

YASKAWA 1000-Series Option LED Operator Installation Manual

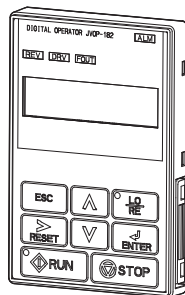
Type: JVOP-182

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

安川 1000シリーズ オプション LEDオペレータ 取扱説明書

形 式 JVOP-182

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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.

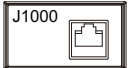
◆ Applicable Documentation

The following manuals are available for the JVOP-182 LED Operator Option:

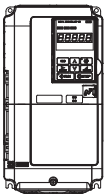
LED Operator

	Yaskawa AC Drive 1000-Series Option LED Operator Installation Manual Manual No: TOBP C730600 35 (this book)	Read this manual first. The installation manual is packaged with the option and contains information required to install the option and set up related unit parameters.
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RS-232C Interface Option

	Yaskawa AC Drive-J1000 Option RS-232C Interface Technical Manual	The Technical Manual is packaged with the RS-232C Interface Option and contains a basic overview of wiring, settings, functions, and fault diagnoses.
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Yaskawa Unit

	Yaskawa AC Drive 1000-Series Quick Start Guide	The unit manuals cover basic installation, wiring, operation procedures, functions, troubleshooting, and maintenance information.
	Yaskawa AC Drive 1000-Series Technical Manual	
	YASKAWA D1000 Series Power Regenerative Converter Instruction Manual	The manuals also include important information about parameter settings and unit tuning. Access these sites to obtain Yaskawa instruction manuals: U.S.: http://www.yaskawa.com Europe: http://www.yaskawa.eu.com Japan: http://www.e-mechatronics.com For questions, contact your local Yaskawa sales office or the nearest Yaskawa representative.
	YASKAWA R1000 Series Power Regenerative Unit Instruction Manual	

1 Preface and Safety

◆ Terms

Note:	Indicates a supplement or precaution that does not cause unit damage.
≥ PRG: 1010:	Indicates a unit feature or function that is only available in unit software version 1010 or greater.
LED:	Light emitting diode.
Option:	YASKAWA 1000-Series Option LED Operator
Unit:	• YASKAWA AC Drive 1000-Series • YASKAWA D1000 Series Power Regenerative Converter • YASKAWA R1000 Series Power Regenerative Unit
Drive:	• YASKAWA AC Drive 1000-Series A1000 High Performance Vector Control Drive • YASKAWA AC Drive 1000-Series V1000 Compact Vector Control Drive • YASKAWA AC-Drive 1000-Series J1000 Compact V/f Control Drive
Converter:	YASKAWA D1000 Series Power Regenerative Converter
Regenerative Unit:	YASKAWA R1000 Series Power Regenerative Unit

◆ Registered Trademarks

Company names and product names listed in this manual are the registered trademarks of those companies.

◆ Supplemental Safety Information

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

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



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 section may include options and units without covers or safety shields to illustrate details. Be sure to reinstall covers or shields before operating any devices. The option board should be used 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 a new copy of the manual due to damage or loss, contact your 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 unit to halogen group disinfectants.

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

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

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

2 Product Overview

◆ About This Product

The option provides an enhanced unit user interface that can operate the Yaskawa unit from up to 3 meters away. The option is an LED display that simplifies the task of interfacing with the unit to perform these tasks:

- Read or modify unit parameters.
- Read and copy unit parameter settings to another Yaskawa unit.
- Operate the unit.
- Monitor unit operation status.

All keys except for the STOP key on the units built-in LED operator will not function when the option is connected to V1000 and J1000. <1>

<1> If desired, to also disable the STOP key on the units built-in LED operator, set parameter o2-02 (STOP Key Function Selection) to 0 (Disabled).

◆ Applicable Models

The option can be used with the unit models in [Table 1](#).

Table 1 Applicable Unit Models

Unit	Unit Software Version <1>
A1000	All versions
V1000	≥ PRG: 1016
J1000	All versions
D1000	All versions
R1000	All versions

<1> See “PRG” on the unit nameplate for software version number.

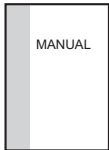
3 Receiving

Perform the following tasks after receiving the option:

- Inspect the option for damage.
If the option appears damaged upon receipt, contact the shipper immediately.
- Verify receipt of the correct model by checking the model number printed on the Name plate of the option.
- If you have received the wrong model or the option does not function properly, contact your supplier.

