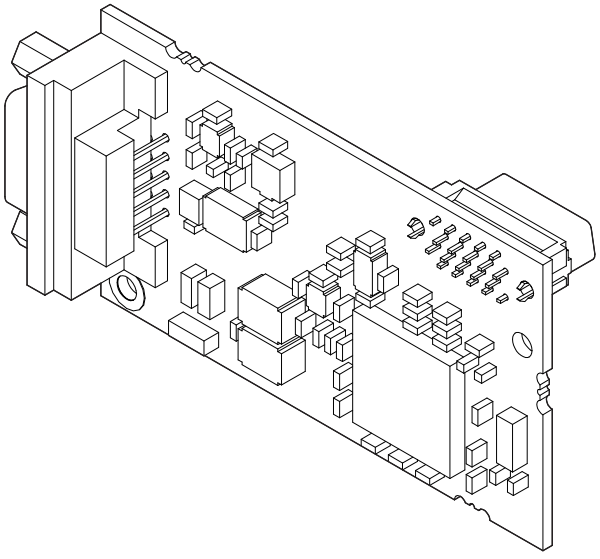
YASKAWA

CANopen-Lift Communication Option

Communication Option Card for Lift Inverter Drive YASKAWA L1000A

Installation Manual

Type: SI-L3



MANUAL NO. SIEP YEUOCL1 01A

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1 Preface and General Precautions

This chapter describes important safety precautions regarding the use of this product. Failure to follow these precautions may result in serious injury or death, and may lead to damage to this product or related devices and systems. Yaskawa shall not be held responsible for any injury or equipment damage as a result of failure to observe the precautions and instructions contained in this manual.

◆ Receiving

This instruction manual contains the information necessary to use the product correctly. Thoroughly read this manual before installing, wiring, operating, or performing maintenance and inspections. Make sure to read and understand the safety information and precautions before using the product.

■ About Terms and Abbreviations in This Document

Representations Used in This Manual	Description
CANopen-Lift Option	Yaskawa CANopen Lift communication option card
Online-DRV	Processing mode, process (ctrl/resp) data is active
Online-DRVMB	Processing mode, process resp data is active, ctrl data is on hold (until MEMOBUS process is complete)
Online-PRG	Processing mode, NO process (ctrl/resp) data is active
Host	YASKAWA inverter drive for Lift L1000A
LED	Light Emitting Diode
OPT, Option	The unit described in this document
INV, Inverter	Inverter drive
PCB	Printed Circuit Board
FCS	Frame Check Sequence
INVR	MEMOBUS register number
EDS	Electronic Data Sheet file

■ About Registered Trademarks

- CANopen® is a registered Community Trademark of CAN in Automation e.V.
- Other company names and product names that appear in this document are trademarks or registered trademarks of the respective companies.

◆ Safety

Read the safety guidelines carefully before installing, wiring, or operating this product.

■ Explanation of Signal Words

⚠ DANGER *Identifies a hazardous situation, which, if not avoided, will cause death or serious injury.*

⚠ WARNING *Identifies a hazardous situation, which, if not avoided, can cause death or serious injury.*

⚠ CAUTION *Identifies a hazardous situation, which, if not avoided, can cause minor or moderate injury.*

NOTICE *Identifies a property damage message.*

■ General Safety Instructions

Yaskawa Electric manufactures and supplies electronic components for a variety of industrial applications. The selection and application of Yaskawa products is the responsibility of the designer of the equipment or the customer that assembles the final product. Yaskawa is not responsible for how our products are incorporated into the final system design. In all cases, Yaskawa products should not be incorporated into a product or design as the exclusive or sole safety control function. All control functions are designed to dynamically detect failures and operate safely without exception. All products that are designed to incorporate parts manufactured by Yaskawa must be provided to the end user and include proper warnings and instructions regarding their safe use and

operation. All warnings from Yaskawa must be promptly issued to the end user. Yaskawa offers warranties only for the quality of our products, in compliance with standards and specifications that are described in the manual. Yaskawa does not offer other warranties, either explicit or implied. Yaskawa assumes no responsibility for personal injury, property damage or loss, or compensation for damage caused by the incorrect application of our products.

Note:

Be aware that serious injury or death may result if the warnings described in this manual are not observed. Yaskawa assumes no responsibility for injuries or equipment damage to your company or customers that are caused by a failure to observe the information contained in this manual.

- Read this manual carefully when mounting, operating, and repairing AC drives and Communication options.
- Follow all warnings, cautions, and instructions.
- All work should be carried out by qualified personnel.
- Ensure the drive is installed to an area that matches the following conditions.

