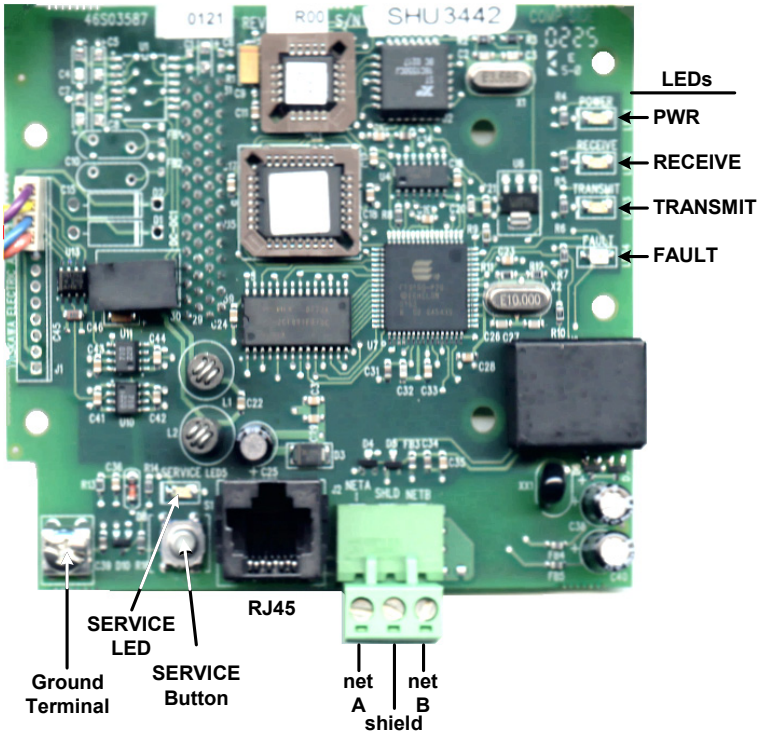
LonWorks® Option Card CM048

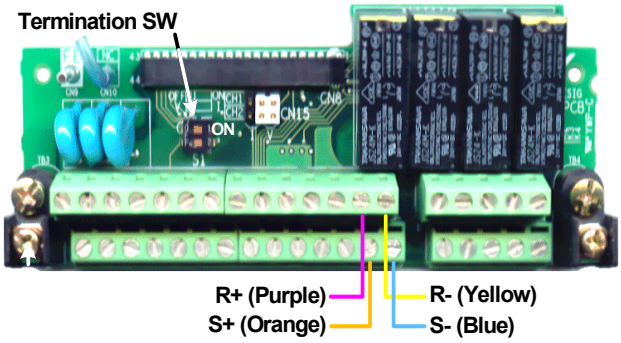
- [ ] Unpack the *LonWorks Option Kit* and verify that all components are present and undamaged.

Part	Qty.
LonWorks Option Card (UTC000057)	1
Installation Guide (IG.AFD.20)	1

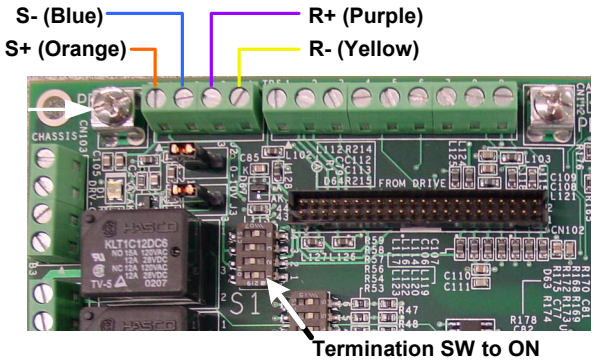


- [ ] Verify that the drive is one of the following series: E7, P7, F7, or G7. The *LonWorks Option Card* is only compatible with these drive series.
- [ ] Apply power to the drive or panel and verify that they function correctly. This includes running the drive through the drive keypad (or the door mounted Bypass controls, in case of E7B, E7L, or P7B. Refer to the appropriate technical manual for information on connections and operation.
- [ ] Remove power and wait for the drive charge lamp to be completely extinguished. Measure and verify the drive's DC BUS voltage to be at a safe level.
- [ ] Remove the operator keypad and drive cover(s).
  - Remove the operator keypad by depressing the tab on the right side of the keypad and then pulling it out. In E7B, E7C, E7L, P7B, P7C, or F7C, the keypad may already have been removed and mounted on the enclosure door.
  - Remove the drive's front cover until the entire control card is exposed. The number of covers and the removal procedure varies by drive series and capacity. Consult the drive's technical manual for details. In E7B, E7C, E7L, P7B, P7C, or F7C, the keypad may already have been removed and mounted on the enclosure door.
  - Remove the option card hold-down plug on the left side of the drive case by carefully compressing the top and bottom until it becomes free of its holder and then pulling it out.

