

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
105	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
	1	1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	-	Function Code High Bit	Function Code Low Bit	Fault Reset	External Fault
	2	Speed Reference (Low Byte)							
	3	Speed Reference (High Byte)							
	4	Register Number (Low Byte)							
	5	Register Number (High Byte)							
	6	Register Data (Low Byte)							
	7	Register Data (High Byte)							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON

Name	Description
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
Function Code	MEMOBUS/Modbus Function Code Refer to Table 8.4 for information.
1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	1000-Series, GA700, GA800, FP605: Terminal M1/M2 0: M1/M2 OFF 1: M1/M2 ON GA500: Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON This function is enabled only when *H2-01 = F*.
1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Terminal P1 *1 0: P1 OFF 1: P1 ON GA700, GA800, FP605: Terminal M3/M4 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when *H2-02 = F*.
1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Terminal P2 *1 0: P2 OFF 1: P2 ON GA700, GA800: Terminal P1 *1 0: P1 OFF 1: P1 ON FP605 0: MD/MF OFF 1: MD/MF ON This function is enabled only when *H2-03 = F*.
Multi-Function Digital Output 4 *2	Terminal P2 *1 0: P2 OFF 1: P2 ON This function is enabled only when *H2-04 = F*.
Speed Reference	Speed Reference Sets drive speed reference. Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*. Unit is not affected by Speed Scale SS.
Register Number	MEMOBUS/Modbus Register Number *3
Register Data	MEMOBUS/Modbus Register Data

*1   Terminals are different for different drive models. Refer to *Terminals that Change depending on the Model of the Drive on page 52* for more information.
*2   Multi-function digital output 4 is not available for 1000-Series, GA500, GA800, or FP605 drives.
*3   Register numbers 0x0001, 0x0002, and 0x0009 are disabled.

Note:

This is a paired assembly (105/155).

Table 8.4 Function Code Decode Table

Function Code High Byte - Low Byte	MEMOBUS/Modbus Function
00	No Operation
10	Read Register
01	Write Register
11	No Operation

Note:

Refer to the MEMOBUS/Modbus Data Table in the drive Technical Manual for a list of monitor data using the MEMOBUS/Modbus message area.

◆ **Enhanced Control (Vendor Specific Yaskawa Electric (YE) Assy) - 106 (0x6A)**

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
106	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
	1	1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	-	-	-	Fault Reset	External Fault
	2	Speed Reference (Low Byte)							
	3	Speed Reference (High Byte)							
	4	-							
	5	-							
	6	-							
	7	-							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	1000-Series, GA700, GA800, FP605: Terminal M1/M2 0: M1/M2 OFF 1: M1/M2 ON GA500: Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON This function is enabled only when *H2-01 = F*.
1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Terminal P1 *1* 0: P1 OFF 1: P1 ON GA700, GA800, FP605: Terminal M3/M4 0: M3/M4 OFF 1: M3/M4 ON

Name	Description
	This function is enabled only when *H2-02 = F*.
1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Terminal P2 *1* 0: P2 OFF 1: P2 ON GA700, GA800: Terminal P1 *1* 0: P1 OFF 1: P1 ON FP605 0: MD/MF OFF 1: MD/MF ON This function is enabled only when *H2-03 = F*.
Multi-Function Digital Output 4 *2*	Terminal P2 *1* 0: P2 OFF 1: P2 ON This function is enabled only when *H2-04 = F*.
Speed Reference	Speed Reference Sets drive speed reference. Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*. Unit is not affected by Speed Scale SS.

*1   Terminals are different for different drive models. Refer to *Terminals that Change depending on the Model of the Drive on page 52* for more information.
*2   Multi-function digital output 4 is not available for 1000-Series, GA500, GA800, or FP605 drives.

◆ Standard DI/DO Control (Vendor Specific Yaskawa Electric (YE) Assy) - 107 (0x6B)

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
107	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
	1		-	-	-	-	-	Fault Reset	External Fault
	2	-	-	1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	-	-	-
	3	-	-	-	-	-	-	-	-
	4	Analog Output 1 (Low Byte)							
	5	Analog Output 1 (High Byte)							
	6	Speed Reference (Low Byte)							
	7	Speed Reference (High Byte)							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON

Name	Description
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	1000-Series, GA700, GA800, FP605: Terminal M1/M2 0: M1/M2 OFF 1: M1/M2 ON GA500: Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON This function is enabled only when *H2-01 = F*.
1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Terminal P1 *1* 0: P1 OFF 1: P1 ON GA700, GA800, FP605: Terminal M3/M4 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when *H2-02 = F*.
1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Terminal P2 *1* 0: P2 OFF 1: P2 ON GA700, GA800: Terminal P1 *1* 0: P1 OFF 1: P1 ON FP605 0: MD/MF OFF 1: MD/MF ON This function is enabled only when *H2-03 = F*.
Multi-Function Digital Output 4 *2*	Terminal P2 *1* 0: P2 OFF 1: P2 ON This function is enabled only when *H2-04 = F*.
Analog Output 1	Analog Output FM This function is enabled only when *H4-01 = 000 [Terminal FM Analog Output Select = 000]*.
Speed Reference	Speed Reference Sets drive speed reference. Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*. Unit is not affected by Speed Scale SS.

*1   Terminals are different for different drive models. Refer to *Terminals that Change depending on the Model of the Drive on page 52* for more information.

*2   Multi-function digital output 4 is not available for 1000-Series, GA500, GA800, or FP605 drives.

◆ Enhanced Torque Control, Dynamic (Vendor Specific Yaskawa Electric (YE) Assy) - 108 (0x6C)

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
108	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
	1	1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	-	Function Code High Bit	Function Code Low Bit	Fault Reset	External Fault
	2	Torque Reference/Torque Limit (Low Byte)							
	3	Torque Reference/Torque Limit (High Byte)							

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	4	Register Number (Low Byte)							
	5	Register Number (High Byte)							
	6	Register Data (Low Byte)							
	7	Register Data (High Byte)							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
Function Code	MEMOBUS/Modbus Function Code Refer to Table 8.4 for information.
1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	1000-Series, GA700, GA800, FP605: Terminal M1/M2 0: M1/M2 OFF 1: M1/M2 ON GA500: Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON This function is enabled only when $H2\text{-}01 = F$.
1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Terminal P1 *1 0: P1 OFF 1: P1 ON GA700, GA800, FP605: Terminal M3/M4 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when $H2\text{-}02 = F$.
1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Terminal P2 *1 0: P2 OFF 1: P2 ON GA700, GA800: Terminal P1 *1 0: P1 OFF 1: P1 ON FP605 0: MD/MF OFF 1: MD/MF ON This function is enabled only when $H2\text{-}03 = F$.
Multi-Function Digital Output 4 *2	Terminal P2 *1

Name	Description
	0: P2 OFF 1: P2 ON This function is enabled only when *H2-04 = F*.
Torque Reference/Torque Limit	Torque Reference/Torque Limit Sets the Torque Reference/Torque Limit. Sets in units of 0.1%. Sets the Torque Reference when using *d5-01 = 1 [Torque Control Selection = Torque Control]*. Sets the Torque Limit when using *d5-01 = 0 [Torque Control Selection = Speed Control]*. The Torque Reference/Torque Limit are disabled when *F6-06 = 0 [Torque Reference/Limit by Comm = Disabled]*.
Register Number	MEMOBUS/Modbus Register Number *3
Register Data	MEMOBUS/Modbus Register Data

*1 Terminals are different for different drive models. Refer to *Terminals that Change depending on the Model of the Drive on page 52* for more information.

*2 Multi-function digital output 4 is not available for 1000-Series, GA500, GA800, or FP605 drives.

*3 Register numbers 0x0001 and 0x0009 are disabled.

Note:

1. This is a paired assembly (108/158).

2. Refer to the MEMOBUS/Modbus Data Table in the drive Technical Manual for a list of monitor data using the MEMOBUS/Modbus message area.

◆ Dynamic Output Assembly (Vendor Specific Yaskawa Electric (YE) Assy) - 109 (0x6D)

This is a dynamic assembly. You can set the parameters that are used.

Note:

The drive is compatible with option software versions 1111 and later.

Output Instance	Byte	Description
109	0	Configurable Output 1 (Low Byte)
	1	Configurable Output 1 (High Byte)
	2	Configurable Output 2 (Low Byte)
	3	Configurable Output 2 (High Byte)
	4	Configurable Output 3 (Low Byte)
	5	Configurable Output 3 (High Byte)
	6	Configurable Output 4 (Low Byte)
	7	Configurable Output 4 (High Byte)

Name	Description
Configurable Output 1	Data to be written to the MEMOBUS/Modbus address defined in parameter *F6-64 [Dynamic Out Assembly 109 Param1]*. If *F6-64 = 0*, then MEMOBUS/Modbus address 0x0001 (Drive Command) is used.
Configurable Output 2	Data to be written to the MEMOBUS/Modbus address defined in parameter *F6-65 [Dynamic Out Assembly 109 Param2]*. If *F6-65 = 0*, then MEMOBUS/Modbus address 0x0002 (Frequency Reference) is used.
Configurable Output 3	Data to be written to the MEMOBUS/Modbus address defined in parameter *F6-66 [Dynamic Out Assembly 109 Param3]*. If *F6-66 = 0*, then MEMOBUS/Modbus address 0x0004 (Torque Reference) is used.
Configurable Output 4	Data to be written to the MEMOBUS/Modbus address defined in parameter *F6-67 [Dynamic Out Assembly 109 Param4]*. If *F6-67 = 0*, then MEMOBUS/Modbus address 0x0009 (Digital Outputs) is used.

◆ 3-Wire Control 2 (Vendor Specific Yaskawa Electric (YE) Assy) - 110 (0x6E)

Output Instance	Byte	Description
110	0	Control Word (Low Byte)
	1	Control Word (High Byte)
	2	Speed Reference (0.1 Hz) (Low Byte)
	3	Speed Reference (0.1 Hz) (High Byte)

Bits	Description
0	0->1 Start Drive
1	0->1 Stop Drive
2	0->1 Start Jog
3	Fault Reset
4 -5	Set drive direction. 00: No Change 01: Forward 10: Reverse 11: No Change
6	Digital Output 2 If *H2-02* is set to 0x0F.
7	Digital Output 3 If *H2-03* is set to 0x0F.
8 - 9	When the reference is from the option card, this changes the Accel/Decel rate. When the function value is 7, this will set Digital Input 6 in the drive. 00: No command 01: Accel1/Decel1 (C1-01/C1-02) 10: Accel2/Decel2 (C1-03/C1-04) 11: No command
10 - 11	Reserved
12 - 14	Reference source 000: Stay at last reference 001: B1-01 010: D1-01 011: Use network set value. 100: D1-02 101: D1-03 110: D1-04 111: D1-05
15	Digital Output 1 If *H2-01* is set to 0x0F.

◆ Speed Command 1 (Vendor Specific Yaskawa Electric (YE) Assy) - 120 (0x78)

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
120	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
	1	-	-	-	-	-	-	Fault Reset	External Fault
	2	Speed Reference (Low Byte)							
	3	Speed Reference (High Byte)							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input

Name	Description
	0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
Speed Reference	Speed Reference Sets drive speed reference. Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*. Unit is not affected by Speed Scale SS.

◆ Torque Command 1 (Vendor Specific Yaskawa Electric (YE) Assy) - 121 (0x79)

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
121	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
	1	-	-	-	-	-	-	Fault Reset	External Fault
	2	Torque Reference/Torque Limit (Low Byte)							
	3	Torque Reference/Torque Limit (High Byte)							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
Torque Reference/Torque Limit	Torque Reference/Torque Limit Sets the Torque Reference/Torque Limit. Sets in units of 0.1%. Sets the Torque Reference when using *d5-01 = 1 [Torque Control Selection = Torque Control]*. Sets the Torque Limit when using *d5-01 = 0 [Torque Control Selection = Speed Control]*. The Torque Reference/Torque Limit are disabled when *F6-06 = 0 [Torque Reference/Limit by Comm = Disabled]*.

◆ Speed Command 2 (Vendor Specific Yaskawa Electric (YE) Assy) - 122 (0x7A)

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
122	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
	1	-	-	-	-	-	-	Fault Reset	External Fault
	2	Speed Reference (Low Byte)							
	3	Speed Reference (High Byte)							
	4	NetRef							
	5	NetCtrl							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
Speed Reference	Speed Reference Sets drive speed reference. Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*. Unit is not affected by Speed Scale SS.
NetRef	Speed reference is from network 0x00: Depends on b1-01 0x01: Enables the speed reference from network
NetCtrl	Run command is from network 0x00: Depends on b1-02 0x01: Enables the Run command from network

◆ Torque Command 2 (Vendor Specific Yaskawa Electric (YE) Assy) - 123 (0x7B)

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
123	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
	1	-	-	-	-	-	-	Fault Reset	External Fault
	2	Torque Reference/Torque Limit (Low Byte)							

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	3	Torque Reference/Torque Limit (High Byte)							
	4	NetRef							
	5	NetCtrl							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
Torque Reference/Torque Limit	Torque Reference/Torque Limit Sets the Torque Reference/Torque Limit. Sets in units of 0.1%. Sets the Torque Reference when using $d5-01 = 1$ [Torque Control Selection = Torque Control]. Sets the Torque Limit when using $d5-01 = 0$ [Torque Control Selection = Speed Control]. The Torque Reference/Torque Limit are disabled when $F6-06 = 0$ [Torque Reference/Limit by Comm = Disabled].
NetRef	Speed reference is from network 0x00: Depends on b1-01 0x01: Enables the speed reference from network
NetCtrl	Run command is from network 0x00: Depends on b1-02 0x01: Enables the Run command from network

◆ Speed Dynamic Assy (Vendor Specific Yaskawa Electric (YE) Assy) - 124 (0x7C)

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
124	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
	1	Service Code							
	2	Class							
	3	Attribute							
	4	Data (Low Byte)							
	5	Data (High Byte)							
	6	Speed Reference (Low Byte)							

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	7	Speed Reference (High Byte)							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
Service Code	Service Code Refer to Table 8.5 for information.
Class	Class Valid Classes are Control Supervisor Object (41) and AC/DC Object (42). Instance will always be 1.
Attribute	Attribute
Data	Data
Speed Reference	Speed Reference Sets drive speed reference. Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*. Unit is not affected by Speed Scale SS.

Note:

This is a paired assembly (124/134).

Table 8.5 Service Code Decode Table

Service Code	Function
0x00	No Operation
0x0E	Get Attribute Single
0x10	Set Attribute Single

◆ Torque Dynamic Assy (Vendor Specific Yaskawa Electric (YE) Assy) - 125 (0x7D)

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
125	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
	1	Function Code							
	2	Class							
	3	Attribute							
	4	Data (Low Byte)							
	5	Data (High Byte)							

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	6	Torque Reference/Torque Limit (Low Byte)							
	7	Torque Reference/Torque Limit (High Byte)							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
Service Code	Service Code Refer to Table 8.5 for information.
Class	Class Valid Classes are Control Supervisor Object (41) and AC/DC Object (42). Instance will always be 1.
Attribute	Attribute
Data	Data
Torque Reference/Torque Limit	Torque Reference/Torque Limit Sets the Torque Reference/Torque Limit. Sets in units of 0.1%. Sets the Torque Reference when using *d5-01 = 1 [Torque Control Selection = Torque Control]*. Sets the Torque Limit when using *d5-01 = 0 [Torque Control Selection = Speed Control]*. The Torque Reference/Torque Limit are disabled when *F6-06 = 0 [Torque Reference/Limit by Comm = Disabled]*.

Note:

This is a paired assembly (125/135).

