

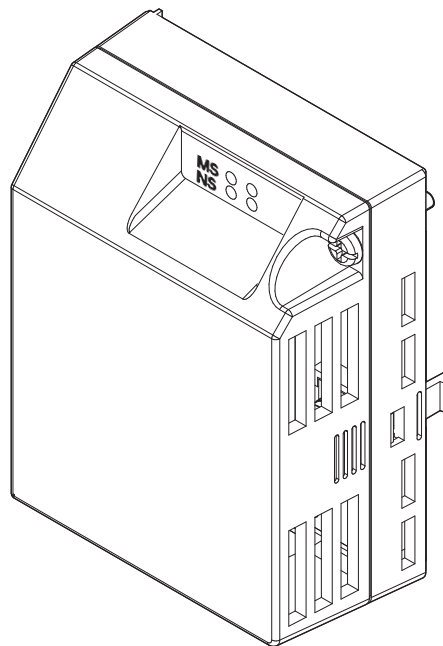


YASKAWA

# YASKAWA AC Drive-V1000 Option CompoNet Technical Manual

Type SI-M3/V

To properly use the product, read this manual thoroughly and retain for easy reference, inspection, and maintenance. Ensure the end user receives this manual.



---

Copyright © 2010 YASKAWA ELECTRIC CORPORATION

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



# Table of Contents

---

<b>1 PREFACE AND SAFETY</b> .....	<b>4</b>
<b>2 PRODUCT OVERVIEW</b> .....	<b>7</b>
<b>3 RECEIVING</b> .....	<b>8</b>
<b>4 OPTION COMPONENTS</b> .....	<b>9</b>
<b>5 INSTALLATION PROCEDURE</b> .....	<b>13</b>
<b>6 RELATED PARAMETERS</b> .....	<b>22</b>
<b>7 CONFIGURING COMPONET MESSAGING</b> .....	<b>24</b>
<b>8 OUTPUT ASSEMBLIES (DRIVE CONSUMES)</b> .....	<b>25</b>
<b>9 INPUT ASSEMBLIES (DRIVE PRODUCES)</b> .....	<b>38</b>
<b>10 GENERAL CLASS OBJECTS</b> .....	<b>53</b>
<b>11 VENDOR-SPECIFIC (YASKAWA) CLASS OBJECTS</b> .....	<b>63</b>
<b>12 TROUBLESHOOTING</b> .....	<b>65</b>
<b>13 SPECIFICATIONS</b> .....	<b>68</b>

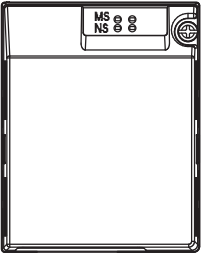
# 1 Preface and Safety

Yaskawa manufactures products used as components in a wide variety of industrial systems and equipment. The selection and application of Yaskawa products remain the responsibility of the equipment manufacturer 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 systems or equipment designed to incorporate a product 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 Yaskawa 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

The following manuals are available for the CompoNet option:

### CompoNet Option

	<b>Yaskawa AC Drive V1000-Series Option SI-M3/V CompoNet Installation Manual</b> <b>Manual No: TOBP C730600 54</b>	Read this manual first. The installation manual is packaged with the option and contains information required to install the option and set up related drive parameters.
	<b>Yaskawa AC Drive V1000-Series Option SI-M3/V CompoNet Technical Manual</b> <b>Manual No: SIEP C730600 54</b>	The technical manual contains detailed information about the option. In the U.S., access <a href="http://www.yaskawa.com">http://www.yaskawa.com</a> to obtain the technical manual. Customers in other areas should contact a Yaskawa representative.

### Yaskawa Drive

	<b>Yaskawa AC Drive V1000 Quick Start Guide</b>	The drive manuals cover basic installation, wiring, operation procedures, functions, troubleshooting, and maintenance information. The manuals also include important information about parameter settings and drive tuning. Access these sites to obtain Yaskawa instruction manuals: U.S.: <a href="http://www.yaskawa.com">http://www.yaskawa.com</a> Europe: <a href="http://www.yaskawa.eu.com">http://www.yaskawa.eu.com</a> Japan: <a href="http://www.e-mechatronics.com">http://www.e-mechatronics.com</a> Other areas: contact a Yaskawa representative. For questions, contact your local Yaskawa sales office or the nearest Yaskawa representative.
	<b>Yaskawa AC Drive V1000 Technical Manual</b>	

## ◆ Terms

- Note:** Indicates supplemental information that is not related to safety messages
- Drive:** Yaskawa AC Drive -V1000 Series
- Option:** Yaskawa AC Drive - V1000 Series SI-M3/V CompoNet Option
- ≥ 1020:** Indicates a drive feature or function that is only available in drive software version 1020 or greater

## ◆ Registered Trademarks

- CompoNet is a trademark of the ODVA.
- All trademarks are the property of their respective owners.

## ◆ Supplemental Safety Information

Read and understand this manual before installing, operating, or servicing this option. Install the option according to this manual and local codes.

The following conventions indicate safety messages in this manual. Failure to heed these messages could cause fatal injury or damage products and related equipment and systems.

### DANGER

Indicates a hazardous situation, which, if not avoided, will result in death or serious injury.

### WARNING

Indicates a hazardous situation, which, if not avoided, could result in death or serious injury.

### CAUTION

Indicates a hazardous situation, which, if not avoided, could result in minor or moderate injury.

### NOTICE

Indicates an equipment damage message.

## ■ General Safety

### General Precautions

- The diagrams in this book may include options and drives without covers or safety shields to illustrate details. Be sure to reinstall covers or shields before operating any devices. Use the option according to the instructions described in this manual.
- Any illustrations, photographs, or examples used in this manual are provided as examples only and may not apply to all products to which this manual is applicable.
- 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.
- When ordering new copies of the manual, contact a Yaskawa representative or the nearest Yaskawa sales office and provide the manual number shown on the front cover.

### DANGER

**Heed the safety messages in this manual.**

Failure to comply will result in death or serious injury.

The operating company is responsible for any injuries or equipment damage resulting from failure to heed the warnings in this manual.

### NOTICE

**Do not expose the drive or option to halogen group disinfectants.**

Failure to comply may cause damage to the electrical components in the option.

Do not pack the drive in wooden materials that have been fumigated or sterilized.

Do not sterilize the entire package after the product is packed.

**Do not modify the drive or option circuitry.**

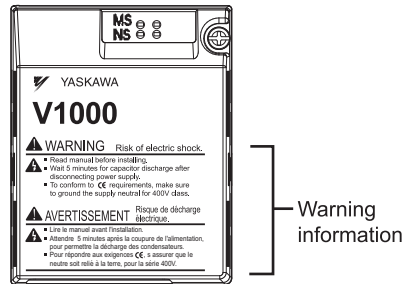
Failure to comply could result in damage to the drive or option and will void warranty.

Yaskawa is not responsible for any modification of the product made by the user. This product must not be modified.

### ■ Option Unit Warning Labels



Warning information is displayed on the option unit as shown in the figure below. Follow all warnings and safety instructions when using the product.

When using the drive in an area that may require displaying warning information in Japanese or Chinese, a warning label is provided with the option. This sticker can be placed over the English and French warnings on the front of the option.





### ■ Warning Contents

#### **WARNING** Risk of electric shock.

-  ■ Read manual before installing.
-  ■ Wait 5 minutes for capacitor discharge after disconnecting power supply.
- To conform to **CE** requirements, make sure to ground the supply neutral for 400V class.

#### **AVERTISSEMENT** Risque de décharge électrique.

-  ■ Lire le manuel avant l'installation.
-  ■ Attendre 5 minutes après la coupure de l'alimentation, pour permettre la décharge des condensateurs.
- Pour répondre aux exigences **CE**, s'assurer que le neutre soit relié à la terre, pour la série 400V.

## 2 Product Overview

### ◆ About This Product

The CompoNet option provides a communications connection between the drive and an ODVA CompoNet network. The SI-M3/V CompoNet Option connects the drive to a CompoNet network and facilitates the exchange of data.

This manual explains the handling, installation and specifications of this product.

CompoNet is a communications link to connect industrial devices (such as sensors and variable frequency drives) as well as masters (such as programmable controllers) to a CIP network.

By installing the CompoNet Option to a drive, it is possible to do the following from a CompoNet master device:

- operate the drive
- monitor the operation status of the drive
- change parameter settings.

### ◆ Applicable Models

The CompoNet Option can be used with the drive models in *Table 1*.

**Table 1 Applicable Models**

Drive	Software Version <1>
CIMR-V□□A□□□□AA□	≥ 1020
CIMR-V□□A□□□□BA□	≥ 1020
CIMR-V□□A□□□□FA□	≥ 1020

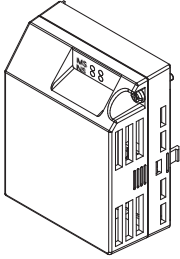
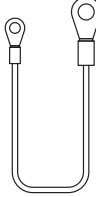
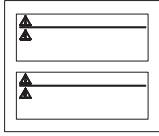
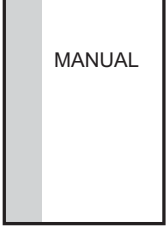
<1> Refer to “PRG” on the drive nameplate for the software version number.

### 3 Receiving

Please perform the following tasks after receiving the option:

- Inspect the option for damage. Contact the shipper immediately if the option appears damaged upon receipt.
- Verify receipt of the correct model by checking the model number printed on the option nameplate (*Refer to Top Views of Option on page 9* for nameplate positioning).
- Contact your supplier if you have received the wrong model or the option does not function properly.

#### ◆ Option Package Contents

Description:	Option Unit	Ground Wire	Warning Labels	Installation Manual
-				
Quantity:	1	4	1	1

#### ◆ Tools Required for Installation

A Phillips screwdriver (M3 metric/#1, #2 U.S. standard size\*) is required to install the option and remove drive front covers.

\*Screw sizes vary by drive capacity. Select a screwdriver appropriate for the drive capacity.

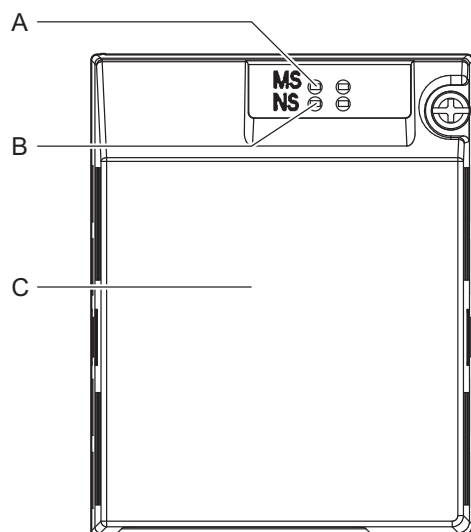
**Note:** Tools and parts required to prepare option networking cables for wiring are not listed in this manual. Refer to the ODVA website for more information.



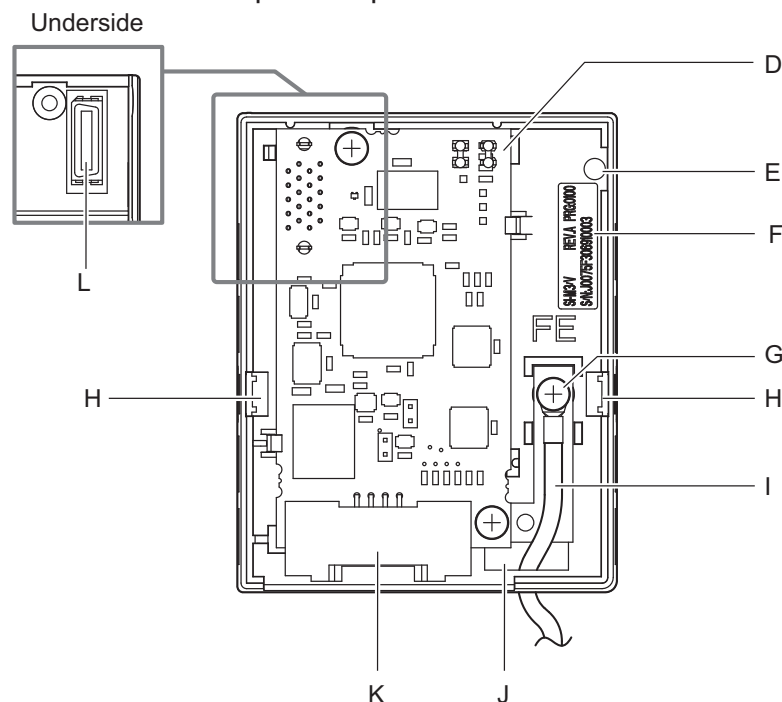
## 4 Option Components

### ◆ SI-M3/V CompoNet Option

CompoNet Option with cover attached



CompoNet Option with cover removed



- A – LED (MS) <1>
- B – LED (NS) <1>
- C – Option cover
- D – CompoNet PCB
- E – Screw hole (attaching option cover)
- F – Nameplate

- G – Functional Earth cable connection (FE)
- H – Mounting tabs
- I – Ground wire <2>
- J – Pass-through hole for wire
- K – Communication cable connector
- L – Option connector

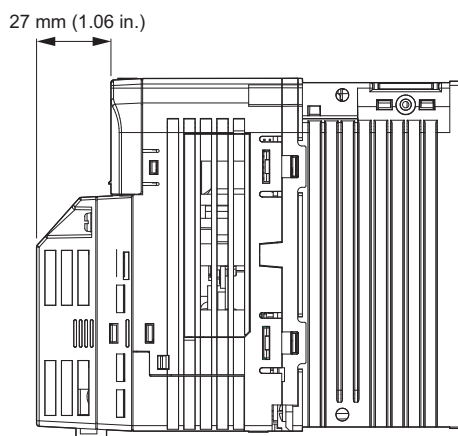
<1> Refer to *Option LED Display on page 11* for details on the LEDs.