◆ Contents and Packaging

Table 2 Contents of Package

Description:	Option	Installation Manual
		
Quantity:	1	1

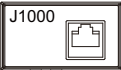
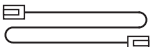
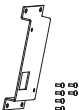
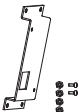
■ Parts Sold Separately

Proper installation of the option requires a digital operator cable (sold separately). A communication cable may be purchased from Yaskawa or recommended LAN cables may be used.

Installation support kit A or B (sold separately) may also be required depending on the option installation method. Refer to [Table 3. Refer to Installing the Option on page 20](#) for more information regarding installation methods.

To order a communication or an installation support kit, contact Yaskawa directly or your nearest Yaskawa distributor.

Table 3 Item Names and Part Numbers (Sold Separately)

Item	Yaskawa Part Number	Notes	Page
 J1000 RS-232C Interface Option	SI-232/J	<3>	24
 Digital Operator Cable 1 m (3 ft.) <1>	WV001 Part number for the Americas: UWR0051	Alternate cables (customer-supplied), RJ45 8-pin Straight Connector UTP Cat5e cable	23
 Digital Operator Cable 3 m (10 ft.) <1>	WV003 Part number for the Americas: UWR0052	Alternate cables (customer-supplied), RJ45 8-pin Straight Connector UTP Cat5e cable	23
 Installation Support Kit A	EZZ020642A	Sold Separately; For use with holes through the panel	22
 Installation Support Kit B <2>	EZZ020642B	Sold Separately; For use with panel-mounted threaded studs	22

<1> Digital Operator Cable: Used to connect the digital operator to the drive (sold separately).

<2> Use Installation Support Kit B when weld studs are on the back of the panel.

<3> To connect the option to J1000, install the RS-232C Interface Option to the unit.

◆ Tool Requirements

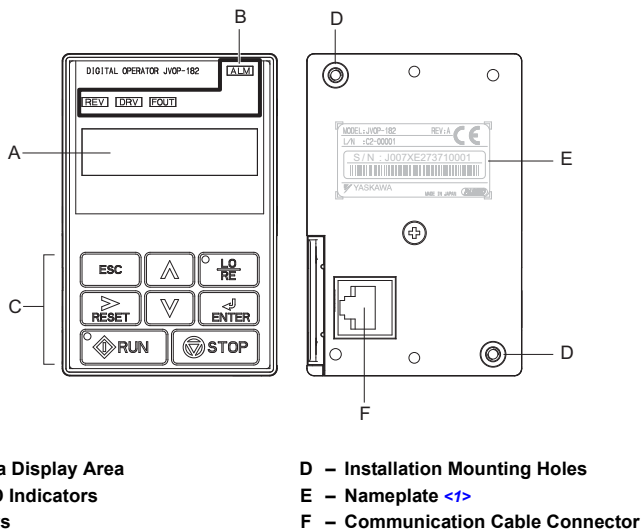
The tools listed in [Table 4](#) are required to install the option on an enclosure panel door.

Table 4 Required Tools

Installation Location	Installation Support	Required Tools
External/Face Mount	—	Phillips screwdriver, M3
Internal/Flush Mount	Installation Support Kit A	Phillips screwdriver, M3, M4
	Installation Support Kit B	Phillips screwdriver, M3 Box end or adjustable wrench, M4

4 Option Components

◆ Option



<1> REV: Display option version.

Figure 1 Option Components

◆ Keys

Refer to [Figure 2](#) and [Table 5](#) for details on key names and functions.

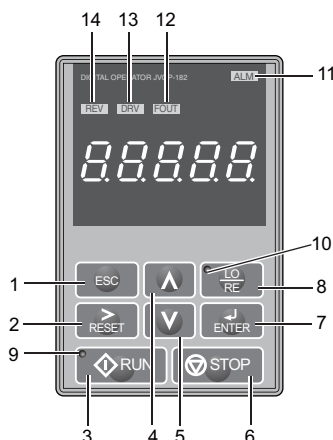


Figure 2 Keys

Table 5 Key Names and Functions

No.	Key	Name	Function
1		ESC Key	- Returns to the previous display. - Moves the cursor one space to the left. - Pressing and holding this button will return to the following display: Drive: Frequency Reference Converter: DC Bus Voltage Reference Regenerative unit: DC Bus Voltage
2		RESET Key	- Moves the cursor to the right. - Resets the unit to clear a fault situation.
3		RUN Key	Starts the unit and motor.
4		Up Arrow Key	Scrolls up to display the next item, selects parameter numbers and increments setting values.