◆ Speed/Torque Assy (Vendor Specific Yaskawa Electric (YE) Assy) - 126 (0x7E)

Output Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
126	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
	1	-	-	-	-	-	-	Fault Reset	External Fault
	2	Speed Reference (Low Byte)							
	3	Speed Reference (High Byte)							
	4	Torque Reference/Torque Limit (Low Byte)							
	5	Torque Reference/Torque Limit (High Byte)							
	6	Torque Compensation (Low Byte)							
	7	Torque Compensation (High Byte)							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
Speed Reference	Speed Reference Sets drive speed reference. Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*. Unit is not affected by Speed Scale SS.
Torque Reference/Torque Limit	Torque Reference/Torque Limit Sets the Torque Reference/Torque Limit. Sets in units of 0.1%. Sets the Torque Reference when using *d5-01 = 1 [Torque Control Selection = Torque Control]*. Sets the Torque Limit when using *d5-01 = 0 [Torque Control Selection = Speed Control]*. The Torque Reference/Torque Limit are disabled when *F6-06 = 0 [Torque Reference/Limit by Comm = Disabled]*.
Torque Compensation	Torque Compensation Sets the amount of Torque Compensation Sets in units of 0.1%.

◆ Terminals that Change depending on the Model of the Drive

The table below lists terminals that change depending on the model of the drive.

Table 8.6 Terminals that Change depending on the Model of the Drive

Drive Type	Name	Terminal	Drive Model
1000-Series	Multi-Function Contact Output	M1-M2	All
	Multi-Function Photocoupler Output 1	P1-PC	CIMR-xAx, CIMR-xTx, CIMR-xKx, CIMR-xBx *1*, CIMR-xDx
		M3-M4	CIMR-xUx, CIMR-xCx
	Multi-Function Photocoupler Output 2	P2-PC	CIMR-xAx, CIMR-xTx, CIMR-xKx, CIMR-xBx *2*, CIMR-xDx
		M5-M6	CIMR-xUx, CIMR-xCx
GA500	Multi-Function Contact Output	MA-MB-MC	All
	Multi-Function Photocoupler Output 1	P1-PC	All
	Multi-Function Photocoupler Output 2	P2-PC	All
GA700	Multi-Function Digital Output 1	M1-M2	All
	Multi-Function Digital Output 2	M3-M4	All

Drive Type	Name	Terminal	Drive Model
	Multi-Function Digital Output 3	P1-C1	CIPR-GA70Ax, CIPR-GA70Tx
		M5-M6	CIPR-GA70Ux, CIPR-GA70Cx, CIPR-GA70Bx, CIPR-GA70Kx, CIPR-GA70Dx
	Multi-Function Digital Output 4	P2-C2	CIPR-GA70Ax, CIPR-GA70Tx
GA800	Multi-Function Digital Output 1	M1-M2	All
	Multi-Function Digital Output 2	M3-M4	All
	Multi-Function Digital Output 3	M5-M6	All
FP605	Multi-Function Digital Output 1	M1-M2	All
	Multi-Function Digital Output 2	M3-M4	All
	Multi-Function Digital Output 3	MD-ME-MF	All

*1 Terminals will change to M3-M4 depending on the model type of CIMR-xBx. Refer to the drive manuals for more information.
*2 Terminals will change to M5-M6 depending on the model type of CIMR-xBx. Refer to the drive manuals for more information.

9 Input Assemblies (Drive Produces)

The convention in this manual is from the PLC perspective. As such, an assembly is called an "Output Assembly" when outputted from the PLC and received by this node. An "Input Assembly" is outputted from this node and read by the PLC. This section details "Input Assemblies" that are "Produced" by this drive.

◆ Basic Speed Control Input - 70 (0x46)

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
70	0	-	-	-	-	-	Running 1 (FWD)	-	Fault
	1	-							
	2	Speed Actual (Low Byte)							
	3	Speed Actual (High Byte)							

Name	Description
Fault	Drive Fault 0: No Fault 1: Fault
Running 1 (FWD)	Forward Running 0: Stop or Reverse Running 1: Forward Running
Speed Actual	Actual Drive Speed Monitors drive output frequency. Speed actual data: Output frequency $\times 2^{SS}$ (SS: Speed scale) Range: 0 - 0xFFFF For example, when output frequency of 4096 with a speed scale of 2 Speed actual data = $4096 \times 2^2 = 16384 = 0x4000$ Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*.

Note:

Parameter *A1-02 [Control Method Selection]* determines whether the value for the speed monitor is the output frequency or the actual motor speed.

Control Mode (A1-02)		Speed Actual
0	V/f	Output Frequency
0 H6-01 = 3 [Terminal RP Pulse Train Function = Speed Feedback (V/F Control)]	V/f with Simple PG	Motor Speed
1	V/f with PG	Motor Speed
2	OLV	Motor Speed
3	CLV	Motor Speed
4 *1	AOLV	Motor Speed
5	OLV for PM Motor	Output Frequency

Control Mode (A1-02)		Speed Actual
6	Advanced OLV for PM motor	Motor Speed
7	CLV for PM Motor	Motor Speed
8 *1	EZOLV	Motor Speed

*1   AOLV (*A1-02 = 4 [Control Method Selection = Advanced Open Loop Vector]*) and EZOLV (*A1-02 = 8 [Control Method Selection = EZ Vector Control]*) control modes are not available for 1000-Series drives.

◆ Extended Speed Control Input - 71 (0x47)

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
71	0	At Speed	Ref from Net	Ctrl from Net	Ready	Running 2 (REV)	Running 1 (FWD)	Warning	Fault
	1	Status							
	2	Speed Actual (Low Byte)							
	3	Speed Actual (High Byte)							

Name	Description
Fault	Drive Fault 0: No Fault 1: Fault
Warning	Warning 0: No Warning Occurred 1: Warning Occurred
Running 1 (FWD)	Forward Running 0: Stop or Reverse Running 1: Forward Running
Running 2 (REV)	Reverse Running 0: Stop or Forward Running 1: Reverse Running
Ready	Drive Ready 0: Not Ready 1: Ready
Ctrl from Net	Run command is from network 0: Run command is not from network 1: Run command is from network
Ref from Net	Speed reference is from network 0: Speed reference is not from network 1: Speed reference is from network
At Speed	Speed Agree 0: - 1: Speed actual at speed reference
State	Drive State 2: Not Ready 3: Ready (Stopped) 4: Enabled (Run command present) 5: Deceleration to Stop 6: Fault Stop 7: Fault
Speed Actual	Actual Drive Speed Monitors drive output frequency. Speed actual data: Output frequency × 2^{SS} (SS: Speed scale) Range: 0 to 0xFFFF For example, when output frequency of 4096 with a speed scale of 2 Speed actual data = $4096 × 2^2 = 16384 = 0x4000$ Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*.

◆ Speed and Torque Control Input - 72 (0x48)

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
72	0	-	-	-	-	-	Running 1 (FWD)	-	Fault

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	1	-							
	2	Speed Actual (Low Byte)							
	3	Speed Actual (High Byte)							
	4	Torque Actual (Low Byte)							
	5	Torque Actual (High Byte)							

Name	Description
Fault	Drive Fault 0: No Fault 1: Fault
Running 1 (FWD)	Forward Running 0: Stop or Reverse Running 1: Forward Running
Speed Actual	Actual Drive Speed Monitors drive output frequency. Speed actual data: Output frequency × 2^{SS} (SS: Speed scale) Range: 0 - 0xFFFF For example, when output frequency of 4096 with a speed scale of 2 Speed actual data = $4096 \times 2^2 = 16384 = 0x4000$ Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*.
Torque Actual	Output Torque Shows the Torque Reference. Value displays in 0.1% units.

◆ Extended Speed and Torque Control Input - 73 (0x49)

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
73	0	At Speed	Ref from Net	Ctrl from Net	Ready	Running 2 (REV)	Running 1 (FWD)	Warning	Fault
	1	Status							
	2	Speed Actual (Low Byte)							
	3	Speed Actual (High Byte)							
	4	Torque Actual (Low Byte): Reserved							
	5	Torque Actual (High Byte): Reserved							

Name	Description
Fault	Drive Fault 0: No Fault 1: Fault
Warning	Warning 0: No Warning Occurred 1: Warning Occurred
Running 1 (FWD)	Forward Running 0: Stop or Reverse Running 1: Forward Running
Running 2 (REV)	Reverse Running 0: Stop or Forward Running 1: Reverse Running
Ready	Drive Ready 0: Not Ready 1: Ready
Ctrl from Net	Run command is from network 0: Run command is not from network 1: Run command is from network
Ref from Net	Speed reference is from network 0: Speed reference is not from network 1: Speed reference is from network
At Speed	Speed Agree 0: -

Name	Description
	1: Speed actual at speed reference
Status	Drive State 2: Not Ready 3: Ready (Stopped) 4: Enabled (Run command present) 5: Deceleration to Stop 6: Fault Stop 7: Fault
Speed Actual	Actual Drive Speed Monitors drive output frequency. Speed actual data: Output frequency/2^{SS} (SS: Speed scale) Range: 0 - 0xFFFF For example, when output frequency of 4096 with a speed scale of 2 Speed actual data = $4096 \times 2^2 = 16384 = 0x4000$ Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*.
Torque Actual	Output Torque Shows the Torque Reference. Value displays in 0.1% units.

◆ 3-Wire Control Status1 (Vendor Specific Yaskawa Electric (YE) Assy) - 104 (0x68)

Note:

The drive is compatible with option software versions 1107 and later.

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
104	0	Fault	-	-	-	Actual Direction	Direction Command	Running	Ready
	1	Reference Selection Status				Local Status			At Speed
	2	Speed Actual (Low Byte)							
	3	Speed Actual (High Byte)							

Name	Description
Ready	Drive Ready 0: Not Ready 1: Ready
Running	Running 0: Stop 1: Running
Direction Command	Commanded rotational direction 0: Reverse 1: Forward
Actual Direction	Actual rotational direction 0: Forward Running 1: Reverse Running
Fault	Drive Fault 0: No Fault 1: Fault
At Speed	During Speed Agree 0: - 1: Speed actual at speed reference
Local Status	Reference Selection Commanded Refer to Table 9.1 for information.
Reference Selection Status	Reference Selection Status Refer to Table 9.2 for information.
Actual Speed	Actual Drive Speed Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*. Unit is not affected by Speed Scale SS.

Table 9.1 Reference Selection Command

Speed Reference Source	Bit 3	Bit 2	Bit 1
Analog Input A2	0	0	0
From Network (Bytes 2, 3)	0	0	1
-	0	1	0
-	0	1	1
-	1	0	0
-	1	0	1
-	1	1	0
-	1	1	1

Table 9.2 Reference Selection Status

Speed Reference Source Selection	Bit 7	Bit 6	Bit 5	Bit 4
-	0	0	0	0
-	0	0	0	1
-	0	0	1	0
Preset 3 (value in parameter *d1-03 [Reference 3]*)	0	0	1	1
Preset 4 (value in parameter d1-04 [Reference 4])	0	1	0	0
Preset 5 (value in parameter d1-05 [Reference 5])	0	1	0	1
Preset 6 (value in parameter d1-06 [Reference 6])	0	1	1	0
Preset 7 (value in parameter d1-07 [Reference 7])	0	1	1	1
Analog Input A2	1	0	0	0
From Network (Bytes 2, 3)	1	0	0	1
-	1	0	1	0
-	1	0	1	1
-	1	1	0	0
-	1	1	0	1
-	1	1	1	0
-	1	1	1	1

◆ Speed Status (Vendor Specific Yaskawa Electric (YE) Assy) - 130 (0x82)

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
130	0	Fault	Alarm	Ready	Speed Agree	Reset	REV Running	ZSP	Running
	1	ZSV	-	1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	LOCAL/ REMOTE	Uv	-
	2	Output Frequency (Low Byte)							
	3	Output Frequency (High Byte)							

Name	Description
Running	Running 0: Stop 1: Forward or Reverse Running
ZSP	Zero Speed 0: Running 1: Stop or DC Injection Braking
REV Running	Reverse Running 0: Not Reverse Running 1: Reverse Running

Name	Description
Reset	Reset 0: - 1: Reset
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
Ready	Drive Ready 0: Not Ready 1: Ready
Alarm	Drive Alarm 0: No Alarm 1: Alarm
Fault	Drive Fault 0: No Fault 1: During Fault
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Run command is from network 0: Run command is not from network 1: Run command is from network
1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	1000-Series, GA700, GA800, FP605: Terminal M1/M2 0: M1/M2 OFF 1: M1/M2 ON GA500: Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON
1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Terminal P1 *1 0: P1 OFF 1: P1 ON GA700, GA800, FP605: Terminal M3/M4 0: M3/M4 OFF 1: M3/M4 ON
1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Terminal P2 *1 0: P2 OFF 1: P2 ON GA700, GA800: Terminal P1 *1 0: P1 OFF 1: P1 ON FP605 0: MD/MF OFF 1: MD/MF ON
Multi-Function Digital Output 4 *2	Terminal P2 *1 0: P2 OFF 1: P2 ON
ZSV	Zero-Servo Completed 0: - 1: Zero-Servo Completed
Output Frequency	Actual Drive Speed Monitors drive output frequency. Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*. Unit is not affected by Speed Scale SS.

*1   Terminals are different for different drive models. Refer to *Terminals that Change depending on the Model of the Drive on page 52* for more information.

*2   Multi-function digital output 4 is not available for 1000-Series, GA500, GA800, or FP605 drives.

◆ Current Status (Vendor Specific Yaskawa Electric (YE) Assy) - 131 (0x83)

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
131	0	Fault	Alarm	Ready	Speed Agree	Reset	REV Running	ZSP	Running
	1	ZSV	-	1000-Series, GA500: Multi-Function Photocoupler 2	1000-Series, GA500: Multi-Function Photocoupler 1	1000-Series, GA500: Multi-Function Digital Output	LOCAL/ REMOTE	Uv	-

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
				GA700, GA800, FP605: Multi-Function Digital Output 3	GA700, GA800, FP605: Multi-Function Digital Output 2	GA700, GA800, FP605: Multi-Function Digital Output 1			
	2	Actual Current (Low Byte)							
	3	Actual Current (High Byte)							

Name	Description
Running	Running 0: Stop 1: Forward or Reverse Running
ZSP	Zero Speed 0: Running 1: Stop or DC Injection Braking
REV Running	Reverse Running 0: Not Reverse Running 1: Reverse Running
Reset	Reset 0: - 1: Reset
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
Ready	Drive Ready 0: Not Ready 1: Ready
Alarm	Drive Alarm 0: No Alarm 1: Alarm
Fault	Drive Fault 0: No Fault 1: During Fault
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Run command is from network 0: Run command is not from network 1: Run command is from network
1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	1000-Series, GA700, GA800, FP605: Terminal M1/M2 0: M1/M2 OFF 1: M1/M2 ON GA500: Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON
1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Terminal P1 *1 0: P1 OFF 1: P1 ON GA700, GA800, FP605: Terminal M3/M4 0: M3/M4 OFF 1: M3/M4 ON
1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Terminal P2 *1 0: P2 OFF 1: P2 ON GA700, GA800: Terminal P1 *1 0: P1 OFF 1: P1 ON FP605 0: MD/MF OFF 1: MD/MF ON
Multi-Function Digital Output 4 *2	Terminal P2 *1 0: P2 OFF 1: P2 ON

Name	Description
ZSV	Zero-Servo Completed 0: - 1: Zero-Servo Completed
Actual Current	Actual Output Current Monitors drive output current. Unit: 0.1A Unit is not affected by Current Scale CS.

*1   Terminals are different for different drive models. Refer to *Terminals that Change depending on the Model of the Drive on page 52* for more information.

*2   Multi-function digital output 4 is not available for 1000-Series, GA500, GA800, or FP605 drives.