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

⚠ WARNING *Fire Hazard. Do not connect power supply wiring to drive output terminals U/T1, V/T2, and W/T3. Connect power supply wiring to main circuit input terminals R/L1, S/L2, and T/L3. Failure to obey can cause death or serious injury.*

⚠ WARNING *Electrical Shock Hazard. Do not make changes to the drive body or drive circuitry. Failure to obey can cause death or serious injury and will void warranty. Yaskawa is not responsible for changes to the product made by the user.*

⚠ WARNING *Electrical Shock Hazard. Only let authorized persons install, wire, maintain, examine, replace parts, and repair the drive. Failure to obey can cause death or serious injury.*

⚠ WARNING *Electrical Shock Hazard. Always ground the motor-side grounding terminal. Contacting the motor case can cause death or serious injury from incorrect equipment grounding.*

⚠ WARNING *Electrical Shock Hazard. Do not work on the drive or around the drive while wearing loose clothing or jewelry. Tighten loose clothing and remove all metal objects such as watches or rings. Failure to obey can cause death or serious injury.*

⚠ WARNING *Electrical Shock Hazard. The leakage current of the drive will be more than 3.5 mA in drive models 2xxxB, 2xxxC, 4002B to 4371B, 4002C to 4371C (with built-in EMC filter turned ON) and 4389 to 4675. The IEC/EN 61800-5-1: 2007 standard specifies that users must wire the power supply to automatically turn off when the protective ground wire disconnects. Users can also connect a protective ground wire that has a minimum cross-sectional area of 10 mm^2 (copper wire) or 16 mm^2 (aluminum wire). Failure to obey these standards can cause death or serious injury.*

⚠ WARNING *Sudden Movement Hazard. Remove all persons and objects from the area around the drive, motor, and load before starting Auto-Tuning. The drive and motor can start suddenly during Auto-Tuning and cause death or serious injury.*

⚠ WARNING *Sudden Movement Hazard. Remove all persons and objects from the area around the drive, motor, and machine area and attach covers, couplings, shaft keys, and machine loads before energizing the drive. Failure to obey can cause death or serious injury.*

⚠ WARNING *Fire Hazard. Do not use the main circuit power supply (Overcurrent Category III) at incorrect voltages. Make sure that the drive rated voltage aligns with the power supply voltage before energizing the drive. Failure to obey can cause death or serious injury.*

⚠ WARNING *Fire Hazard. Do not put flammable or combustible materials on top of the drive and do not install the drive near flammable or combustible materials. Attach the drive to metal or other noncombustible material. Failure to obey can cause death or serious injury.*

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

⚠ WARNING *Electrical Shock Hazard. Do not cause a short circuit on the drive output circuit. Failure to obey can cause death or serious injury.*

⚠ WARNING *Electrical Shock Hazard. Always use a type B Residual Current Monitor/Residual Current Device (RCM/RCD) where a residual current operated protective or monitoring device protects against direct or indirect contact as specified by IEC/EN 60755 The drive can cause a residual current with a DC component in the protective earthing conductor. Failure to obey can cause death or serious injury.*

⚠ WARNING *Electrical Shock Hazard. Ground the neutral point on the power supply of drive models 2xxxB/C and 4xxxA/B/C to comply with the EMC Directive before turning on the EMC filter or if there is high resistance grounding. If the EMC filter is switched ON without the neutral point being grounded or if there is high resistance grounding, it can cause death or serious injury.*

⚠ WARNING *Electrical Shock Hazard. Do not immediately energize the drive or operate peripheral devices after the drive blows a fuse or trips an RCM/RCD. Wait for the time specified on the warning label at a minimum and make sure that all indicators are OFF. Then check the wiring and peripheral device ratings to find the cause of the problem. Contact Yaskawa before energizing the drive or peripheral devices if the cause is not known. Failure to obey can cause death or serious injury and damage to the drive.*

⚠ WARNING *Fire Hazard. Install sufficient branch circuit short circuit protection as specified by applicable codes and this manual. The drive is suited for circuits that supply not more than 100,000 RMS symmetrical amperes, 240 Vac maximum (200 V Class), 480 Vac maximum (400 V Class). Failure to obey can cause death or serious injury.*

⚠ CAUTION *Burn Hazard. Do not touch a hot drive heatsink. De-energize the drive, wait 15 minutes minimum, and make sure that the heatsink is cool to replace the cooling fans. Failure to obey can cause minor to moderate injury.*

NOTICE *Observe correct electrostatic discharge (ESD) procedures when touching the drive and circuit boards. Failure to obey can cause ESD damage to the drive circuitry.*

NOTICE *Do not connect or disconnect the motor from the drive while the drive is supplying voltage. Incorrect equipment sequencing can cause damage to the drive.*

NOTICE *Do not do a withstand voltage test or Megger test on the drive. Failure to obey can cause damage to the drive.*

NOTICE *Do not connect or operate damaged equipment or equipment with missing parts. Failure to obey can cause damage to the drive and connected equipment.*

NOTICE *Install fuses and an RCM/RCD. Failure to obey can cause damage to the drive.*

NOTICE *Do not use unshielded wire for control wiring. Use shielded, twisted-pair wires and ground the shield to the ground terminal of the drive. Failure to obey can cause electrical interference and unsatisfactory system performance.*

NOTICE *Make sure that all connections are correct after you install the drive and connecting peripheral devices. Failure to obey can cause damage to the drive.*

■ Intended Use

This communication option card is electrical equipment intended to enable Yaskawa drives to communicate with an additional fieldbus system for commercial use. Do not use this product for any other purpose.

