INSTRUCTIONS

ETHERNET/IP INTERFACE

RIGHT FROM THE START



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Compatibility

The Ethernet/IP Interface is compatible with the following AuCom soft starters:

- CSX 24 VAC/VDC and 110/240 VAC control voltage.
 The Modbus TCP Interface is not suitable for use with CSX starters using 380/440 VAC control voltage.
- EMX3 all models
- MVS and MVX all models

Warnings



WARNING

For your safety, isolate the soft starter from mains voltage before attaching or removing accessories.



WARNING

Inserting foreign objects or touching the inside of the starter while the expansion port cover is open may endanger personnel, and can damage the starter.

Disclaimer

The examples and diagrams in this manual are included solely for illustrative purposes. The information in this manual is subject to change at any time and without prior notice. In no event will responsibility or liability be accepted for direct, indirect or consequential damages resulting from the use or application of this equipment.

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1. Important User Information

1.1 Safety

Observe all necessary safety precautions when controlling the soft starter remotely. Alert personnel that machinery may start without warning.

It is the installer's responsibility to follow all instructions in this manual and to follow correct electrical practice.

Close attention is required to the electrical installation and the system design to avoid hazards either in normal operation or in the event of equipment malfunction. System design, installation, commissioning and maintenance must be carried out by personnel who have the necessary training and experience. They must read this safety information and this guide carefully.

1.2 Product Design

The Ethernet/IP Interface allows an AuCom soft starter to connect to an Ethernet network and be controlled or monitored using an Ethernet communication model.

Separate interfaces are available for Profinet, Modbus TCP and Ethernet/IP networks.

The Ethernet/IP Interface operates at the application layer. Lower levels are transparent to the user.

Familiarity with Ethernet protocols and networks is required to operate the Ethernet/IP Interface successfully. For difficulties using this device with third party products, including PLCs, scanners and commissioning tools, contact the relevant supplier.

2. Installation



CAUTION

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

2.1 Installation Procedure

- 1. Remove control power and mains supply from the soft starter.
- 2. Fully pull out the top and bottom retaining clips on the interface.
- 3. Line up the interface with the comms port slot.
- 4. Push in the top and bottom retaining clips to secure the interface to the starter.
- 5. Insert the network connector.
- 6. Apply control power to the soft starter.





MVS and MVX: Plug the interface onto the back of the controller.



3

Remove the interface using the following procedure:

- 1. Remove control power and mains supply from the soft starter.
- 2. Disconnect all external wiring from the interface.
- 3. Fully pull out the top and bottom retaining clips on the interface.
- 4. Pull the interface away from the soft starter.



3. Connection

3.1 Soft Starter Connection

The Ethernet/IP Interface is powered from the soft starter.

CSX: For the Ethernet/IP Interface to accept Fieldbus commands, a link must be fitted across terminals A1-02 on the soft starter.

The Ethernet/IP Interface is not suitable for use with CSX starters using 380/440 VAC control voltage.

EMX3 and MVS/MVX: Input links are required across the stop and reset inputs if the soft starter is being operated in Remote mode. In Local mode, links are not required.



NOTE

EMX3 and MVS/MVX: Control via the fieldbus communication network is always enabled in local control mode, and can be enabled or disabled in remote control mode (parameter 6R *Comms in Remote*). Refer to the soft starter user manual for parameter details.



3.2 Network Connection

Ethernet Ports

The Ethernet/IP Interface has two Ethernet ports. The ports are equal and interchangeable - if only one connection is required, either port can be used.

Cables

Use Category 5, 5e, 6 or 6e cable to connect to the Ethernet/IP Interface.

EMC Precautions

To minimise electromagnetic interference, Ethernet cables should be separated from motor and mains cables by 200 mm.

If the Ethernet cable must cross motor or mains cables, the crossing should be at an angle of 90°.

3.3 Network Establishment

The controller must establish communications directly with each interface before the interface can participate in the network. Once communications are established, the interface can participate in an existing network.

3.4 Addressing

Each device in a network is addressed using a MAC address and an IP address, and can be assigned a symbolic name associated with the MAC address.

