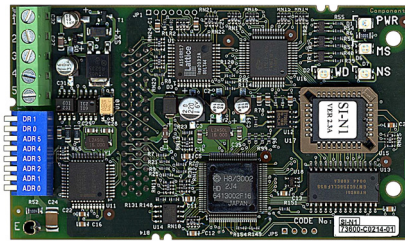
DeviceNet™ Option Kit CM059 (SI-N1)

The CM059 (SI-N1) option is compatible with these Yaskawa drive products:

Product Series	Models (Drive Nameplate)	Notes
GPD/515/G5	**CIMR-G5□**	For G5U (HHP) drives, refer to IG.G5HHP.13
F7	**CIMR-F7□**	--
G7	**CIMR-G7□**	--
ACA	**CIMR-ACA□**	1. The CM059 (SI-N1) option firmware must be version 2.4 or later for operation with the ACA product series. Refer to the firmware lable on the CM059 (SI-N1) option to identify the firmware. Contact Yaskawa to obtain an updated CM059 (SI-N1) option if required. 2. The ACA product will appear the the same as the G7 product series when viewed on the network.



☐ Unpack the *CM059 DeviceNet Option Card* and verify that all components are present and undamaged.

CM059 Option Kit Parts List	Qty.
DeviceNet Option Card (SI-N1)	1
Installation Guide (IG.AFD.13)	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.

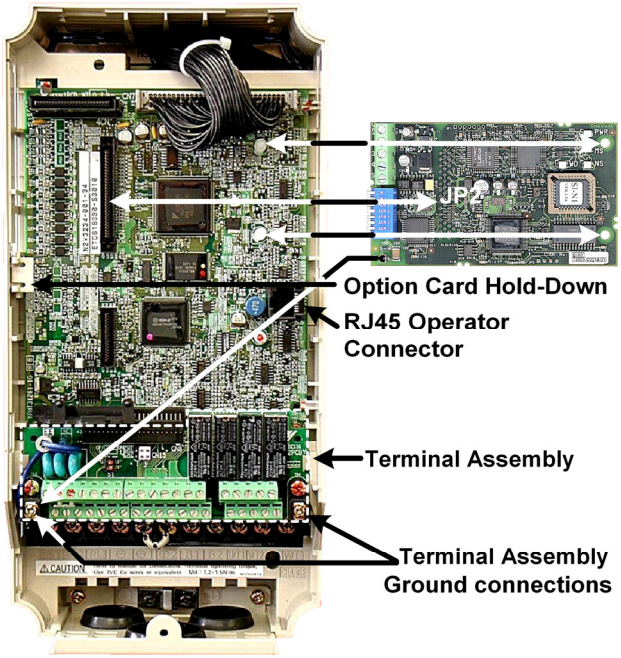
☐ Remove the operator keypad and drive cover.

- Remove the operator keypad and loosen any screws on the front of the terminal cover. Simultaneously pushing the locking tabs on the bottom right and left sides of the terminal cover inward, pull the bottom edge of the terminal cover outward.
- Loosen any screws on the front of the control cover. Simultaneously pushing the locking tabs on the bottom right and left sides of the control cover inward, pull the bottom edge of the control cover outward. The drive control card should be visible.
- Remove the option card hold-down on the left side of the drive case by carefully compressing the top and bottom until it becomes free of its holder. Lift it out.

☐ Mount the *DeviceNet Option Card* on the drive.

- Align the JP2 connector on the back of the *DeviceNet Option* with its mating 2CN connector on the drive control card.
- Align the two standoffs on the front of the drive control board with the two holes on the right side of the *DeviceNet Option Card.*
- Press the *DeviceNet Option Card* firmly onto the drive 2CN connector and standoffs until the JP2 connector is fully seated on 2CN and the drive standoffs have locked into their appropriate holes.
- Replace the option card hold down.
- Connect the ground wire from the ground terminal E on the *DeviceNet Option Card* to a ground terminal on the terminal assembly.

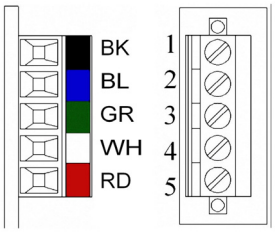
☐ Apply power to the drive and verify that the drive functions correctly.



