❑ This document applies to the Yaskawa F7U, G7U, P7U, E7U, G5M(Spec F), and G5M(600V) drives. For G5U(HHP) drives, refer to IG.G5HHP.17.

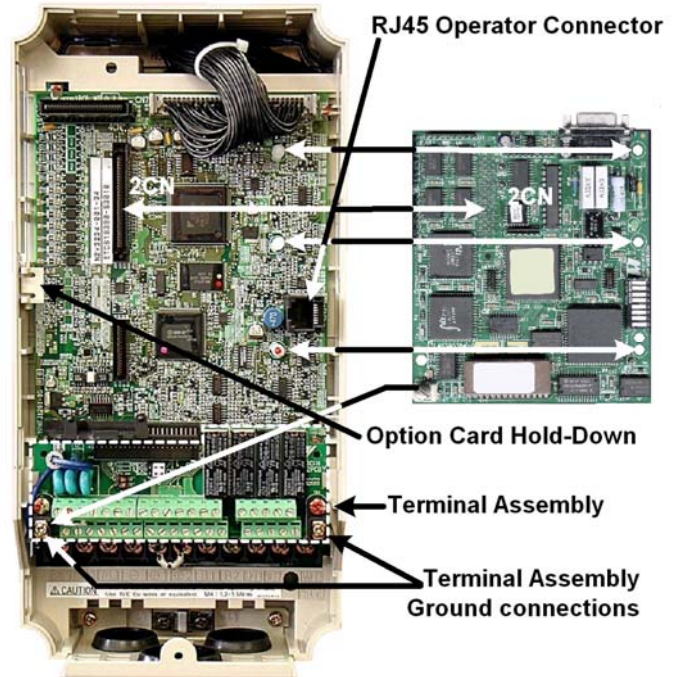❑ Unpack the CM071 *Modbus Plus Option Card* and verify that all components are present and undamaged.

CM071 Option Kit Parts List	Qty.
Modbus Plus Option Card (46S03364-0010 or UTC000063)	1
Installation Guide (IG.AFD.17)	1

❑ Connect power to the drive and verify that the drive functions correctly. This includes running the drive from the operator keypad. Refer to the appropriate drive technical manual for information on connecting and operating the drive.

❑ 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.
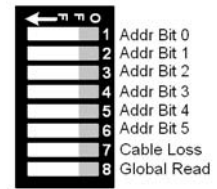
❑ Remove the operator keypad and drive cover.
   ■ Remove the operator keypad.
   ■ Remove any and all covers necessary to expose the drive terminal assembly and control board. Refer to the appropriate drive documentation for information on removing drive covers.
   ■ Remove the option card hold-down on the left side of the drive.

❑ Mount the *Modbus Plus Option Card* on the drive.
   ■ Align the **2CN** connector on the back of the *Modbus Plus Option Card* with its mating **2CN** connector on the front of the drive control card.
   ■ Align the three standoffs on the front of the drive control board with the three holes on the right side of the *Modbus Plus Option Card*.
   ■ Press the *Modbus Plus Option Card* firmly onto the drive **2CN** connector and standoffs until the **2CN** connector is fully seated and the drive standoffs have locked into their appropriate holes.
   ■ For the F7, G7, and P7 drives, connect a ground wire from the ground terminal on the *Modbus Plus Option Card* to a ground terminal on the terminal assembly.
   ■ For the G5 drive, connect a ground wire from the ground terminal on the *Modbus Plus Option Card* to terminal 12 on the drive's terminal strip.

RJ45 Operator Connector

2CN

2CN

Option Card Hold-Down

Terminal Assembly

Terminal Assembly Ground connections

- ☐ DIP Switch Settings
  - ■ Set the Modbus Plus network node address
  - ■ Set cable loss and global read behavior.

DIP switch labels:
1 Addr Bit 0
2 Addr Bit 1
3 Addr Bit 2
4 Addr Bit 3
5 Addr Bit 4
6 Addr Bit 5
7 Cable Loss
8 Global Read

Sw	Modbus Plus Network Node Address																															
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
2	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0
3	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0
4	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Sw	Modbus Plus Network Node Address																															
	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
2	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0
3	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0
4	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

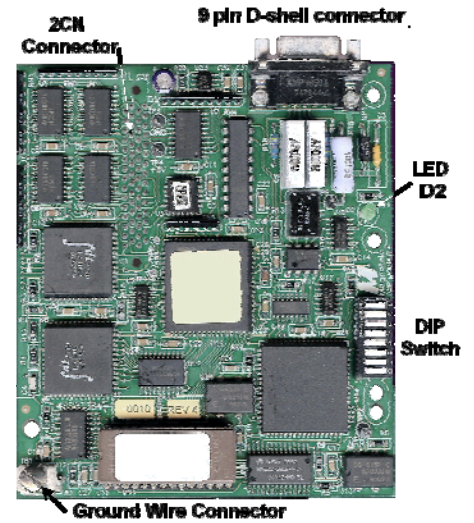| SW 7 – Cable Loss Detection	
0	Disabled
1	Enabled

Note: G5HHP drive response is governed by parameters F6-01, F6-02 and F6-03. Refer to the appropriate user, programming or technical manual for parameter information

SW 8 – Global Read Function	
0	Disabled
1	Enabled

- ☐ Connect the drive to the Modbus Plus communication network.