1. Read and understand all safety precautions.
2. Wire and ground the drive and communication option card in accordance with all applicable standards and safety precautions.
3. Firmly attach all parts and protective covers.
4. Always use the product in the proper environmental conditions as specified in this manual.

⚠ DANGER *Electrical Shock Hazard. Make sure that all electrical connections are correct and install all drive covers before energizing the drive. Use terminals for their intended function only. Incorrect wiring or ground connections, and incorrect repair of protective covers can cause death or serious injury.*

⚠ WARNING *Electrical Shock Hazard. Do not make changes to the drive body or drive circuitry. Failure to obey can cause death or serious injury and will void warranty. Yaskawa is not responsible for changes to the product made by the user.*

◆ Exclusion of Liability

This product is not designed and manufactured for use in life-support machines or systems.

Contact a Yaskawa representative or your Yaskawa sales representative if you are considering the application of this product for special purposes, such as machines or systems used for passenger cars, medicine, airplanes and aerospace, nuclear power, electric power, or undersea relaying.

⚠ WARNING *Injury to Personnel. Yaskawa manufactured this product with strict quality-control guidelines. Install applicable safety devices to minimize the risk of accidents when installing the product where its failure could cause a life-or-death situation, loss of human life, or a serious accident or physical injury.*

2 Product Overview

◆ About This Product

The CANopen-Lift Communication Option (Model: SI-L3) is an option card designed to connect the Yaskawa inverter drive for Lift L1000A to an CANopen-Lift network. Using this option card and an CANopen-Lift controller you can:

- Operate the inverter drive for Lift
- Monitor the inverter drive for Lift operation status

• Read or modify inverter drive for Lift parameters.

The CANopen-Lift Option supports the following communication profiles:

• CiA-301 Ver. 4.02
• CiA-417 Ver. 2.2.0, Profile Velocity and Profile Position

◆ Applicable Models

The option can be used with the drive models in Table 2.1:

Table 2.1 Applicable Models

Option Card Model	Drive Series	Software Version
SI-L3	L1000A	For L1000A 400V class: VSA923400 and higher

For software version, see “PRG” on the nameplate of the drive or regenerative unit.

3 Receiving

This instruction manual contains the information necessary to use the product correctly. Thoroughly read this manual before installing, wiring, operating, or performing maintenance and inspections. Make sure to read and understand the safety information and precautions before using the product.

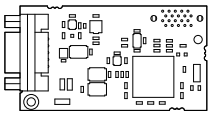
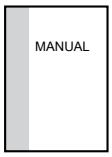
◆ Receiving the Option Card

Please perform the following tasks after receiving the Communication Option card:

• Inspect the Communication Option card for damage. If the Communication Option card appears damaged upon receipt, contact the shipper immediately.
• Verify receipt of the correct model by checking the information on the PCB.
• If you have received the wrong option card model or the Communication Option card does not function properly, contact your supplier.

◆ Content and Packaging

Table 3.1 Option Package Contents for SI-L3 (Inverter Drive for Lift L1000A)

Description	Option Card	Ground Cables	Screws (M3)	LED Label	Installation Manual
Illustration					
Quantity	1	1	3	1	1

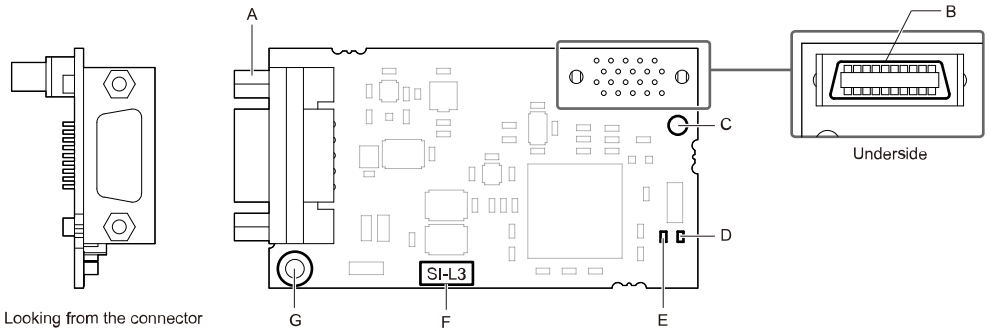
◆ Tools Required

A Phillips screwdriver PH1(#1) or PH2(#2) is required to install the Communication Option card.

Note:
Tools required to prepare communication network cables for wiring are not listed in this manual.

4 CANopen Lift Option Components

◆ CANopen Lift Option SI-L3



A - Communication cable connector (9 pin D-sub)
B - Connector (CN5)
C - Installation hole
D - LED (RUN)
E - LED (ERR)
F - Model number
G - Ground terminal (installation hole)

Figure 4.1 Option Card

◆ CANopen-Lift Option Status LEDs

The CANopen-Lift Option has two LEDs that indicate the communication status.

