

PIM-DN-01 | **DeviceNet Interface**

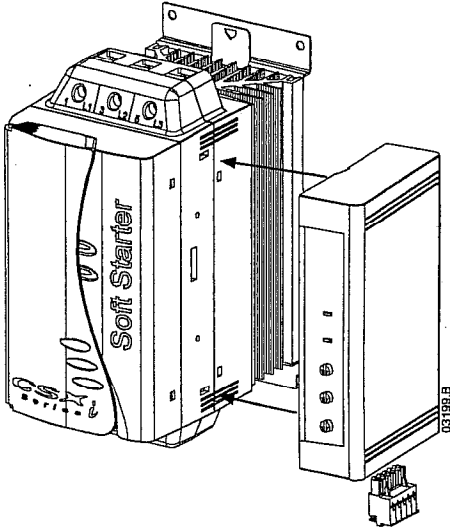
I. Installation

Install the DeviceNet Interface using the following procedure:

1. Remove control power and mains supply from the soft starter.
2. Attach the DeviceNet Interface to the soft starter as illustrated below.
3. Set the DeviceNet Interface Node Address (MAC ID) and Data Rate.
4. Apply control power to the soft starter.
5. Insert the network connector into the interface and power up the DeviceNet network.

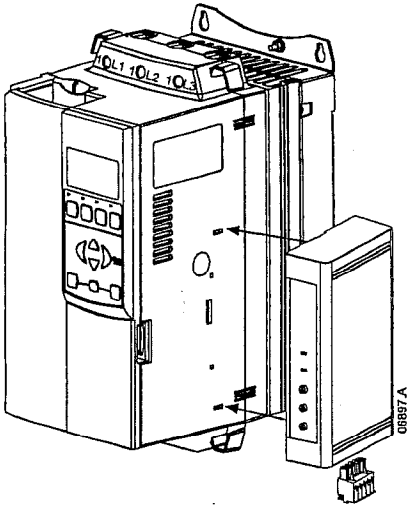
CSX Series:

Plug the interface onto the side of the soft starter.



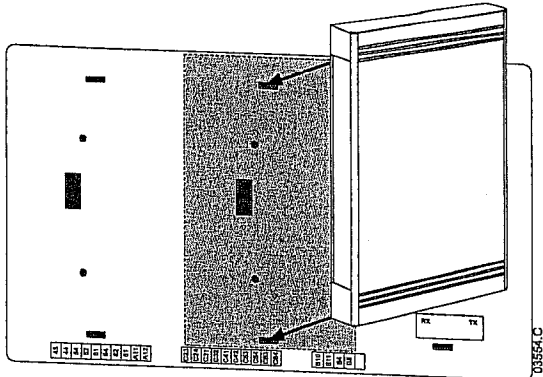
EMX3:

To plug the interface onto the side of the soft starter, line the interface up with the comms port slot. Press the top retaining clip of the interface into the soft starter chassis first, followed by pressing in the bottom retaining clip.



MVS:

Plug the interface onto the back of the MVS Controller.



DEVICENET INTERFACE



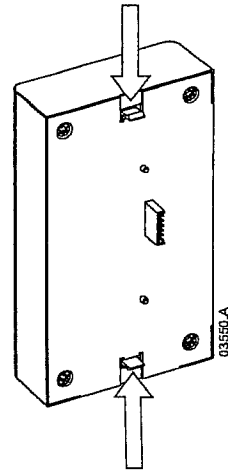
CAUTION

Network designs must decrease the maximum allowable cumulative dropline length by 400 mm for every DeviceNet interface installed on the network. Failure to do so may result in network communication errors and decreased reliability.

Example: ODVA specifies a maximum cumulative dropline length of 156 m on a network operating at 125 kb/s. If six DeviceNet Interfaces were installed on this network, the total cumulative dropline length would need to be decreased to 153.6 m.

Remove the DeviceNet Interface using the following procedure:

- 1 Take the interface off-line and remove the DeviceNet connector.
- 2 Remove control power and mains supply from the soft starter.
- 3 Disconnect all field wiring from the interface.
- 4 Push a small flat-bladed screwdriver into the slots at the top and bottom of the interface and depress the retaining clips.
- 5 Pull the interface away from the soft starter.



CAUTION

Remove mains and control voltage from the soft starter before attaching or removing accessories. Failure to do so may damage the equipment.

2. Configuration

The DeviceNet Interface is a Group 2 slave device, using a predefined master/slave connection set. I/O data is produced and consumed using polled I/O messaging.

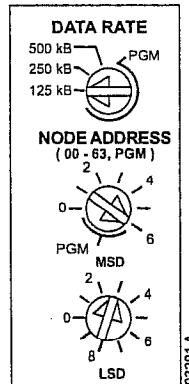
The soft starter must be added to the DeviceNet manager project using the EDS file and configuration/management software tool. The file can be downloaded from the Resources section of the website www.aucom.com. In order to operate successfully, the correct EDS file must be used.