<2> The ground wire provided in the option shipping package must be connected during installation.

Figure 1 Top Views of Option

### ◆ Dimensions

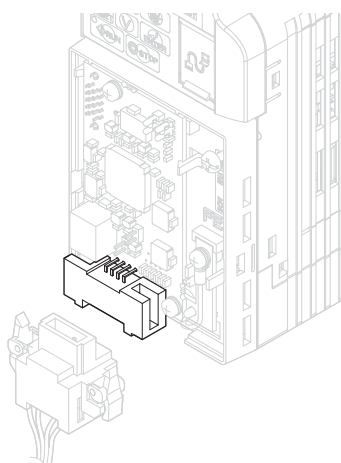
The installed option adds 27 mm (1.06 in.) to the total depth of the drive.



**Figure 2 Dimensions**

### ◆ Communication Cable Connector

The communication connector on the option is a 4-pin pluggable female connector. This connector is the connection point for a customer supplied CompoNet network communication cable.



**Figure 3 Communication Cable Connector**

**Table 2 Communication Cable Connector Descriptions**

Pin	Cable Color	Signal	Description
1	Red	BS+	Communications DC+24V </>
2	White	BDH	Comm Data High
3	Blue	BDL	Comm Data Low
4	Black	BS-	Network common </>

</> Not used with the CompoNet Option.

## ◆ Option LED Display

The option has two bicolor, red/green LEDs: one for Module Status (MS) and one for Network Status (NS).

The operational states of the LEDs after completing the CompoNet power-up diagnostic LED sequence are described in [Table 4](#). Wait at least 2 seconds for the power-up diagnostic process to complete before verifying the states of the LEDs.

**Table 3 Option LED States**

Name	Indication		Operating Status	Remarks
	Color	Status		
MS	–	OFF	Power supply OFF	Power is not being supplied to the drive.
	Green	ON	Option operating	The option is operating normally.
	Green	Flashing	Option initializing	Incorrect settings must be corrected.
	Red	ON	Fatal error occurred	A fatal (irrecoverable) error occurred in the option.
	Red	Flashing	Non-fatal error occurred	A non-fatal (recoverable) error occurred.
	Green/Red	Flashing	Device self-test	Device in self-test mode.
NS	–	OFF	Offline or Power supply OFF	Device is not online. • The transmission speed is being checked. • Power is not being supplied.
	Green	ON	Online communications established	Device is online with connections in the established state. I/O connection is established with other nodes.
	Green	Flashing	Online communications not established	Device is online, but has no connections in the established state. The transmission speed is determined, but the I/O connection with other nodes is not established.
	Red	ON	Communications error	An error occurred disabling CompoNet communications. • MAC ID duplication • Bus off detected
	Red	Flashing	Communications time-out	A communications time-out occurred with the master.

## ◆ Power-Up Diagnostics

An LED test is performed each time the drive is powered up. The initial boot sequence may take several seconds. After the LEDs have completed the diagnostic LED sequence as shown in [Table 4](#), the option is successfully initialized. The LEDs then assume operational conditions as shown in [Table 3](#).

**Table 4 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	-

## ◆ Option MAC ID

The option is a word MIX slave. The maximum allowable MAC ID differs depending on the settings for F6-52 (PCA setting) and F6-53 (PPA setting). The maximum MAC ID is obtained by the following equation:

Maximum MAC ID = 64 - (Number of words for the I/O size of PCA or PPA)

**Note:** Use the larger value between PCA or PPA for the equation.

Example: When F6-52 = 21 (2 words) and F6-53 = 71 (2 words), the maximum allowable MAC ID is 62.

### ■ Parameter F6-40, MAC ID Setting 0 to 63

The option MAC ID is set by drive parameter F6-40. MAC ID settings between 0~63 are considered a valid MAC IDs.

The option reads the MAC ID value from parameter F6-40 upon power-up and upon a network reset.

### ◆ Option Baud Rate

The option supports standard baud rates of 93.75 kbps, 1.5 Mbps, 3 Mbps, and 4 Mbps.

**Table 5 Parameter F6-41 Baud Rate Setting**

Description	Value
93.75 kbps	0
Auto Detect	1
1.5 Mbps	2
3 Mbps	3
4 Mbps	4

#### ■ Auto Detect Baud Rate Sensing (F6-41 = 1)

Setting parameter F6-41 to 1 enables automatic baud rate detection and allows the option to automatically determine the baud rate of the CompoNet network.

Connect the master to the CompoNet network to automatically detect the baud rate. While the option is detecting the baud rate, option LEDs will be (NS=OFF and MS=solid green).

## 5 Installation Procedure

### ◆ Section Safety

#### DANGER

##### Electrical Shock Hazard

**Do not connect or disconnect wiring while the power is on.**

Failure to comply will result in death or serious injury.

Disconnect all power to the drive, wait at least five minutes after all indicators are off, measure the DC bus voltage to confirm safe level, and check for unsafe voltages before servicing. The internal capacitor remains charged after the power supply is turned off. The charge indicator LED will extinguish when the DC bus voltage is below 50 Vdc.

#### WARNING

##### Electrical Shock Hazard

**Do not remove the option cover while the power is on.**

Failure to comply could result in death or serious injury.

The diagrams in this section may include options and drives without covers or safety shields to show details. Be sure to reinstall covers or shields before operating any devices. Use the option according to the instructions described in this manual.

**Do not allow unqualified personnel to use equipment.**

Failure to comply could result in death or serious injury.

Maintenance, inspection, and replacement of parts must be performed only by authorized personnel familiar with installation, adjustment, and maintenance of this product.

**Do not touch circuit boards while the power to the drive is on.**

Failure to comply could result in death or serious injury.

**Do not use damaged wires, stress the wiring, or damage the wire insulation.**

Failure to comply could result in death or serious injury.

##### Fire Hazard

**Tighten all terminal screws to the specified tightening torque.**

Loose electrical connections could result in death or serious injury by fire due to overheating of electrical connections.

#### NOTICE

##### Damage to Equipment

**Observe proper electrostatic discharge (ESD) procedures when handling the option card, drive, and circuit boards.**

Failure to comply may result in ESD damage to circuitry.

**Never shut the power off while the drive is running or outputting voltage.**

Failure to comply may cause the application to operate incorrectly or damage the drive.

**Do not operate damaged equipment.**

Failure to comply may cause further damage to the equipment.

Do not connect or operate any equipment with visible damage or missing parts.

### NOTICE

**Do not use unshielded cable for control wiring.**

Failure to comply may cause electrical interference resulting in poor system performance.

Use shielded twisted-pair wires and ground the shield to the ground terminal of the drive.

**Properly connect all pins and connectors.**

Failure to comply may prevent proper operation and possibly damage equipment.

**Check wiring to ensure that all connections are correct after installing the option and connecting any other devices.**

Failure to comply may result in damage to the option.

### ◆ Prior to Installing the Option

Prior to installing the option, wire the drive, make necessary connections to the drive terminals, and verify that the drive functions normally without the option installed. Refer to the Quick Start Guide packaged with the drive for information on wiring and connecting the drive.

### ◆ Installing the Option

Refer to the instructions below to install the option.

1. Shut off power to the drive, wait at least five minutes after confirming the DC bus voltage becomes safe level, then loosen the screw that fastens the front cover in place and remove the front cover. This drive front cover will be replaced by the option cover. Cover removal varies depending on drive size.

**DANGER!** *Electrical Shock Hazard. Do not connect or disconnect wiring while the power is on. Failure to comply will result in death or serious injury. Before installing the option, disconnect all power to the drive. The internal capacitor remains charged even after the power supply is turned off. The charge indicator LED will extinguish when the DC bus voltage is below 50 Vdc. To prevent electric shock, wait at least five minutes after all indicators are off and measure the DC bus voltage level to confirm safe level.*

**NOTICE:** *Damage to Equipment. Observe proper electrostatic discharge procedures (ESD) when handling the option, drive, and circuit boards. Failure to comply may result in ESD damage to circuitry.*

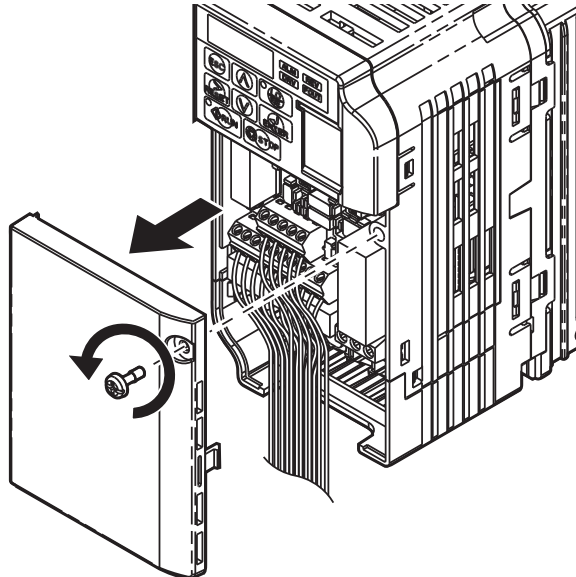


Figure 4 Remove the Front Cover

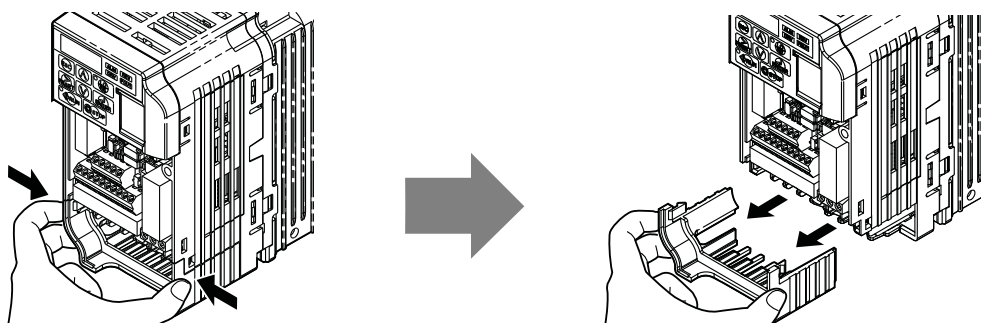
- The remaining installation steps differ based on drive model. Find the drive model number on the drive nameplate and refer to the step indicated in [Table 6](#) based on your model number.

**Table 6 Installation Steps Based on Drive Model**

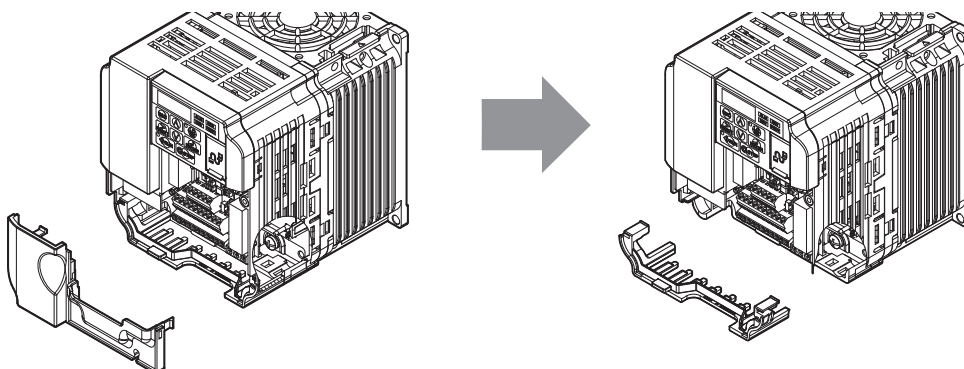
Enclosure Type	Drive Model	Steps to Follow	Page
IP20/Open-Chassis	CIMR-V□□A□□□□B	3. 4. <2>	15, 16
IP20/NEMA Type 1 <1>	CIMR-V□□A□□□□F	6. 7. 8. <2>	16, 17, 17

<1> Installing the option on an IP20/NEMA Type 1 enclosure drive voids NEMA Type 1 protection while maintaining IP20 conformity  
 <2> After performing each step, proceed to Step 9.

- For IP20/Open-Chassis models CIMR-V□□A□□□□B, Remove the bottom cover of the drive by applying pressure to the tabs on each side of the bottom cover. Pull the bottom cover away from the drive while pushing in on the tabs to release the cover from the drive. Refer to [Figure 5](#) for details. Refer to [Figure 6](#) for drive models CIMR-V□□BA0006B to BA0018B, 2A0008B to 2A0069B, and 4A0001B to 4A0038B, which require removing the terminal cover prior to removing the bottom cover.