- The interface will receive a dynamic IP address (via DHCP) when it is connected to the network, or can be assigned a static IP address during configuration.
- The symbolic name is optional and must be configured within the device.
- The MAC address is fixed within the device and is printed on a label on the front of the interface.



4. Device Configuration

To permanently configure attributes in the Ethernet/IP Interface, use the on-board web server.



NOTE

The Error LED flashes whenever the interface is receiving power but is not connected to a network. The Error LED will flash throughout the configuration process.

4.1 On-board Web Server

Ethernet attributes can be configured directly in the Ethernet/IP Interface using the on-board web server.



NOTE

The default address for a new Ethernet/IP Interface is 192.168.0.2. The default subnet mask is 255.255.255.0. The web server will only accept connections from within the same subnet domain. Use the Ethernet Device Configuration Tool to temporarily change the network address of the interface to match the network address of the PC running the tool, if required.

To configure the device using the on-board web server:

- 1. Attach the interface to a soft starter.
- 2. Connect one Ethernet port on the interface to the Ethernet port of the PC.
- 3. Apply control power to the soft starter.

4. Start a browser on the PC and enter the device address, followed by /ipconfig. The default address for a new Ethernet/IP Interface is 192.168.0.2.



5. Edit the settings as required. Click "Submit" to save the new settings. To store the settings permanently in the interface, tick "Static".

6. If prompted to enter a username and password:

username: aucom password: aucom



NOTE

If you change the IP address and lose your record of it, use the Ethernet Device Configuration Tool to scan the network and identify the interface.

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L		

NOTE

If you change the subnet mask, the web server will not be able to communicate with the interface after the new settings are saved to the interface.

4.2 Ethernet Device Configuration Tool

The Ethernet Device Configuration Tool can be downloaded from <u>www.aucom.com</u>.

To permanently configure attributes in the Ethernet/IP Interface, use the on-board web server. Changes made via the Ethernet Device Configuration Tool cannot be stored permanently in the Ethernet/IP Interface.

To configure the device using the Ethernet Device Configuration Tool:

- 1. Attach the interface to a soft starter.
- 2. Connect one Ethernet port on the interface to the Ethernet port of the PC.
- 3. Apply control power to the soft starter.
- 4. Start the Ethernet Device Configuration Tool.

evices Online	Find:				<u>n</u> ext	previo	us
MAC Address	Device	Device Name	IP Address	Protocol	Devic	Vend	D.,

5. Click on Search Devices. The software will search for connected devices.

evices Online	Find:				next	previo	us
MAC Address	Device	Device Name	IP Address	Protocol	Devic	Vend	D
00-02-A2-25-DC-B3	NETIC 50	netIC [SN=	192.168.0.2	NetId	-	-	-

6. To set a static IP address, click Configure then select Set IP address.

IP Configuration	n for OC)-()2-A	2-2	25-1	DC-	B3 [×
IP Address:	192	•	168	•	0			
Subnet <u>m</u> ask:	0	4	0	÷	0	÷	0	
								⊲
	Q	ιK			2	anc	el	15621

5. Operation

The Ethernet/IP Interface has been designed for use in a system complying with the ODVA Common Industrial Protocol. For successful operation, the scanner must also support all functions and interfaces described in this document.

5.1 Device Classification

The Ethernet/IP Interface is an Adapter class device and must be managed by a Scanner class device over Ethernet.

5.2 Scanner Configuration

EDS File

An EDS file is available from <u>www.aucom.com</u>. The EDS file contains all required attributes of the Ethernet/IP Interface.

Once the EDS file has been loaded, the individual Ethernet/IP Interface must be defined. Input/Output registers must be 240 bytes in size, and type INT.

Module definition of the Ethernet/IP Interface, using RSLogix 5000

Revision:		1 🔹					
Electronic Keying:							
Connections:							
Name		Remote Data		Size			
Euclusius Ouvers	Input:	Input_CP	101	240	NT		
Exclusive owner	Output:	Output_CP	100	240	INT		
	Output:	Output_CP	100	240			
-							
The disabled controls ca	annot be chan	ged while online	 e.				