■ RUN LED

LED	Color	Display	Meaning
RUN	Green	On	The device is in Operational State.
	Green	Blinking	The device is in Pre-Operational State.
	Green	Single flash	The device is stopped.
	Green	Flickering	Automatic bit rate detection in process.

■ ERR LED

LED	Color	Display	Meaning
ERR	–	Off	Online.
	Red	Blinking	Bus initialization failed.
		Single flash	A fault has occurred. Receiving CAN error frames.
		Double flash	Guard / Heartbeat has occurred.
		Flickering	Automatic bitrate detection in process. Flickers with RUN LED alternatively.
		On	Bus off.

■ Indicator Flash Rates

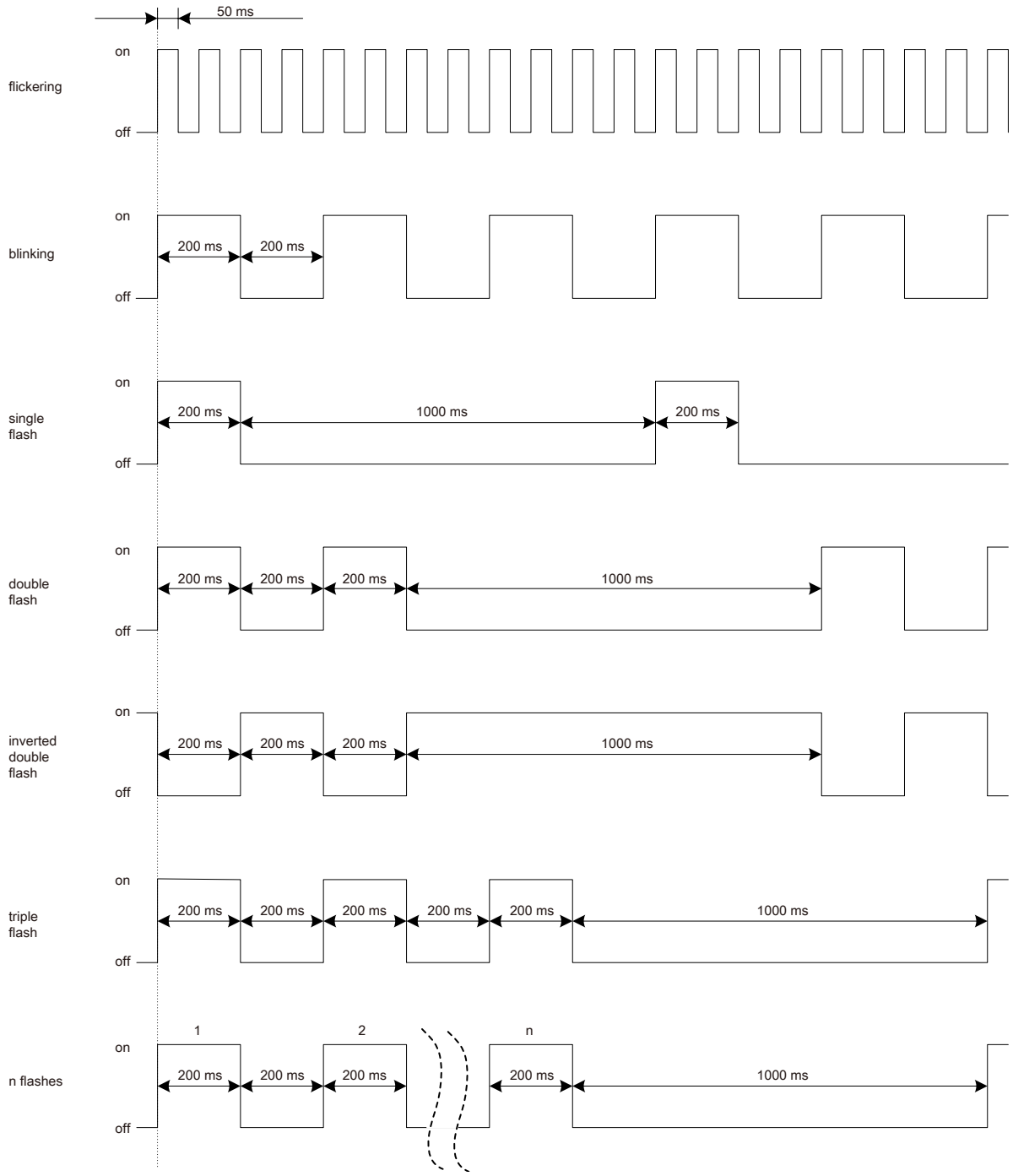
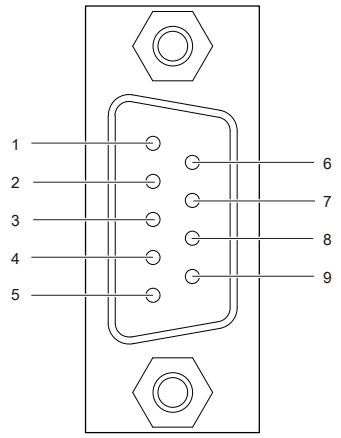


Figure 4.2 Meaning of LED Flash Rates

◆ Communication Connector

The Communication Option card is connected to the network using a 9 pin D-sub connector.