**Figure 5 Remove the Bottom Cover on an IP20/Open-Chassis Drive (Models CIMR-V□□BA0001B to BA0003B and 2A0001B to 2A0006B)**

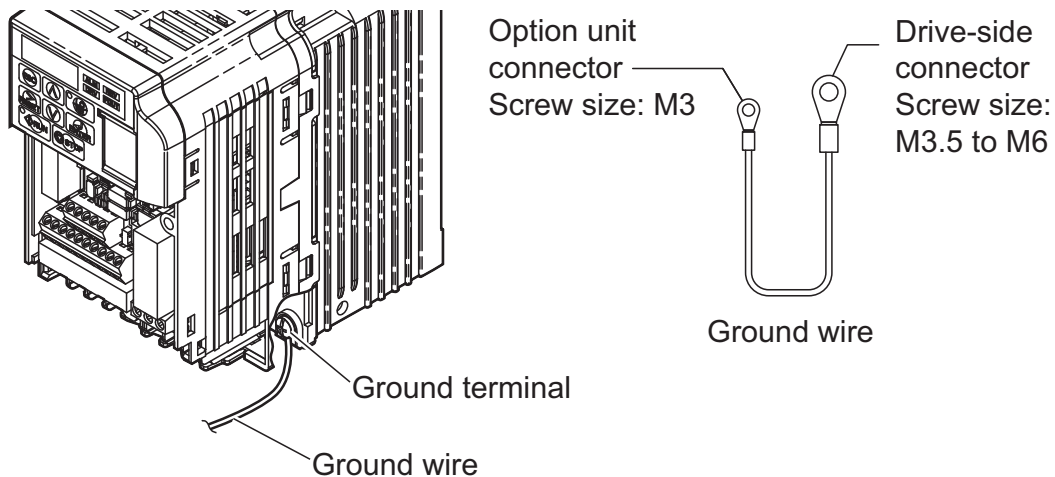


**Figure 6 Remove the Terminal Cover and Bottom Cover on an IP20/Open-Chassis Drive (Models CIMR-V□□BA0006B to BA0018B; 2A0008B to 2A0069B; 4A0001B to 4A0038B)**

## 5 Installation Procedure

- On IP20/Open-Chassis models, connect the drive-side of the ground wire to the drive ground terminal.

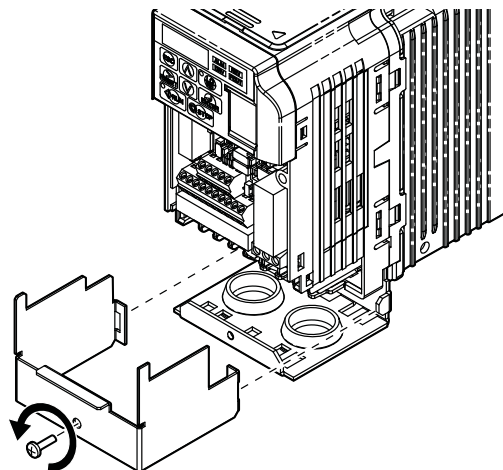
**Note:** The four different ground wires packaged with the option connect the option to different drive models. Select the proper ground wire depending on drive size.



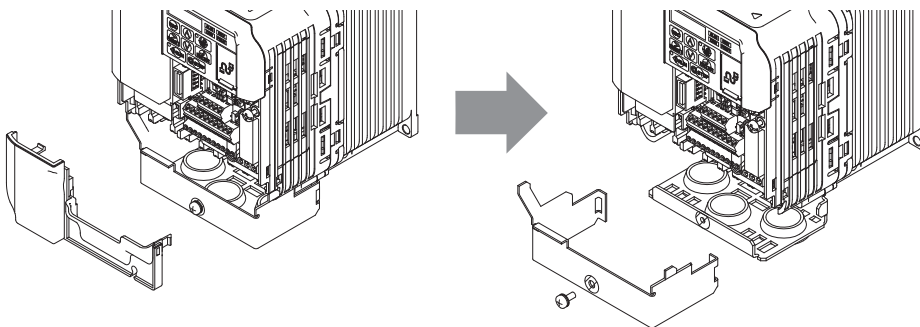
**Figure 7 Connect the Ground Wire on an IP20/Open-Chassis Drive**

- For IP20/Open-Chassis models, go to Step 9. on page 18.
- For IP20/NEMA Type 1 Enclosure models CIMR-V□□A□□□□F, loosen the screw on the front of the NEMA Type 1 terminal cover and remove it from the drive. Refer to [Figure 8](#) for details. Refer to [Figure 9](#) for drive models CIMR-V□BA0006F to BA0018F, 2A0008F to 2A0069F, and 4A0001F to 4A0038F, which require removing the plastic terminal cover prior to removing NEMA Type 1 terminal cover.

**Note:** Installing the option on an IP20/NEMA Type 1 enclosure drive voids NEMA Type 1 protection while maintaining IP20 conformity.



**Figure 8 Remove the NEMA Type 1 Terminal Cover**



**Figure 9 Remove the Terminal Cover on an IP20/NEMA Type 1 Drive (Models CIMR-V□BA0006F to BA0018F; 2A0008F to 2A0069F; 4A0001F to 4A0038F)**



7. Loosen the screws attaching the NEMA Type 1 conduit bracket to the drive to remove the NEMA Type 1 conduit bracket.

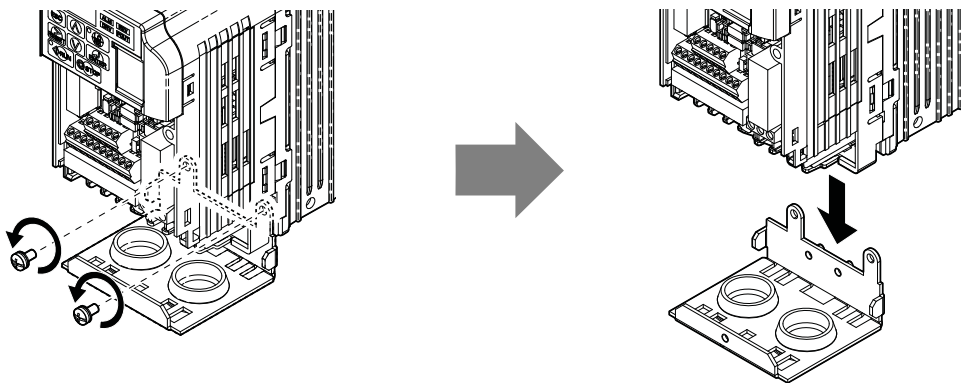


Figure 10 Remove the NEMA Type 1 Conduit Bracket

8. On NEMA Type 1 enclosure drives, the screw for the drive ground terminal also acts as one of the screws that attaches the NEMA Type 1 conduit bracket to the drive. Reattach the NEMA Type 1 conduit bracket according to [Figure 11](#) and connect the drive-side of the ground wire to the drive ground terminal.

**Note:** The four different ground wires packaged with the option connect the option to different drive models. Select the proper ground wire depending on drive size.

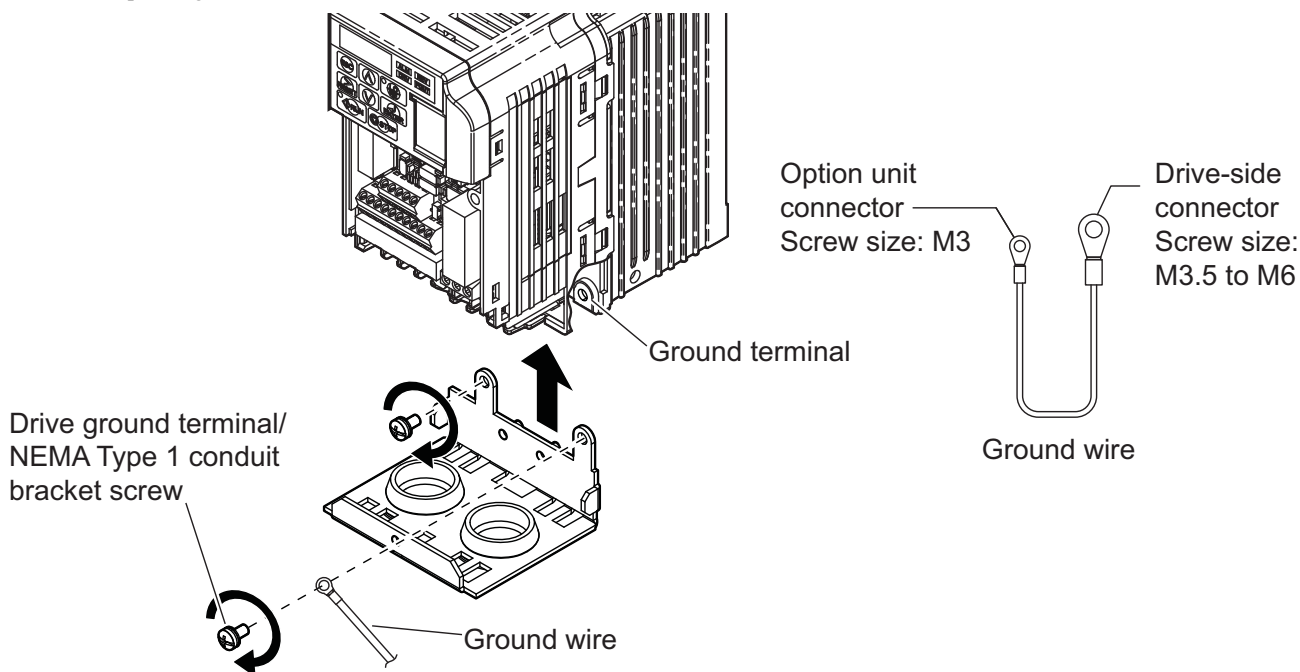
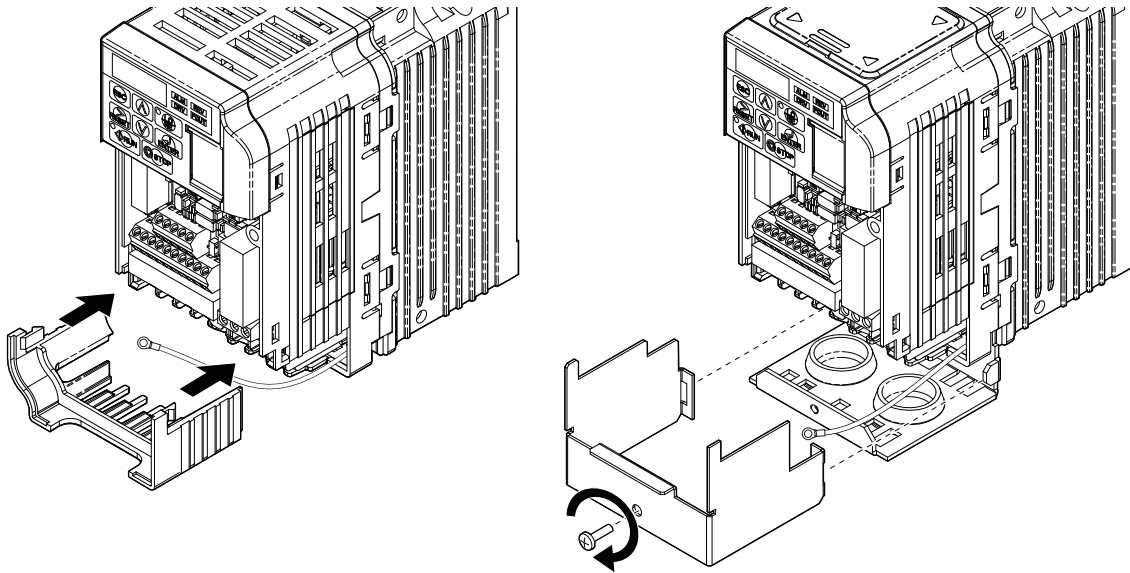


Figure 11 Reattach the NEMA Type 1 Conduit Bracket and Connect the Ground Wire

9. Reattach the bottom cover. Keep the ground wire inside of the bottom cover when reattaching.



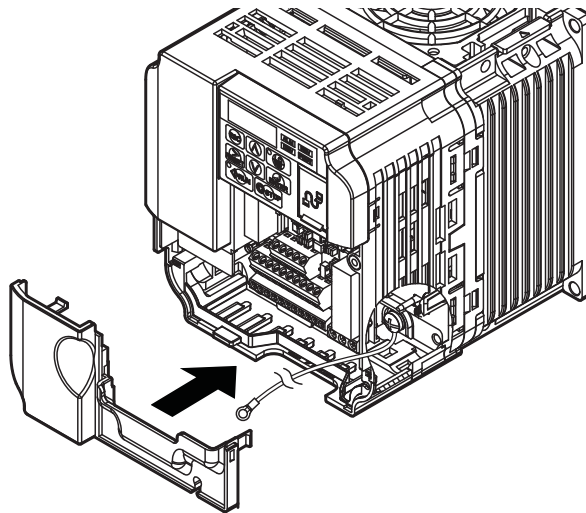
IP20/Open-Chassis

IP20/NEMA Type 1 Enclosure

**Figure 12 Reattach the Bottom Cover**

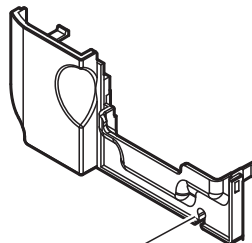
10. On models CIMR-V□BA0006□ to BA0018□, 2A0008□ to 2A0069□, and 4A0001□ to 4A0038□, reattach the terminal cover.

Refer to [Figure 14](#) for drive models CIMR-V□BA0006□ to BA0018□, 2A0008□ to 2A0020□, and 4A0001□ to 4A0011□, which require routing the ground wire through the provided notch when reinstalling the terminal cover.



**Figure 13 Reattach the Terminal Cover**

(Models CIMR-V□BA0006□ to BA0018□; 2A0008□ to 2A0069□; 4A0001□ to 4A0038□)



Ground wire  
routing notch

**Figure 14 Terminal Cover Ground Wire Notch**

(Models CIMR-V□BA0006□ to BA0018□; 2A0008□ to 2A0020□; 4A0001□ to 4A0011□)

11. Pass the ground wire through the inside of the drive bottom cover and into the through-hole for the ground wire at the front of the option.