5.3 LEDs

O source		LED name	LED Status	Description
		Power	Off	Interface is not powered up.
	14702A		On	Interface is receiving power.
C the status		Error	Off	Interface is not powered up or does not have an IP address.
			Flashing	Connection timeout.
			On	Duplicate IP address.
		Status	Off	Interface is not powered up or does not have an IP address.
LO ATRA			Flashing	Interface has obtained an IP address but has not established any network connections.
			On	Communication has been established.
		Link x	Off	No network connection.
			On	Connected to a network.
		TX/RX x	Flashing	Transmitting data.

6. Packet Structures

NOTE

All references to registers mean the registers within the interface unless otherwise stated.

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L	_	_	
L	_	_	
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NOTE

Some soft starters do not support some functions.

6.1 Ensuring Safe and Successful Control

Data written to the Ethernet/IP Interface will remain in its registers until the data is overwritten or the interface is reinitialised. The Ethernet/IP Interface will not transfer successive duplicate commands to the soft starter.



NOTE

If the soft starter is started via fieldbus communications but stopped via the keypad or a remote input, an identical start command cannot be used to restart the starter.

In order to operate safely and successfully in an environment where the soft starter may also be controlled via the keypad or the remote inputs (as well as via Fieldbus communications), a control command should be immediately followed by a status query to confirm the command has been actioned.

6.2 Control Commands (Write Only)

Use the following structures to send a control command to the soft starter:

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	0 = Use soft starter remote input to select motor set
		1 = Use primary motor set when starting ¹
		2 = Use secondary motor set when starting ¹
		3 = Reserved
	2 to 7	Reserved

¹ Ensure that the programmable input is not set to Motor Set Select before using this function.

6.3 Status Commands (Read Only)

NOTE

Some soft starters do not support some functions. Voltage values are only available from medium voltage soft starters.

CSX open loop soft starters will read back average current as "2222" and motor 1 temperature as "111" decimal.

Use the following structures to query the soft starter's status:

Byte	Bit	Function	Details
0	0	Trip	1 = Tripped
	1	Warning	1 = Warning
	2	Running	0 = Unknown, not ready, ready to start or
			tripped
			1 = Starting, running, stopping or jogging
	3	Reserved	
	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	Local/Remote	0 = Local control
			1 = Remote control
	7	At reference	1 = Running (full voltage at the motor)
1	0 to 7	Status	0 = Unknown (menu open)
			2 = Starter not ready (restart delay,
			thermal delay or run simulation)
			3 = Ready to start (including warning
			state)
			4 = Starting or running
			5 = Soft stopping
			7 = Trip
			8 = Jog forward
			9 = Jog reverse
2-3	0 to 15	Trip/Warning code	Refer to Trip Codes on page 19
4 ¹	0 to 7	Motor current (low byte)	Current (A)
5 ¹	0 to 7	Motor current (high	
		byte)	
6	0 to 7	Motor 1 temperature	Motor 1 thermal model (%)
7	0 to 7	Motor 2 temperature	Motor 2 thermal model (%)
8-9	0 to 5	Reserved	
	6 to 8	Product parameter list	
		version	
	9 to 15	Product type code ²	

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Byte	Bit	Function	Details
10	0 to 7	Reserved	
11	0 to 7	Reserved	
12 ³	0 to 7	Changed parameter number	0 = no parameters have changed 1~255 = index number of the last parameter changed
13	0 to 7	Parameters	Total number of parameters available in the starter
14-15	0 to 13	Changed parameter value ³	Value of the last parameter that was changed, as indicated in byte 12
	14 to 15	Reserved	
16	0 to 4	Starter state	0 = Reserved 1 = Ready 2 = Starting 3 = Running 4 = Stopping 5 = Not ready (restart delay, restart temperature check, run simulation) 6 = Tripped 7 = Programming mode 8 = Jog forward 9 = Jog reverse
	5	Warning	1 = Warning
	6	Initialised	0 = Unintialised 1 = Initialised
	7	Local/Remote	0 = Local control 1 = Remote control
17	0	Parameters	0 = Parameter(s) have changed since last parameter read 1 = no parameters have changed
	1	Phase sequence	0 = Negative phase sequence 1 = Positive phase sequence
	2 to 7	Trip code ⁴	Refer to Trip Codes on page 19
18-19	0 to 13	Current	Average rms current across all three phases
	14 to 15	Reserved	
20-21	0 to 13	Current (% motor FLC)	
	14 to 15	Reserved	
22	0 to 7	Motor 1 thermal model (%)	
23	0 to 7	Motor 2 thermal model (%)	