Table 4.1 Pin Assignment

Connector	Pin	Signal	Description
	1	–	–
	2	CAN_L	CAN_L bus line (dominant low)
	3	CAN_GND	CAN ground
	4	–	–
	5	CAN_SHLD	CAN shield
	6	–	–
	7	CAN_H	CAN_H bus line (dominant high)
	8	–	–
	9	–	–
	–	CAN_SHLD	CAN shield

■ Communication Cable

Connect the CANopen-Lift option card to the network using a 9 pin D-sub connector wired like shown below.

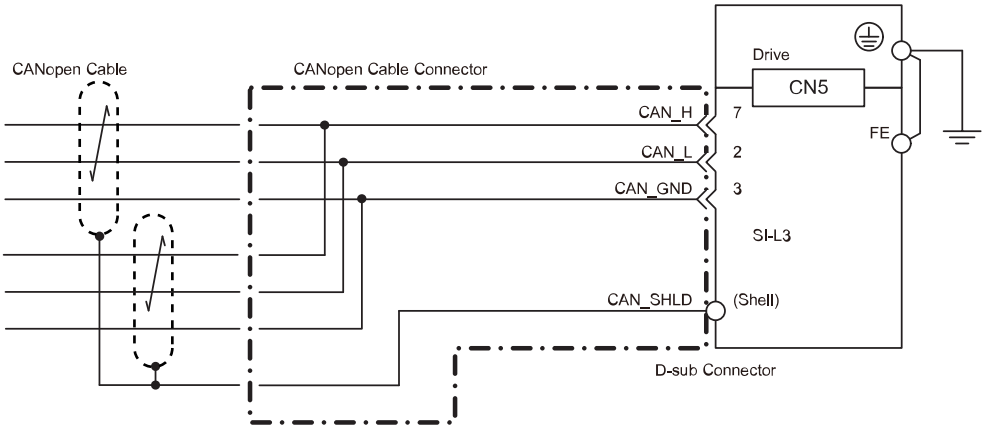


Figure 4.3 Wiring Diagram

Note:
The FE terminal on the Communication Option must be connected to the drive ground terminal using the delivered ground wire.

■ Network Termination

Both ends of the CANopen network have to be terminated with a 120 Ohm resistor. If the CANopen option is the last node in the network, make sure to apply a termination resistor as shown below, because the CANopen option does not have a built-in termination resistor:

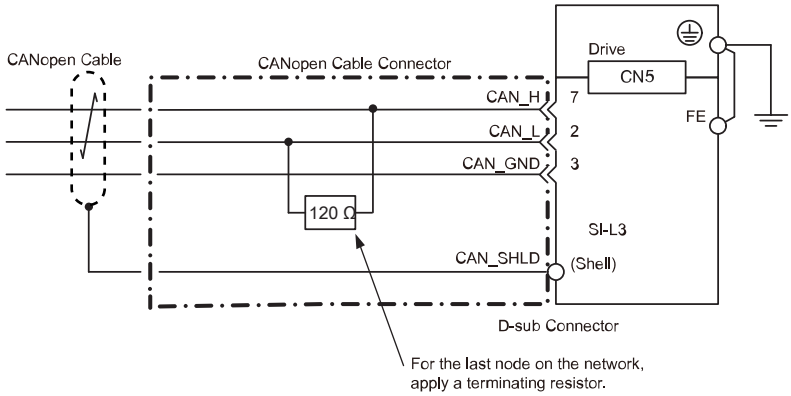


Figure 4.4 Termination Resistor

Note:
The FE terminal on the Communication Option must be connected to the drive ground terminal using the delivered ground wire.

5 Mechanical & Electrical Installation

◆ Safety Precautions

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

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

⚠ WARNING *Electrical Shock Hazard. Do not work on the drive or around the drive while wearing loose clothing or jewelry. Tighten loose clothing and remove all metal objects such as watches or rings. Failure to obey can cause death or serious injury.*

⚠ WARNING *Electrical Shock Hazard. Do not remove covers or touch circuit boards while the drive is energized. Failure to obey can cause death or serious injury.*

⚠ WARNING *Electrical Shock Hazard. Only let authorized persons install, wire, maintain, examine, replace parts, and repair the drive. Failure to obey can cause death or serious injury.*

⚠ WARNING *Electrical Shock Hazard. Do not make changes to the drive body or drive circuitry. Failure to obey can cause death or serious injury and will void warranty. Yaskawa is not responsible for changes to the product made by the user.*