Product	EDS filename
CSX Series	SSDM04_11.eds
EMX3	SSDM06_12.eds
MVS	SSDM05_12.eds (serial number version xxxxxx-1)
MVS	SSDM05_13.eds (serial number version xxxxxx-2)

An on-screen graphics bitmap file can be downloaded from the Resources section of the website www.aucom.com. This bitmap filename is device.bmp.

3. Adjustment

The factory default settings for the rotary adjustment switches are:



Changes to the rotary switch settings take effect when the DeviceNet network is next powered up.

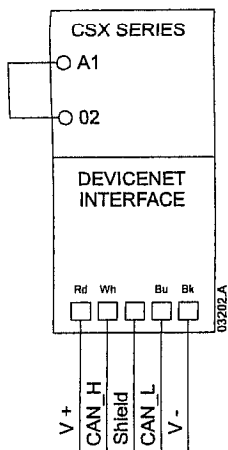


NOTE

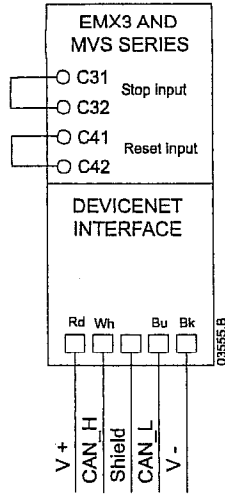
The Data Rate and Node Address (MAC ID) must be set locally on the interface. These cannot be set using DeviceNet management software.

When the Data Rate and MSD Node Address (MAC ID) rotary switches are set on PGM position, the interface uses the previously used valid on-line Data Rate and Node Address (MAC ID).

If the EMX3 or MVS soft starter is operating in Remote mode, links must be fitted to terminals C31-C32 and C41-C42 as shown (these links are not required for Local mode operation).



Standard connection onto DeviceNet bus



Standard connection onto DeviceNet bus

(Remote mode)



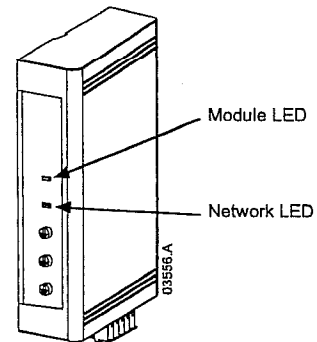
NOTE

EMX3 parameter 6-R selects whether the soft starter will accept Start, Stop or Reset commands from the Serial Network Master while in Remote mode. Refer to the EMX3 User Manual for parameter details.

4. Module and Network LEDs

The Module LED indicates the condition of the power supply and interface operation.

The Network LED indicates status of the communication link between the DeviceNet Interface and the network Master. LED operation is as follows:



LED	State	Description
Module	Off	Network power off
	Green	Normal operation
	Red	Unrecoverable fault
	Red/Green flashing	Self Test mode
Network	Off	Duplicate MAC ID test has not been completed
	Green flashing	Online but no connection with Master
	Green	Online and allocated to a Master
	Red flashing	One or more timed out I/O connections
	Red	Failed communication between interface and Master
	Red/Green flashing	Communication faulted and received an Identity communication faulted request



NOTE

When a communications failure occurs, the soft starter may trip if the Communication Timeout parameter for the network is set greater than zero. When communication is restored, the soft starter must be reset.

5. DeviceNet Polled I/O Structure

Once the EDS file has been loaded, the DeviceNet Interface must be added to the scanner list with parameters shown in the following table:

Parameter	Value
I/O connection type	Polled
Poll receive size	14 bytes
Poll transmit size	2 bytes

Once the soft starter, interface and Master have been set up, configured and powered up, the Master will transmit 2 bytes of data to the interface and receive 14 bytes of data from the interface.

Master > Slave polled I/O output data is as follows:

Byte	Bit	Function	
0	0	0 = Stop command 1 = Start command	
	1	0 = Enable Start or Stop command 1 = Quick Stop (ie coast to stop) and disable Start command	
	2	0 = Enable Start or Stop command 1 = Reset command and disable Start command	
	3 to 7	Reserved	
1	0 to 1 ¹	0 = Use soft starter remote input to select motor set 1 = Use primary motor set 1 when starting ² 2 = Use secondary motor set 2 when starting ² 3 = Reserved	
		Reserved	
		2 to 7	Reserved

¹ Only available on EMX3 and MVS units.

² When using these functions, ensure the programmable inputs are not set to Motor Set Select.

Slave > Master polled I/O input data is as follows:

Byte	Bit	Function	Value
0	0	Trip	1 = Soft starter trip
	1 ²	Warning	1 = Soft starter warning
	2	Running	0 = Unknown, not ready, ready to start or tripped 1 = Starting, running, stopping or jogging.
	3	<i>Reserved</i>	
	4	Ready	0 = Start or stop command not acceptable 1 = Start or stop command acceptable
	5	Control from Net	1 = Always except in Program mode
	6	<i>Reserved</i>	
	7	At reference	1 = Running (full voltage at the motor)
1	0 to 7	Status	0 = Unknown (menu open) ³ 2 = Starter not ready (restart delay, thermal delay or run simulation) ² 3 = Ready to start (including warning state ²) 4 = Starting or running 5 = Soft stopping 7 = Trip 8 = Jog forward ³ 9 = Jog reverse ³
2	0 to 7	Trip/Warning code	Refer to trip code table below
3	0	Initialised	1 = Phase sequence bit is valid (bit 1) after 1 st start
	1	Phase sequence	1 = Positive phase sequence detected
	2 to 7	<i>Reserved</i>	
4 ¹	0 to 7	Motor current (low byte)	Current (A)
5 ¹	0 to 7	Motor current (high byte)	
6 ¹	0 to 7	Current %FLC (low byte)	Current as a percentage of soft starter FLC setting (%)
7 ¹	0 to 7	Current %FLC (high byte)	
8 ¹	0 to 7	% Motor 1 temperature	Motor 1 thermal model
9 ³	0 to 7	% Motor 2 temperature	Motor 2 thermal model
10 ²	0 to 7	% Power factor	Percentage power factor (100 = power factor of 1)
11 ²	0 to 7	Power (low byte)	Power low byte, scaled by power scale
12 ²	0 to 3	Power (high nibble)	Power high nibble, scaled by power scale
	4 to 5	Power scale	0 = Multiply power by 10 to get W 1 = Multiply power by 100 to get W 2 = Power (kW) 3 = Multiply power by 10 to get kW
	6 to 7	<i>Reserved</i>	
13	0 to 7	<i>Reserved</i>	

¹ Only available on CSXi, EMX3 and MVS units.

² Only available on EMX3 and MVS units.

³ Only available on EMX3 units.

6. Trip/Warning Codes

Code	Trip Type	CSX	CSX	EMX3	MVS
0	No trip	●	●	●	●
11	Input A trip (Auxiliary input A)			●	●
20	Motor 1 overload (thermal model)		●	●	●
21	Heatsink overtemperature			●	
23	L1 phase loss			●	●
24	L2 phase loss			●	●
25	L3 phase loss			●	●
26	Current imbalance (Phase imbalance)		●	●	●
27	Ground fault			●	●
28	Instantaneous overcurrent			●	●
29	Undercurrent			●	●
50	Power loss (Power circuit)	●	●	●	●
51	Undervoltage			●	●
52	Overvoltage			●	●
54	Phase sequence		●	●	●
55	Frequency (Mains Supply)	●	●	●	●
60	Unsupported option (not available in 6-wire)			●	
61	FLC too high (FLC out of range)			●	
62	EEPROM fail			●	●
70	Miscellaneous			●	●
75	Motor thermistor		●	●	●
101	Excess start time		●	●	●
102	Motor connection			●	●
104	Internal fault			●	●
105	Bypass fail (Bypass contactor)			●	●
110	Input B trip (Auxiliary input B)			●	●
111	RTD relay trip				●
112	RTD communication failure				●
113	Starter communication (between interface and soft starter)	●	●	●	●
114	Network communication (between interface and network)	●	●	●	●
115	L1 shorted SCR			●	●
116	L2 shorted SCR			●	●
117	L3 shorted SCR			●	●
118	Motor 2 overload (thermal model)			●	
119	Time-overcurrent (Bypass overload)			●	
120	SCR overtemperature (SCR temperature model)				●
121	Battery/Clock			●	●
122	Thermistor circuit			●	
123	RTD A overtemperature			●	
124	RTD B overtemperature			●	
125	RTD C overtemperature			●	
126	RTD D overtemperature			●	
127	RTD E overtemperature			●	
128	RTD F overtemperature			●	
129	RTD G overtemperature			●	
131	RTD circuit fail			●	
132	Analog input trip			●	

7. Parameter Object

The DeviceNet Interface supports a parameter object through explicit messaging. Soft starter parameters can be uploaded (written) and downloaded (read) using DeviceNet management software. When the DeviceNet Interface is powered up, it automatically obtains parameter information from the soft starter.

Detail	Value (Hex)	Comment
Object	0F	Parameter object address
Instance	1 ~ xxx	xxx = maximum soft starter parameter number
Attribute ID	01	Always 0x01
Get Service	0E	Read single soft starter parameter value
Set Service	10	Write single soft starter parameter value

This function is only available on EMX3 and MVS soft starters. For parameter details, refer to the soft starter User Manual.

8. Specifications

Enclosure	
Dimensions	35 mm (W) x 157 mm (H) x 90 mm (D)
Weight	250 g
Protection	IP20
Mounting	
Spring-action plastic mounting clips (x 2)	
Connections	
Soft starter	6-way pin assembly
Network	5-way male and unpluggable female connector (supplied)
Maximum cable size	2.5 mm ²
Contacts	Gold flash
Settings	
Node address (MAC ID)	
Setting	Rotary switches
Range	0 to 63 (63, factory default)
Data rate	
Setting	Rotary switch
Options	125 kB, 250 kB, 500 kB (125 kB, factory default)
Power	
Consumption	
steady state	19 mA at 25 VDC
	31 mA at 11 VDC
in-rush (at 24 VDC)	1.8 A maximum for 2 ms
Galvanically isolated	
Certification	
✓	IEC 60947-4-2
CE	IEC 60947-4-2
ODVA	DeviceNet Conformance Tested ®