Mounting the *DeviceNet Option Card* on an F7 drive

☐ Connect to the DeviceNet network as shown in the figure to the right.

Terminal	Color	Name	Wire Color	Description
1	Black	V-	Black	Communication GND
2	Blue	CAN_L	Blue	CAN Data Low
3	Green	Shield	Bare	Cable Shield
4	White	CAN_H	White	CAN Data High
5	Red	V+	Red	Communications +24VDC



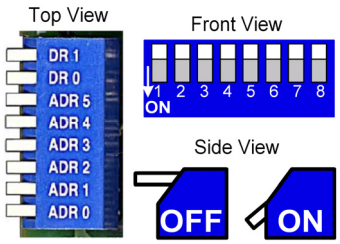
☐ Set the *DeviceNet Option Card* Baud Rate

Set the Baud Rate for the *DeviceNet Option* to the network baud rate by setting DIP switches DR1 (1) and DR0 (2) as shown in the figure to the right. The baud rate must match the baud rate of the DeviceNet master (PC/PLC/Scanner) in order for the connection to function properly.

☐ Set the *DeviceNet Option Card* MAC ID

Set the MAC ID of *DeviceNet Option Card* by setting DIP switches ADR 5 (3) through ADR 0 (8) as shown in the table below. Each device on the network must have a unique MAC ID, typically between 3 and 62. Addresses 0 and 1 are usually reserved for DeviceNet masters, address 2 for diagnostic/monitoring equipment and address 63 for vendor specific functions in some systems. Check the network schematic to verify the MAC ID setting.

Sw	MAC ID																														
	00	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
ADR 5 (3)	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
ADR 4 (4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADR 3 (5)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
ADR 2 (6)	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	1	1	1	1
ADR 1 (7)	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	1	1
ADR 0 (8)	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	1



Sw	MAC ID																														
	32	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
ADR 5 (3)	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
ADR 4 (4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADR 3 (5)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
ADR 2 (6)	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	1	1	1	1
ADR 1 (7)	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	1	1
ADR 0 (8)	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	1

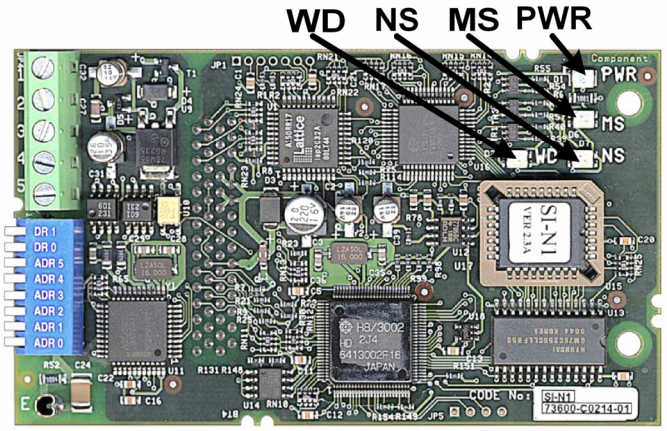
Sw	Baud Rate			
	125kbps	250kbps	500kbps	N/A
DR1 (1)	0	0	1	1
DR0 (2)	0	1	0	1

☐ Verify LED Status

Refer to the table on the following page for a complete listing of LED states.

LED Power-Up Sequence		
LED	**Color**	**Condition**
PWR	GREEN	Steady
WD	RED	On for 0.25 sec
WD	NONE	Off for 0.25 sec
WD	GREEN	Blink at 0.1ms interval
MS	GREEN	On for 0.25 sec
MS	RED	On for 0.25 sec
MS	GREEN	On for 0.25 sec
NS	GREEN	On for 0.25 sec
NS	RED	On for 0.25 sec

LED Normal Operation Status	
LED	**Condition**
PWR	GREEN
MS	GREEN
NS	FLASH GREEN (no communication)
	REEN (communicating)
WD	FLASH GREEN



☐ 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 all drive covers and the operator keypad.

☐ Apply power to the drive and wait for the power-up sequence to complete.

☐ Set parameters b1-01 and b1-02 to their appropriate values. Refer to the table to the right for available b1-01 and b1-02 values.