4 Option Components

No.	Key	Name	Function
5		Down Arrow Key	Scrolls down to display the previous item, selects parameter numbers and decrements setting values.
6		STOP Key	Stops unit operation. Note: The STOP key can be enabled or disabled when operating from the external terminal or network communications by setting parameter o2-02.
7		ENTER Key	- Enters parameter values and settings. - Selects a menu item to move between displays.
8		LO/RE Selection Key	Switches unit control between the operator (LOCAL) and an external source (REMOTE) for the Run command and frequency reference. Note: The LOCAL/REMOTE key is only effective when the unit is stopped in Drive Mode. As a safety precaution, it is possible to disable the LO/RE Selection Key by setting parameter o2-01 (LOCAL/REMOTE Key Function Selection) to 0 (disabled). <I>
9		RUN Light	Illuminated during an operation. <i>Refer to Option LED Status Indicators on page 15 for details.</i>
10		LO/RE Light	Illuminated while the option is selected to run the unit (LOCAL mode).
11		ALM LED Light	<i>Refer to LED Screen Display on page 18</i>
12		REV LED Light	
13		DRV LED Light	
14		FOUT LED Light	

<1> o2-01 (LOCAL/REMOTE Key Function Selection) is not compatible with J1000. LO/RE Selection Key is always effective.

<2> These LEDs are not lit in D1000.

◆ Option LED Status Indicators

■ Connecting the Option to A1000, V1000, or J1000

Table 6 LED Status and Meaning

LED	Illuminated	Flashing <1>	Flashing Quickly <1>	Off
	When the option is selected for Run command and frequency reference control (LOCAL).	—	—	When a device other than the option is selected for Run command and frequency reference control (REMOTE).
	During run.	- During deceleration to stop. - When a Run command is input and the frequency reference is 0 Hz.	- During deceleration when a Fast Stop command was entered. - During stop by External Fault digital input.	During stop.
Examples				

<1> Refer to [Figure 3](#) for the difference between “flashing” and “flashing quickly”.

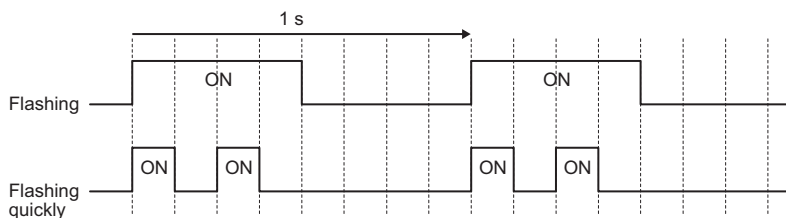


Figure 3 RUN LED Status

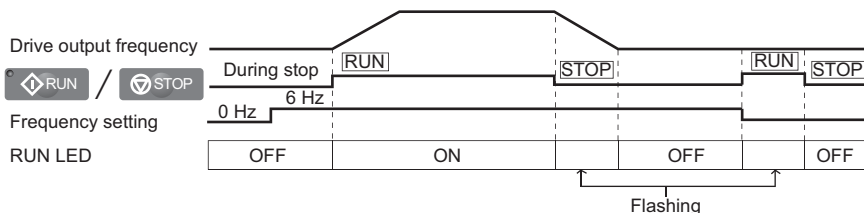


Figure 4 RUN LED and Drive Operation

4 Option Components

■ Connecting the Option to D1000

Table 7 LED Status and Meaning

LED	Illuminated	Flashing Quickly <1>	Off
	When the option is selected for Run command and frequency reference control (LOCAL).	—	When a device other than the option is selected for Run command and frequency reference control (REMOTE).
	During run.	During stop by External Fault digital input.	During stop.
Examples			

<1> Refer to [Figure 5](#) for the difference between “flashing” and “flashing quickly”.

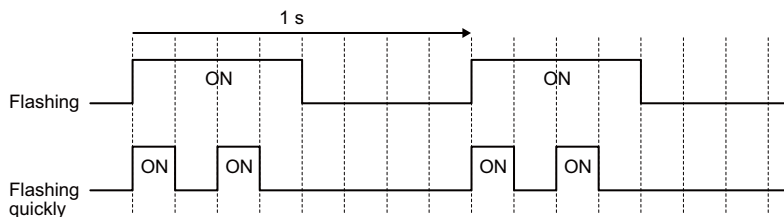


Figure 5 RUN LED Status

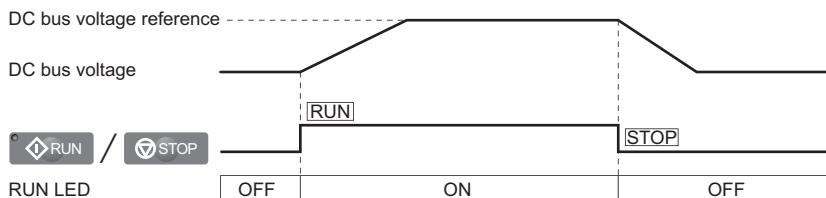


Figure 6 RUN LED and Converter Operation

■ Connecting the Option to R1000

Table 8 LED Status and Meaning

LED	Illuminated	Flashing Quickly <1>	Off
	When the run command is selected from the LED operator (LOCAL).	—	When a device other than the option is selected for Run command and frequency reference control (REMOTE).
	During run.	During stop by External Fault digital input.	During stop.
Examples			