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Byte	Bit	Function	Details
24-25 5	0 to 11	Power	
	12 to 13	Power scale	
	14 to 15	Reserved	
26	0 to 7	% Power factor	100% = power factor of 1
27	0 to 7	Reserved	
28	0 to 7	Reserved	
29	0 to 7	Reserved	
30-31	0 to 13	Phase 1 current (rms)	
	14 t0 15	Reserved	
32-33	0 to 13	Phase 2 current (rms)	
	14 to 15	Reserved	
34-35	0 to 13	Phase 3 current (rms)	
	14 to 15	Reserved	
36-37	0 to 7	Phase 1 voltage (rms)	medium voltage products only
	14 to 15	Reserved	
38-39	0 to 7	Phase 2 voltage (rms)	medium voltage products only
	14 to 15	Reserved	
40-41	0 to 7	Phase 3 voltage (rms)	medium voltage products only
	14 to 15	Reserved	
42	0 to 7	Parameter list minor	
	_	revision	
43	0 to 7	Parameter list major revision	
44	0 to 7	Digital Input state	For all inputs, 0 = open, 1 = closed (shorted) 0 = Start 1 = Stop 2 = Reset 3 = Input A 4 = Input B 5 = Input C, if fitted 6 = Input D, if fitted 7 to 15 = <i>Reserved</i>

45-70 0 to 7 *Reserved*

¹ For models EMX3-0053B and smaller this value will be 10 times greater than the value displayed on the keypad.

² Product type code:

4 = CSX Series 6 = EMX3 11 = MVS and MVX ³ Reading bytes 14-15 (Changed parameter value) will reset byte 12 (Changed parameter number) and bit 0 of byte 17 (Parameters have changed). Always read bytes 12 and 17 before reading bytes 14-15.

⁴ Bits 2~7 of byte 17 report the soft starter's trip or warning code. If the value of bits 0~4 of byte 16 is 6, the soft starter has tripped. If bit 5 = 1, a warning has activated and the starter is continuing to operate.

⁵ Powerscale functions as follows:

- 0 = multiply Power by 10 to get W
- 1 = multiply Power by 100 to get W
- 2 = Power is represented in kW
- 3 = multiply Power by 10 to get kW

6.4 Soft Starter Internal Register Addresses

Internal registers within the soft starter have the following functions. These registers are not directly accessible via fieldbus.

Register	Description	Bits	Details
Address			
0	Version	0 to 5	Reserved
		6 to 8	Product parameter list version
		9 to 15	Product type code ¹
1	Device details		
2 ²	Changed	0 to 7	0 = no parameters have changed
	parameter		1~255 = index number of the last parameter
	number		changed
		8 to 15	Total number of parameters available in the
			starter
3 ²	Changed	0 to 13	Value of the last parameter that was changed,
	parameter value		as indicated in register 2
		14 to 15	Reserved
4	Starter state	0 to 4	0 = <i>Reserved</i>
			1 = Ready
			2 = Starting
			3 = Running
			4 = Stopping
			5 = Not ready (restart delay, restart
			temperature check, run simulation)
			6 = Tripped
			7 = Programming mode
			8 = Jog forward
			9 = Jog reverse
		5	1 = Warning