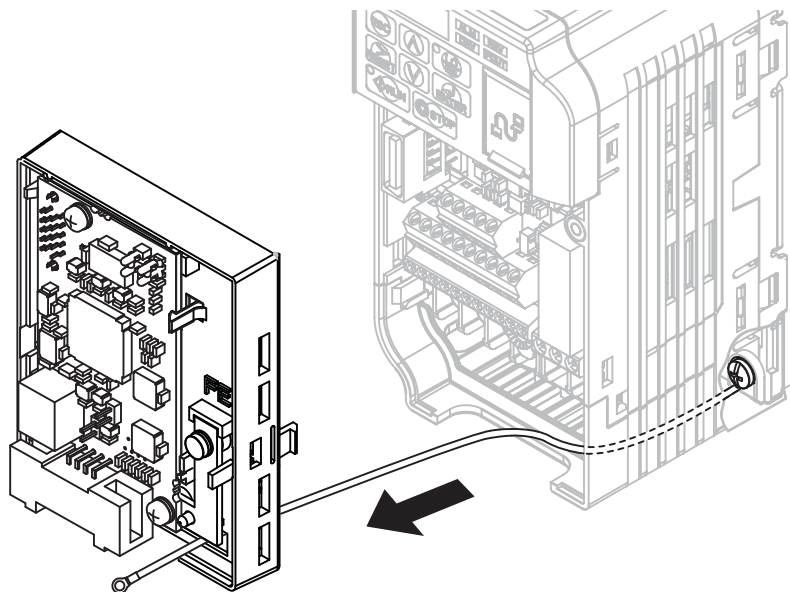


Figure 15 Ground Wire Routing

12. Attach the option to the drive. Properly seat the tabs on the left and right sides of the option to the drive case.

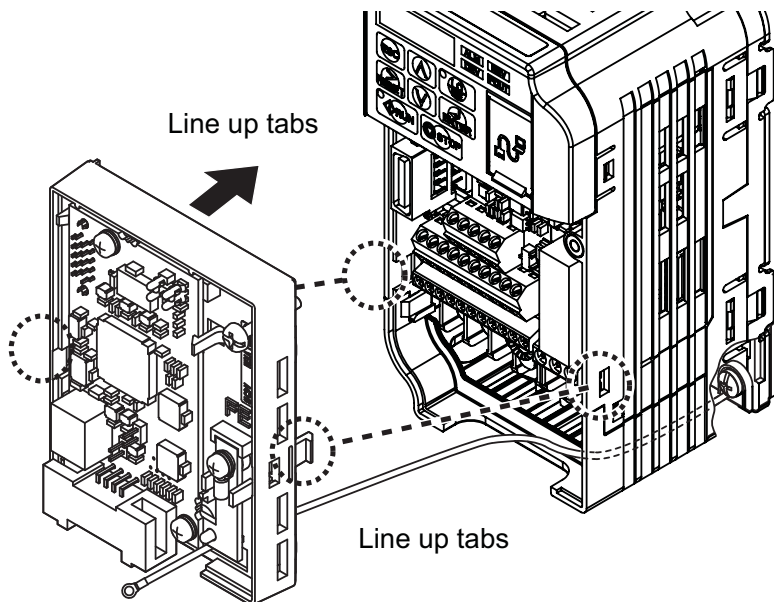
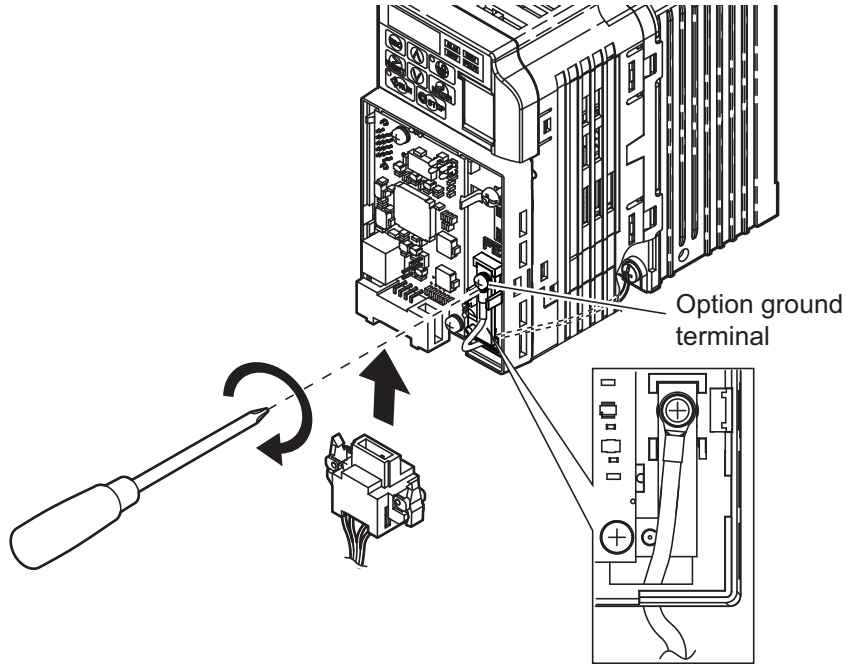


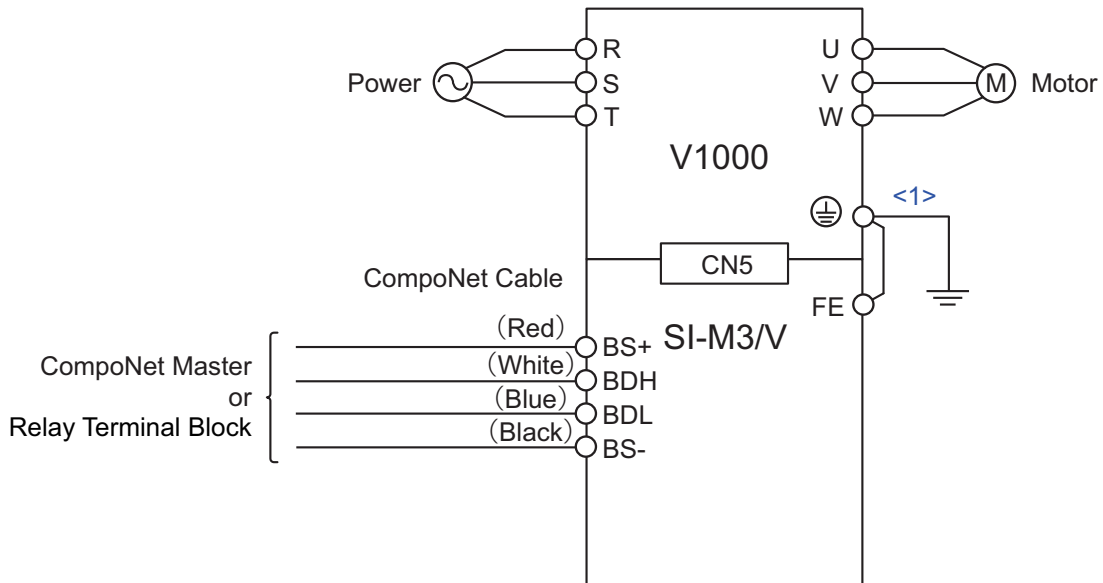
Figure 16 Connect the Option

## 5 Installation Procedure

13. Connect the ground wire at the option ground terminal. Tighten the screw to 0.5 ~ 0.6 Nm or (4.4 ~ 5.3 in lbs) using an M3 Phillips screwdriver. Firmly plug the CompoNet cable connector into the option.



**Figure 17 Connect the Ground Wire and CompoNet Cable Connector to the Option Connection Diagram**



**Figure 18 Wiring Diagram**

<1> The ground wire provided in the option shipping package must be connected during installation.

14. Attach the option cover by aligning the tabs with the mounting holes, seat the front cover into place, and tighten the screw on the front.

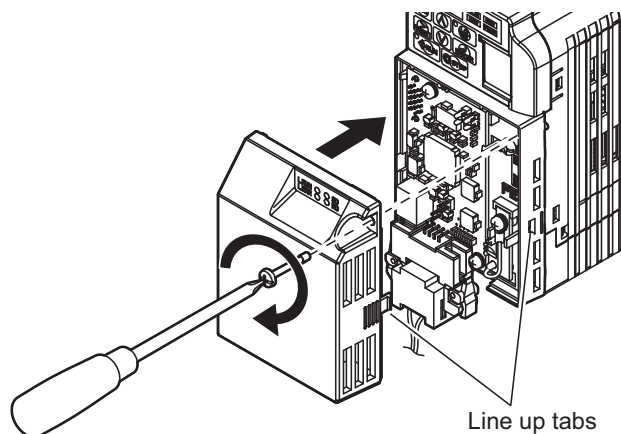


Figure 19 Attach the Option Cover

- Note:**
1. Take proper precautions when wiring the option so that the front covers will easily fit back onto the drive. Make sure no cables are pinched between the front covers and the drive when replacing the covers.
  2. A replacement safety label is provided when using the drive in areas that may require displaying warning information in Japanese or Chinese. This label can be placed over the English and French warnings on the option cover.
15. Set drive parameters in [Table 9](#) for proper option performance.

## ◆ Network Configuration Restrictions

Some restrictions apply to CompoNet network configuration and vary in accordance with the type of cable being used. Refer to the ODVA website at [www.odva.org](http://www.odva.org) for more information.

### ■ When Using Round Cable I

Table 7 Wiring Length when Using Round Cable I

Communication Speed	Max. Length of Trunk Line	Max. Length of Branch Line	Total Length of Branch Lines	Max. No. of Slaves per Branch Line	Max. Length of Sub-branch Line	Total Length of Sub-branch Lines
4 Mbps	30 m	0 m	0 m	0	0 m	0 m
3 Mbps	30 m	0.5 m	8 m	1	0 m	0 m
1.5 Mbps	100 m	0 m	0 m	0	0 m	0 m
	30 m	2.5 m	25 m	3	0 m	0 m
93.75 kbps	500 m	6 m	120 m	1	0 m	0 m

### ■ When Using Round Cable II and Flat Cable I/II

Table 8 Wiring Length when Using Round Cable II and Flat Cable I/II

Communication Speed	Max. Length of Trunk Line	Max. Length of Branch Line	Total Length of Branch Lines	Max. No. of Slaves per Branch Line	Max. Length of Sub-branch Line	Total Length of Sub-branch Lines
4 Mbps	30 m	0 m	0 m	0	0 m	0 m
3 Mbps	30 m	0.5 m	8 m	1	0 m	0 m
1.5 Mbps	30 m	2.5 m	25 m	3	0.1 m	2 m
93.75 kbps	200 m	If total wiring length is 200 m or shorter, no limits apply.				

### ■ Termination Resistor Connection

Install a termination resistor when connecting the option to the end of a trunk or sub-trunk line (121  $\Omega$ ,  $\pm 1\%$ , 1/4W).

## ◆ EDS Files

For easy network implementation of drives equipped with the SI-M3/V option, an EDS file can be obtained from:

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

Other areas: Contact a Yaskawa representative.

## 6 Related Parameters

The following parameters are used to set up the drive for operation with the option.

Confirm proper setting of the all parameters in [Table 9](#) before starting network communications.

**Table 9 Related Parameters**

No. (Addr. Hex)	Name	Description	Values
b1-01 (180) </>	Frequency Reference Selection	Selects the frequency reference input source 0: Operator - Digital preset speed d1-01 to d1-17 1: Terminals - Analog input terminal A1 or A2 2: MEMOBUS/Modbus communications 3: Option PCB 4: Pulse Input (Terminal RP)	Default: 1 Range: 0 to 4 (Set to 3 for CompoNet)
b1-02 (181) </>	Run Command Selection	Selects the run command input source 0: Digital Operator - RUN and STOP keys 1: Digital input terminals S□ 2: MEMOBUS/Modbus communications 3: Option PCB	Default: 1 Range: 0 to 3 (Set to 3 for CompoNet)
F6-01 (3A2)	Operation Selection after Communications Error	Determines drive response when a bUS error is detected during communications with the option 0: Ramp to Stop 1: Coast to Stop 2: Fast-Stop 3: Alarm Only <2>	Default: 1 Range: 0 to 3
F6-02 (3A3)	External Fault Detection Conditions (EF0)	Sets the condition for external fault detection (EF0) 0: Always detected 1: Detected only during operation	Default: 0 Range: 0, 1
F6-03 (3A4)	Stopping Method for External Fault from Communication Option	Determines drive response for external fault input (EF0) detection during CompoNet communication 0: Ramp to Stop 1: Coast to Stop 2: Fast-Stop 3: Alarm Only <2>	Default: 1 Range: 0 to 3
F6-07 (3A8)	NetRef/ComRef Selection Function	0: Multi-step speed reference disabled 1: Multi-step speed reference allowed	Default: 1 Range: 0, 1
F6-08 (36A)	Reset Communication Related Parameters	Determines which F6-□□ and F7-□□ parameters are reset to default values when the drive is initialized using A1-03. 0: Do not reset parameters 1: Reset parameters	Default: 0 Range: 0, 1
F6-40 (3D5) </>	MAC ID	Selects the drive MAC address <b>Note:</b> Used in the CompoNet Link Object	Default: 0 Min: 0 Max: 63
F6-41 (3D6)	Baud Rate	CompoNet communication speed 0: 93.75 kbps 1: Detect automatically 2: 1.5 Mbps 3: 3 Mbps 4: 4 Mbps 5 to 255: Unused <b>Note:</b> Used in the CompoNet Link Object	Default: 1 Range: 0 to 4
F6-52 (3C3) </>	PCA setting	I/O Polled Consuming Assembly data instance <b>Note:</b> Used in the Connection Object	Default: 21 Min: 0 Max: 255
F6-53 (3C4) </>	PPA setting	I/O Polled Producing Assembly data instance <b>Note:</b> Used in the Connection Object	Default: 71 Min: 0 Max: 255
F6-56 (3D7)	Speed Scaling	Sets the scaling factor for the Speed Monitor in the CompoNet Object Class 2A hex <b>Note:</b> Used in the AC/DC Drive Object	Default: 0 Min: -15 Max: 15