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

⚠ CAUTION *Crush Hazard. Do not hold the drive by the front cover or terminal cover. Tighten the screws correctly before moving the drive. Failure to obey can cause minor to moderate injury.*

NOTICE *Observe correct electrostatic discharge (ESD) procedures when touching the drive. Failure to obey can cause ESD damage to the drive circuitry.*

NOTICE *Do not lift the drive with the cover removed. Failure to obey can cause damage to the drive board and terminal block.*

NOTICE *Do not use unshielded wire for control wiring. Use shielded, twisted-pair wires and ground the shield to the ground terminal of the drive. Failure to obey can cause electrical interference and unsatisfactory system performance.*

NOTICE *Do not change the drive circuitry. Failure to obey can cause damage to the drive and will void warranty. Yaskawa is not responsible for modifications of the product made by the user.*

NOTICE *Make sure that all connections are correct after you install the drive and connecting peripheral devices. Failure to obey can cause damage to the drive.*

◆ Before Installing the Option Card

Prior to installing the Communication Option Card, wire the inverter drive and connect to the drive terminals. For more information on wiring and connecting the inverter drive, refer to the manual packaged with the inverter drive.

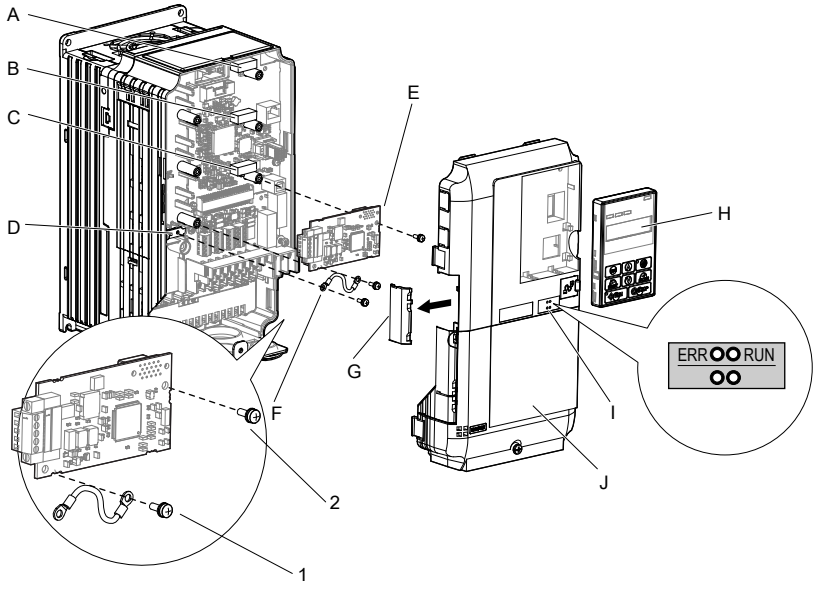
Verify that the inverter drive runs normally without the option installed.

◆ Installing the Option on a L1000A

1. Turn off the power. Wait until the CHARGE LED turns off and then remove the cover. Refer to the drive manual for direction on removing the front cover.
2. Plug the option card (E) to the CN5-A connector (C).
   Fieldbus option cards must always be plugged into CN5-A connector.
3. Connect the ground wire (F) to option card and fix with screw (1).
   Select shortest possible cable for ground connection.

4. Fix option card to the inverter with screw (2) additionally. Connect the ground wire (F) to inverter ground terminal (D).

Note:
There are only two screw holes on the drive for ground terminals. If three different option cards are connected, two of the ground wires will need to share the same ground terminal.



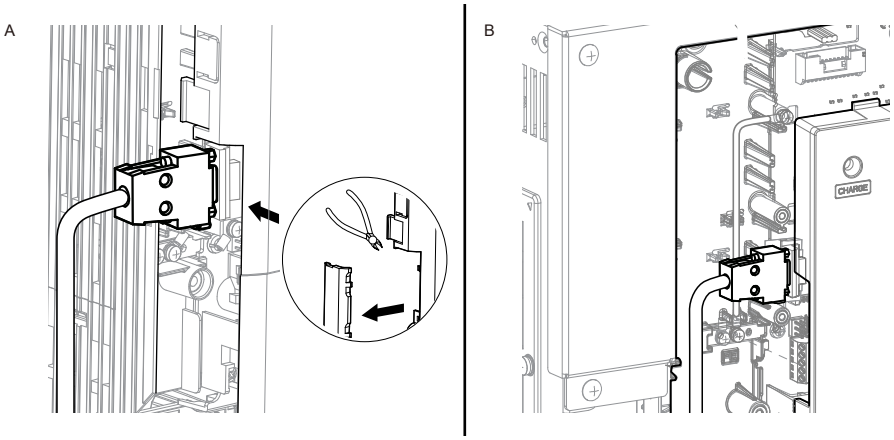
A - Connector CN5-C
B - Connector CN5-B
C - Connector CN5-A
D - Drive grounding terminal (FE)
E - Option cards
F - Ground wire
G - Opening for cable lines (use cutter to create the opening)
H - Operator
I - LED labels
J - Front cover

Figure 5.1 Installing the Option Card

5. Prepare the 9 pin D-sub network cable connectors.

   For inverter drives CIMR-Lx4F0002 to 0023: the network cable should be routed to the outside through the openings at the left side (G) of the front cover. Make sure no sharp edges remain.