<1> Refer to [Figure 7](#) for the difference between “flashing” and “flashing quickly”.

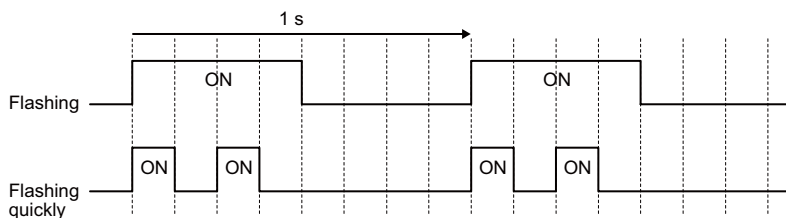


Figure 7 RUN LED Status

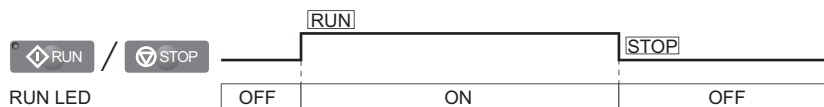
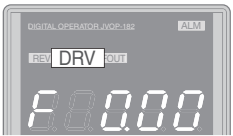
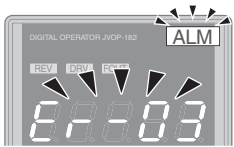


Figure 8 RUN LED and Regenerative Unit Operation

4 Option Components

◆ LED Screen Display

Display	Lit	Flashing	Off
ALM	When the unit detects an alarm or error	- When an alarm occurs - oPE detected	Normal state (no fault or alarm)
REV </>	Motor is rotating in reverse	—	Motor is rotating forward
DRV	Drive Mode	—	Programming Mode
FOUT </>	Displays output frequency (Hz)	—	—
As illustrated in this manual			

<1> These LEDs are not lit in D1000 or R1000.

5 Installation Procedure

◆ Section Safety

NOTICE

Damage to Equipment

Use only Yaskawa connection cables or recommended cables.

Failure to comply may cause the unit or option to function incorrectly.

Properly connect the connectors.

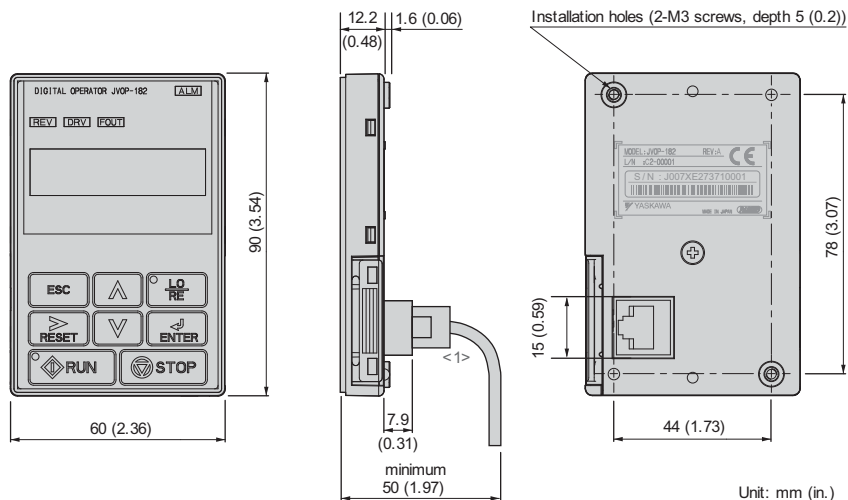
Failure to comply may prevent proper operation and possibly damage equipment.

Do not exceed communication cable bend radius specifications.

Failure to comply may result in broken wires or loose connections.

5 Installation Procedure

◆ Option Dimensions



<1> Use only Yaskawa cables or cables recommended by Yaskawa. Refer to [Item Names and Part Numbers \(Sold Separately\) on page 11](#)

Figure 9 Dimensions

◆ Installing the Option

The option mounts to an enclosure two different ways:

- **External/face-mount** installs the operator outside the enclosure panel.
- **Internal/flush-mount** installs the operator inside the enclosure panel.