- [ ] Mount the *LonWorks Option Card* on the drive.
  - Align the 2CN connector on the back of the *LonWorks Option Card* with its mating 2CN connector on the front of the drive's control board. Align the two standoffs on the front of the drive's control board with the two holes on the right side of the *LonWorks Option Card*.
  - Press the *LonWorks Option Card* firmly onto the drive's 2CN connector and standoffs until the 2CN connector is fully seated and the drive standoffs have locked into their appropriate holes.
  - **Standard Connection** - Route the four wires from the *LonWorks Option Card* along the left side of the control board and connect them directly to the R+, R-, S+ and S- terminals on the I/O terminal assembly as shown below.
  - **E7L Connection** - Route the four wires from the *LonWorks Option Card* to terminal board TB4 on the E7L control card. The E7L control board is typically mounted on the left inside wall of the E7L enclosure. Connect the wires as shown below.
  - A noise free ground is essential for continuous, stable communications. DO NOT USE THE GROUND TERMINALS LOCATED ON THE DRIVE'S TERMINAL BOARD OR CHASSIS. If an external, noise free ground is available, connect a ground wire from the ground terminal on the *LonWorks option Card* to the ground. If no noise free ground is available, leave the ground terminal on the *LonWorks Option Card* un-terminated.
  - **Standard Termination** - Set the Termination Switch S1-1 to ON as shown below. This is independent of whether the drive is the first or last device on the *LonWorks* network.
  - **E7L Termination** - Set the Termination Switch S1 to ON. This is independent of whether the drive is the first or last device on the *LonWorks* network.



Standard Drive Connection



E7L Connection

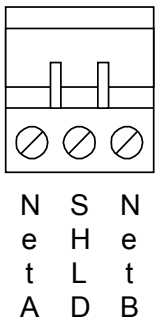
❑ Setting the drive parameters

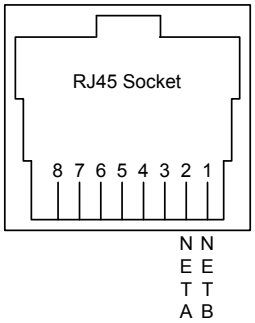
- Remove power from the drive and wait for the charge lamp to be completely extinguished. Wait at least five additional minutes for the drive to be completely discharged. Measure the DC BUS voltage and verify that it is at a safe level.
- Reinstall the operator keypad and all drive covers. Apply power to the drive.
- Set parameter A1-01 to 2, Advanced.
- Set parameters b1-01 and b1-02 to their appropriate values. Refer to the table below for available b1-01 and b1-02 values. Reference Selection and Operation Method Selection can have different values depending on the application. To control both frequency and run/stop over the network, set both b1-01 and b1-02 to 2, Serial Communications.
- Set parameter H5-01 to 1F (31)
- Set parameter H5-02 to 3, 9600 baud
- Set parameter H5-03 to 0, No Parity
- Set parameter H5-06 to 5, 5ms transmission wait
- Set parameter H5-07 to 0, Disabled
- Set parameter H5-08 to 0, MODBUS
- Parameters H5-04 (Stopping Method at Communications Fault), H5-05 (Serial Fault Detection) and H5-09 (CE Detect Time) should be set according to the desired drive performance during a communications timeout or failure.
- After all drive parameters have been set, power cycle the drive. Communications parameters will not take affect until power has been removed from the drive until the charge lamp has been extinguished and restored.
- **For E7L or E7B Bypass-Panel applications, refer to the parameter table and electrical schematic accompanying the unit for parameter and DIP-switch settings.**