◆ Current & Speed Status (Vendor Specific Yaskawa Electric (YE) Assy) - 132 (0x84)

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
132	0	Fault	Alarm	Ready	Speed Agree	Reset	REV Running	ZSP	Running
	1	ZSV	-	1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	LOCAL/ REMOTE	Uv	-
	2	Actual Current (Low Byte)							
	3	Actual Current (High Byte)							
	4	Output Frequency (Low Byte)							
	5	Output Frequency (High Byte)							

Name	Description
Running	Running 0: Stop 1: Forward or Reverse Running
ZSP	Zero Speed 0: Running 1: Stop or DC Injection Braking
REV Running	Reverse Running 0: Not Reverse Running 1: Reverse Running
Reset	Reset 0: - 1: Reset
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
Ready	Drive Ready 0: Not Ready 1: Ready
Alarm	Drive Alarm 0: No Alarm 1: Alarm
Fault	Drive Fault 0: No Fault 1: During Fault
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Run command is from network 0: Run command is not from network 1: Run command is from network
1000-Series, GA500: Multi-Function Digital Output	1000-Series, GA700, GA800, FP605: Terminal M1/M2 0: M1/M2 OFF

Name	Description
GA700, GA800, FP605: Multi-Function Digital Output 1	1: M1/M2 ON GA500: Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON
1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Terminal P1 *1 0: P1 OFF 1: P1 ON GA700, GA800, FP605: Terminal M3/M4 0: M3/M4 OFF 1: M3/M4 ON
1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Terminal P2 *1 0: P2 OFF 1: P2 ON GA700, GA800: Terminal P1 *1 0: P1 OFF 1: P1 ON FP605 0: MD/MF OFF 1: MD/MF ON
Multi-Function Digital Output 4 *2	Terminal P2 *1 0: P2 OFF 1: P2 ON
ZSV	Zero-Servo Completed 0: - 1: Zero-Servo Completed
Actual Current	Actual Output Current Monitors drive output current. Unit: 0.1A Unit is not affected by Current Scale CS.
Output Frequency	Actual Drive Speed Monitors drive output frequency. Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*. Unit is not affected by Speed Scale SS.

*1   Terminals are different for different drive models. Refer to *Terminals that Change depending on the Model of the Drive on page 52* for more information.
*2   Multi-function digital output 4 is not available for 1000-Series, GA500, GA800, or FP605 drives.

◆ Speed Status Dynamic Assy (Vendor Specific Yaskawa Electric (YE) Assy) - 134 (0x86)

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
134	0	Fault	Alarm	Ready	Speed Agree	Reset	REV Running	ZSP	Running
	1	Service Code							
	2	Class							
	3	Attribute							
	4	Data (Low Byte)							
	5	Data (High Byte)							
	6	Output Frequency (Low Byte)							
	7	Output Frequency (High Byte)							

Name	Description
Running	Running 0: Stop 1: Forward or Reverse Running
ZSP	Zero Speed 0: Running 1: Stop or DC Injection Braking
REV Running	Reverse Running 0: Not Reverse Running 1: Reverse Running

Name	Description
Reset	Reset 0: - 1: Reset
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
Ready	Drive Ready 0: Not Ready 1: Ready
Alarm	Drive Alarm 0: No Alarm 1: Alarm
Fault	Drive Fault 0: No Fault 1: Fault
Service Code	Service Code Refer to Table 9.3 for information.
Class	Class Valid Classes are Control Supervisor Object (41) and AC/DC Object (42). Instance will always be 1.
Attribute	Attribute
Data	Data If Service Code is 0x94, Data is Error Code.
Output Frequency	Actual Drive Speed Monitors drive output frequency. Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*. Unit is not affected by Speed Scale SS.

Note:

This is a paired assembly (124/134).

Table 9.3 Reply Mapping - 134

Byte	Write Success	Read Success	Write Failure	Read Failure	Busy	Illegal Function Code	Function Code Equals Zero
1	0x90	0x8E	0x94	0x94	0x8E/0x90	0x94	0
2	Class Number	Class Number	0	0	Class Number	0	0
3	Attribute Number	Attribute Number	0	0	Attribute Number	0	0
4	0	Data Low Byte	DeviceNet Error Code	DeviceNet Error Code	0	0x08	0
5	0	Data High Byte	0xFF	0xFF	0	0xFF	0

Note:

For Error Codes, please refer to *Explicit Message Communications Errors on page 92*.

◆ Current Status Dynamic Assy (Vendor Specific Yaskawa Electric (YE) Assy) - 135 (0x87)

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
135	0	Fault	Alarm	Ready	Speed Agree	Reset	REV Running	ZSP	Running
	1	Service Code							
	2	Class							
	3	Attribute							
	4	Data (Low Byte)							
	5	Data (High Byte)							
	6	Actual Current (Low Byte)							
	7	Actual Current (High Byte)							

Name	Description
Running	Running 0: Stop 1: Forward or Reverse Running
ZSP	Zero Speed 0: Running 1: Stop or DC Injection Braking
REV Running	Reverse Running 0: Not Reverse Running 1: Reverse Running
Reset	Reset 0: - 1: Reset
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
Ready	Drive Ready 0: Not Ready 1: Ready
Alarm	Drive Alarm 0: No Alarm 1: Alarm
Fault	Drive Fault 0: No Fault 1: During Fault
Service Code	Service Code Refer to Table 9.3 for information.
Class	Class Valid Classes are Control Supervisor Object (41) and AC/DC Object (42). Instance will always be 1.
Attribute	Attribute
Data	Data If Service Code is 0x94, Data is Error Code.
Actual Current	Actual Output Current Monitors drive output current. Unit: 0.1A Unit is not affected by Current Scale CS.

Note:

This is a paired assembly (125/135).

Table 9.4 Reply Mapping - 135

Byte	Write Success	Read Success	Write Failure	Read Failure	Busy	Illegal Function Code	Function Code Equals Zero
1	0x90	0x8E	0x94	0x94	0x8E/0x90	0x94	0
2	Class Number	Class Number	0	0	Class Number	0	0
3	Attribute Number	Attribute Number	0	0	Attribute Number	0	0
4	0	Data Low Byte	DeviceNet Error Code	DeviceNet Error Code	0	0x08	0
5	0	Data High Byte	0xFF	0xFF	0	0xFF	0

◆ Torque and Speed Status (Vendor Specific Yaskawa Electric (YE) Assy) - 136 (0x88)

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
136	0	Fault	Alarm	Ready	Speed Agree	Reset	REV Running	ZSP	Running
	1	ZSV	-	1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	LOCAL/ REMOTE	Uv	-

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	2	Actual Torque (Low Byte)							
	3	Actual Torque (High Byte)							
	4	Output Frequency (Low Byte)							
	5	Output Frequency (High Byte)							
	6	Speed Reference (Low Byte)							
	7	Speed Reference (High Byte)							

Name	Description
Running	Running 0: Stop 1: Forward or Reverse Running
ZSP	Zero Speed 0: Running 1: Stop or DC Injection Braking
REV Running	Reverse Running 0: Not Reverse Running 1: Reverse Running
Reset	Reset 0: - 1: Reset
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
Ready	Drive Ready 0: Not Ready 1: Ready
Alarm	Drive Alarm 0: No Alarm 1: Alarm
Fault	Drive Fault 0: No Fault 1: During Fault
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Run command is from network 0: Run command is not from network 1: Run command is from network
1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	1000-Series, GA700, GA800, FP605: Terminal M1/M2 0: M1/M2 OFF 1: M1/M2 ON GA500: Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON
1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Terminal P1 *1 0: P1 OFF 1: P1 ON GA700, GA800, FP605: Terminal M3/M4 0: M3/M4 OFF 1: M3/M4 ON
1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Terminal P2 *1 0: P2 OFF 1: P2 ON GA700, GA800: Terminal P1 *1 0: P1 OFF 1: P1 ON FP605 0: MD/MF OFF 1: MD/MF ON
Multi-Function Digital Output 4 *2	Terminal P2 *1 0: P2 OFF 1: P2 ON

Name	Description
ZSV	Zero-Servo Completed 0: - 1: Zero-Servo Completed
Actual Torque	Output Torque Shows the Torque Reference. Value displays in 0.1% units.
Output Frequency	Actual Drive Speed Monitors drive output frequency. Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*. Unit is not affected by Speed Scale SS.
Speed Reference	Frequency Reference Monitors drive frequency reference. Units are determined by parameter *o1-03*. Unit is not affected by Speed Scale SS.

*1   Terminals are different for different drive models. Refer to *Terminals that Change depending on the Model of the Drive on page 52* for more information.

*2   Multi-function digital output 4 is not available for 1000-Series, GA500, GA800, or FP605 drives.

◆ MEMOBUS/Modbus Message Reply (Vendor Specific Yaskawa Electric (YE) Assy) - 150 (0x96)

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
150	0	Function Code							
	1	Register Number (High Byte)							
	2	Register Number (Low Byte)							
	3	Register Data (High Byte)							
	4	Register Data (Low Byte)							

Note:

This is a paired assembly (100/150).

Table 9.5 Reply Mapping - 150

Byte	Write Success	Read Success	Write Failure	Read Failure	Invalid Function Code	Function Code Equals Zero
0	0x10	0x03	0x90	0x83	Function Code Or-ed with 0x80	0
1	Output Assembly Register Number (High Byte)	Output Assembly Register Number (High Byte)	Output Assembly Register Number (High Byte)	Output Assembly Register Number (High Byte)	Output Assembly Register Number (High Byte)	0
2	Output Assembly Register Number (Low Byte)	Output Assembly Register Number (Low Byte)	Output Assembly Register Number (Low Byte)	Output Assembly Register Number (Low Byte)	Output Assembly Register Number (Low Byte)	0
3	0	Read Data (High Byte)	0	0	0	0
4	0	Read Data (Low Byte)	Error Code	Error Code	1	0

Table 9.6 Error Replies - 150

Error Code	Description
0x01	Invalid Function Code
0x02	Invalid Register Number
0x21	Upper/Lower Limit Error
0x22	Write Mode Error Option generated busy event. The MEMOBUS/Modbus requested operation is in the process loop but the drive is not done yet. Writing "Enter" when drive is running. Attempt to write data that is read only. Attempt to write a parameter when drive is running. During a CPF06 [Control Circuit Error (EEPROM memory Data Error)] event attempting to write to registers other than *A1-00 [Language Selection], A1-01 [Access Level Selection], A1-02 [Control Method Selection], A1-03 [Initialize Parameters], A1-04 [Password], A1-05 [Password Setting], E1-03 [V/f Pattern Selection], o2-04 [Drive Model (KVA) Selection]*.

Error Code	Description
0x23	Writing Error during Undervoltage Attempting to write during a drive Uv [Undervoltage] event.
0x24	Writing Error during Parameter Processing Attempting to write while the drive is storing data.

Note:

Refer to the MEMOBUS/Modbus Data Table in the drive Technical Manual for a list of monitor data using the MEMOBUS/Modbus message area.

◆ Standard Status 1 (Vendor Specific Yaskawa Electric (YE) Assy) - 151 (0x97)

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
151	0	Fault	Alarm	Ready	Speed Agree	Reset	REV Running	ZSP	Running
	1	-	-	1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	LOCAL/REMOTE	Uv	oPE
	2	Output Frequency (Low Byte)							
	3	Output Frequency (High Byte)							
	4	Actual Torque (Low Byte)							
	5	Actual Torque (High Byte)							
	6	Actual Current (Low Byte)							
	7	Actual Current (High Byte)							

Name	Description
Running	Running 0: Stop 1: Forward or Reverse Running
ZSP	Zero Speed 0: Running 1: Stop or DC Injection Braking
REV Running	Reverse Running 0: Not Reverse Running 1: Reverse Running
Reset	Reset 0: - 1: Reset
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
Ready	Drive Ready 0: Not Ready 1: Ready
Alarm	Drive Alarm 0: No Alarm 1: Alarm
Fault	Drive Fault 0: No Fault 1: During Fault
oPE	oPE 0: - 1: oPExx
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Status of Run command from network 0: Run command is not from network 1: Run command is from network

Name	Description
1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	1000-Series, GA700, GA800, FP605: Terminal M1/M2 0: M1/M2 OFF 1: M1/M2 ON GA500: Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON
1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Terminal P1 *1 0: P1 OFF 1: P1 ON GA700, GA800, FP605: Terminal M3/M4 0: M3/M4 OFF 1: M3/M4 ON
1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Terminal P2 *1 0: P2 OFF 1: P2 ON GA700, GA800: Terminal P1 *1 0: P1 OFF 1: P1 ON FP605 0: MD/MF OFF 1: MD/MF ON
Multi-Function Digital Output 4 *2	Terminal P2 *1 0: P2 OFF 1: P2 ON
Output Frequency	Actual Drive Speed Monitors drive output frequency. Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*. Unit is not affected by Speed Scale SS.
Actual Torque	Output Torque Shows the Torque Reference. Value displays in 0.1% units.
Actual Current	Actual Output Current Monitors drive output current. Unit: 0.1A Unit is not affected by Current Scale CS.

*1 Terminals are different for different drive models. Refer to *Terminals that Change depending on the Model of the Drive on page 52* for more information.
*2 Multi-function digital output 4 is not available for 1000-Series, GA500, GA800, or FP605 drives.

◆ Standard Status 2 (Vendor Specific Yaskawa Electric (YE) Assy) -152 (0x98)

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
152	0	Fault	Alarm	Ready	Speed Agree	Reset	REV Running	ZSP	Running
	1	-	-	1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	LOCAL/ REMOTE	Uv	oPE
	2	Output Frequency (Low Byte)							
	3	Output Frequency (High Byte)							
	4	Speed Reference (Low Byte)							
	5	Speed Reference (High Byte)							
	6	Actual Current (Low Byte)							
	7	Actual Current (High Byte)							

Name	Description
Running	Running 0: Stop 1: Forward or Reverse Running
ZSP	Zero Speed

Name	Description
	0: Running 1: Stop or DC Injection Braking
REV Running	Reverse Running 0: Not Reverse Running 1: Reverse Running
Reset	Reset 0: - 1: Reset
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
Ready	Drive Ready 0: Not Ready 1: Ready
Alarm	Drive Alarm 0: No Alarm 1: Alarm
Fault	Drive Fault 0: No Fault 1: During Fault
oPE	oPE 0: - 1: oPExx
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Run command is from network 0: Run command is not from network 1: Run command is from network
1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	1000-Series, GA700, GA800, FP605: Terminal M1/M2 0: M1/M2 OFF 1: M1/M2 ON GA500: Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON
1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Terminal P1 *1 0: P1 OFF 1: P1 ON GA700, GA800, FP605: Terminal M3/M4 0: M3/M4 OFF 1: M3/M4 ON
1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Terminal P2 *1 0: P2 OFF 1: P2 ON GA700, GA800: Terminal P1 *1 0: P1 OFF 1: P1 ON FP605 0: MD/MF OFF 1: MD/MF ON
Multi-Function Digital Output 4 *2	Terminal P2 *1 0: P2 OFF 1: P2 ON
Output Frequency	Actual Drive Speed Monitors drive output frequency. Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*. Unit is not affected by Speed Scale SS.

Name	Description
Speed Reference	Frequency Reference Monitors drive frequency reference. Units are determined by parameter *o1-03*. Unit is not affected by Speed Scale SS.
Actual Current	Actual Output Current Monitors drive output current. Unit: 0.1A Unit is not affected by Current Scale CS.

*1   Terminals are different for different drive models. Refer to *Terminals that Change depending on the Model of the Drive on page 52* for more information.

*2   Multi-function digital output 4 is not available for 1000-Series, GA500, GA800, or FP605 drives.

◆ Enhanced Speed Status, Dynamic (Vendor Specific Yaskawa Electric (YE) Assy) - 155 (0x9B)

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
155	0	Fault	Alarm	Ready	Speed Agree	Reset	REV Running	ZSP	Running
	1	1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	LOCAL/REMOTE	Function Code High Bit	Function Code Low Bit	Uv	oPE
	2	Output Frequency (Low Byte)							
	3	Output Frequency (High Byte)							
	4	Register Number (Low Byte)							
	5	Register Number (High Byte)							
	6	Register Data (Low Byte)							
	7	Register Data (High Byte)							

Name	Description
Running	Running 0: Stop 1: Forward or Reverse Running
ZSP	Zero Speed 0: Running 1: Stop or DC Injection Braking
REV Running	Reverse Running 0: Not Reverse Running 1: Reverse Running
Reset	Reset 0: - 1: Reset
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
Ready	Drive Ready 0: Not Ready 1: Ready
Alarm	Drive Alarm 0: No Alarm 1: Alarm
Fault	Drive Fault 0: No Fault 1: External Fault
oPE	oPE 0: - 1: oPExx
Uv	Undervoltage 0: -

Name	Description
	1: Undervoltage
Function Code	MEMOBUS/Modbus Function Code Refer to Table 9.7 for information.
LOCAL/REMOTE	Run command is from network 0: Run command is not from network 1: Run command is from network
1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	1000-Series, GA700, GA800, FP605: Terminal M1/M2 0: M1/M2 OFF 1: M1/M2 ON GA500: Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON
1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Terminal P1 *1 0: P1 OFF 1: P1 ON GA700, GA800, FP605: Terminal M3/M4 0: M3/M4 OFF 1: M3/M4 ON
1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Terminal P2 *1 0: P2 OFF 1: P2 ON GA700, GA800: Terminal P1 *1 0: P1 OFF 1: P1 ON FP605 0: MD/MF OFF 1: MD/MF ON
Multi-Function Digital Output 4 *2	Terminal P2 *1 0: P2 OFF 1: P2 ON
Output Frequency	Actual Drive Speed Monitors drive output frequency. Units are determined by parameter o1-03 [Frequency Display Unit Selection]. Unit is not affected by Speed Scale SS.
Register Number	MEMOBUS/Modbus Register Number
Register Data	MEMOBUS/Modbus Register Data

*1   Terminals are different for different drive models. Refer to *Terminals that Change depending on the Model of the Drive on page 52* for more information.