No. (Addr. Hex)	Name	Description	Values
F6-57 (3D8)	Current Scaling	Sets the scaling factor for the Output Current Monitor in the CompoNet Object Class 2A hex <b>Note:</b> Used in the AC/DC Drive Object	Default: 0 Min: -15 Max: 15
F6-58 (3D9)	Torque Scaling	Sets the scaling factor for the Torque Monitor in the CompoNet Object Class 2A hex <b>Note:</b> Used in the AC/DC Drive Object	Default: 0 Min: -15 Max: 15
F6-59 (3DA)	Power Scaling	Sets the scaling factor for the Power Monitor in the CompoNet Object Class 2A hex <b>Note:</b> Used in the AC/DC Drive Object	Default: 0 Min: -15 Max: 15
F6-60 (3DB)	Voltage Scaling	Sets the scaling factor for the Voltage Monitor in the CompoNet Object Class 2A hex <b>Note:</b> Used in the AC/DC Drive Object	Default: 0 Min: -15 Max: 15
F6-61 (3DC)	Time Scaling	Sets the scaling factor for the Time Monitor in the CompoNet Object Class 2A hex <b>Note:</b> Used in the AC/DC Drive Object	Default: 0 Min: -15 Max: 15
U6-80 (7B0)	MAC ID from Network	Actual MAC address <b>Note:</b> Used in the CompoNet Link Object	Min: 0 Max: 63
U6-81 (7B1)	Baud Rate from Network	CompoNet actual communication speed 0: 93.75 kbps 2: 1.5 Mbps 3: 3 Mbps 4: 4 Mbps <b>Note:</b> Used in the CompoNet Link Object	Default: 0 Range: 0 to 4
U6-82~ U6-99	Not Used	–	–

- <1> To start and stop the drive with the CompoNet master device using serial communications, set b1-02 to 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 to 3 or set the “Net Reference” bit in the assemblies or AC/DC object.
- <2> Setting F6-01 or F6-03 to 3 will allow the drive to continue to operate after detecting a fault. When allowing the drive to continue operation after fault detection, be sure to take proper safety measures such as installing an emergency stop switch.
- <3> All MAC addresses must be unique.
- <4> Setting unavailable values will initialize Polled Consuming Assembly (PCA) and Polled Producing Assembly (PPA).

## 7 Configuring CompoNet Messaging

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

### ◆ Drive Configuration on CompoNet

#### ■ Support Message Types

Explicit Messages: Fragmentation is not supported.

Polled I/O Messages: Fragmentation is not supported. Up to 8 Bytes can be input and output.

#### ■ Polled Configuration

Configure the drive CompoNet Polled connection before receiving commands from a Master device. The two parameters that must be configured are:

- F6-52: Polled Consuming Assembly (PCA)  
**Note:** Output assembly consumed by the drive.
- F6-53: Polled Producing Assembly (PPA)  
**Note:** Input assembly produced by the drive.

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

The PCA and PPA parameters can be accessed by two methods:

- A software configuration tool (not supplied), and Yaskawa Electronic Data Sheet (EDS)  
**Note:** The PCA and PPA parameters can be accessed from the “DN: Polled Config” parameter group.
- A software configuration tool (not supplied), via a CompoNet message path, such as Extended Speed Control  
**Note:** Use CompoNet Connection Object to change the PCA or PPA if required by the application (Class 5, Instance 1, Attributes 14 and 16)

One each PCA and PPA assembly from [Table 10](#) must be selected to configure the drive for polled operation.

**Table 10 Supported Polled Assemblies (PCA and PPA)**

Assembly Number (decimal)	Description	Type	Bytes	Page
20	<i>Basic Speed Control Output - 20 (0x14)</i>	PCA	4	<a href="#">25</a>
21	<i>Extended Speed Control Output - 21 (0x15)</i> (Default Setting)	PCA	4	<a href="#">26</a>
22	<i>Speed and Torque Control Output - 22 (0x16)</i>	PCA	6	<a href="#">27</a>
23	<i>Extended Speed and Torque Control Output - 23 (0x17)</i>	PCA	6	<a href="#">28</a>
70	<i>Basic Speed Control Input - 70 (0x46)</i>	PPA	4	<a href="#">38</a>
71	<i>Extended Speed Control Input - 71 (0x47)</i> (Default Setting)	PPA	4	<a href="#">39</a>
72	<i>Speed and Torque Control Input - 72 (0x48)</i>	PPA	6	<a href="#">40</a>
73	<i>Extended Speed and Torque Control Input - 73 (0x49)</i>	PPA	6	<a href="#">41</a>
100	<i>MEMOBUS/Modbus Message Command (Vendor Specific Yaskawa Electric (YE) Assy) - 100 (0x64)</i>	PCA	6	<a href="#">29</a>
101	<i>Standard Control (Vendor Specific Yaskawa Electric (YE) Assy) - 101 (0x65)</i>	PCA	8	<a href="#">30</a>
102	<i>Accel/Decel Time (Vendor Specific Yaskawa Electric (YE) Assy) - 102 (0x66)</i>	PCA	8	<a href="#">31</a>
105	<i>Enhanced Speed Control, Dynamic (Vendor Specific Yaskawa Electric (YE) Assy) - 105 (0x69)</i>	PCA	8	<a href="#">33</a>
106	<i>Enhanced Control (Vendor Specific Yaskawa Electric (YE) Assy) - 106 (0x6A)</i>	PCA	8	<a href="#">35</a>
107	<i>Standard DI/DO Control (Vendor Specific Yaskawa Electric (YE) Assy) - 107 (0x6B)</i>	PCA	8	<a href="#">36</a>
150	<i>MEMOBUS/Modbus Message Reply (Vendor Specific Yaskawa Electric (YE) Assy) - 150 (0x96)</i>	PPA	6	<a href="#">42</a>
151	<i>Standard Status 1 (Vendor Specific Yaskawa Electric (YE) Assy) - 151 (0x97)</i>	PPA	8	<a href="#">43</a>
152	<i>Standard Status 2 (Vendor Specific Yaskawa Electric (YE) Assy) -152 (0x98)</i>	PPA	8	<a href="#">45</a>
155	<i>Enhanced Speed Status, Dynamic (Vendor Specific Yaskawa Electric (YE) Assy) - 155 (0x9B)</i>	PPA	8	<a href="#">47</a>
156	<i>Enhanced Control Status (Vendor Specific Yaskawa Electric (YE) Assy) -156 (0x9C)</i>	PPA	8	<a href="#">49</a>
157	<i>Standard DI/DO Status (Vendor Specific Yaskawa Electric (YE) Assy) - 157 (0x9D)</i>	PPA	8	<a href="#">51</a>



## 8 Output Assemblies (Drive Consumes)

The convention in this manual is from the master or PLC perspective. An “Output Assembly” is outputted from the master and received by this node. 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: No Fault Reset 1: Fault Reset
Speed Reference	Speed Command Sets drive speed reference Speed reference data: Frequency reference $\times 2^{SS}$ (SS: Speed scale) Setting range: 0 to 0xFFFF For example, when setting a reference of 1024 with a speed scale of 2 Speed reference data = $1024 \times 2^2 = 4096 = 0x1000$ Unit depends on o1-03.

### ◆ 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	–	Net Ref	Net Ctrl	–	–	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: No Fault Reset 1: Fault Reset
NetCtrl	Run command from Network 0: Depends on b1-02 1: Enables the run command from network
NetRef	Speed reference from Network 0: Depends on b1-01 1: Enables the speed reference from network
Speed Reference	Speed Command Sets drive speed reference Speed reference data: Frequency reference $\times 2^{SS}$ (SS: Speed scale) Setting range: 0 to 0xFFFF For example, when setting a reference of 1024 with a speed scale of 2 Speed reference data = $1024 \times 2^2 = 4096 = 0x1000$ Unit depends on o1-03.

## ◆ 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 (Low Byte), not supported							
	5	Torque Reference (High Byte), not supported							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Fault Reset	Fault Reset 0: No Fault Reset 1: Fault Reset
Speed Reference	Speed Command Sets drive speed reference Speed reference data: Frequency reference $\times 2^{SS}$ (SS: Speed scale) Setting range: 0 to 0xFFFF For example, when setting a reference of 1024 with a speed scale of 2 Speed reference data = $1024 \times 2^2 = 4096 = 0x1000$ Unit depends on o1-03.
Torque Reference	Not supported

### ◆ 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	–	Net Ref	Net Ctrl	–	–	Fault Reset	Run Rev	Run Fwd
	1	–							
	2	Speed Reference (Low Byte)							
	3	Speed Reference (High Byte)							
	4	Torque Reference (Low Byte), not supported							
	5	Torque Reference (High Byte), not supported							

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: No Fault Reset 1: Fault Reset
NetCtrl	Run command from Network 0: Depends on b1-02 1: Enables the run command from network
NetRef	Speed reference from Network 0: Depends on b1-01 1: Enables the speed reference from network
Speed Reference	Speed Command Sets drive speed reference Speed reference data: Frequency reference $\times 2^{SS}$ (SS: Speed scale) Setting range: 0 to 0xFFFF For example, when setting a reference of 1024 with a speed scale of 2 Speed reference data = $1024 \times 2^2 = 4096 = 0x1000$ Unit depends on o1-03.
Torque Reference	Not supported

## ◆ 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)							
	3	Register Data (High Byte)							
	4	Register Data (Low Byte)							
	5	-							

**Note:** This is a paired assembly (100/150).

Name	Description
Function Code	MEMOBUS/Modbus Function Code <i>Refer to Function Code Decode Table on page 29</i> for details.
Register Number	MEMOBUS/Modbus Register Number
Register Data	MEMOBUS/Modbus Register Data

**Table 11 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 Appendix C of the V1000 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 7 <I>	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
	1	Multi-Function Photocoupler 2	Multi-Function Photocoupler 1	Multi-Function Digital Output	–	–	–	Fault Reset	External Fault
	2	Speed Reference (Low Byte)							
	3	Speed Reference (High Byte)							
	4	Torque Reference (Low Byte), not supported							
	5	Torque Reference (High Byte), not supported							
	6	Torque Compensation (Low Byte), not supported							
	7	Torque Compensation (High Byte), not supported							

Output Instance	Byte
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 <I>	Terminal S7 Function Input 0: Terminal S7 Function (H1-07) OFF 1: Terminal S7 Function (H1-07) ON
External Fault	External Fault EF0 0: No External Fault (EF0) 1: External Fault (EF0)
Fault Reset	Fault Reset 0: No Fault Reset 1: Fault Reset
Multi-Function Digital Output	Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON This function is enabled only when H2-01 is set to F.
Multi-Function Photocoupler 1	Terminal P1 0: P1 OFF 1: P1 ON This function is enabled only when H2-02 is set to F.
Multi-Function Photocoupler 2	Terminal P2 0: P2 OFF 1: P2 ON This function is enabled only when H2-03 is set to F.
Speed Reference	Speed Command Sets drive speed reference Unit depends on o1-03. Unit is not affected by Speed Scale SS.

Output Instance	Byte
Torque Reference	Not supported
Torque Compensation	Not supported

<1> CIMR-VC□□□□□□ drives do not have terminal S7.

### ◆ 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 7 <I>	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
	1	Multi-Function Photocoupler 2	Multi-Function Photocoupler 1	Multi-Function Digital Output	–	–	–	Fault Reset	External Fault
	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)							

Parameter	Data
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 <I>	Terminal S7 Function Input 0: Terminal S7 Function (H1-07) OFF 1: Terminal S7 Function (H1-07) ON
External Fault	External Fault EF0 0: No External Fault (EF0) 1: External Fault (EF0)
Fault Reset	Fault Reset 0: No Fault Reset 1: Fault Reset
Multi-Function Digital Output	Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON This function is enabled only when H2-01 is set to F.
Multi-Function Photocoupler 1	Terminal P1 0: P1 OFF 1: P1 ON This function is enabled only when H2-02 is set to F.

## 8 Output Assemblies (Drive Consumes)

Parameter	Data
Multi-Function Photocoupler 2	Terminal P2 0: P2 OFF 1: P2 ON This function is enabled only when H2-03 is set to F.
Speed Reference	Speed Command Sets drive speed reference Unit depends on o1-03. Unit is not affected by Speed Scale SS.
Acceleration Time 1	Acceleration Time 1 (C1-01) Unit depends on C1-10. Unit is not affected by Time Scale TS.
Deceleration Time 1	Deceleration Time 1 (C1-02) Unit depends on C1-10. Unit is not affected by Time Scale TS.

<1> CIMR-VC□□□□□□ drives do not have terminal S7.