Parameter	Function	Data	Description	Default
b1-01	Frequency Reference Source Selection	0	Digital Operator	1
		1	Terminal Strip	
		2	Built-in Modbus RTU	
		3	**Option Card (DeviceNet Option Card)**	
		4	Pulse Input (F7 Only)	
b1-02	Run Command Source Selection	0	Digital Operator	1
		1	Terminal Strip	
		2	Built-in Modbus RTU	
		3	**Option Card (DeviceNet Option Card)**	

Install the EDS File and Configure the Drive on the DeviceNet Network

To simplify the drive configuration, EDS file can be obtained at **www.yaskawa.com**. Select Downloads, By Inverter Drives, By Product, and Network Comms-DeviceNet. Then select the appropriate EDS file based on the drive series and the latest version from those listed. EDS files for individual drive models are compressed into a single Zip file.

Install the EDS file into the DeviceNet configuration tool (i.e. RSNetworx® for DeviceNet). There is a separate EDS file for each drive model. Verify that the correct EDS file has been installed for the drive model configured. Refer to the documentation that came with the master configuration tool for information on installing EDS files and configuring a DeviceNet node.

LED Status Indicators and Diagnostics

LED Display				Content	Cause	Solution
PWR	MS	NS	WD			
Off	Off	Off	Off	Power Off	■ The drive is not powered	■ Check the drive main circuit wiring ■ Turn power on.
					■ The option board is not connected correctly or securely to the drive.	■ Turn Off drive power. ■ Check the connection of the option board to the 2CN connector on the drive, ■ Turn power on.
Solid Green	Off	Off	Solid Red	CPU Fault	■ The option board CPU is being initialized or has a fault.	■ Cycle power to the drive. ■ If the fault persists, replace the option board.
Solid Green	Flashing Green	Off	Flashing Green	Option Board Initialization	■ Option board Initialization.	■ Wait for initialization to complete ■ If initialization does not complete within several seconds, cycle power to the drive. ■ If initialization does not complete after power cycling the drive, replace the option card
Solid Green	Flashing Red	Off	Flashing Green	Recoverable Option Board Fault	■ An incorrect DIP switch setting or other recoverable fault.	■ Check baud rate setting (DIP switch, DR1 and DR0), and then cycle power to the drive. ■ If the fault persists, replace the option board.
Solid Green	Solid Red	Off	Flashing Green	Unrecoverable Option Board Fault	■ An un-recoverable fault	■ Cycle power to the drive. ■ If the fault persists, replace the option board.
Solid Green	Solid Red	Solid Red	Flashing Green	Baud Rate Setting Fault	■ DR1 and DR0 are both set to ON.	■ Set the baud rate switches correctly. ■ Cycle power to the drive.
Solid Green	Solid Green	Flashing Red	Flashing Green	Communication Timeout	■ A master communication timeout.	■ Check network termination. ■ Check network wiring. ■ Check that the communication bus wiring is separated from the main circuit wiring.
Solid Green	Solid Green	Solid Red	Flashing Green	Communication Error	■ Unrecoverable communication fault.	■ Check if other device's MAC ID is not unique per the network. ■ Check if the master is correctly configured. ■ Check if the end termination resistor is correctly connected to the communication bus. ■ Check if the communication device is correctly connected per wiring diagrams. ■ Check if the communication bus wiring is separated from the main circuit wiring.
Solid Green	Solid Green	Flashing Green	Flashing Green	Normal Not Communicating	■ Connected to a DeviceNet network but not communicating	■ Send explicit message or I/O message from the master as necessary.
Solid Green	Solid Green	Solid Green	Flashing Green	Normal Communicating	■ Connected to a DeviceNet network and communicating normally	-

Note: 1: Do not install, remove or handle a network card connected to the drive with power applied to 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.

2: When cycling power to the drive, make sure that the drive is fully discharged prior to reapplying power.

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 any Yaskawa manual may be obtained by contacting the nearest Yaskawa office. Information on DeviceNet may be obtained from **www.odva.org**

Reference documents:

***DeviceNet Option (CM059) Installation Guide*– IG.AFD.13**

***DeviceNet Option (CM059) Installation Guide for G5HHP*– IG.G5HHP.13**

***DeviceNet Option (CM059) Technical Manual*– TM.AFD.13**

***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 Manual* – TM.G7.01**

***CIMR-ACA* Instruction Manual* – TOEP C710636 00**

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

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