Table 9 Option Installation Methods

Installation Method	Description	Notes
External/Face-mount	Simplified installation with the option is mounted on the outside of the panel with two screws.	—
Internal/Flush-mount	Encloses the option in the panel. The front of the option is flush with the outside of the panel.	Requires purchase of separate items. Refer to Item Names and Part Numbers (Sold Separately) on page 11.

NOTICE: Prevent foreign matter such as metal shavings or wire clippings from falling into the unit during installation and project construction. Failure to comply could result in damage to the unit. Place a temporary cover over the top of the unit during installation. Remove the temporary cover before startup, as the cover will reduce ventilation and cause the unit to overheat.

External/Face-mount Installation

1. Cut an opening in the enclosure panel for the option according to [Figure 10](#).
2. Position the option so the LED display faces outwards, and mount it to the enclosure panel as shown in [Figure 10](#).

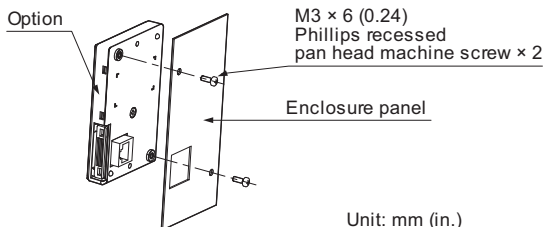


Figure 10 External/Face-mount Installation

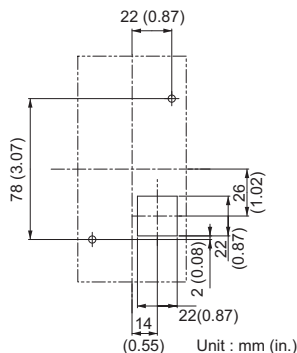


Figure 11 Panel Cut-out Dimensions (External/Face-mount Installation)

5 Installation Procedure

■ Internal/Flush-mount Installation

The internal flush-mount installation method requires an installation support that is purchased separately. *Refer to Item Names and Part Numbers (Sold Separately) on page 11* for information regarding the installation support and mounting hardware. **Figure 12** illustrates how to install Installation Support Kit A.

1. Cut an opening in the enclosure panel for the option according to **Figure 13**.
2. Mount the option to the installation support (sold separately).
3. Mount the installation support and option to the enclosure panel.

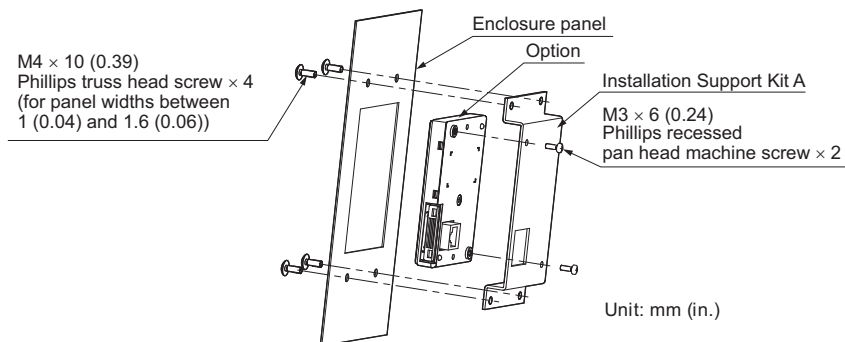


Figure 12 Internal/Flush Mount Installation

Note: For environments with a significant amount of dust or other airborne debris, use a gasket between the enclosure panel and the option.

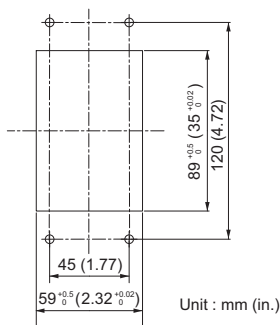


Figure 13 Panel Cut-out Dimensions (Internal/Flush-mount Installation)

◆ Connecting the Option to the Unit

This section contains instructions for connecting the option to units.

■ Connecting the Option to V1000

Plug the customer-supplied communication cable into the communication cable connector of the option and the drive communications port as shown in **Figure 15**. Ensure both cable ends are firmly connected. **Refer to Item Names and Part Numbers (Sold Separately) on page 11** for information regarding recommended cables.

Note: Use only Yaskawa recommended cables. Using a cable not specified may cause the option or drive to malfunction.