### ◆ 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 7 <2>	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
	1	Multi-Function Photocoupler 2	Multi-Function Photocoupler 1	Multi-Function Digital Output	–	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 <2>	Terminal S7 Function Input 0: Terminal S7 Function (H1-07) OFF 1: Terminal S7 Function (H1-07) ON
External Fault	External Fault EF0 0: No External Fault (EF0) 1: External Fault (EF0)
Fault Reset	Fault Reset 0: No Fault Reset 1: Fault Reset
Function Code	MEMOBUS/Modbus Function Code <i>Refer to Function Code Decode Table on page 34</i> for details.
Multi-Function Digital Output	Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON This function is enabled only when H2-01 is set to F.
Multi-Function Photocoupler 1	Terminal P1 0: P1 OFF 1: P1 ON This function is enabled only when H2-02 is set to F.
Multi-Function Photocoupler 2	Terminal P2 0: P2 OFF 1: P2 ON This function is enabled only when H2-03 is set to F.

## 8 Output Assemblies (Drive Consumes)

Name	Description
Speed Reference	Speed Command Sets drive speed reference Unit depends on o1-03. Unit is not affected by Speed Scale SS.
Register Number	MEMOBUS/Modbus Register Number <1>
Register Data	MEMOBUS/Modbus Register Data

<1> Register numbers 0x0001, 0x0002, and 0x0009 are disabled.

<2> CIMR-VC□□□□□□ drives do not have terminal S7.

**Note:** This is a paired assembly (105/155).

**Table 12 Function Code Decode Table**

Function Code High Byte - Low Byte	MEMOBUS/Modbus Function
0 0	No Operation
1 0	Read Register
0 1	Write Register
1 1	No Operation

**Note:** Refer to the MEMOBUS/Modbus Data Table in Appendix C of the V1000 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 7 <1>	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
	1	Multi-Function Photocoupler 2	Multi-Function Photocoupler 1	Multi-Function Digital Output	–	–	–	Fault Reset	External Fault
	2	Speed Reference (Low Byte)							
	3	Speed Reference (High Byte)							
	4	–							
	5	–							
	6	–							
	7	–							

Parameter	Data
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 <1>	Terminal S7 Function Input 0: Terminal S7 Function (H1-07) OFF 1: Terminal S7 Function (H1-07) ON
External Fault	External Fault EF0 0: No External Fault (EF0) 1: External Fault (EF0)
Fault Reset	Fault Reset 0: No Fault Reset 1: Fault Reset
Multi-Function Digital Output	Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON This function is enabled only when H2-01 is set to F.
Multi-Function Photocoupler 1	Terminal P1 0: P1 OFF 1: P1 ON This function is enabled only when H2-02 is set to F.
Multi-Function Photocoupler 2	Terminal P2 0: P2 OFF 1: P2 ON This function is enabled only when H2-03 is set to F.
Speed Reference	Speed Command Sets drive speed reference Unit depends on o1-03. Unit is not affected by Speed Scale SS.

<1> CIMR-VC□□□□□□ drives do not have terminal S7.

◆ 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 7 <I>	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	–	–	Multi-Function Photocoupler 2	Multi-Function Photocoupler 1	Multi-Function Digital Output	–	–	–	
	3	–	–	–	–	–	–	–	–	
	4	Analog Output 1 (Low Byte)								
	5	Analog Output 1 (High Byte)								
	6	Speed Reference (Low Byte)								
	7	Speed Reference (High Byte)								

Parameter	Data
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 <I>	Terminal S7 Function Input 0: Terminal S7 Function (H1-07) OFF 1: Terminal S7 Function (H1-07) ON
External Fault	External Fault EF0 0: No External Fault (EF0) 1: External Fault (EF0)
Fault Reset	Fault Reset 0: No Fault Reset 1: Fault Reset
Multi-Function Digital Output	Terminal MA/MB 0: MA/MB OFF 1: MA/MB ON This function is enabled only when H2-01 is set to F.
Multi-Function Photocoupler 1	Terminal P1 0: P1 OFF 1: P1 ON This function is enabled only when H2-02 is set to F.
Multi-Function Photocoupler 2	Terminal P2 0: P2 OFF 1: P2 ON This function is enabled only when H2-03 is set to F.
Analog Output 1	Analog Output AM This function is enabled only when H4-01 is set to 000.

Parameter	Data
Speed Reference	Speed Command Sets drive speed reference Unit depends on o1-03. Unit is not affected by Speed Scale SS.

<1> CIMR-VC□□□□□□ drives do not have terminal S7.

## 9 Input Assemblies (Drive Produces)

The convention in this manual is from the master or PLC perspective. An “Input Assembly” is outputted from this node and read by the master. This section details “Input Assemblies” that are “Produced” by the 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)	–	Faulted
	1	–							
	2	Speed Actual (Low Byte)							
	3	Speed Actual (High Byte)							

Parameter	Data
Faulted	Faulted 0: No Faults Occurred 1: Fault Occurred
Running1	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 <sup>SS</sup> (SS: Speed scale) Range: 0 to 0xFFFF For example, when output frequency of 4096 with a speed scale of 2 Speed actual data = 4096 / 22 = 1024 = 0x0400 Unit depends on o1-03.

◆ 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	Faulted
	1	State							
	2	Speed Actual (Low Byte)							
	3	Speed Actual (High Byte)							

Name	Description
Faulted	Faulted 0: No Faults Occurred 1: Fault Occurred
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	Status of Run command from Network 0: Run command is not from network 1: Run command is from network
Ref from Net	Status of Speed reference from Network 0: Speed reference is not from network 1: Speed reference is from network
At Speed	Speed Agree 0: No Speed Agree 1: Actual speed at speed reference
State	Drive Status 2: Not Ready 3: Ready 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 <sup>SS</sup> (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 <sup>2</sup> = 1024 = 0x0400 Unit depends on o1-03.

◆ 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)	-	Faulted
	1	-							
	2	Speed Actual (Low Byte)							
	3	Speed Actual (High Byte)							
	4	Torque Actual (Low Byte), not supported							
	5	Torque Actual (High Byte), not supported							

Name	Description
Faulted	Faulted 0: No Faults Occurred 1: Fault Occurred
Running 1	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 <sup>SS</sup> (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 <sup>2</sup> = 1024 = 0x0400 Unit depends on o1-03.
Torque Actual	Output Torque, not supported



## ◆ 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	Faulted
	1	State							
	2	Speed Actual (Low Byte)							
	3	Speed Actual (High Byte)							
	4	Torque Actual (Low Byte), not supported							
	5	Torque Actual (High Byte), not supported							

Name	Description
Faulted	Faulted 0: No Faults Occurred 1: Fault Occurred
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	Status of Run command from Network 0: Run command is not from network 1: Run command is from network
Ref from Net	Status of Speed reference from Network 0: Speed reference is not from network 1: Speed reference is from network
At Speed	Speed Agree 0: No Speed Agree 1: Actual speed at speed reference
State	Drive Status 2: Not Ready 3: Ready 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 <sup>SS</sup> (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 <sup>2</sup> = 1024 = 0x0400 Unit depends on o1-03.
Torque Actual	Output Torque, not supported

◆ 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)							
	5	-							

Note: This is a paired assembly (100/150).

Table 13 Reply Mapping - 150

Byte	Write Success	Read Success	Write Failure	Read Failure	Illegal 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
5	-	-	-	-	-	-

Table 14 Error Replies - 150

Error Code	Description
0x01	Invalid Function Code
0x02	Invalid Register Number
0x21	Upper/Lower Limit Error
0x22	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 constant when drive is running. During a CPF06 event attempting to write to registers other than A1-00 to A1-05, E1-03, o2-04.
0x23	Attempting to write during a drive undervoltage (Uv) event.
0x24	Attempting to write while the drive is storing data.

Note: Refer to the MEMOBUS/Modbus Data Table in Appendix C of the V1000 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)

Output 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	–	–	Multi-Function Photocoupler 2	Multi-Function Photocoupler 1	Multi-Function Digital Output	Local/Remote	Uv	oPE
	2	Output Frequency (Low Byte)							
	3	Output Frequency (High Byte)							
	4	Actual Torque (Low Byte), not supported							
	5	Actual Torque (High Byte), not supported							
	6	Actual Current (Low Byte)							
	7	Actual Current (High Byte)							

Parameter	Data
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: No Reset 1: Reset
Speed Agree	Speed Agree 0: No Speed Agree 1: Actual speed at speed reference
Ready	Drive Ready 0: Not Ready 1: Ready
Alarm	Drive Alarm 0: No Drive Alarm 1: Alarm
Fault	Drive Fault 0: No Drive Fault 1: Fault
oPE	OPE Fault 0: No OPExx Fault 1: OPExx
Uv	Under Voltage 0: No Under Voltage 1: Under Voltage
Local/Remote	Status of Run command from Network 0: Run command is not from network 1: Run command is from network
Multi-Function Digital Output	Terminal MA/MB 0: Terminal MA/MB OFF 1: Terminal MA/MB ON
Multi-Function Photocoupler 1	Terminal P1 0: Terminal P1 OFF 1: Terminal P1 ON
Multi-Function Photocoupler 2	Terminal P2 0: Terminal P2 OFF 1: Terminal P2 ON

## 9 Input Assemblies (Drive Produces)

---

Parameter	Data
Output Frequency	Actual Drive Speed Monitors drive output frequency Unit depends on o1-03. Unit is not affected by Speed Scale SS.
Actual Torque	Output Torque, not supported
Actual Current	Actual Output Current Monitors drive output current Unit: 0.1 A Unit is not affected by Current Scale CS.

◆ 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	–	–	Multi-Function Photocoupler 2	Multi-Function Photocoupler 1	Multi-Function Digital Output	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)							

Parameter	Data
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: No Reset 1: Reset
Speed Agree	Speed Agree 0: No Speed Agree 1: Actual speed at speed reference
Ready	Drive Ready 0: Not Ready 1: Ready
Alarm	Drive Alarm 0: No Drive Alarm 1: Alarm
Fault	Drive Fault 0: No Drive Fault 1: Fault
oPE	OPE Fault 0: No OPExx Fault 1: OPExx
Uv	Under Voltage 0: No Under Voltage 1: Under Voltage
Local/Remote	Status of Run command from Network 0: Run command is not from network 1: Run command is from network
Multi-Function Digital Output	Terminal MA/MB 0: Terminal MA/MB OFF 1: Terminal MA/MB ON
Multi-Function Photocoupler 1	Terminal P1 0: Terminal P1 OFF 1: Terminal P1 ON
Multi-Function Photocoupler 2	Terminal P2 0: Terminal P2 OFF 1: Terminal P2 ON

## 9 Input Assemblies (Drive Produces)

---

Parameter	Data
Output Frequency	Actual Drive Speed Monitors drive output frequency Unit depends on o1-03. Unit is not affected by Speed Scale SS.
Frequency Reference	Frequency Reference Monitors drive frequency reference Unit depends on o1-03. Unit is not affected by Speed Scale SS.
Actual Current	Actual Output Current Monitors drive output current Unit: 0.1 A Unit is not affected by Current Scale CS.

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

Output 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	Multi-Function Photocoupler 2	Multi-Function Photocoupler 1	Multi-Function Digital Output	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)							

Parameter	Data
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: No Reset 1: Reset
Speed Agree	Speed Agree 0: No Speed Agree 1: Actual speed at speed reference
Ready	Drive Ready 0: Not Ready 1: Ready
Alarm	Drive Alarm 0: No Drive Alarm 1: Alarm
Fault	Drive Fault 0: No Drive Fault 1: Fault
oPE	OPE Fault 0: No OPExx Fault 1: OPExx
Uv	Under Voltage 0: No Under Voltage 1: Under Voltage
Function Code	MEMOBUS/Modbus Function Code <i>Refer to Function Code Decode Table on page 34</i> for details.
Local/Remote	Status of Run command from Network 0: Run command is not from network 1: Run command is from network
Multi-Function Digital Output	Terminal MA/MB 0: Terminal MA/MB OFF 1: Terminal MA/MB ON
Multi-Function Photocoupler 1	Terminal P1 0: Terminal P1 OFF 1: Terminal P1 ON
Multi-Function Photocoupler 2	Terminal P2 0: Terminal P2 OFF 1: Terminal P2 ON

## 9 Input Assemblies (Drive Produces)

Parameter	Data
Output Frequency	Actual Drive Speed Monitors drive output frequency Unit depends on o1-03. Unit is not affected by Speed Scale SS.
Register Number	MEMOBUS/Modbus Register Number
Register Data	MEMOBUS/Modbus Register Data

**Note:** This is a paired assembly (105/155).

**Note:** Refer to the MEMOBUS/Modbus Data Table in Appendix C of the V1000 Technical Manual for a list of monitor data using the MEMOBUS/Modbus message area.

**Table 15 Reply Mapping - 155**

Function Code Bits/Byte	Write Success	Read Success	Running	Write Failure	Read Failure	Function Code Equal to 0 0
Function Bits (High/Low)	1 1	1 1	1 0	0 1	0 1	0 0
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)	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)	Output Assembly Register Number (High Byte)	0
6	0	Read Data (Low Byte)	0x22	Error Code	Error Code	0
7	0	Read Data (High Byte)	0	0	0	0

**Table 16 Error Replies - 155**

Error Code	Description
0x02	Invalid Register Number
0x21	Upper/Lower Limit Error
0x22	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 event attempting to write to registers other than A1-00 to A1-05, E1-03, o2-04.
0x23	Attempting to write during a drive undervoltage (Uv) event.
0x24	Attempting to write while the drive is storing data.

**Note:** Refer to the MEMOBUS/Modbus Data Table in Appendix C of the V1000 Technical Manual for a list of monitor data using the MEMOBUS/Modbus message area.