*2   Multi-function digital output 4 is not available for 1000-Series, GA500, GA800, or FP605 drives.

Note:

1. This is a paired assembly (105/155).

2. Refer to the MEMOBUS/Modbus Data Table in the drive Technical Manual for a list of monitor data using the MEMOBUS/Modbus message area.

Table 9.7 Reply Mapping - 155

Function Code Bits/Byte	Write Success	Read Success	Write Failure	Read Failure	No Operation
Function Bits (High/Low)	11	11	01	01	00
4	Output Assembly Register Number (Low Byte)	Output Assembly Register Number (Low Byte)	Output Assembly Register Number (Low Byte)	Output Assembly Register Number (Low Byte)	0
5	Output Assembly Register Number (High Byte)	Output Assembly Register Number (High Byte)	Output Assembly Register Number (High Byte)	Output Assembly Register Number (High Byte)	0
6	0	Read Data (Low Byte)	Error Code	Error Code	0
7	0	Read Data (High Byte)	0	0	0

Note:

For Error Codes, please refer to Table 9.5.

◆ Enhanced Control Status (Vendor Specific Yaskawa Electric (YE) Assy) -156 (0x9C)

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
156	0	Fault	Alarm	Ready	Speed Agree	Reset	REV Running	ZSP	Running
	1	1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	-	Multi-Function Input 4	Multi-Function Input 3	Multi-Function Input 2	Multi-Function Input 1
	2	Output Frequency (Low Byte)							
	3	Output Frequency (High Byte)							
	4	-							
	5	-							
	6	Actual Current (Low Byte)							
	7	Actual Current (High Byte)							

Name	Description
Running	Running 0: Stop 1: Forward or Reverse Running
ZSP	Zero Speed 0: Running 1: Stop or DC Injection Braking
REV Running	Reverse Running 0: Not Reverse Running 1: Reverse Running
Reset	Reset 0: - 1: Reset
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
Ready	Drive Ready 0: Not Ready 1: Ready
Alarm	Drive Alarm 0: No Alarm 1: Alarm
Fault	Drive Fault 0: No Fault 1: During Fault
Multi-Function Input 1	Terminal S1 0: Terminal S1 OFF 1: Terminal S1 ON
Multi-Function Input 2	Terminal S2 0: Terminal S2 OFF 1: Terminal S2 ON
Multi-Function Input 3	Terminal S3 0: Terminal S3 OFF 1: Terminal S3 ON
Multi-Function Input 4	Terminal S4 0: Terminal S4 OFF 1: Terminal S4 ON
1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	1000-Series, GA700, GA800, FP605: Terminal M1/M2 0: M1/M2 OFF 1: M1/M2 ON GA500: Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON

Name	Description
1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Terminal P1 *1 0: P1 OFF 1: P1 ON GA700, GA800, FP605: Terminal M3/M4 0: M3/M4 OFF 1: M3/M4 ON
1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Terminal P2 *1 0: P2 OFF 1: P2 ON GA700, GA800: Terminal P1 *1 0: P1 OFF 1: P1 ON FP605 0: MD/MF OFF 1: MD/MF ON
Multi-Function Digital Output 4 *2	Terminal P2 *1 0: P2 OFF 1: P2 ON
Output Frequency	Actual Drive Speed Monitors drive output frequency. Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*. Unit is not affected by Speed Scale SS.
Actual Current	Actual Output Current Monitors drive output current. Unit: 0.1A Unit is not affected by Current Scale CS.

*1   Terminals are different for different drive models. Refer to *Terminals that Change depending on the Model of the Drive on page 52* for more information.

*2   Multi-function digital output 4 is not available for 1000-Series, GA500, GA800, or FP605 drives.

Note:

Refer to the MEMOBUS/Modbus Data Table in the drive Technical Manual for a list of monitor data using the MEMOBUS/Modbus message area.

◆ Standard DI/DO Status (Vendor Specific Yaskawa Electric (YE) Assy) - 157 (0x9D)

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
157	0	Fault	Alarm	Ready	Speed Agree	Reset	REV Running	ZSP	Running
	1	-	-	-	-	-	LOCAL/ REMOTE	Uv	oPE
	2	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Multi-Function Input 2	Multi-Function Input 1
	3	-	-	1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	-	-	-
	4	Analog Input 1 (Low Byte)							
	5	Analog Input 1 (High Byte)							
	6	Output Frequency (Low Byte)							
	7	Output Frequency (High Byte)							

Name	Description
Running	Running 0: Stop 1: Forward or Reverse Running
ZSP	Zero Speed 0: Running 1: Stop or DC Injection Braking
REV Running	Reverse Running

Name	Description
	0: Not Reverse Running 1: Reverse Running
Reset	Reset 0: - 1: Reset
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
Ready	Drive Ready 0: Not Ready 1: Ready
Alarm	Drive Alarm 0: No Alarm 1: Alarm
Fault	Drive Fault 0: No Fault 1: During Fault
oPE	oPE 0: - 1: oPExx
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Run command is from network 0: Run command is not from network 1: Run command is from network
Multi-Function Input 1	Terminal S1 0: Terminal S1 OFF 1: Terminal S1 ON
Multi-Function Input 2	Terminal S2 0: Terminal S2 OFF 1: Terminal S2 ON
Multi-Function Input 3	Terminal S3 0: Terminal S3 OFF 1: Terminal S3 ON
Multi-Function Input 4	Terminal S4 0: Terminal S4 OFF 1: Terminal S4 ON
Multi-Function Input 5	Terminal S5 0: Terminal S5 OFF 1: Terminal S5 ON
Multi-Function Input 6	Terminal S6 0: Terminal S6 OFF 1: Terminal S6 ON
Multi-Function Input 7	Terminal S7 0: Terminal S7 OFF 1: Terminal S7 ON
Multi-Function Input 8	Terminal S8 0: Terminal S8 OFF 1: Terminal S8 ON
1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	1000-Series, GA700, GA800, FP605: Terminal M1/M2 0: M1/M2 OFF 1: M1/M2 ON GA500: Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON
1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Terminal P1 *1 0: P1 OFF 1: P1 ON GA700, GA800, FP605: Terminal M3/M4 0: M3/M4 OFF 1: M3/M4 ON

Name	Description
1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Terminal P2 *1 0: P2 OFF 1: P2 ON GA700, GA800: Terminal P1 *1 0: P1 OFF 1: P1 ON FP605 0: MD/MF OFF 1: MD/MF ON
Multi-Function Digital Output 4 *2	Terminal P2 *1 0: P2 OFF 1: P2 ON
Analog Input 1	Analog Input terminal A1
Output Frequency	Actual Drive Speed Monitors drive output frequency. Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*. Unit is not affected by Speed Scale SS.

*1   Terminals are different for different drive models. Refer to *Terminals that Change depending on the Model of the Drive on page 52* for more information.

*2   Multi-function digital output 4 is not available for 1000-Series, GA500, GA800, or FP605 drives.

◆ Enhanced Torque Status, Dynamic (Vendor Specific Yaskawa Electric (YE) Assy) -158 (0x9E)

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
158	0	Fault	Alarm	Ready	Speed Agree	Reset	REV Running	ZSP	Running
	1	1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	LOCAL/ REMOTE	Function Code High Bit	Function Code Low Bit	Uv	oPE
	2	Actual Torque (Low Byte)							
	3	Actual Torque (High Byte)							
	4	Register Number (Low Byte)							
	5	Register Number (High Byte)							
	6	Register Data (Low Byte)							
	7	Register Data (High Byte)							

Name	Description
Running	Running 0: Stop 1: Forward or Reverse Running
ZSP	Zero Speed 0: Running 1: Stop or DC Injection Braking
REV Running	Reverse Running 0: Not Reverse Running 1: Reverse Running
Reset	Reset 0: - 1: Reset
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
Ready	Drive Ready 0: Not Ready 1: Ready
Alarm	Drive Alarm 0: No Alarm

Name	Description
	1: Alarm
Fault	Drive Fault 0: No Fault 1: During Fault
oPE	oPE 0: - 1: oPExx
Uv	Undervoltage 0: - 1: Undervoltage
Function Code	MEMOBUS/Modbus Function Code Refer to Table 9.7 for information.
LOCAL/REMOTE	Run command is from network 0: Run command is not from network 1: Run command is from network
1000-Series, GA500: Multi-Function Digital Output GA700, GA800, FP605: Multi-Function Digital Output 1	1000-Series, GA700, GA800, FP605: Terminal M1/M2 0: M1/M2 OFF 1: M1/M2 ON GA500: Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON
1000-Series, GA500: Multi-Function Photocoupler 1 GA700, GA800, FP605: Multi-Function Digital Output 2	1000-Series, GA500: Terminal P1 *1 0: P1 OFF 1: P1 ON GA700, GA800, FP605: Terminal M3/M4 0: M3/M4 OFF 1: M3/M4 ON
1000-Series, GA500: Multi-Function Photocoupler 2 GA700, GA800, FP605: Multi-Function Digital Output 3	1000-Series, GA500: Terminal P2 *1 0: P2 OFF 1: P2 ON GA700, GA800: Terminal P1 *1 0: P1 OFF 1: P1 ON FP605 0: MD/MF OFF 1: MD/MF ON
Multi-Function Digital Output 4 *2	Terminal P2 *1 0: P2 OFF 1: P2 ON
Actual Torque	Output Torque Shows the Torque Reference. Value displays in 0.1% units.
Register Number	MEMOBUS/Modbus Register Number
Register Data	MEMOBUS/Modbus Register Data

*1 Terminals are different for different drive models. Refer to *Terminals that Change depending on the Model of the Drive on page 52* for more information.

*2 Multi-function digital output 4 is not available for 1000-Series, GA500, GA800, or FP605 drives.

Note:

1. This is a paired assembly (108/158).
2. Refer to the MEMOBUS/Modbus Data Table in the drive Technical Manual for a list of monitor data using the MEMOBUS/Modbus message area.

Table 9.8 Reply Mapping - 158

Function Code Bits/Byte	Write Success	Read Success	Write Failure	Read Failure	No Operation
Function Bits (High/Low)	11	11	01	01	00
4	Output Assembly Register Number (Low Byte)	Output Assembly Register Number (Low Byte)	Output Assembly Register Number (Low Byte)	Output Assembly Register Number (Low Byte)	0
5	Output Assembly Register Number (High Byte)	Output Assembly Register Number (High Byte)	Output Assembly Register Number (High Byte)	Output Assembly Register Number (High Byte)	0
6	0	Read Data (Low Byte)	Error Code	Error Code	0
7	0	Read Data (High Byte)	0	0	0

Table 9.9 Error Replies - 158

Error Code	Description
0x02	Invalid Register Number
0x21	Upper/Lower Limit Error
0x22	Write Mode Error Option generated busy event. The MEMOBUS/Modbus requested operation is in the process loop but the drive is not done yet. Writing "Enter" when drive is running. Attempt to write data that is read only. Attempt to write a parameter when drive is running. During a CPF06 [Control Circuit Error (EEPROM memory Data Error)] event attempting to write to registers other than *A1-00 [Language Selection]*, *A1-01 [Access Level Selection]*, *A1-02 [Control Method Selection]*, *A1-03 [Initialize Parameters]*, *A1-04 [Password]*, *A1-05 [Password Setting]*, *E1-03 [V/f Pattern Selection]*, *o2-04 [Drive Model (KVA) Selection]*.
0x23	Writing Error during Undervoltage Attempting to write during a drive Uv [Undervoltage] event.
0x24	Writing Error during Parameter Processing Attempting to write while the drive is storing data.

◆ Dynamic Input Assembly (Vendor Specific Yaskawa Electric (YE) Assy) - 159 (0x9F)

This is a dynamic assembly. You can set the parameters that are used.

Note:

The drive is compatible with option software versions 1111 and later.

Input Instance	Byte	Description
159	0	Configurable Input 1 (Low Byte)
	1	Configurable Input 1 (High Byte)
	2	Configurable Input 2 (Low Byte)
	3	Configurable Input 2 (High Byte)
	4	Configurable Input 3 (Low Byte)
	5	Configurable Input 3 (High Byte)
	6	Configurable Input 4 (Low Byte)
	7	Configurable Input 4 (High Byte)

Name	Description
Configurable Input 1	Data read from the MEMOBUS/Modbus address defined in parameter *F6-68 [Dynamic In Assembly 159 Param 1]*. If *F6-68 = 0*, then MEMOBUS/Modbus address 0x004B (Drive Status) is used.
Configurable Input 2	Data read from the MEMOBUS/Modbus address defined in parameter *F6-69 [Dynamic In Assembly 159 Param 2]*. If *F6-69 = 0*, then MEMOBUS/Modbus address 0x0041 (Output Frequency) is used.
Configurable Input 3	Data read from the MEMOBUS/Modbus address defined in parameter *F6-70 [Dynamic In Assembly 159 Param 3]*. If *F6-70 = 0*, then MEMOBUS/Modbus address 0x0026 (Output Current) is used.
Configurable Input 4	Data read from the MEMOBUS/Modbus address defined in parameter *F6-71 [Dynamic In Assembly 159 Param 4]*. If *F6-71 = 0*, then MEMOBUS/Modbus address 0x0048 (Torque) is used.

◆ 3-Wire Control Status2 (Vendor Specific Yaskawa Electric (YE) Assy) - 160 (0xA0)

Input Instance	Byte	Description
160	0	Status Word (Low Byte)
	1	Status Word (High Byte)
	2	Output Frequency (0.1 Hz) (Low Byte)
	3	Output Frequency (0.1 Hz) (High Byte)

Bits	Fields (# bits)	Description
0	Ready	0 = NOT READY 1 = READY
1	Active	0 = NOT RUNNING

Bits	Fields (# bits)	Description
		1 = RUNNING
2	Direction Command	0 = REV 1 = FWD
3	Actual Direction	0 = REV 1 = FWD
4	Accel	0 = Not accelerating 1 = Accelerating
5	Decel	0 = Not decelerating 1 = Decelerating
6	Alarm	Drive Alarm
7	Fault	Drive Fault
8	At Speed	At Speed
9	Main Freq	0 = Reference source not from option card 1 = Reference source from option card
10	Operation Command	0 = Run is not controlled by option card 1 = Run is controlled by option card
11	Reserved	Reserved
12	Digital Input 1 Status	Digital Input 1 Status
13	Digital Input 2 Status	Digital Input 2 Status
14	Digital Input 3 Status	Digital Input 3 Status
15	Digital Input 4 Status	Digital Input 4 Status

◆ Change of State Response (Vendor Specific Yaskawa Electric (YE) Assy) - 199 (0xC7)

Note:

The drive is compatible with option software versions 1107 and later.