  - ■ Connect the Modbus Plus network cable to the Modicon 9-pin D-shell connector.
    - ● Recommended cable is Belden 9841
    - ● Available Modicon cables
      - ▪ 97-9841-100 – Modbus Plus 100ft
      - ▪ 97-9841-500100 – Modbus Plus 500ft
      - ▪ 97-9841-01k100 – Modbus Plus 1000ft
    - ● Modicon offers two connectors along with an assembly tool.
      - ▪ AS-MBKT-085 – Modbus Plus In-line Connector
      - ▪ AS-MBKT-185 – Modbus Plus Terminating Connector
      - ▪ AS-MBPL-001 – Modbus Plus Connector Assembly Tool
    - ● Assemble the cable to one of the connectors listed above. If this node is either at the beginning or end of the network segment, use the terminating connector. For all devices not at either end of the network segment, use the in-line connector.
  - ■ Attach the Modicon connector to the 9-pin D-shell connector on top of the *Modbus Plus Option Card*.

Labels: 2CN Connector, 9 pin D-shell connector, LED D2, DIP Switch, Ground Wire Connector

- ☐ Apply power to the drive and verify that the diagnostic LED (D2) on the front of the *Modbus Plus Option Card* is in its correct state.

LED D2 States			
Color	State	Timing	Description
Green	Continuous slow blinking	ON 340ms OFF 640ms	Drive is off-line and cannot transmit. It does, however, listen on the network and build an active node table
Green	Continuous rapid blinking	ON 80ms OFF 80ms	Normal operation
Green	Two (2) rapid blinks	ON 160ms OFF 160ms	Drive is permanently in the idle state and cannot be communicated with. Possibly a bad transmitter
Green	Three (3) rapid blinks	ON 160ms OFF 160ms	Drive cannot find any other nodes on the network. It claims and wins the token but has nowhere to pass it, disrupting network communication. Possible network wiring error
Green	Four (4) rapid blinks	ON 160ms OFF 160ms	Duplicate node address found. Drive will stay off-line until the duplicate node address has not been heard on the network for 5 seconds

☐ 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 the following parameters in the table below. Use F6-02 and F6-03 for F7, G7 and P7 drives. Use F9-02 and F9-03 for G5 drives.

Parameter	Function	Data	Description	Default
b1-01	Frequency Reference Source Selection	0	Digital Operator	1
		1	Terminal Strip	
		2	Built-in Modbus RTU Terminals	
		3	**Option Card** (*Modbus Plus Option Card*)	
		4	Pulse Input (F7 and G7 only)	
b1-02	Run Command Source Selection	0	Digital Operator	1
		1	Terminal Strip	
		2	Built-in Modbus RTU Terminals	
		3	**Option Card** (*Modbus Plus Option Card*)	
F6-02	External Fault Detection **(F7, G7, and P7 drives only)**	0	Always Detect	0
		1	Detect Only During Run	
F6-03	Stopping Method for External Fault **(F7, G7, and P7 drives only)**	0	Ramp to Stop	1
		1	Coast to Stop	
		2	Emergency Stop (Deceleration time set by C1-09)	
		3	Operation Continues	
F9-02	External Fault Detection **(G5 drive only)**	0	Always Detect	0
		1	Detect Only During Run	
F9-03	Stopping Method for External Fault **(G5 drive only)**	0	Ramp to Stop	1
		1	Coast to Stop	
		2	Emergency Stop (Deceleration time set by C1-09)	
		3	Operation Continues	

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 manuals may be obtained by contacting the Yaskawa Help Desk at 800-927-5292. Information on Modbus and Modbus Plus may be obtained from **www.modbus.org**

Reference documents:

Modbus Plus Option Installation Guide – **IG.AFD.17**

Modbus Plus Option Installation Guide for G5HHP – **IG.G5HHP.17**

G5M Modbus Plus Technical Manual – **TM.4557**

G5M Technical Manual – **TM.4515**

G5M Modbus Technical Manual – **TM.4025**

F7U Drive User Manual – **TM.F7.01**

F7U Drive Programming Manual – **TM.F7.02**

F7U Drive Parameter Access Technical Manual – **TM.F7.11**

G7U Drive Technical Manual – **TM.G7.01**

G7U Drive Parameter Access Technical Manual – **TM.G7.11**

P7U Drive User Manual – **TM.P7.01**

P7U Drive Programming Manual – **TM.P7.02**

P7U Drive Parameter Access Technical Manual – **TM.P7.11**

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Data subject to change without notice.