   For Inverter drives 4F0031 to 0165: enough space to keep all wiring inside the unit is available.



A - Opening for network cables (CIMR-Lx4F0002 to 0023)
B - Space for wiring (CIMR-Lx4F0031 to 0165)

Figure 5.2 Network Cable Routing

6. Plug in the 9 pin D-sub network cable connector to the option.
7. Reinstall the front cover back onto the drive as it was before.
8. Attach the LED label (I) as shown in Figure 5.1.
9. Switch on the drive power supply.
10. Set inverter parameter as follows:

b1-01 to 6,
b1-02 to 6,
H5-13 to 5.

11. Powercycle the inverter drive.

◆ EDS File

For easy network implementation of drives equipped with a Communication Option card, the EDS file (version **ESI_SIS3L_OPT_V_2_01_04** or later) can be obtained from these sources:

- Europe:
  http://www.yaskawa.eu.com
- Japan:
  http://www.e-mechatronics.com
- USA:
  http://www.yaskawa.com
- Other areas: contact a YASKAWA representative

6 CANopen-Lift Option Related Drive Parameters

Some drive parameters have influence on some functions of the communication option card. Check these parameters before starting network communications.

Table 6.1 Parameter Settings

No.	Name	Description	Default
b1-01	Frequency Reference Selection	Selects the frequency reference input source 0: Operator - Digital preset speed d1-01 to d1-17 1: Terminals - Analog input terminals 2: MEMOBUS/Modbus communications 3: Option card 4: Pulse Input (Terminal RP) 6: DCP/CANopen-Lift	1
b1-02	Run Command Selection	Selects the run command input source 0: Digital Operator - RUN and STOP keys 1: Digital input terminals Sx 2: MEMOBUS/Modbus communications 3: Option card 6: DCP/CANopen-Lift	1
F6-01	Operation Selection after Communications Error	Determines drive response when a bUS error is detected during communications 0: Ramp to Stop 1: Coast to Stop 2: Fast-Stop 3: Alarm Only *1	1
F6-02	External Fault Detection Conditions (EF0)	Sets the condition for external fault detection (EF0) 0: Always detected 1: Detected only during operation	0
F6-03	Stopping Method for External Fault from Communication Option Board	Determines drive response for external fault input (EF0) detection 0: Ramp to Stop 1: Coast to Stop 2: Fast-Stop 3: Alarm Only	1

No.	Name	Description	Default
F6-08	Reset Communication Related Parameters	Determines if communication-related parameters are set back to their original default values when the drive is initialized. 0: Do not reset F6-xx and F7-xx parameters when the drive is initialized using parameter A1-03. 1: Reset F6-xx and F7-xx parameters when the drive is initialized using parameter A1-03. **Note:** Setting this parameter does not affect communication-related parameters. Setting this parameter only determines if communication-related parameters (F6-xx and F7-xx) are also reset when A1-03 is used to initialize the drive.	0
F6-35	Node Address	0 to 126	2
F6-36	Communication Speed	0: Automatic Bit Rate Detection 1: 10 kbps 2: 20 kbps 3: 50 kbps 4: 125 kbps 5: 250 kbps 6: 500 kbps 7: 800 kbps 8: 1 Mbps	5
H5-13	Serial Comm Mode	0: DCP Communication Channel 1: Memobus/Modbus 3: DCP 3 4: DCP 4 5: CANopen-Lift	1
o1-03	Digital Operator Display Selection	Sets the units to display the frequency reference and output frequency. 0: 0.01 Hz 1: 0.01% (100% = E1-04) 2: r/min (enter the number of motor poles to E2-04). Relevant for CiA-417. 3: User defined by parameters o1-10 and o1-11	*2
o1-20	Traction Sheave Diameter	100.0 to 2000.0 mm	400.0 mm
o1-21	Roping Ratio	1 to 4	2
o1-22	Mechanical Gear Ratio	0.10 to 100.0	In CLV mode: 14.00 In CLV PM mode: 1.00

*1 If set to 3, then the drive will continue to operate when an EF0 fault is detected. Take proper safety measures, such as installing an emergency stop switch.
*2 The default value depends on the drive used and/or the drive software version. For details refer to the technical manual for the drive.

7 Troubleshooting

◆ Drive-Side Error Codes

Drive-side error codes appear on the drive's digital operator.

◆ Faults

This section gives information about the causes and possible solutions of faults. You must use the Fault Reset operation to remove the fault before you can operate the drive. Use the information in this table to remove the cause of the fault.