Input Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
199	0	Multi-Function Input 4	Multi-Function Input 3	NetCtrl	NetRef	Fault Reset	External Fault	Run Rev	Run Fwd
	1	-	-	-	-	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5
	2	Fault	Alarm	Ready	Speed Agree	Reset	REV Running	ZSP	Running
	3	NetCtrl (Status)	NetRef (Status)	-	-	-	2nd Motor	Uv	oPE
	4	Output Frequency (Low Byte)							
	5	Output Frequency (High Byte)							
	6	Torque Actual (Low Byte)							
	7	Torque Actual (High Byte)							

Name	Description
Run Fwd	Forward Run command from Network 0: Forward Run command is not from network 1: Forward Run command is from network
Run Rev	Reverse Run command from Network 0: Reverse Run command is not from network 1: Reverse Run command is from network
External Fault	External Fault command from Network 0: External Fault command is not from network 1: External Fault command is from network
Fault Reset	Fault Reset command from Network 0: Fault Reset command is not from network 1: Fault Reset command is from network
NetRef	Reference command from Network 0: Reference command is not from network 1: Reference command is from network

Name	Description
NetCtrl	Run command from Network 0: Run command is not from network 1: Run command is from network
Multi-Function Input 3	Terminal S3 command by Network 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 command by Network 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 command by Network 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 command by Network 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 command by Network 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 command by Network 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
Running	Running 0: Stop 1: Forward or Reverse Running
ZSP	Zero Speed 0: Running 1: Stop or DC Injection Braking
REV Running	Reverse Running 0: Not Reverse Running 1: Reverse Running
Reset	Reset 0: - 1: Reset
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
Ready	Drive Ready 0: Not Ready 1: Ready
Alarm	Drive Alarm 0: No Alarm 1: Alarm
Fault	Drive Fault 0: No Fault 1: During Fault
oPE	oPE 0: - 1: oPExx
Uv	Undervoltage 0: - 1: Undervoltage
2nd Motor	Status of Second Motor 0: First Motor Select 1: Second Motor Select
NetRef (Status)	Status of reference command from network 0: Reference command is not from network 1: Reference command is from network
NetCtrl (Status)	Status of Run command from network 0: Run command is not from network 1: Run command is from network

Name	Description
Output Frequency	Actual Drive Speed Monitors drive output frequency. Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*. Unit is not affected by Speed Scale SS.
Actual Torque	Output Torque Shows the Torque Reference. Value displays in 0.1% units.

10 General Class Objects

◆ Identity Object - 1 (Class 0x01)

■ Services Supported

Service Code No. (Hex)	Service Name
0E	Get Attribute Single
10	Set Attribute Single
05	Reset

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	The Identity Object software revision.	○	-	Word	-	1
1	1	Vendor ID	Manufacturer code. 44 (2C Hex): Yaskawa Electric	○	-	Word	-	44
1	2	Device Type	The device profile. The profile for this product is an AC drive. 2: AC drive	○	-	Word	-	2
1	3	Product Code	Product codes determined by the manufacturer.	○	-	Word	-	*1
1	4	Revision	Software revision for the option card.	○	-	Word	-	Depends on software
1	5	Status	The comm. status for the drive.	○	-	Word	-	0
1	6	Serial Number	Option card serial number	○	-	Long	-	Each unit is unique
1	7	Product Name	Product name.	○	-	String (14 Bytes)	-	Product-dependent (ex: CIMR-AA2A0004)
1	8	State	The operation status of the drive. 3: Drive Ready 4: Fault	○	-	Byte	-	3
1	9	Configuration Consistency Value	Shows verification data for any parameters that have been edited from their default values.	○	-	Word	-	0000
1	10	Heartbeat Interval	Heartbeat interval.	○	○	Word	0 - 10	0 = disabled

*1   Product code is 2 bytes. The first byte is the drive type and the second byte is the model number of the drive.

◆ Message Router Object - 2 (Class 0x02)

■ Services Supported

Service Code No. (Hex)	Service Name
0E	Get Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	The Message Router object software revision	○	-	Word	-	1

◆ DeviceNet Object - 3 (Class 0x03)

■ Services Supported

Service Code No. (Hex)	Service Name
0E	Get Attribute Single
10	Set Attribute Single
05	Reset

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	DeviceNet Object software revision	○	-	Word	-	2
1	1	MAC ID	Shows the currently available MAC Address.	○	○ *1	Byte	0 - 63	0
1	2	Baud Rate	Shows the currently available baud rate.	○	○ *2	Byte	0 - 3	0
1	3	Bus Off Interruption (BOI)	Operation at a Bus off Detection is shown.	○	-	Byte	00, 01	00
1	4	Bus Off Counter	The number of Bus off Detection is shown.	○	-	Byte	0 - 255	0
1	5	Allocation Information	The DeviceNet communication connection information.	○	-	Byte × 2	-	00, 00
1	6	MAC ID Switch Changed	Indication that MAC Address Switch Changed since last Power-up	○	-	Bool	-	0
1	7	Baud Rate Switch Changed	Indication that Baud Rate Switch Changed since last Power-up	○	-	Bool	-	0
1	8	MAC ID Switch Value	The MAC ID setting value. Setting through drive keypad, *F6-50 [DeviceNet MAC Address]*.	○	-	Word	0 - 64	0
1	9	Baud Rate Switch Value	The Baud rate setting value. Setting through drive keypad.	○	-	Word	0 - 4	0

*1   Settable when Attribute 08, *F6-50 = 64 [DeviceNet MAC Address = 64]*.
*2   Valid when Attribute 09, *F6-51 = 3 [DeviceNet Baud Rate = Adjustable from Network]*.

◆ Assembly Object - 4 (Class 0x04)

■ Services Supported

Service Code No. (hex)	Service Name
0E	Get Attribute Single
10	Set Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	DeviceNet Object software revision	○	-	Word	-	2
20	3	Data	Same function as the Basic Speed Control (Output Assembly)	○	○	Array 4 Bytes	-	00 00 00 00
21	3	Data	Same function as the Extended Speed Control (Output Assembly)	○	○	Array 4 Bytes	-	00 00 00 00
22	3	Data	Same function as the Speed and Torque Control (Output Assembly)	○	○	Array 6 Bytes	-	00 00 00 00 00 00
23	3	Data	Same function as the Extended Speed and Torque Control (Output Assembly)	○	○	Array 6 Bytes	-	00 00 00 00 00 00

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
70	3	Data	Same function as the Basic Speed Control (Input Assembly)	○	-	Array 4 Bytes	-	00 00 00 00
71	3	Data	Same function as the Extended Speed Control (Input Assembly)	○	-	Array 4 Bytes	-	00 00 00 00
72	3	Data	Same function as the Speed Control (Input Assembly)	○	-	Array 6 Bytes	-	00 00 00 00 00 00
73	3	Data	Same function as the Extended Speed and Torque Control (Input Assembly)	○	-	Array 6 Bytes	-	00 00 00 00 00 00
100	3	Data	Same function as the MEMOBUS/Modbus Message Command (Output Assembly)	○	○	Array 5 Bytes	-	00 00 00 00 00
101	3	Data	Same function as the Standard Control (Output Assembly)	○	○	Array 8 Bytes	-	00 00 00 00 00 00 00 00
102	3	Data	Same function as the Accel/Decel Time (Output Assembly)	○	○	Array 8 Bytes	-	00 00 00 00 00 00 00 00
103 *1	3	Data	Same function as the 3-Wire Control (Output Assembly)	○	○	Array 4 Bytes	-	00 00 00 00
104 *1	3	Data	Same function as the 3-Wire Control Status (Input Assembly)	○	-	Array 4 Bytes	-	00 00 00 00
105	3	Data	Same function as the Enhanced Torque Control, Dynamic (Output Assembly)	○	○	Array 8 Bytes	-	00 00 00 00 00 00 00 00
106	3	Data	Same function as the Enhanced Control (Output Assembly)	○	○	Array 8 Bytes	-	00 00 00 00 00 00 00 00
107	3	Data	Same function as the Standard DI/DO Control (Output Assembly)	○	○	Array 8 Bytes	-	00 00 00 00 00 00 00 00
108	3	Data	Same function as the Enhanced Torque Control, Dynamic (Output Assembly)	○	○	Array 8 Bytes	-	00 00 00 00 00 00 00 00
109 *2	3	Data	Same function as the Dynamic Output Assembly (Output Assembly)	○	○	Array 8 Bytes	-	00 00 00 00 00 00 00 00
120	3	Data	Same function as the Speed Command 1 (Output Assembly)	○	○	Array 4 Bytes	-	00 00 00 00
121	3	Data	Same function as the Torque Command 1 (Output Assembly)	○	○	Array 4 Bytes	-	00 00 00 00
122	3	Data	Same function as the Speed Command 2 (Output Assembly)	○	○	Array 6 Bytes	-	00 00 00 00 00 00
123	3	Data	Same function as the Torque Command 2 (Output Assembly)	○	○	Array 6 Bytes	-	00 00 00 00 00 00
124	3	Data	Same function as the Speed Dynamic Assy (Output Assembly)	○	○	Array 8 Bytes	-	00 00 00 00 00 00 00 00
125	3	Data	Same function as the Torque Dynamic Assy (Output Assembly)	○	○	Array 8 Bytes	-	00 00 00 00 00 00 00 00
126	3	Data	Same function as the Speed/Torque Assy (Output Assembly)	○	○	Array 8 Bytes	-	00 00 00 00 00 00 00 00
130	3	Data	Same function as the Speed Status 1 (Input Assembly)	○	-	Array 4 Bytes	-	00 00 00 00
131	3	Data	Same function as the Current Status 1 (Input Assembly)	○	-	Array 4 Bytes	-	00 00 00 00
132	3	Data	Same function as the Current & Speed Status 1 (Input Assembly)	○	-	Array 6 Bytes	-	00 00 00 00 00 00
134	3	Data	Same function as the Speed Status Dynamic Assy (Input Assembly)	○	-	Array 8 Bytes	-	00 00 00 00 00 00 00 00
135	3	Data	Same function as the Current Status Dynamic Assy (Input Assembly)	○	-	Array 8 Bytes	-	00 00 00 00 00 00 00 00
136	3	Data	Same function as the Torque and Speed Status (Input Assembly)	○	-	Array 8 Bytes	-	00 00 00 00 00 00 00 00
150	3	Data	Same function as the MEMOBUS/Modbus Message Reply (Input Assembly)	○	-	Array 5 Bytes	-	00 00 00 00 00
151	3	Data	Same function as the Standard Status 1 (Input Assembly)	○	-	Array 8 Bytes	-	00 00 00 00 00 00 00 00
152	3	Data	Same function as the Standard Status 2 (Input Assembly)	○	-	Array 8 Bytes	-	00 00 00 00 00 00 00 00
155	3	Data	Same function as the Standard Status 3 (Input Assembly)	○	-	Array 8 Bytes	-	00 00 00 00 00 00 00 00

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
156	3	Data	Same function as the Enhanced Control Status (Input Assembly)	○	-	Array 8 Bytes	-	00 00 00 00 00 00 00 00
157	3	Data	Same function as the Standard DI/DO Status (Input Assembly)	○	-	Array 8 Bytes	-	00 00 00 00 00 00 00 00
158	3	Data	Same function as the Standard Status 4 (Input Assembly)	○	-	Array 8 Bytes	-	00 00 00 00 00 00 00 00
159 *2	3	Data	Same function as the Dynamic Input Assembly (Input Assembly)	○	-	Array 8 Bytes	-	00 00 00 00 00 00 00 00
199 *1	3	Data	Same function as the Change of State Response (Input Assembly)	○	-	Array 8 Bytes	-	00 00 00 00 00 00 00 00

*1   The drive is compatible with option software versions 1107 and later.
*2   The drive is compatible with option software versions 1111 and later.

◆ DeviceNet Connection Object - 5 (Class 0x05)

■ Services Supported

Service Code No. (Hex)	Service Name
0E	Get Attribute Single
10	Set Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	DeviceNet Connection object software revision	○	-	Word	-	1
1 Explicit	1	State	Status of the instance. 00: Network not found or not yet connected. 01: Online, awaiting connection from the master. 02: Waiting to write the connection ID. 03: Connected successfully. 04: Timeout.	○	-	Byte	-	3
	2	Instance type	Shows the instance type. 00: Explicit message 01: I/O message	○	-	Byte	-	0
	3	Transport class trigger	Defines behavior of the connection.	○	-	Byte	-	83 (Hex.)
	4	Produced connection ID	The label used in the comm. header for the drive.	○	-	Word	-	-
	5	Consumed connection ID	Set once the comm. connection is complete.	○	-	Word	-	-
	6	Initial comm characteristics	Code for the comm. type.	○	-	Byte	-	21 (Hex.)
	7	Produced connection size	Maximum number of bytes that can be transmitted.	○	-	Byte	-	-
	8	Consumed connection size	Maximum number of bytes received.	○	-	Byte	-	-
	9	Expected packet rate	The time to timeout after receiving a comm. request. Rounds up to the nearest 10 ms.	○	○	Word	0 - 65535	2500
	12	Watchdog time-out action	Action taken after timeout. 00: Save value until reset or power is shut off 01: Auto delete 02: Restart while remaining connected	○	-	Byte	-	1
	13	Produced connection path length	Number of bytes for the transmission connection path.	○	-	Word	-	0
	14	Produced connection path	Specifies the application object that will produce data by this Connection Object.	○	-	Array	-	-
	15	Consumed connection path length	Number of bytes in the consumed connection path.	○	-	Word	-	0
	16	Consumed connection path	Specifies the Application Object that will receive data consumed by this Connection Object.	○	-	Array	-	-

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
2 Polled I/O	1	State	Status of the instance. 00: Network not found or not yet connected. 01: Online, awaiting connection from the master. 02: Waiting to write the connection ID. 03: Connected successfully. 04: Timeout.	○	-	Byte	-	3
	2	Instance type	Shows the instance type. 00: Explicit message 01: I/O message	○	-	Byte	-	1
	3	Transport class trigger	Defines behavior of the connection.	○	-	Byte	-	-
	4	Produced connection ID	The label used in the comm. header for the drive.	○	-	Word	-	-
	5	Consumed connection ID	Set once the comm. connection is complete.	○	-	Word	-	-
	6	Initial comm characteristics	Code for the comm. type.	○	-	Byte	-	
	7	Produced connection size	Maximum number of bytes that can be transmitted.	○	-	Byte	-	4
	8	Consumed connection size	Maximum number of bytes received.	○	-	Byte	-	4
	9	Expected packet rate	The time to timeout after receiving a comm. request. Rounds up to the nearest 10 ms.	○	○	Word *1	0 - 65535	0
	12	Watchdog time-out action	Action taken after timeout. 00: Save value until reset or power is shut off 01: Auto delete 02: Restart while remaining connected	○	○	Byte	0 - 2	0
	13	Produced connection path length	Number of bytes for the transmission connection path.	○	-	Word *2	-	6
	14	Produced connection path	Specifies the application object that will produce data by this Connection Object.	○	○	Array *2	-	20 (Hex.) 04 (Hex.) 24 (Hex.) 47 (Hex.) 30 (Hex.) 03 (Hex.)
	15	Consumed connection path length	Number of bytes in the consumed connection path.	○	-	Word *2	-	6
	16	Consumed connection path	Specifies the Application Object that will receive data consumed by this Connection Object.	○	○	Array *2	-	20 (Hex.) 04 (Hex.) 24 (Hex.) 15 (Hex.) 30 (Hex.) 03 (Hex.)
	100	Produced connection path	Specifies Polled Producing Assembly.	○	○	Byte	-	71
	101	Consumed connection path	Specifies Polled Consuming Assembly.	○	○	Byte	-	21
4 COS	1	State	Status of the instance. 00: Network not found or not yet connected. 01: Online, awaiting connection from the master. 02: Waiting to write the connection ID. 03: Connected successfully. 04: Timeout.	○	-	Byte	-	1
	2	Instance type	Shows the instance type. 00: Explicit message 01: I/O message	○	-	Byte	-	1
	3	Transport class trigger	Defines behavior of the connection.	○	-	Byte	-	0x10
	4	Produced connection ID	Shows the label used in the comm. header for the drive.	○	-	Word	-	-
	5	Consumed connection ID	Set once the comm. connection is complete.	○	-	Word	-	0xFFFF
	6	Initial comm characteristics	Code for the comm. type.	○	-	Byte	-	0x0F
	7	Produced connection size	Maximum number of bytes that can be transmitted.	○	-	Byte	-	8
	8	Consumed connection size	Maximum number of bytes received.	○	-	Byte	-	0

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
	9	Expected packet rate	The time to timeout after receiving a comm. request. Rounds up to the nearest 10 ms.	○	○	Word	-	0
	12	Watchdog timeout action	Action taken after timeout. 00: Save value until reset or power is shut off 01: Auto delete 02: Restart and stay connected	○	○	Byte	-	0
	13	Produced connection path length	Number of bytes for the transmission connection path.	○	-	Word *1	-	6
	14	Produced connection path	Specifies the application object that will produce data by this Connection Object.	○	-	Array *1	-	20 (Hex.) 04 (Hex.) 24 (Hex.) C7 (Hex.) 30 (Hex.) 03 (Hex.)
	15	Consumed connection path length	Number of bytes in the consumed connection path.	○	-	0	-	0
	16	Consumed connection path	Specifies the Application Object that will receive data consumed by this Connection Object.	○	-	Array *1	-	0
	17	Production inhibit time	-	○	○	Word	-	0

*1 These attributes default on power-up to logical encoding. If a message is received that is in symbolic encoding, a three-byte symbolic encoded message is returned.