Note: The STOP key on the built-in LED operator of the drive is the only functional key on the drive when the option is connected and parameter b1-02 is set to 0 (LCD Operator or Option). Set parameter o2-02 (STOP Key Function Selection) to 0 (Disable) to disable the STOP key.

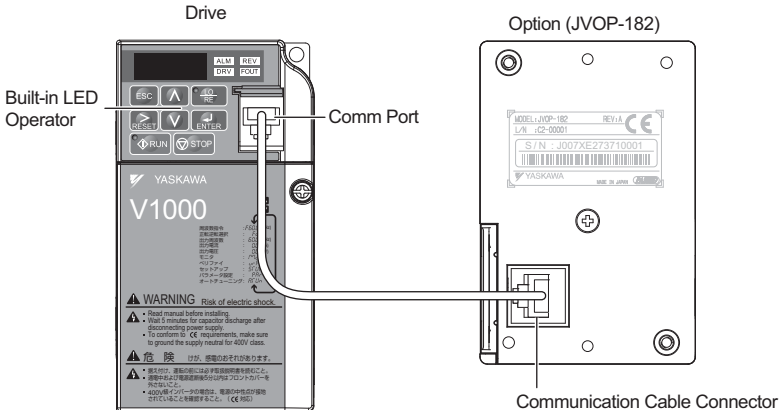


Figure 14 Communication Cable Connection

5 Installation Procedure

■ Connecting the Option to J1000

Note: Attach the RS-232C Interface Option (SI-232/J) to the drive before connecting the option to the drive.

Plug the customer-supplied communication cable into the communication cable connector of the option and the drive communications port of the RS-232C Interface Option (SI-232/J) as shown in **Figure 15**. Ensure both cable ends are firmly connected. *Refer to Item Names and Part Numbers (Sold Separately) on page 11* for information regarding recommended cables.

NOTICE: Use only Yaskawa recommended cables. Using a cable not specified may cause the option or drive to malfunction.

Note: The STOP key on the built-in LED operator of the drive is the only functional key on the drive when the option is connected and parameter b1-02 is set to 0 (LCD Operator or Option). Set parameter o2-02 (STOP Key Function Selection) to 0 (Disable) to disable the STOP key.

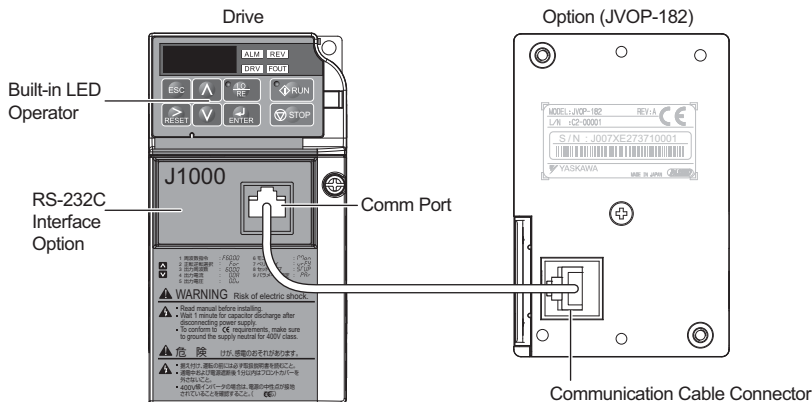


Figure 15 Communication Cable Connection

■ Connecting the LCD Operator Option to A1000, D1000, or R1000

Plug the customer-supplied communication cable into the communication cable connector of the option and the unit communications port as shown in **Figure 15**. Ensure both cable ends are firmly connected. *Refer to Item Names and Part Numbers (Sold Separately) on page 11* for information regarding recommended cables.

Note: Use only Yaskawa recommended cables. Using a cable not specified may cause the option or unit to malfunction.

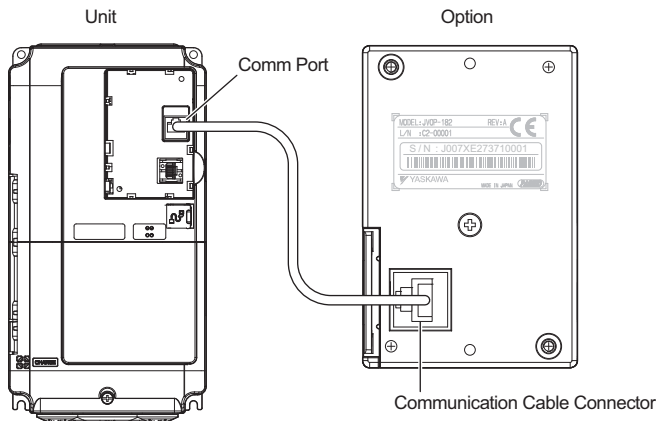


Figure 16 Communication Cable Connection

6 Basic Operation

◆ Basic Operation for Option

The option operates in the same way as the option or built in the unit.
Refer to the J1000 Manuals for option main structure and basic Operation.