## ◆ 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	Multi-Function Photocoupler 2	Multi-Function Photocoupler 1	Multi-Function Digital Output	–	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)							

Parameter	Data
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: No Reset 1: Reset
Speed Agree	Speed Agree 0: No Speed Agree 1: Actual speed at speed reference
Ready	Drive Ready 0: Not Ready 1: Ready
Alarm	Drive Alarm 0: No Drive Alarm 1: Alarm
Fault	Drive Fault 0: No Drive Fault 1: 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
Multi-Function Digital Output	Terminal MA/MB 0: Terminal MA/MB OFF 1: Terminal MA/MB ON
Multi-Function Photocoupler 1	Terminal P1 0: Terminal P1 OFF 1: Terminal P1 ON

## 9 Input Assemblies (Drive Produces)

---

Parameter	Data
Multi-Function Photocoupler 2	Terminal P2 0: Terminal P2 OFF 1: Terminal P2 ON
Output Frequency	Actual Drive Speed Monitors drive output frequency Unit depends on o1-03. Unit is not affected by Speed Scale SS.
Actual Current	Actual Output Current Monitors drive output current Unit: 0.1 A Unit is not affected by Current Scale CS.

**Note:** Refer to the MEMOBUS/Modbus Data Table in Appendix C of the V1000 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 7 <I>	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	-	-	Multi-Function Photocoupler 2	Multi-Function Photocoupler 1	Multi-Function Digital Output	-	-	-	
	4	Analog Input 1 (Low Byte)								
	5	Analog Input 1 (High Byte)								
	6	Output Frequency (Low Byte)								
	7	Output Frequency (High Byte)								

Parameter	Data
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: No Reset 1: Reset
Speed Agree	Speed Agree 0: No Speed Agree 1: Actual speed at speed reference
Ready	Drive Ready 0: Not Ready 1: Ready
Alarm	Drive Alarm 0: No Drive Alarm 1: Alarm
Fault	Drive Fault 0: No Drive Fault 1: Fault
oPE	OPE Fault 0: No OPExx Fault 1: OPExx
Uv	Under Voltage 0: No Under Voltage 1: Under Voltage
Local/Remote	Status of Run command 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

## 9 Input Assemblies (Drive Produces)

Parameter	Data
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 <1>	Terminal S7 0: Terminal S7 OFF 1: Terminal S7 ON
Multi-Function Digital Output	Terminal MA/MB 0: Terminal MA/MB OFF 1: Terminal MA/MB ON
Multi-Function Photocoupler 1	Terminal P1 0: Terminal P1 OFF 1: Terminal P1 ON
Multi-Function Photocoupler 2	Terminal P2 0: Terminal P2 OFF 1: Terminal P2 ON
Analog Input 1	Analog Input A1
Output Frequency	Actual Drive Speed Monitors drive output frequency Unit depends on o1-03. Unit is not affected by Speed Scale SS.

<1> CIMR-VC□□□□□□ drives do not have terminal S7.

## 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 (YASKAWA)
1	2	Device Type	The device profile. The profile for this product is an AC drive. 2: AC drive	○	–	Word	–	2 (AC Drives)
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-VA2A0001
1	8	State	The operation status of the drive. 3: Drive ready 4: Fault	○	–	Byte	–	3
1	9	Configuration Consistency Value	Confirmation data for parameter changes	○	–	Word	–	0000

<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

◆ 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	The CompoNet 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
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 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 6 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
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
150	3	Data	Same function as the MEMOBUS/Modbus Message Reply (Input Assembly)	○	–	Array 6 bytes	–	00 00 00 00 00
151	3	Data	Same function as the Standard Status (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 Enhanced Speed Status (Input Assembly)	○	–	Array 8 bytes	–	00 00 00 00 00 00 00 00
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

## ◆ CompoNet 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	The CompoNet Connection object software revision	○	–	Word	–	1
1 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	The instance type. 00: Explicit message 01: I/O message	○	–	Byte	–	1
	3	Transport class trigger	Defines behavior of the connection.	○	–	Byte	–	82h
	7	Produced connection size	Maximum number of bytes that can be transmitted.	○	–	Word	–	4
	8	Consumed connection size	Maximum number of bytes received.	○	–	Word	–	4
	9	Expected packet rate	The time to timeout after receiving a comm. request. Rounds up to the nearest 10 ms.	○	○	Word <1>	–	–
	12	Watchdog time-out action	Action taken after timeout. 00: Save value until reset or power is shut off	○	○	Byte	0	0
	13	Produced connection path length	Number of bytes for the transmission connection path.	○	–	Word	–	6
	14	Produced connection path	Specifies the application object whose data will be produced by this Connection Object.	○	○	Array	–	20h 04h 24h 47h 30h 03h
	15	Consumed connection path length	Number of bytes in the consumed connection path.	○	–	Word	–	6
	16	Consumed connection path	Specifies the Application Object that will receive data consumed by this Connection Object.	○	○	Array	–	20h 04h 24h 15h 30h 03h
	100	Produced connection path	Number of bytes in the consumed connection path.	○	○	Byte	–	71
101	Consumed connection path	Specifies the Application Object that will receive data consumed by this Connection Object.	○	○	Byte	–	21	

<1> A polled EPR time. Timing out will trigger a drive bUS fault.

◆ 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	The Motor Data Object software revision	○	–	Word	–	1
1	3	Motor Type	Differs by the motor control mode. When set for Open Loop Vector for PM motors (A1-02 = 5), value becomes 3 (PM motor). When the drive is set for V/f Control (A1-02 = 0) or Open Loop Vector (A1-02 = 2), value becomes 7 (squirrel cage motor).	○	○	Byte	–	Depends on A1-02, Control Method Selection
1	6	Rated Current [0.1 A]	Motor rated current. 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. Displayed in 1 V units. Changes according to the voltage scale (VS).	○	○	Byte		Depends on Capacity

■ Corresponding Data on V1000 MEMOBUS/Modbus

Instance ID	Attribute	Description	Data
1	3	Motor Type	The value of this parameter is dependent of the value of A1-02, Control Method Selection. If A1-02 is 5, Open Loop Vector PM, set this parameter to 3, Permanent Magnet Motor. For all other A1-02 settings, set this parameter to 7, Induction Motor.
1	6	Rated Current [0.1 A]	Motor Rated Current The unit of value returned is 0.1[A]. Uses current scale.
1	7	Rated Voltage [1 V]	Uses voltage scale.



## ◆ 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 Running 0: Stop 1: Forward Running	○	○	Byte	0,1	0
1	4	Run 2 (Reverse Run Command)	Reverse Running 0: Stop 1: Reverse Running	○	○	Byte	0,1	0
1	5	NetCtrl (Command)	Run command from Network 0: Depends on b1-02 1: Enables the run command from network	○	○	Byte	0,1	0
1	6	State	Drive Status 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 (FWD)	Forward Running 0: Stop 1: Forward Running	○	–	Byte	–	0
1	8	Running 1 (REV)	Reverse Running 0: Stop 1: Reverse Running	○	–	Byte	–	0
1	9	Ready	Drive Ready 0: Not ready 1: Ready	○	–	Byte	–	1
1	10	Fault	Drive Fault 0: No Drive Fault 1: Fault	○	–	Byte	–	0
1	11	Warning	Warning 0: No Warning 1: Warning	○	–	Byte	–	0
1	12	Fault Reset	Fault Reset 0: No Fault Reset 1: Fault Reset	○	○	Byte	0,1	0
1	13	Fault Code	Current Fault <i>Refer to CompoNet Fault Code Conversion Table on page 58</i> for details	○	–	Word	–	0000
1	15	Control from Net (Status)	Run Command from CompoNet 0: Enables the run command from except for CompoNet 1: Enables the run command from CompoNet	○	–	Byte	–	0
1	16	CompoNet Fault Mode	Normal 2 (vendor specific)	○	○	Byte	–	2

## 10 General Class Objects

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
1	17	Force Fault	External fault 0: No External Fault 1: External fault (EF0) Triggered by the rising edge of the signal	○	○	Byte	0,1	0
1	18	Force Reset	External fault status 0: No External Fault 1: External fault Triggered by the rising edge of the signal.	○	–	Byte	–	0

### ■ Corresponding Data on V1000 MEMOBUS/Modbus (Control Supervisor Object)

Instance ID	Attribute	Description	Data
1	3	Run 1	Forward Run Command
1	4	Run 2	Reverse Run Command
1	5	NetCtrl (Command)	Net Control Command
1	6	State	Drive Status 2 = Not ready (complement of Ready) 3 = Ready, Drive Ready 4 = Enable 5 = Stopping 6 = Stopping due to fault 7 = Faulted
1	7	Running 1	Forward Running
1	8	Running 2	Reverse Running
1	9	Ready	Drive Ready
1	10	Faulted	Drive Fault
1	11	Warning	Drive Alarm
1	12	Fault Reset	Fault Reset
1	13	Fault Code	Current Fault
1	15	Control from Net (Status)	Status of Run command source (1 = Network) 0 = As set by b1-02 1 = Network
1	16	CompoNet Fault Mode	Always set to "2" (Vendor specific)
1	17	Force Fault	External Fault, 0 -> 1
1	18	Force Reset	0 -> 1

### ■ CompoNet Fault Code Conversion Table

V1000 Fault Code [Dec] (MEMOBUS/Modbus #0080hex)	CompoNet Fault Code [hex]	Description
0	0000	None
2	3220	DC Bus Undervolt (Uv1)
3	5110	CTL PS Undervolt (Uv2)
4	3222	MC Answerback (Uv3)
6	2120	Ground Fault (GF)
7	2300	Over Current (oC)
8	3210	DC Bus Overvolt (ov)
9	4200	Heatsink Overtemp (oH)
10	4210	Heatsink Max Temp (oH1)
11	2220	Motor Overload (oL1)
12	2200	Inv Overload (oL2)
13	2221	Overtorque Det 1 (oL3)
14	2222	Overtorque Det 2 (oL4)
15	7110	DynBrk Transistor (rr)
16	7112	DynBrk Resistor (rH)
17	9000	External Fault 3 (EF3)

V1000 Fault Code [Dec] (MEMOBUS/Modbus #0080hex)	CompoNet Fault Code [hex]	Description
18	9000	External Fault 4 (EF4)
19	9000	External Fault 5 (EF5)
20	9000	External Fault 6 (EF6)
21	9000	External Fault 7 (EF7)
24	7310	Overspeed Det (oS)
25	7310	Speed Deviation (dEv)
26	7301	PG Open (PGo)
27	3130	Input Phase Loss (PF)
28	3130	Output Phase Loss (LF)
30	5300	Operator Disconnected (oPr)
31	6320	EEPROM R/W Error (Err)
33	7500	MEMOBUS/Modbus Com Fault (CE)
34	7500	CompoNet communication Error (bUS)
37	8321	Out of Control (CF)
39	9000	External Fault 0 (EF0)

◆ 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 Agree	○	–	Byte	–	0
1	4	NetRef (Command)	Status of reference command from CompoNet 0: Reference command from CompoNet 1: Reference command from except for CompoNet	○	–	Byte	–	0
1	6	Drive Mode	0: V/f Control 2: Open Loop Vector 5: PM Open Loop Vector	○	○	Byte	0, 2, 5	0
1	7	Speed Actual	Actual Drive Speed Unit is not affected by Speed Scale SS.	○	–	Word	–	3
1	8	Speed Reference	Frequency Reference Monitors drive frequency reference. Unit is not affected by Speed Scale SS.	○	○	Word	–	0
1	9	Current Actual	Actual Output Current Unit: 0.1 A Unit is not affected by Current Scale CS.	○	–	Word	–	0
1	11	Torque Actual	Not supported	○	–	Word	–	0
1	12	Torque Reference	Not supported	○	○	Word	–	0
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 parameter C1-10. Unit is affected by Time scale (TS).	○	○	Word	–	2710h
1	19	Decel Time [ms]	Deceleration Time 1 (C1-02) Units set in parameter C1-10. Unit is affected by Time scale (TS).	○	○	Word	–	2710h
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	3E8h
1	22	Speed Scale (–15 to 15)	Setting for F6-56, scale of units for speed-related data	○	○	Byte	–15 ~ 15	0
1	23	Current Scale (–15 to 15)	Setting for F6-57, scale of units for current-related data	○	○	Byte	–15 ~ 15	0
1	24	Torque Scale (–15 to 15)	Setting for F6-58, scale of units for torque-related data	○	○	Byte	–15 ~ 15	0
1	26	Power Scale (–15 to 15)	Setting for F6-59, scale of units for power-related data	○	○	Byte	–15 ~ 15	0

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
1	27	Voltage Scale (-15 to 15)	Setting for F6-60, scale of units for voltage-related data	○	○	Byte	-15 ~ 15	0
1	28	Time Scale (-15 to 15)	Setting for F6-61, scale of units for speed-related data	○	○	Byte	-15 ~ 15	0
1	29	Reference from Net (Status)	Status of reference command from CompoNet 0: Reference command from CompoNet 1: Reference command from except for CompoNet	○	-	Byte	-	0