*2 A polled EPR time. If there is a timeout, the drive will fault with a bUS [Option Communication Error].

◆ Motor Data Object - 40 (Class 0x28)

■ Services Supported

Service Code No. (hex)	Service Name
0E	Get Attribute Single
10	Set Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	Motor Data Object software revision	○	-	Word	-	1
1	3	Motor Type	Type of motor used. 0: Not standard 3: PM motor 7: IM Motor The setting value of this parameter is different for different A1-02 [Control Method Selection] settings. *1 When A1-02 = 5, 6, 7 [PM Open Loop Vector, PM Advanced Open Loop Vector, PM Closed Loop Vector], this attribute becomes 3 (PM motor). When A1-02 = 0, 1, 2, 3 [V/f Control, V/f Control with Encoder, Open Loop Vector, Closed Loop Vector], this attribute becomes 7 (IM motor).	○	-	Byte	-	Depends on A1-02 [Control Method Selection].
1	6	Rated Current [0.1 A]	Motor rated current. *2 Displayed in 0.1 A units. Changes according to the current scale (CS).	○	○	Byte	-	Depends on capacity
1	7	Rated Voltage [1 V]	Motor rated voltage. *3 *4 Displayed in 1 V units. Changes according to the voltage scale (VS).	○	○	Byte	-	Depends on capacity

*1 When the option software version is PRG: 1116 or later and A1-02 = 8 [Control Method Selection = EZ Vector Control], this parameter setting value is different for different E9-01 [Motor Type Selection] settings: (Applicable products: GA700, GA800, and FP605)

E9-01 = 0: 7,

E9-01 = 1: 3,

E9-01 = 2: 0.

*2   When the option software version is PRG: 1116 or later, this parameter setting value is different for different *A1-02* settings.

When *A1-02 = 0, 1, 2, 3, 4 [V/f Control, V/f Control with Encoder, Open Loop Vector, Closed Loop Vector, Advanced Open Loop Vector]*, E2-01 [Motor Rated Current (FLA)] is used.

When A1-02 = 5, 6, 7 [PM Open Loop Vector, PM Advanced Open Loop Vector, PM Closed Loop Vector], *E5-03 [PM Motor Rated Current (FLA)]* is used.

When *A1-02 = 8 [EZ Vector Control]*, E9-06 [Motor Rated Current (FLA)] is used.

*3   Motor rated voltage is the same as the voltage for *E1-13 [Base Voltage]* in option software versions PRG: 1111 and earlier. It is the voltage for *E1-01 [Input AC Supply Voltage]* in option software versions PRG: 1112 to 1115.

*4   When the option software version is PRG: 1116 or later, this parameter setting value is different for different *A1-02* settings.

When *A1-02 = 0, 1, 2, 3, 4, 5, 6, 7 [V/f Control, V/f Control with Encoder, Open Loop Vector, Closed Loop Vector, Advanced Open Loop Vector, PM Open Loop Vector, PM Advanced Open Loop Vector, PM Closed Loop Vector]*, E1-05 [Maximum Output Voltage] is used.

When *A1-02 = 8 [EZ Vector Control]*, E9-05 [Base Voltage] is used.

◆ Control Supervisor Object - 41 (Class 0x29)

■ Services Supported

Service Code No. (hex)	Service Name
0E	Get Attribute Single
10	Set Attribute Single
05	Reset

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	Revision number of the Control Supervisor Object	○	-	Word	-	1
1	3	Run 1 (Forward Run Command)	Forward Run Command 0: Stop 1: Forward Run	○	○	Byte	0, 1	0
1	4	Run2 (Reverse Run Command)	Reverse Run Command 0: Stop 1: Reverse Run	○	○	Byte	0, 1	0
1	5	NetCtrl (Command)	Run command is from network Depends on b1-02 1: Run command is from network	○	○	Byte	0, 1	0
1	6	State	Drive State 2: Not Ready 3: Ready (Stopped) 4: Enabled (Run command present) 5: Deceleration to Stop 6: Fault Stop 7: Fault	○	-	Byte	-	3
1	7	Running 1	Forward Running 0: Stop or Reverse Running 1: Forward Running	○	-	Byte	-	0
1	8	Running 2	Reverse Running 0: Stop or Forward Running 1: Reverse Running	○	-	Byte	-	0
1	9	Ready	Drive Ready 0: Not Ready 1: Ready	○	-	Byte	-	1
1	10	Fault	Fault 0: No Fault 1: Fault	○	-	Byte	-	0
1	11	Warning	Warning 0: No Warning Occurred 1: Warning Occurred	○	-	Byte	-	0
1	12	Fault Reset	Fault Reset 0: - 1: Fault Reset	○	○	Byte	0, 1	0
1	13	Fault Code	Current Fault	○	-	Word	-	0000

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
			Refer to page 86 for more information.					
1	15	Control from Net (Status)	Run command is from network 0: Run command is not from network 1: Run command is from network	○	-	Byte	-	0
1	16	DeviceNet Fault Mode	Normal 2 (Vendor Specific)	○	-	Byte	-	2
1	17	Force Fault	External Fault 0: - 1: External Fault [EF0] Triggered by the rising edge of the signal.	○	○	Byte	0, 1	0
1	18	Force Reset	External Fault status 0: - 1: External Fault [EF0] Triggered by the rising edge of the signal.	○	-	Byte	-	0

■ DeviceNet Fault Code Conversion Table

Drive Fault Code (Dec.) (MEMOBUS/Modbus #0080 (Hex.))	DeviceNet Fault Code (Hex.)	Description
0	0000	No Fault
2	3220	Uv1 [DC Bus Undervoltage]
3	5110	Uv2 [Control Power Undervoltage]
4	3222	Uv3 [Soft Charge Answerback Fault]
6	2120	GF [Ground Fault]
7	2300	oC [Overcurrent]
8	3210	ov [Overvoltage]
9	4200	oH [Heatsink Overheat]
10	4210	oH1 [Heatsink Overheat]
11	2220	oL1 [Motor Overload]
12	2200	oL2 [Drive Overload]
13	2221	oL3 [Overtorque Detection 1]
14	2222	oL4 [Overtorque Detection 2]
15	7110	rr [Dynamic Braking Transistor Fault]
16	7112	rH [Braking Resistor Overheat]
17	9000	EF3 [External Fault (Terminal S3)]
18	9000	EF4 [External Fault (Terminal S4)]
19	9000	EF5 [External Fault (Terminal S5)]
20	9000	EF6 [External Fault (Terminal S6)]
21	9000	EF7 [External Fault (Terminal S7)]
22	9000	EF8 [External Fault (Terminal S8)] **Note:** This fault is not displayed on GA500 drives.
24	7310	oS [Overspeed]
25	7310	dEv [Speed Deviation]
26	7301	PGo [Encoder (PG) Feedback Loss]
27	3130	PF [Input Phase Loss]
28	3130	LF [Output Phase Loss]
29	5210	oH3 [Motor Overheat (PTC Input)] **Note:** This fault is not displayed on GA500 drives.
30	5300	oPr [Keypad Connection Fault]
31	6320	Err [EEPROM Write Error]

Drive Fault Code (Dec.) (MEMOBUS/Modbus #0080 (Hex.))	DeviceNet Fault Code (Hex.)	Description
32	3210	oH4 [Motor Overheat Fault (PTC Input)]
33	7500	CE [Modbus Communication Error]
34	7500	bUS [Option Communication Error]
37	8321	CF [Control Fault]
38	8313	SvE [Zero Servo Fault] **Note:** This fault is not displayed on GA500 or FP605 drives.
39	9000	EF0 [Option Card External Fault]
40	8000	FbL [PID Feedback Loss]
41	8000	UL3 [Undertorque Detection 1]
42	8000	UL4 [Undertorque Detection 2]
43	8000	oL7 [High Slip Braking Overload]
50	8000	dv1 [Z Pulse Fault] **Note:** This fault is not displayed on GA500 or FP605 drives.
51	8000	dv2 [Z Pulse Noise Fault Detection] **Note:** This fault is not displayed on GA500 or FP605 drives.
52	8000	dv3 [Inversion Detection] **Note:** This fault is not displayed on GA500 or FP605 drives.
53	8000	dv4 [Inversion Prevention Detection] **Note:** This fault is not displayed on GA500 or FP605 drives.
54	8000	LF2 [Output Current Imbalance]
55	8000	STo [Safe Torque OFF] **Note:** When using GA500, GA700, GA800, and FP605 drives, "STPo" (Motor Step-Out Detected) will be shown.
56	7000	PGoH [Encoder (PG) Hardware Fault] **Note:** This fault is not displayed on GA500 drives.
59	1000	SEr [Speed Search Retries Exceeded]
65	8000	FbH [Excessive PID Feedback]
66	9000	EF1 [External Fault (Terminal S1)]
67	9000	EF2 [External Fault (Terminal S2)]
68	8000	oL5 [Mechanical Weakening Detection 1]
69	8000	UL5 [Mechanical Weakening Detection 2]
70	5000	CoF [Current Offset Fault]
73	8000	dWFL [DriveWorksEZ Fault]
77	5000	voF [Output Voltage Detection Fault] **Note:** This fault is not displayed on GA500 or FP605 drives.
78	7000	rF [Braking Resistor Fault]
79	7000	boL [BrakingTransistor Overload Fault]
-	1000	Other faults

◆ AC/DC Drive Object - 42 (Class 0x2A)

■ Services Supported

Service Code No. (hex)	Service Name
0E	Get Attribute Single
10	Set Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	Revision number of AC/DC Drive object	○	-	Word	-	1
1	3	Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference	○	-	Byte	-	0
1	4	NetRef (Command)	Status of reference command from DeviceNet 0: Reference command from except for DeviceNet 1: Reference command from DeviceNet	○	-	Byte	-	0
1	6	Drive Mode	Drive Control Mode 0: OLV (When *A1-02 = 0, 2, 4, 5, 6, 8 [Control Method Selection = V/f Control, Open Loop Vector, Advanced Open Loop Vector, PM Open Loop Vector, PM Advanced Open Loop Vector, EZ Vector Control]*) 1: CLV (When *A1-02 = 1, 3, 7 [V/f Control with Encoder, Closed Loop Vector, PM Closed Loop Vector]*) Writing a 0 or a 1 to this attribute will set A1-02 to 0 (V/f control). **Note:** • When using GA500, GA700 or GA800 drives, the following setting value "0" is added. −0: Advanced OLV for PM (Read only) −0: EZOLV (Read only) • When using an FP605 drive, the following setting value "0" is added. −0: EZOLV (Read only)	○	○	Byte	0 - 1	0
1	7	Speed Actual	Actual drive speed Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*. Unit is not affected by Speed Scale SS.	○	-	Word	-	3
1	8	Speed Reference	Speed Reference Units are determined by parameter *o1-03 [Frequency Display Unit Selection]*. Unit is not affected by Speed Scale SS.	○	○	Word	-	0
1	9	Current Actual	Actual Output Current Monitors drive output current. Unit: 0.1A Unit is not affected by Current Scale CS.	○	-	Word	-	0
1	11	Torque Actual	Drive Output Torque Unit is affected by Torque Scale (TS)	○	-	Word	-	0
1	12	Torque Reference/Torque Limit	Torque Reference/Torque Limit Sets the Torque Reference/Torque Limit. Unit is affected by Torque Scale (TS) Sets the Torque Reference when using *d5-01 = 1 [Torque Control Selection = Torque Control]*. Sets the Torque Limit when using *d5-01 = 0 [Torque Control Selection = Speed Control]*. The Torque Reference/Torque Limit are disabled when *F6-06 = 0 [Torque Reference/Limit by Comm = Disabled]*.	○	○	Word	-	0

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
1	15	Power Actual [W]	Drive Output Power Unit is affected by Power Scale (PS).	○	-	Word	-	0
1	16	Input Voltage [V]	Drive Input Voltage Unit is affected by Voltage Scale (VS).	○	-	Word	-	Depends on capacity
1	17	Output Voltage [V]	Drive Output Voltage Unit is affected by Voltage Scale (VS).	○	-	Word	-	0
1	18	Accel Time [ms]	Acceleration Time 1 [C1-01] Units set in *C1-10 [Accel/Decel Time Setting Units]*. Unit is affected by Time Scale (TS).	○	○	Word	-	2710 (Hex.)
1	19	Decel Time [ms]	Acceleration Time 1 [C1-02] Units set in *C1-10*. Unit is affected by Time Scale (TS).	○	○	Word	-	2710 (Hex.)
1	20	Low Speed Limit Percent of Max Speed	Frequency Reference Lower Limit [d2-02]	○	○	Word	0 - 1100	0
1	21	High Speed Limit Percent of Max Speed	Frequency Reference Upper Limit [d2-01]	○	○	Word	0 - 1100	3E8 (Hex.)
1	22	Speed Scale (-15 to 15)	Setting for *F6-56 [DeviceNet Speed Scaling]*, scale of units for speed related data	○	○	Byte	-15 - 15	0
1	23	Current Scale (-15 to 15)	Setting for *F6-57 [DeviceNet Current Scaling]*, scale of units for current-related data	○	○	Byte	-15 - 15	0
1	24	Torque Scale (-15 to 15)	Setting for *F6-58 [DeviceNet Torque Scaling]*, scale of units for torque-related data	○	○	Byte	-15 - 15	0
1	26	Power Scale (-15 to 15)	Setting for *F6-59 [DeviceNet Power Scaling]*, scale of units for power-related data	○	○	Byte	-15 - 15	0
1	27	Voltage Scale (-15 to 15)	Setting for *F6-60 [DeviceNet Voltage Scaling]*, scale of units for voltage-related data	○	○	Byte	-15 - 15	0
1	28	Time Scale (-15 to 15)	Setting for *F6-61 [DeviceNet Time Scaling]*, scale of units for speed-related data	○	○	Byte	-15 - 15	0
1	29	Reference from Net (Status)	Status of reference command from DeviceNet 0: Reference command from except for DeviceNet 1: Reference command from DeviceNet	○	-	Byte	-	0

11   Vendor-Specific (Yaskawa) Class Objects

◆ Yaskawa Drive Parameters Object - 100 (Class 0x64)

■ Services Supported

Service Code No. (Hex.)	Service Name
0E	Get Attribute Single
10	Set Attribute Single

Yaskawa Drive Parameters object is related to the parameters of Yaskawa drives. Not compatible with DeviceNet-compatible drives from a different manufacturer. With this Class object, you can access any drive parameter or monitor with a MEMOBUS/Modbus address larger than 0x0100. This is how to map Class Object instance/attributes to MEMOBUS/Modbus addresses:

For a typical MEMOBUS/Modbus Address of 0xXXYY

The DeviceNet Instance value is equal to XX

The DeviceNet Attribute value is equal to YY

As an example, to access parameter *b5-12 [Feedback Loss Detection Select]* (MEMOBUS/Modbus Address = 0x01B0)

Class Object is 100 (0x64) (Always for this Class Object)

Instance = 0x01

Attribute = 0xB0

Note:

Writing a zero to 0x0900 (Enter) stores changed parameters to the non-volatile memory of the drive. You can write the EEPROM to the drive a maximum of 100,000 times. Do not use this write command frequently. Writing a 0 to 0x0910 (Accept) allows the drive to use the changed parameters. This normally is automatically sent when you change the parameter. Reading Enter Command 0x0900 or Accept Command 0x910 will always return a value of 0x0001.