◆ Functions characteristic of the Option

■ Read/Copy Function Procedure

Read

Reads and saves parameter settings from the unit to the option.

The option can perform the Read function an estimated 100,000 times.

Copy

Copies parameter settings from the option to another Yaskawa unit.

These parameters control the Copy function of the digital operator. The Copy function stores parameter settings into the memory of the digital operator to facilitate the transfer of those settings to other units that are the same model, capacity, and same control mode setting.

Note: Parameter settings can only be copied to other units that are the same model, capacity, and have the same control mode setting.

Verify

Verifies parameter settings in the unit match parameter settings saved to the option.

The following procedure is used to read parameters from the unit.

- Note:**
1. Set parameter o3-02 (Read Allowable) to 1 (Enable) to read the parameter settings from the unit. Set parameter o3-02 to 0 (Disable) to protect the parameter settings in the option.
 2. If D1000 is used, refer to the D1000 Installation Manual.

Step	Display/Result
1. Turn on the power to the unit. The initial display appears.	
2. Press · to select the Parameter Setting and Press .	
3. Press · · to select o3-01 (Copy Function Selection) and press .	
4. Press · to select 01.	
5. Press and the option will read parameter settings from the unit.	
6. Automatically return to the Copy Function Selection display.	
7. Press repeatedly until the display returns to the initial display.	

7 Related Parameters

Parameters related to the use of the option are listed in [Table 10](#). Set these parameters as needed for the application.

Table 10 Related Parameters

No.	Name	Unit				Description	Values
		J1000	A1000/ V1000	D1000	R1000		
b1-01	Frequency Reference Selection 1	YES	YES	N/A	N/A	Selects the source of the frequency reference. 0: LED operator or LCD operator -Digital preset speed d1-01 to d1-17 1: Terminals - Analog input terminal A1 or A2 2: MEMOBUS/Modbus serial communications 3: Option PCB 4: Pulse Input (Terminal RP) </>	Default: 1 Range: 0 to 4
b1-02	Run Command Selection 1	YES	YES	YES	YES	Selects the Run command input source. 0: LED operator or LCD operator -RUN and STOP keys on the LED Operator Option 1: Digital input terminals S1 to S7 2: MEMOBUS/Modbus serial communications 3: Option PCB </>	Default: 1 Range: 0 to 3
b1-15	Frequency Reference 2	N/A	YES	N/A	N/A	Selects the frequency reference input source. 0: LED operator or LCD operator - Digital preset speed d1-01 to d1-17 1: Terminals - Analog input terminal A1 or A2 2: MEMOBUS/Modbus serial communications 3: Option PCB 4: Pulse Input (Terminal RP)	Default: 0 Range: 0 to 4
b1-16	Run Command Source 2	N/A	YES	N/A	N/A	Selects the Run command input source. 0: LED operator or LCD operator - RUN and STOP keys on the LED Operator Option 1: Digital input terminals S1 to S7 2: MEMOBUS/Modbus serial communications 3: Option PCB	Default: 0 Range: 0 to 3

No.	Name	Unit				Description	Values
		J1000	A1000/ V1000	D1000	R1000		
b1-18	Voltage Reference Source	N/A	N/A	YES	N/A	Sets the input source for the DC bus voltage reference. 0: LED operator or LCD operator 1: Control circuit terminal (analog input) 2: MEMOBUS/Modbus communications 3: Option card 7: Input voltage based control 1 8: Input voltage based control 2	Default: 0 Range: 0 to 3, 7, 8
o2-01	LOCAL/ REMOTE Key Function Selection	N/A	YES	YES	YES	Enables/Disables the option LOCAL/ REMOTE key. 0: Disabled 1: Enabled	Default: 1 Range: 0, 1
o2-02	STOP Key Function Selection	YES	YES	YES	YES	Enables/Disables the operator panel STOP key when the unit is operated from external sources (not operator). 0: Disabled 1: Enabled	Default: 1 Range: 0, 1
o2-05	Frequency Reference Setting Method Selection	YES	YES	N/A	N/A	Selects if the ENTER key press is required when inputting the frequency reference by the digital operator. 0: Data/Enter key must be pressed to enter a frequency reference. 1: Data/Enter key is not required. The frequency reference is adjusted by the up and down arrow keys.	Default: 0 Range: 0, 1
o2-06	Operation Selection when LED Operator Option is Disconnected	YES	YES	YES	YES	Sets unit action when the option is removed in LOCAL mode or with b1-02 = 0. 0: The drive, converter, or regenerative unit will continue operation. 1: The drive, converter, or regenerative unit will trigger a fault (oPr) and the motor will coast to stop.	Default: 0 Range: 0, 1