Code	Name	Causes	Possible Solutions
bUS	Option Communication Error	The drive did not receive a signal from the controller.	Correct wiring errors.
		The communications cable wiring is incorrect.	
		There is a short circuit or the communications cable is not connected.	• Repair short circuits and connect cables. • Replace the defective communications cable.
		Electrical interference caused a communication data error.	• Examine the control circuit lines, main circuit lines, and ground wiring, and decrease the effects of electrical interference. • Make sure that a magnetic contactor is not the source of the electrical interference, then use a Surge Protective Device if necessary. • Use only the recommended cables or other shielded line. Ground the shield on the controller side or the drive input power side. • Isolate the communication wiring from drive power lines, and install a noise filter to the input side of the power supply for communication. • Decrease the effects of electrical interference from the controller.
		The option card is incorrectly installed to the drive.	Correctly install the option card to the drive.
		The option card is damaged.	If the fault continues and the wiring is correct, replace the option card.
CLoE	CANopen Lift Operation Error	Sequence error.	• Check shaft encoder. • Check inverter and lift controller setup and wiring.
		Invalid position data.	
oFA00	Option Not Compatible with Port	The option card connected to connector CN5-A is not compatible.	Connect the option card to the correct connector. **Note:** Encoder option cards are not compatible with connector CN5-A.
oFA01	Option Fault/Connection Error	The option card connected to connector CN5-A is not compatible.	1. De-energize the drive. 2. Refer to the option card manual and correctly connect the option card to the connector on the drive.
oFA30 to oFA43	Communication Option Card Connection Error (CN5-A)	A fault occurred in the option card.	1. De-energize the drive. 2. Make sure that the option card is correctly connected to the connector. 3. If the problem continues, replace the option card.
oFb00	Option Not Compatible with Port	The option card connected to connector CN5-B is not compatible.	Connect the option card to the correct connector. **Note:** DO-A3, AO-A3, PG-B3, and PG-X3 options can connect to connector CN5-B. Use connector CN5-C when connecting only one encoder option card.
oFb02	Duplicate Options	The same option cards or the same type of option cards are connected to connectors CN5-A, B, and C.	Connect the option card to the correct connector.
oFC00	Option Not Compatible with Port	The option card connected to connector CN5-C is not compatible.	Connect the option card to the correct connector. **Note:** AI-A3, DI-A3, and communication option cards cannot be connected to the CN5-C connector.
oFC02	Duplicate Options	The same option cards or the same type of option cards are connected to connectors CN5-A, B, and C.	Connect the option card to the correct connector.
PE1	Programming Error 1	Object content mapping was changed from the default. A Node reset was sent while the drive was running.	Stop the drive before performing Node reset.

◆ Minor Faults/Alarms

This section gives information about the causes and possible solutions when a minor fault or alarm occurs. Use the information in this table to remove the cause of the minor fault or alarm.

Code	Name	Causes	Possible Solutions
AEr	Station Address Setting Error	Option card node address is outside of the acceptable setting range.	For CANopen communication, set *F6-35 [CANopen Node ID Selection]* correctly.
CALL	Serial Comm Transmission Error	The communications cable wiring is incorrect.	Correct any wiring errors.
		There is a short circuit or the communications cable is not connected.	• Repair short circuits and connect cables. • Replace the defective communications cable.
		There was a programming error on the controller side.	Examine communications at start-up and correct programming errors.
		The communications circuitry is damaged.	• Do a self-diagnostics check. • If the problem continues, replace the control board or the drive. For information about replacing the control board, contact Yaskawa or your nearest sales representative.
		The termination resistor setting for MEMOBUS/Modbus communications is incorrect.	On the last drive in a MEMOBUS/Modbus network, set DIP switch S2 to the ON position to enable the termination resistor.
EEP	EEPROM Checksum Error	Communication wiring is faulty, there is a short circuit, or something is not connected properly.	Correct any wiring errors.
		EEPROM checksum error.	• If these errors occur, the object dictionary will be reset to its default values. After the object dictionary has been changed and object dictionary contents are then changed, execute a Store Parameter command (Index = 1010 (Hex)). • If the object dictionary has not been changed, execute a Restore Parameter command (Index = 1011 (Hex)).
		Programming error occurred on the controller side.	Check communications at start-up and correct programming errors.
		Communications circuitry is damaged.	• Perform a self-diagnostics check. • If the problem continues, replace either the control board or the entire drive. For instructions on replacing the control board, contact Yaskawa or your nearest sales representative.

8 Specifications

Item	Specification
Model	SI-L3
Communication Profile	CiA-301 Ver. 4.02 CiA-417 Ver. 2.2.0, Profile Velocity and Profile Position
Connector	9 pin D-sub connector
Communication Speed	10 kbps to 1 Mbps
Ambient Temperature	-10 °C to +50 °C
Humidity	up to 95% RH (non-condensing)
Storage Temperature	-20 °C to +60 °C
Area of Use	Indoor (free of corrosive gas, airborne particles, etc.)
Altitude	Up to 1000 m

Revision History

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CANopen-Lift Communication Option

Communication Option Card for Lift Inverter Drive YASKAWA L1000A

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