### ■ Corresponding Data on V1000 MEMOBUS/Modbus (AC/DC Drive Object)

Instance ID	Attribute	Description	Data
1	3	At Reference	Speed Agree
1	4	Net Reference (Command)	Net Reference Command
1	6	Drive Mode	Sets the Control Method
1	7	Speed Actual [RPM]	Speed Feedback or Output frequency
1	8	Speed Reference [RPM]	Speed Command
1	9	Current Actual [0.1A]	Output Current
1	10	Current Limit	Not Supported
1	11	Torque Actual	Not Supported
1	12	Torque Reference	Not Supported
1	15	Power Actual [W]	Monitor Parameter U1-08
1	16	Input Voltage [V]	Parameter E1-01
1	17	Output Voltage [V]	Monitor Parameter U1-06
1	18	Accel Time [ms]	Parameter C1-01
1	19	Decel Time [ms]	Parameter C1-02
1	20	Low Speed Limit Percent of Max Speed	Parameter d2-02
1	21	High Speed Limit Percent of Max Speed	Parameter d2-01
1	22	Speed Scale (-15 to 15)	Parameter F6-56
1	23	Current Scale (-15 to 15)	Parameter F6-57
1	24	Torque Scale (-15 to 15)	Parameter F6-58
1	26	Power Scale (-15 to 15)	Parameter F6-59
1	27	Voltage Scale (-15 to 15)	Parameter F6-60
1	28	Time Scale (-15 to 15)	Parameter F6-61
1	29	Reference from the Net (Status)	Status of reference command (1 = Network) 0 = As set by bl-01, 1 = Network

◆ CompoNet Link Object - 247 (Class 0xF7)

■ Services Supported

Service Code No. (hex)	Service Name
0E	Get Attribute Single
10	Set Attribute Single
4B	Allocate
4C	Release

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	Revision number of CompoNet Link object	○	–	Word	–	1
1	1	MAC ID	Actual MAC address	○	–	Word	–	0
1	2	Data Rate	CompoNet actual communication speed 0: 93.75 kbps 2: 1.5 Mbps 3: 3 Mbps 4: 4 Mbps	○	–	Byte	–	–
1	5	Allocation choice	Selected type of communications	○	–	Byte	–	2
1	6	Node Address Switch Changed	Indicates whether the MAC ID Switch setting has been changed since the power was tuned on.	○	–	BOOL	–	0
1	8	Node Address Switch Value	MAC ID setting value Set in parameter F6-40 by the drive's digital operator.	○	–	Word	–	0
1	10	Explicit Message Timer	Total time (in seconds) required to detect an Explicit Message Communication fault The initial value depends on the communication speed.	○	○	Word	0~65535	115: 93.75 kbps 8: 1.5 Mbps 4: 3 Mbps 3: 4 Mbps

# 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

This is a dynamic explicit Class Object. With this Class object any drive parameter with a MEMOBUS/Modbus address greater than 0x00FF can be accessed. The mapping of Class Object instance / attribute to MEMOBUS/Modbus address is as follows.

Given a typical MEMOBUS/Modbus Address of 0xXXYY

The CompoNet Instance value is equal to XX

The CompoNet Attribute value is equal to YY

As an example, to access parameter b5-12 (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 drive non-volatile memory. Writing a zero to 0x0910 (Accept) allows the drive to use the changed parameters. This normally is automatically sent when the parameter is changed. Read Enter Command 0x0900 or Accept Command 910 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 to 0x01FF	○	○	Word	–	–
2	YY	MEMOBUS/Modbus Registers 0x0200 ~ 0x02FF	MEMOBUS/Modbus registers 0x0200 to 0x02FF	○	○	Word	–	–
..	..	..	..	○	○	Word	–	–
255	YY	MEMOBUS/Modbus Register 0xFF00 ~ 0xFFFF	MEMOBUS/Modbus registers 0xFF00 to 0xFFFF	○	○	Word	–	–

**Note:**

1. Attempting to set a read-only parameter results in a CompoNet error code of 0x0E, Attribute Not Settable.
2. Attempting to access an invalid parameter results in a CompoNet error code of 0x09, Invalid Attribute Value
3. Refer to the MEMOBUS/Modbus Data Table in Appendix C of the V1000 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. With this Class object any parameter with a MEMOBUS/Modbus address less than 0x0100 can be accessed. 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 of 0x00YY

The CompoNet Instance value is equal to 0x01

The CompoNet 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	MEMOBUS/Modbus Address	Description	Get	Set	Size
0	1	-	Object Software Revision	○	-	Word
1	1	0x0001	Drive Command Bits	○	○	Word
1	2	0x0002	Frequency Instruction	○	○	Word
..	..	..	..	○	○	Word
1	255	0x00FF	Unused	○	○	Word

- Note:**
1. Attempting to set a read-only parameter results in a CompoNet error code of 0x0E, Attribute Not Settable.
  2. Attempting to access an invalid parameter results in a CompoNet error code of 0x09, Invalid Attribute Value
  3. Refer to the MEMOBUS/Modbus Data Table in Appendix C of the V1000 Technical Manual for a list of monitor data using the MEMOBUS/Modbus message area.



## 12 Troubleshooting

### ◆ Drive-Side Error Codes

**Table 17** lists the various option-related fault codes. Refer to the drive Technical Manual for further information about fault codes.

#### ■ Faults

Both bUS (Option Communication Error) and EF0 (External Fault Input from the Option) can appear either as an alarm or as a fault. When a fault occurs, the digital operator ALM LED remains lit. When an alarm occurs, the digital operator ALM LED flashes.

Check the following items first when an error code occurs on the drive:

- Communication cable connections
- Make sure the option is properly installed to the drive
- Operation status of the master program and master CPU
- Did a momentary power loss interrupt communications?

**Table 17 Fault Displays, Causes, and Possible Solutions**

Digital Operator Display		Fault Name
<i>bUS</i>	bUS	Option Communication Error
		After establishing initial communication, the connection was lost. Only detected when the run command frequency reference is assigned to the option (bl-01 = 3 or bl-02 = 3).
Cause		Possible Solution
Master has stopped communicating.		Check for faulty wiring.
Communication cable is not connected properly.		Correct any wiring problems.
A data error occurred due to noise.		Check the various options available to minimize the effects of noise. Counteract noise in the control circuit wiring, main circuit lines, and ground wiring. If a magnetic contactor is the source of noise, install a surge absorber to the contactor coil. Make sure the cable used fulfills the CompoNet requirements.
Option is damaged.		If there are no problems with the wiring and the error continues to occur, replace the option.
Connection timeout		The option Expected Packet Rate (EPR) timer timed out. Make sure that EPR time is set properly.
Duplicate MAC ID		The option MAC ID and at least one other mode have the same MAC ID. Verify F6-40 is set properly.

Digital Operator Display		Fault Name
<i>EF0</i>	EF0	External Fault Input from the Option
		The alarm function for an external device has been triggered.
Cause		Corrective Action
An external fault is being sent from the master.		Remove the cause of the external fault. Reset the external fault input from the master device.
Problem with the master program.		Check the program used by the master and make the appropriate corrections.

Digital Operator Display		Fault Name
<i>oFA00</i>	oFA00	Option Fault
		Option is not properly connected.
Cause		Possible Solution
Non-compatible option connected to the drive.		Use only compatible options.

## 12 Troubleshooting

Digital Operator Display		Fault Name
oFA01	oFA01	Option Fault
		Option is not properly connected.
Cause		Possible Solution
Problem with the connector between the drive and option.		Turn the power off and check the connectors between the drive and option.

Digital Operator Display		Fault Name
oFA03	oFA03	Option Fault
		Option self-diagnostics error.
Cause		Possible Solution
Option hardware fault.		Replace the option.

Digital Operator Display		Fault Name
oFA04	oFA04	Option Fault
		Option Flash write mode
Cause		Possible Solution
Option hardware fault.		Replace the option.

Digital Operator Display		Fault Name
oFA30 to oFA43	oFA30 to oFA43	Option Fault (port A)
		Communication ID error
Cause		Possible Solution
Option hardware fault		Replace the option. Contact Yaskawa for assistance.

### ■ Minor Faults and Alarms

Digital Operator Display		Minor Fault Name	
AEr	AEr	MAC ID Setting Error	
		Option MAC ID is outside the acceptable setting range.	
Cause		Possible Solutions	Minor Fault (H2-□□ = 10)
MAC ID is set outside the possible setting range.		Reset the MAC ID in F6-40 to an allowable value.	Yes

Digital Operator Display		Fault Name	
CALL	CALL	Serial Communication Transmission Error	
		Communication has not yet been established.	
Cause		Possible Solution	Minor Fault (H2-□□ = 10)
Communication wiring or terminal resistor connection is faulty, there is a short circuit, or something is not connected properly.		Check for wiring errors. Correct the wiring. Remove and ground shorts and reconnect loose wires.	Yes
Master-side programming error		Check communications at start-up and correct programming errors.	
Damaged communication circuitry		Perform a self-diagnostics check. Replace the drive if the fault continues to occur.	

## ◆ 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 “94” and an error code from *Table 18* as the data.

**Table 18 Explicit Message Error Codes, Causes, and Possible Solutions**

Error Code	Description	Cause	Possible Solution
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 Appendix C of the V1000 Technical Manual for a list of monitor data using the MEMOBUS/Modbus message area.

# 13 Specifications

Table 19 Option Specifications

Item	Specification
Model	SI-M3/V (PCB model: SI-M3)
SI-M3/V Supported Messages	Explicit Messages: Fragmentation is not supported. Up to 44 bytes can be input and output. Polled I/O Messages: Fragmentation is not supported. Up to 8 bytes can be input and output.
I/O Assembly Instance	Input: 10 types (4~8 bytes) Output: 10 types (4~8 bytes)
CompoNet Specification	Word MIX slave
Profile	AC Drive
Input Power	Power is supplied from the drive.
Connector Type	4-pin open-style screw connector
Physical Layer Type	Isolated Physical Layer Pulse transformer
MAC ID Setting	Programmable from drive keypad: MAC ID 0 to 63
Communications Speed/Baud Rate	Programmable from drive keypad: 4 Mbps / 3 Mbps / 1.5 Mbps / 93.75 kbps
Ambient Temperature	-10 °C to +50 °C
Humidity	up to 95% RH (no condensation)
Storage Temperature	-20 °C to +60 °C (allowed for short-term transport of the product)
Area of Use	Indoor (free of corrosive gas, airborne particles, etc.)
Altitude	1000 m or lower

## ◆ Revision History

The revision dates and the numbers of the revised manuals appear on the bottom of the back cover.

MANUAL NO. SIEP C730600 54A

Published in Japan June 2010 10-6

└ Date of publication  
└ Date of original publication

Date of Publication	Revision Number	Section	Revised Content
June 2010	–	–	First edition

# YASKAWA AC Drive-V1000 Option

# CompoNet

# Technical Manual

---

**IRUMA BUSINESS CENTER (SOLUTION CENTER)**

480, Kamifujisawa, Iruma, Saitama, 358-8555, Japan  
Phone: 81-4-2962-5696 Fax: 81-4-2962-6138

**YASKAWA ELECTRIC CORPORATION**

New Pier Takeshiba South Tower, 1-16-1, Kaigan, Minatoku, Tokyo, 105-6891, Japan  
Phone: 81-3-5402-4511 Fax: 81-3-5402-4580  
<http://www.yaskawa.co.jp>

**YASKAWA ELECTRIC AMERICA, INC.**

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

**YASKAWA ELÉTRICO DO BRASIL COMÉRCIO LTDA.**

Avenda Fagundes Filho, 620 Bairro Saude, São Paulo, SP04304-000, Brasil  
Phone: 55-11-3585-1100 Fax: 55-11-5581-8795  
<http://www.yaskawa.com.br>

**YASKAWA ELECTRIC EUROPE GmbH**

Hauptstraße 185, 65760 Eschborn, Germany  
Phone: 49-6196-569-300 Fax: 49-6196-569-398

**YASKAWA ELECTRIC UK LTD.**

1 Hunt Hill Orchardton Woods, Cumbernauld, G68 9LF, United Kingdom  
Phone: 44-1236-735000 Fax: 44-1236-458182

**YASKAWA ELECTRIC KOREA CORPORATION**

7F, Doore Bldg. 24, Yeoido-dong, Youngdungpo-Ku, Seoul, 150-877, Korea  
Phone: 82-2-784-7844 Fax: 82-2-784-8495

**YASKAWA ELECTRIC (SINGAPORE) PTE. LTD.**

151 Lorong Chuan, #04-02A, New Tech Park, 556741, Singapore  
Phone: 65-6282-3003 Fax: 65-6289-3003

**YASKAWA ELECTRIC (SHANGHAI) CO., LTD.**

No. 18 Xizang Zhong Road, Room 1702-1707, Harbour Ring Plaza, Shanghai, 200001, China  
Phone: 86-21-5385-2200 Fax: 86-21-5385-3299

**YASKAWA ELECTRIC (SHANGHAI) CO., LTD. BEIJING OFFICE**

Room 1011A, Tower W3 Oriental Plaza, No. 1 East Chang An Ave.,  
Dong Cheng District, Beijing, 100738, China  
Phone: 86-10-8518-4086 Fax: 86-10-8518-4082

**YASKAWA ELECTRIC TAIWAN CORPORATION**

9F, 16, Nanking E. Rd., Sec. 3, Taipei, Taiwan  
Phone: 886-2-2502-5003 Fax: 886-2-2505-1280



YASKAWA

YASKAWA ELECTRIC CORPORATION

In the event that the end user of this product is to be the military and said product is to be employed in any weapons systems or the manufacture thereof, the export will fall under the relevant regulations as stipulated in the Foreign Exchange and Foreign Trade Regulations. Therefore, be sure to follow all procedures and submit all relevant documentation according to any and all rules, regulations and laws that may apply.

Specifications are subject to change without notice for ongoing product modifications and improvements.

© 2010 YASKAWA ELECTRIC CORPORATION. All rights reserved.

MANUAL NO. SIEP C730600 54A

Published in Japan June 2010 10-6  
10-3-3