7 Related Parameters

No.	Name	Unit				Description	Values
		J1000	A1000/ V1000	D1000	R1000		
o3-01	Copy Function Selection	YES	YES	YES	YES	This parameter controls the copying of parameters to and from the option. 0: COPY SELECT (no function) 1: All parameters are copied from the unit to the LED Operator Option or LCD Operator Option. 2: All parameters are copied from the LED Operator Option or LCD Operator Option to the drive, converter, or regenerative unit. 3: Parameter settings in the drive, converter, or regenerative unit are compared to those in the LED Operator Option or LCD Operator Option. Note: When using the copy function, the drive model number (o2-04), software number (U1-14), and control method (A1-02) must match or an error will occur.	Default: 0 Range: 0 to 3
o3-02	Copy Allowable	YES	YES	YES	YES	Enables or disables reading of unit parameter settings. 0: Disabled - Read not allowed 1: Enabled - Read allowed	Default: 0 Range: 0, 1

<1> b1-01 = 4 and b1-02 = 3 are not compatible with the J1000.

8 Option Fault Diagnostics

◆ Error Code and Connection Messages

Fault/Error code text will appear on the option display to indicate a specific fault. The fault codes in [Table 11](#) are displayed on the LED operator built in the drive and/or the option displays. For information on the fault codes not listed in [Table 11](#), refer to the unit manual.

When an option fault occurs, ensure that the communication cable is properly connected to the option and it is not loose.

Contact your nearest Yaskawa representative or sales department if the cable appears to be connected properly but still no message appears to indicate the error.

Note: If A1000, D1000, or R1000 is used, the fault codes are displayed on the option only.

Table 11 Fault/Error Code Displays

LED Operator (JVOP-182)	LED Operator (V1000 and J1000 built-in)	Description
CPFD0	</>	LED Operator (JVOP-182) Communication Error 1
		Occurs when the unit cannot communicate with the option within 5 seconds after the power is switched on.
Cause		Possible Solution
Communication cable between the option and the unit is not properly connected.		Remove and reconnect the option.
Problem with the option.		Replace the option.
Problem with the control circuit in the unit.		• Cycle power to the unit. • Replace the unit.
LED Operator (JVOP-182)	LED Operator (V1000 and J1000 built-in)	Description
CPFD1	</>	LED Operator (JVOP-182) Communication Error 2
		Occurs when the unit does not respond to the option for longer than 2 seconds.
Cause		Possible Solution
Connector on the option cable is loose or damaged.		Remove and reconnect the option.
Problem with the option.		Replace the option.
Problem with the control circuit in the unit.		• Cycle power to the unit. • Replace the unit.

8 Option Fault Diagnostics

LED Operator (JVOP-182)	LED Operator (V1000 and J1000 built-in)	Description
oPr	oPr	LED Operator Option Connection Fault
		Data should appear on the LED operator built in the unit. By reconnecting the option to the unit, data should also appear on the option display. An oPr fault will occur when both of the following conditions are true: Output is interrupted when the option is disconnected (o2-06 = 1). The Run command is assigned to the option (b1-02/b1-16= 0 and LOCAL is selected).
Cause		Possible Solution
Option is not properly connected to the unit.		• Check the connection between the option and the unit. • Replace the cable if damaged. • Turn off the unit input power and disconnect the option. Reconnect the option and reapply unit input power.

<1> Display will vary depending on operation status.

9 Specifications

Table 12 Option Specifications

Model	JVOP-182
Connector	RJ-45
Power Supply	Powered from the unit (DC +5 V $\pm$ 5%)
Operating Temperature	-10 to +50 °C (+14 to +122 °F)
Humidity	up to 95% RH (no condensation)
Storage Temperature	-20 to +60 °C (-4 to +140 °F) (allowed for short-term transport of the product)
Area of Use	Indoor (free of corrosive gas, airborne particles, etc.)
Altitude	Up to 1000 m (3280 ft.)
Shock	10 to 20 Hz: 9.8 m/s ² 20 to 55 Hz: 5.9 m/s ²
Read Function Limitation	Estimated 100,000 times

10 Revision History

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

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		Back cover	Revision: Address
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