Parameter	Function	Data	+/- Limits - Description	Default
A1-01	Access Level	0	Operator	2
		1	User	
		2	**Advanced**	
B1-01	Reference Selection	0	Digital Operator	1
		1	Terminals	
		2	**Serial Communication (LONWORKS)**	
		3	Option PCB	
		4	Pulse Input	
B1-02	Operation Method Selection	0	Digital Operator	1
		1	Terminals	
		2	**Serial Communication (LONWORKS)**	
		3	Option PCB	
H5-01	Serial Communications Address	1F	0 – 1F	1F
H5-02	Serial Baud Rate Select	0	1200 baud	3
		1	2400 baud	
		2	4800 baud	
		3	**9600 baud (LONWORKS)**	
		4	19200 baud	
H5-03	Serial Parity Select	**0**	**None (LONWORKS)**	0
		1	Even parity	
		2	Odd parity	
H5-06	Transmit Wait	**5**	5 – 65ms	5
H5-07	RTS Control Select	**0**	**Disabled (LONWORKS)**	0
		1	Enabled	
H5-08	Protocol Select	**0**	**MODBUS (LONWORKS)**	0
		1	N2 (Metasys)	
		2	P1 (APOGEE)	

☐ Connect to the *LonWorks* network.

- Connect the network to the *LONWORKS Option Card* as shown.





☐ Network Identification and Node Configuration

The *LONWORKS Option Card* is shipped **unconfigured**. This implies that the application is loaded and communications parameters are defined but the option has not been installed on the network. On power up, an un-configured node can be recognized by the **SERVICE** LED blinking at 2Hz.

Network identification is accomplished with an installation tool. Unique network identities are established by pairing "logical" addresses with a device's 48-bit Neuron ID.

- **SERVICE Button**

  Each option card has a Service Button. If using a configuration tool utilizing this feature, press the Service Button when prompted to do so. When pressed, a broadcast message is sent which contains the Neuron ID and program ID. This uniquely identifies the node on the network. This method works best for small networks or with portable installation tools.

- **Find and Wink**

  When it is impractical to press each node's Service Button for installation (e.g. in large networks or a node is physically enclosed), the "find and wink" installation method is useful. With this method, the installation tool queries the network for all unconfigured nodes. Nodes respond with their Neuron ID and a logical address is assigned. A "wink" command can then be sent to each logical address. In response to this command, the **TRANSMIT** and **RECEIVE** LED's will blink rapidly for several seconds. In this manner, the exact physical location of each node can be identified.

- **Reclaiming a Node**

  - A node can be "reclaimed", or returned to its unconfigured state, as follows:
  - Remove power from the drive and wait for the charge lamp to be completely extinguished.
  - Press and hold the Service Button.
  - Re-apply drive power, continuing to press and hold the Service Button.
  - After approximately 5 seconds, the SERVICE LED should begin flashing at a 0.5 Hz rate, indicating the unconfigured state. This procedure sets both domain table entries to "undefined" and sets the channel ID to 0.

☐ LED Status Indicators and Diagnostics

LED Display					Condition	Solution
PWR	Receive	Transmit	Fault	Service		
				BLINK 0.5Hz	Option is Not **Configured**	• Configure Option
				FLASH 1s**ON**_2s**OFF**_Cont**ON**	Application missing	• Download application image file • Assign network Identity
OFF	OFF	OFF	OFF	OFF	Power not supplied	• Check that drive has power • Check option card seating in CN2 connector
ON	BLINK	BLINK	BLINK	OFF	Communications not established	• Check drive parameters (refer to table above) • Check connection between option and drive
ON			ON	OFF	Communications Loss	• Check network cable connections
ON	**FLASH**		**OFF**	**OFF**	**Normal communications**	Flash each time serial task is complete Approximately 0.5Hz when drive is at STOP Approximately 1.0Hz when drive RUN is active
ON		**FLASH**	**OFF**	**OFF**	**Normal communications**	Flash for every 5 network variables updates

Copies of this Installation Guide along with all technical manuals in PDF format and support files may be obtained from either the CD supplied with the drive or from **www.yaskawa.com** . Printed copies of manuals may be obtained by contacting the Yaskawa Help Desk at 800-927-5292. Information on *LonWorks* may be obtained at **www.echelon.com**

Reference documents:

E7 Technical Manual – **TM.E7.02**
P7 Technical Manual – **TM.P7.02**
F7 Technical Manual – **TM.F7.02**
G7 Technical Manual – **TM.G7.01**

F7 Parameter Access Technical Manual – **TM.F7.11**

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