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	The Yaskawa drive parameters object software revision	○	-	Word	-	1
1	00	MEMOBUS/Modbus Register 0x0100	Language selection	○	○	Word	0 - 7	1
1	01	MEMOBUS/Modbus Register 0x0101	Parameter access level	○	○	Word	0 - 2	2
1	YY	MEMOBUS/Modbus Registers 0x0100 - 0x01FF	MEMOBUS/Modbus Registers 0x0100 - 0x01FF	○	○	Word	-	-
2	YY	MEMOBUS/Modbus Registers 0x0200 - 0x02FF	MEMOBUS/Modbus Registers 0x0200 - 0x02FF	○	○	Word	-	-
..	..	..	..	○	○	Word	-	-
255	YY	MEMOBUS/Modbus Registers 0xFF00 - 0xFFFF	MEMOBUS/Modbus Registers 0xFF00 - 0xFFFF	○	○	Word	-	-

Note:

1. Attempting to set a read-only parameter results in a DeviceNet error code of 0x0E, Attribute Not Settable.

2. Attempting to access an invalid parameter results in a DeviceNet error code of 0x09, Invalid Attribute Value.

3. Refer to *Explicit Message Communications Errors on page 92* for error codes.

4. Refer to the MEMOBUS/Modbus Data Table in the drive Technical Manual for a list of monitor data using the MEMOBUS/Modbus message area.

◆ Yaskawa Monitor/Control Object - 125 (Class 0x7D)

■ Services Supported

Service Code No. (Hex)	Service Name
0E	Get Attribute Single
10	Set Attribute Single

This is a dynamic explicit Class Object. Not compatible with other company's DeviceNet compatible drives. Any parameter with a MEMOBUS/Modbus address lower than 0x0100 can be accessed with this class object. This class is similar to the Drive Parameters Object Class 100, except that since the most significant byte of MEMOBUS/Modbus address is always zero, the instance in this class remains at 1.

Given a typical MEMOBUS/Modbus Address 0f 0x00YY

The DeviceNet Instance value is equal to 0x01

The DeviceNet Attribute value is equal to YY

As an example, to access Drive Status (MEMOBUS/Modbus Address = 0x002C)

Class Object is 125 (0x7D) (Always for this Class Object)

Instance = 0x01

Attribute = 0x2C

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	Yaskawa Monitor/Control object software revision	○	-	Word	-	1
1	01	MEMOBUS/Modbus Register 0x0001	Drive Command Bits	○	○	Word	-	0
..	..	..	..	○	○	Word	-	-
1	31	Reserved	Reserved	○	○	Word	-	-

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
1	32	MEMOBUS/Modbus Register 0x0020	Drive Status 1	○	-	Word	-	4
..	..	..	..	○	-	Word	-	-
1	255	MEMOBUS/Modbus Register 0x00FF	Reserved	○	-	Word	-	-

Note:

1. Attempting to set a read-only parameter results in a DeviceNet error code of 0x0E, Attribute Not Settable.
2. Attempting to access an invalid parameter results in a DeviceNet error code of 0x09, Invalid Attribute Value.
3. Refer to *Explicit Message Communications Errors on page 92* for error codes.
4. Refer to the MEMOBUS/Modbus Data Table in the drive Technical Manual for a list of monitor data using the MEMOBUS/Modbus message area.

12   Troubleshooting

◆ Drive-Side Error Codes

Drive-side error codes appear on the drive keypad. *Fault on page 91* lists causes of the errors and possible corrective actions. Refer to the drive Technical Manual for additional error codes that may appear on the drive keypad.

■ Fault

Both *bUS [Option Communication Error]* and *EF0 [Option Card External Fault]* can appear as a fault. When a fault occurs, the keypad ALM LED stays lit. When an alarm occurs, the ALM LED flashes.

If communication stops while the drive is running, use these questions as a guide to help remove the fault:

• Is the option properly installed?
• Is the communication line properly connected to the option? Is it loose?
• Is the PLC program working? Is the controller/PLC CPU stopped?
• Did a momentary power loss interrupt communications?

Code	Name	Causes	Possible Solutions
bUS	Option Communication Error	The drive did not receive a signal from the controller.	• Check for wiring errors. • Correct the wiring.
		The communications cable wiring is incorrect.	
		An existing short circuit or communications disconnection	Check disconnected cables and short circuits and repair as needed
		A data error occurred due to electric interference	• Prevent noise in the control circuit, main circuit, and ground wiring. • If you identify a magnetic contactor as a source of noise, install a surge absorber to the contactor coil. • Use only recommended cables or other shielded line. Ground the shield on the controller side or the drive input power side. • Separate all communication wiring from drive power lines. Install an EMC noise filter to the drive power supply input. • Counteract noise in the master controller (PLC).
		Option is damaged	If there are no problems with the wiring and the error continues to occur, replace the option.
		Connection Time-out	• The option Requested Packet Interval (RPI) timer timed out • Make sure that RPI time is set properly
		Duplicate MAC ID	The option MAC ID and at least one other node have the same MAC ID. Check the setting values of *F6-50 [DeviceNet MAC Address]*.
EF0	Option Card External Fault	The option received an external fault from the controller.	1. Find the device that caused the external fault and remove the caus. 2. Clear the external fault input from the controller.
		A programming error occurred on the controller side.	Examine the operation of the controller program.
oFA00	Option Not Compatible with Port	The option connected to connector CN5-A is not compatible.	Connect the option to the correct connector. • Use connector CN5-A when you connect the option. To use other options, refer to those option manuals.
oFA01	Option Card Fault (CN5-A)	The option connected to option port CN5-A was changed during run.	1. De-energize the drive. 2. Connect the option to the correct option port.

Code	Name	Causes	Possible Solutions
oFA03, oFA04	Option Card Error (CN5-A)	A fault occurred in the option.	1. De-energize the drive. 2. Make sure that the option is correctly connected to the connector. 3. If the problem continues, replace the option.
oFA30 to oFA43	Option Card Connection Error (CN5-A)	A fault occurred in the option.	1. De-energize the drive. 2. Make sure that the option is correctly connected to the connector. 3. If the problem continues, replace the option.
oFb00	Option Not Compatible with Port	The option connected to connector CN5-B is not compatible.	Connect the option to the correct connector. • Use connector CN5-A when you connect the option. To use other options, refer to those option manuals.
oFb02	Option Fault	An option of the same type is already installed in option port CN5-A, CN5-B, or CN5-C.	Connect the option to the correct option port.
oFC00	Option Fault (CN5-B)	The option connected to connector CN5-C is not compatible.	Connect the option to the correct connector. • Use connector CN5-A when you connect the option. To use other options, refer to those option manuals.
oFC02	Option Fault	An option of the same type is already installed in option port CN5-A, CN5-B, or CN5-C.	Connect the option to the correct option port.

■ Minor Faults and Alarms

Code	Name	Causes	Possible Solutions
CyPo	Cycle Power to Active Parameters	Comm. Option Parameter Not Upgraded	Re-energize the drive to update the communication option parameters.

◆ Explicit Message Communications Errors

When there is a problem with a request message sent from the master in explicit communications, the drive will return a response message with a service code of "94" and an error code from the following table as the data.

Table 12.1 Explicit Message Error Codes, Causes, and Possible Solutions

Error Code	Description	Cause	Possible Solutions
08FF	Service not supported	The service code is incorrect.	Correct the service code.
09FF	Invalid attribute value	The attribute is incorrect.	Correct the attribute.
0CFF	Object state conflict	Attempted to change a drive constant that cannot be changed while the drive is running.	Stop the drive.
0EFF	Attribute not settable	Attempted to change a read-only attribute.	Correct the service code or attribute setting.
13FF	Not enough data	The data size is incorrect.	Correct the data size.
14FF	Attribute not supported	Attempted to execute a service that is not defined for the attribute.	Correct the service code or attribute setting.
15FF	Too much data	The data size is incorrect.	Correct the data size.
16FF	Object does not exist	An unsupported object was specified.	Correct the class or instance setting.
1FFF	Vendor specific error	• Attempted to change a drive constant that cannot be changed while the drive is running. • Attempted to change a drive constant to a value outside of the setting range.	• Stop the drive. • Specify a value that is within the setting range.
20FF	Invalid parameter	Attempted to change to a data value outside of the setting range.	Specify a data value that is within the setting range.

Note:

Refer to the MEMOBUS/Modbus Data Table in the drive Technical Manual for a list of monitor data using the MEMOBUS/Modbus message area.

■ DeviceNet Option Error Codes

Table 12.2 DeviceNet Option Error Codes

Drive Error Code (Hex.) *1	DeviceNet Error Code (Hex.)	Name	Possible Solution
00	0000	-	-
01	5120	PUF [DC Bus Fuse Open]	Output Transistor Failure • Replace the drive.
02	3220	Uv1 [DC Bus Undervoltage]	The drive input power voltage is changing too much.
03	5110	Uv2 [Control Power Undervoltage]	Cycle drive power.

Drive Error Code (Hex.) *1	DeviceNet Error Code (Hex.)	Name	Possible Solution
			• If the fault stays, replace the drive.
04	3222	Uv3 [Soft Charge Answerback Fault]	Cycle drive power. • If the fault stays, replace the drive.
05	2130	SC [Short Circuit/IGBT Failure]	• Check drive wiring. • Cycle drive power. – If the fault stays, replace the drive.
06	2120	GF [Ground Fault]	Check for motor and/or cable damage.
07	2300	oC [Overcurrent]	Check motor, motor load and acc/dec rates.
08	3210	ov [Overvoltage]	• Check incoming voltage. • Check deceleration time
09	4200	oH [Heatsink Overheat]	• Check ambient temperature. • Examine cooling fan operation.
0A	4210	oH1 [Heatsink Overheat]	Examine cooling fan operation.
0B	2220	oL1 [Motor Overload]	• Check the load, acc/dec and cycle times. • Check motor rated current (E2-01 [Motor Rated Current (FLA)])
0C	2200	oL2 [Drive Overload]	• Check the load, acc/dec and cycle times. • Check drive rating.
0D	2221	oL3 [Overtorque Detection 1]	• Check L6-02 [Torque Detection Level 1] and L6-03 [Torque Detection Time 1] settings. • Check system mechanics.
0E	2222	oL4 [Overtorque Detection 2]	• Check L6-05 [Torque Detection Level 2] and L6-06 [Torque Detection Time 2] settings. • Check system mechanics.
0F	7110	rr [Dynamic Braking Transistor Fault]	• Cycle drive power. • If the fault stays, replace the drive.
10	7112	rH [Braking Resistor Overheat]	Check load, operating speed and deceleration time.
11	9000	EF3 [External Fault (Terminal S3)]	
12	9000	EF4 [External Fault (Terminal S4)]	
13	9000	EF5 [External Fault (Terminal S5)]	• Remove the cause of the external fault. • Clear the external fault input in the MFDI.
14	9000	EF6 [External Fault (Terminal S6)]	
15	9000	EF7 [External Fault (Terminal S7)]	
16	9000	EF8 [External Fault (Terminal S8)]	
17	4140	FAn [Internal Fan Fault]	Examine cooling fan operation.
18	7310	oS [Overspeed]	• Check reference and reference gain. • Check F1-08 [Overspeed Detection Level] and F1-09 [Overspeed Detection Delay Time] settings.
19	7310	dEv [Speed Deviation]	• Check load, acc/dec times and system mechanics. • Check F1-10 [Speed Deviation Detection Level] and F1-11 [Speed Deviation Detect DelayTime] settings.
1A	7301	PGo [Encoder (PG) Feedback Loss]	Check PG card connections.
1B	3130	PF [Input Phase Loss]	The drive input power voltage is changing too much.
1C	3130	LF [Output Phase Loss]	• Check for broken wire/loose terminals. • Check motor rating.
1D	5210	-	-
1E	5300	oPr [Keypad Connection Fault]	Remove the keypad and connect it again.
1F	6320	Err [EEPROM Write Error]	• Cycle drive power. • If the fault stays, replace the drive.
20	0000	-	-

Drive Error Code (Hex.) *1	DeviceNet Error Code (Hex.)	Name	Possible Solution
21	7500	bUS [Option Communication Error]	• Check DeviceNet network cable connections. • Check 24 Vdc power supply voltage.
22			Check DeviceNet Option Card installation and connections.
23			• Cycle drive power. • Replace DeviceNet Option or drive if fault continues.
24			
25	8321	CF [Control Fault]	• Check motor parameters. • Auto-tune
27	9000	EF0 [Option Card External Fault]	• Examine the operation of the controller program. • Check MI switch setting. • Check DeviceNet Option Card LEDs for fault indication.

*1   Drive error code is stored in MEMOBUS/Modbus address 0080 (Hex.).

■ DeviceNet Option Fault Monitors U6-98 [First Fault] and U6-99 [Current Fault]

The DeviceNet option can declare error/warning conditions via drive monitor parameters on the drive keypad as shown in Table 12.3.

Table 12.3 DeviceNet Option Fault Monitor Descriptions

Fault Condition	Fault Declared	Status Value (U6-98/U6-99)	Description
No Fault	-	0	No Fault
Option Card failure	EF0	1	Option card failure.
PLC in Idle State	EF0	2	PLC is sending polled I/O with all data set to zero.
Force Fault	EF0	3	Network sent a message to force this node to the fault state.
Network Power Loss	bUS	1000	Power on DeviceNet network is off.
Connection Time-out	bUS	1001	This nodes timer (Expect Packet Rate) timed out.
Dup MAC ID	bUS	1002	This node and at least one other node have the same MAC ID. Another node sent its MAC ID to the network first.
Bus Off	bUS	1003	CAN transceiver senses network error.

Two drive monitor parameters, *U6-98 [First Fault]* and *U6-99 [Current Fault]*, assist the user in network troubleshooting.

• *U6-98* displays the first declared fault since the last fault reset or power cycle. *U6-98* is only cleared upon drive power-up.
• *U6-99* displays the present option status.

These parameters are accessible from the DeviceNet network or the drive keypad. *U6-98* and *U6-99* are cleared upon a drive fault reset and upon power-up.

Note:

In the event of a PLC idle state, the action taken by the DeviceNet Option SI-N3 depends upon the value of parameter *F6-54 [Net Idle Fault Detection]*.

◆ Option Compatibility

You can connect a maximum of 3 options at the same time depending on the type of option.

Note:
•You can only connect one option to a GA500 drive. Connect the option to the CN5 connector.
•You can connect two options to an FP605 drive. Connect the communication option to the CN5-A connector.
•Compatible communication options are different for different models. Refer to the drive manuals for more information.

Table 12.4 Option Compatibility

Option	Connector	Number of Options Possible
PG-B3 *1, PG-X3 *1	CN5-B, CN5-C	2 *2
PG-RT3 *1 *3 *4, PG-F3 *1 *3 *4	CN5-C	1

Option	Connector	Number of Options Possible
DO-A3 *5, AO-A3 *5	CN5-A, B, and C	1
SI-C3, SI-N3, SI-P3, SI-S3, SI-T3, SI-ET3, SI-ES3, SI-B3, SI-M3, SI-W3 *4, SI-EM3 *4, SI-EM3D *4, SI-EN3 *4, SI-EN3D *4, SI-EP3, JOHB-SMP3, AI-A3 *5 *6, DI-A3 *5 *6	CN5-A	1

*1 Not available for GA500 or FP605 drives.
*2 To connect two PG options, use the CN5-C and CN5-B connectors. To connect only one PG option, use the CN5-C connector.
*3 If you use the motor switching function, you cannot use this option.
*4 Not available for 1000-Series drive models with capacities between 450 and 630 kW (650 to 1000 HP).
*5 Not available for GA500 drives.
*6 To use AI-A3 and DI-A3 input statuses as monitors, connect the options to CN5-A, CN5-B, or CN5-C.

◆ Automatic Device Replacement (ADR)

This DeviceNet Interface is compatible with the ADR feature associated with Rockwell controllers and DeviceNet Scanners. ADR features Configuration Recovery and Auto Address Recovery.

■ Configuration Recovery (CR)

CR is the ability of the scanner to download previously uploaded and saved configuration data to the DeviceNet node.

When a DeviceNet node is removed and returned to the network or replaced with another device, an ADR-enabled scanner reads the Electronic Key of the device that is configured in the scanner. A typical setup of the Electronic Key is: Vendor ID, Product Code, Model Number and Product Revision. When the CR feature is enabled, the stored configuration is downloaded to the DeviceNet node.

If the scanner reads the Configuration Consistency Value (CCV), it will use this value to determine if a download will occur. If the CCV in the scanner does not equal the CCV in the DeviceNet node, the configuration information saved in the scanner will be downloaded to the DeviceNet node. In this implementation of DeviceNet, the CCV will always be 0.

■ Auto Address Recovery (AAR)

AAR is the ability of the scanner to change the MAC ID of a node to a predetermined MAC ID. To use this feature, set the MAC ID switch (*F6-50 [DeviceNet MAC Address]*) of the DeviceNet node to 64 and set its actual MAC ID (*F6-63 [DeviceNet Network MAC ID]*) to 63.

If the recovering node is a replacement for another device, put the new device on the network to enable AAR feature. A scanner with AAR enabled will search the network for a node with a MAC ID of 63 and then read its Electronic Key. If the Electronic Key matches the node being replaced, the scanner will change the MAC ID of the found device to the MAC ID of the device it is replacing.

After the MAC ID is changed, the device sends its duplicate MAC IDs and executes the CR feature. Example: With current Rockwell PLCs, you must enable the CR feature to enable the AAR feature.

13 Trunk Line and Drop Line Length

Refer to the ODVA website (www.odva.org) for more information on network cabling.

◆ Trunk Line

The maximum allowable trunk line length depends on the type of cable used and the network baud rate. The total cable length includes the length of the trunk and the sum of all the drop lines.

Table 13.1 Trunk Line Cable Length

Baud Rate (kbps)	Thick Cable	Thin Cable
125	500 m (1640 ft)	100 m (328 ft)
250	250 m (787 ft)	100 m (328 ft)
500	100 m (328 ft)	100 m (328 ft)

To calculate the maximum total length for trunk lines of mixed thick and thin cables, use the following formulas:

- 125 kbps: $L_{thick} + (5 \times L_{thin}) \leq 500$ m (1640 ft)

- 250 kbps: $L_{thick} + (2.5 \times L_{thin}) \leq 250$ m (1640 ft)
- 500 kbps: $L_{thick} + L_{thin} \leq 100$ m (328 ft)
- thick: Thick cable thin: Thin cable

◆ Drop Line

The drop line is measured from the tap on the trunk line to the transceiver of the DeviceNet node. The total cable length includes the length of the trunk and the sum of all the drop lines.

Table 13.2 Drop Line Cable Length

Baud Rate (kbps)	Maximum at Each Drop	Maximum Total
125		156 m (511 ft)
250	6 m (20 ft)	78 m (256 ft)
500		39 m (128 ft)

14 European Standards

Figure 14.1 CE Mark

The CE mark indicates compliance with European safety and environmental regulations.

European standards include the Machinery Directive for machine manufacturers, the Low Voltage Directive for electronics manufacturers, and the EMC Directive for controlling noise.

It is required for engaging in business and commerce in Europe.

This option displays the CE mark based on the EMC Directive.

EMC Directive 2014/30/EU

Drives used in combination with this option and devices used in combination with the drive must also be CE certified and display the CE mark.

When using drives displaying the CE mark in combination with other devices, it is ultimately the responsibility of the user to ensure compliance with CE standards. Verify that conditions meet European standards after setting up the device.

◆ EMC Directive Compliance

This option is tested according to European standard EN 61800- 3:2004/A1:2012 and complies with the EMC Directive. The CE marking is declared based on the harmonized standards.

■ Option Installation

Verify the following installation conditions to make sure that other devices and machinery used with this option and drive also comply with EMC Directive:

1. Use dedicated shield cable for the option and external device (encoder, I/O device, master), or run the wiring through a metal conduit.

2. Keep wiring as short as possible and ground the largest possible surface area of the shield to the metal panel according to Figure 14.2, Figure 14.3, and Figure 14.4.
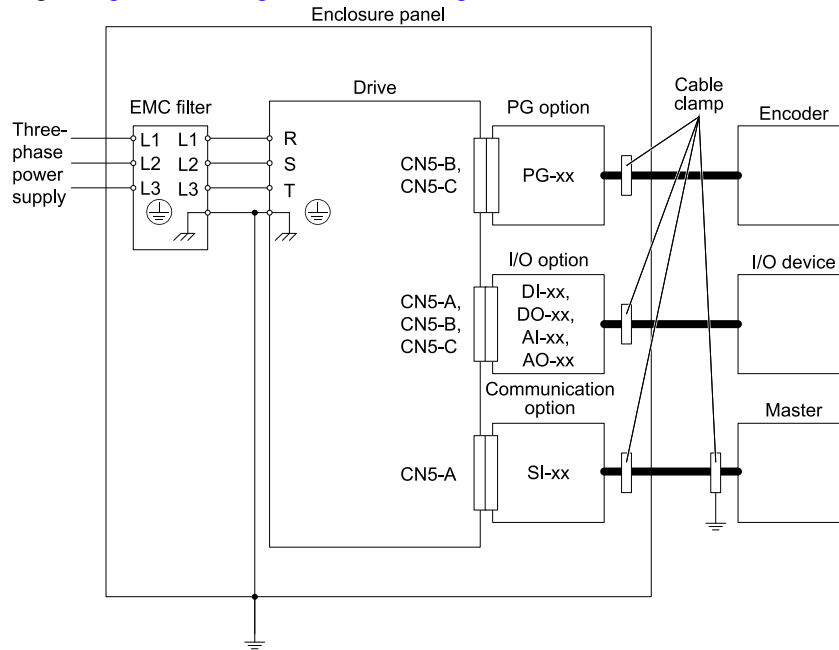

Figure 14.2 Option Installation for CE Compliance: 1000-Series, GA700, GA800
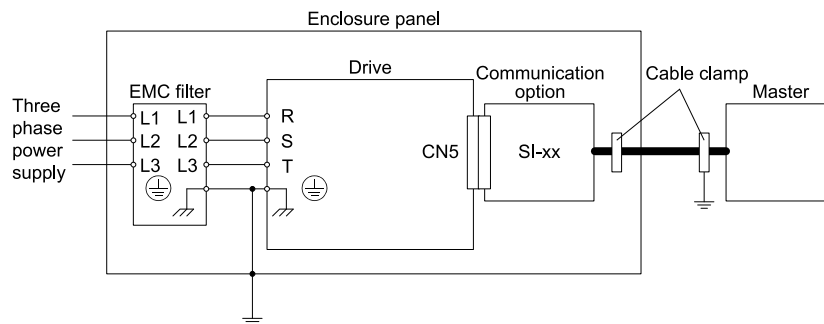

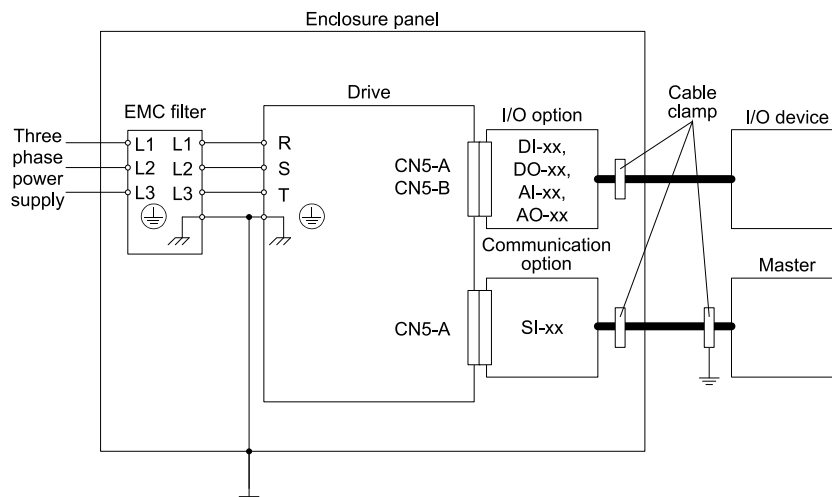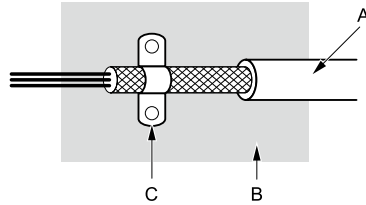**Figure 14.3 Option Installation for CE Compliance: GA500**

Figure 14.4 Option Installation for CE Compliance: FP605

3. Ground the largest possible surface area of the shield to the metal panel.

Yaskawa recommends using cable clamps.

A - Braided shield cable   C - Cable clamp (conductive)
B - Metal panel

Figure 14.5 Ground Area

15   Precautions for Korean Radio Waves Act

Figure 15.1 KC Mark

This product confirms to broadcast and communications equipment for business use (Class A) and are designed for use in locations other than in ordinary houses.

Drives that bear the Korea Certification (KC) mark conform to the Korean Radio Waves Act. Be careful when you use the drive in Korea under the following conditions.

Table 15.1 Precaution When You Use this Drive

Precautions
This equipment is evaluated for compatibility for use in a business environment and may cause radio interference in a domestic environment.

Note:

The user guide applies only to "Business Broadcasting Communication Equipment".

Comply with the EMC Directive to conform to the Korean Radio Act.

16   Specifications

◆ Specifications

Table 16.1 Option Specifications

| Items	Specifications
Model	SI-N3
Supported Messages	• Group 2 Server (UCMM capable). • Explicit Messages: Fragmentation is supported. Up to 32 bytes can be input and output. • Polled I/O Messages: Fragmentation is not supported. Up to 8 bytes can be input and output. • Faulted Node Recovery/Offline Connection Set Messages/Automatic Device Replacement (ADR). • Change of State Message (COS). COS can be used as an I/O Input Assembly.
I/O Assembly Instance	Input: 21 types (4 - 8 bytes) Output: 21 types (4 - 8 bytes)
DeviceNet Specification	Conformance Level 27: Passed
DeviceNet Profile	AC Drive
Input Power	Power Supply Voltage: 11 Vdc - 25 Vdc Current: 40 mA
Connector Type	5-pin open-style screw connector
Physical Layer Type	Isolated Physical Layer CAN transceiver + photocoupler
MAC ID Setting	Programmable from drive keypad or network: MAC ID: 0 - 63
Communications Speed/Baud Rate	Programmable from drive keypad or network:

Items	Specifications
	• 125/250/500 kbps • Auto Baud Rate • Idle Mode Detect • Heartbeat
Ambient Temperature	-10 °C to +50 °C (14 °F to +122 °F)
Humidity	Up to 95% RH (non-condensing)
Storage Temperature	-20 °C to +60 °C (-4 °F to 140 °F) allowed for short-term transport of the product
Area of Use	Indoors and not near: • Oil mist, corrosive gas, flammable gas, or dust • Radioactive materials or flammable materials, including wood • Dangerous gases or fluids • Salt • Direct sunlight • Falling objects
Altitude	Up to 1000 m (3281 ft.)

17 Disposal

◆ Disposal Instructions

Correctly dispose of the product and packing material as specified by applicable regional, local, and municipal laws and regulations.

◆ WEEE Directive
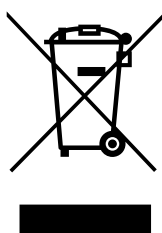
The wheelie bin symbol on this product, its manual, or its packaging identifies that you must recycle it at the end of its product life.

You must discard the product at an applicable collection point for electrical and electronic equipment (EEE). Do not discard the product with usual waste.

Revision History

Date of Publication	Revision Number	Section	Revised Content
September 2022	6	All	Revision: Reviewed and corrected entire documentation
		Chapters 2 to 5	Deletion: Information on Z1000
		Chapters 3, 4	Revision: LED label for FP605
		Chapter 15	Addition: Precautions for Korean Radio Waves Act
March 2022	5	All	Addition: Information on FP605 Revision: Reviewed and corrected entire documentation
March 2019	4	All	Addition: Applicable product series Revision: Reviewed and corrected entire documentation
		Chapter 16	Addition: Disposal
January 2019	3	All	Addition: Applicable product series Revision: Reviewed and corrected entire documentation
August 2018	2	All	Addition: Applicable product series Revision: Reviewed and corrected entire documentation
October 2016	1	All	Revision: Applicable product series
June 2016	-	-	First Edition

YASKAWA AC Drive Option
DeviceNet
Technical Manual

DRIVE CENTER (INVERTER PLANT)
2-13-1, Nishimiyaichi, Yukuhashi, Fukuoka, 824-8511, Japan
Phone: +81-930-25-2548 Fax: +81-930-25-3431
www.yaskawa.co.jp

YASKAWA ELECTRIC CORPORATION
New Pier Takeshiba South Tower, 1-16-1, Kaigan, Minatoku, Tokyo, 105-6891, Japan
Phone: +81-3-5402-4502 Fax: +81-3-5402-4580
www.yaskawa.co.jp

YASKAWA AMERICA, INC.
2121, Norman Drive South, Waukegan, IL 60085, U.S.A.
Phone: +1-800-YASKAWA (927-5292) or +1-847-887-7000 Fax: +1-847-887-7310
www.yaskawa.com

YASKAWA ELÉTRICO DO BRASIL LTDA.
777, Avenida Piraporinha, Diadema, São Paulo, 09950-000, Brasil
Phone: +55-11-3585-1100 Fax: +55-11-3585-1187
www.yaskawa.com.br

YASKAWA EUROPE GmbH
Hauptstraße 185, 65760 Eschborn, Germany
Phone: +49-6196-569-300 Fax: +49-6196-569-398
E-mail: info@yaskawa.eu.com
www.yaskawa.eu.com

YASKAWA ELECTRIC KOREA CORPORATION
18F, Hi Investment & Securities Building, 66 Yeoui-daero, Yeongdeungpo-gu, Seoul, 07325, Korea
Phone: +82-2-784-7844 Fax: +82-2-784-8495
www.yaskawa.co.kr

YASKAWA ASIA PACIFIC PTE. LTD
30A, Kallang Place, #06-01, 339213, Singapore
Phone: +65-6282-3003 Fax: +65-6289-3003
www.yaskawa.com.sg

YASKAWA ELECTRIC (THAILAND) CO., LTD.
59, 1F-5F, Flourish Building, Soi Ratchadapisek 18, Ratchadapisek Road, Huaykwang, Bangkok, 10310, Thailand
Phone: +66-2-017-0099 Fax: +66-2-017-0799
www.yaskawa.co.th

YASKAWA ELECTRIC (CHINA) CO., LTD.
22F, Link Square 1, No.222, Hubin Road, Shanghai, 200021, China
Phone: +86-21-5385-2200 Fax: +86-21-5385-3299
www.yaskawa.com.cn

YASKAWA ELECTRIC (CHINA) CO., LTD. BEIJING OFFICE
Room 1011, Tower W3 Oriental Plaza, No. 1, East Chang An Avenue,
Dong Cheng District, Beijing, 100738, China
Phone: +86-10-8518-4086 Fax: +86-10-8518-4082

YASKAWA ELECTRIC TAIWAN CORPORATION
12F, No. 207, Section 3, Beishin Road, Shindian District, New Taipei City 23143, Taiwan
Phone: +886-2-8913-1333 Fax: +886-2-8913-1513 or +886-2-8913-1519
www.yaskawa.com.tw

YASKAWA INDIA PRIVATE LIMITED
#17/A, Electronics City, Hosur Road, Bengaluru, 560 100 (Karnataka), India
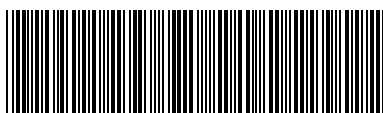Phone: +91-80-4244-1900 Fax: +91-80-4244-1901
www.yaskawaindia.in

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YASKAWA ELECTRIC CORPORATION