6 0 = Unintialised 1 = Initialised 7 0 = Local control 1 = Remote control 8 0 = Parameter(s) have changed since last parameter read 1 = no parameters have changed ² 9 0 = Negative phase sequence 1 = Positive phase sequence 10 to 15 Refer to Trip Codes on page 19 ³ 5 O to 13	Register Address	Description	Bits	Details
7 0 = Local control 1 = Remote control 8 0 = Parameter(s) have changed since last parameter read 1 = no parameters have changed ² 9 0 = Negative phase sequence 1 = Positive phase sequence 1 = Positive phase sequence 10 to 15 Refer to Trip Codes on page 19 ³ 5 O to 13			6	0 = Unintialised 1 = Initialised
1 = Remote control 8 0 = Parameter(s) have changed since last parameter read 1 = no parameters have changed 2 9 0 = Negative phase sequence 1 = Positive phase sequence 10 to 15 Refer to Trip Codes on page 19 3 5 0 to 13			7	0 = Local control
8 0 = Parameter(s) have changed since last parameter read 1 = no parameters have changed 2 9 0 = Negative phase sequence 1 = Positive phase sequence 10 to 15 Refer to Trip Codes on page 19 3 5 0 to 13				1 = Remote control
1 = no parameters have changed 2 9 0 = Negative phase sequence 1 = Positive phase sequence 10 to 15 Refer to Trip Codes on page 19 3 5 0 to 13			8	0 = Parameter(s) have changed since last parameter read
9 0 = Negative phase sequence 1 = Positive phase sequence 10 to 15 Refer to Trip Codes on page 19 3 5 0 to 13 Average rms current across all three phases 4				1 = no parameters have changed ²
1 = Positive phase sequence 10 to 15 Refer to Trip Codes on page 19 3 5 0 to 13 Average rms current across all three phases 4			9	0 = Negative phase sequence
10 to 15 Refer to Trip Codes on page 19 ⁻³ 5 Current 0 to 13 Average rms current across all three phases 4				1 = Positive phase sequence
5 Current 0 to 13 Average rms current across all three phases 4			10 to 15	Refer to Trip Codes on page 19 ³
	5	Current	0 to 13	Average rms current across all three phases ⁴
14 to 15 <i>Reserved</i>			14 to 15	Reserved
6 Current 0 to 9 Current (% motor FLC)	6	Current	0 to 9	Current (% motor FLC)
10 to 15 <i>Reserved</i>			10 to 15	Reserved
7 Motor 0 to 7 Motor 1 thermal model (%)	7	Motor	0 to 7	Motor 1 thermal model (%)
temperature		temperature		
8 ⁵ Power <u>O to 11 Power</u>	8 5	Power	0 to 11	Power
12 to 13 Power scale			12 to 13	Power scale
14 to 15 Reserved			14 to 15	Reserved
9 % Power factor 0 to 7 100% = power factor of 1	9	% Power factor	0 to 7	100% = power factor of 1
8 to 15 Reserved			8 to 15	Reserved
10 Voltage 0 to 13 Average rms voltage across all three phases (medium voltage products only)	10	Voltage	0 to 13	Average rms voltage across all three phases (medium voltage products only)
14 to 15 Reserved			14 to 15	Reserved
11 ⁴ Current <u>0 to 13</u> Phase 1 current (rms)	11 ⁴	Current	0 to 13	Phase 1 current (rms)
14 to 15 <i>Reserved</i>			14 to 15	Reserved
12 ⁴ Current <u>0 to 13</u> Phase 2 current (rms)	12 4	Current	0 to 13	Phase 2 current (rms)
14 to 15 <i>Reserved</i>			14 to 15	Reserved
13 ⁴ Current <u>0 to 13</u> Phase 3 current (rms)	13 4	Current	0 to 13	Phase 3 current (rms)
14 to 15 <i>Reserved</i>			14 to 15	Reserved
14 Voltage 0 to 13 Phase 1 voltage, rms (medium voltage products only)	14	Voltage	0 to 13	Phase 1 voltage, rms (medium voltage products only)
14 to 15 <i>Reserved</i>			14 to 15	Reserved
15 Voltage 0 to 13 Phase 2 voltage, rms (medium voltage products only)	15	Voltage	0 to 13	Phase 2 voltage, rms (medium voltage products only)
14 to 15 Reserved			14 to 15	Reserved
16 Voltage 0 to 13 Phase 3 voltage, rms (medium voltage products only)	16	Voltage	0 to 13	Phase 3 voltage, rms (medium voltage products only)
14 to 15 Reserved			14 to 15	Reserved

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Register Address	Description	Bits	Details
17	Parameter list	0 to 7	Parameter list minor revision
	version number	8 to 15	Parameter list major version
18	Digital Input state	0 to 15	For all inputs, 0 = open, 1 = closed (shorted) 0 = Start 1 = Stop 2 = Reset 3 = Input A 4 = Input B 5 = Input C, if fitted 6 = Input D, if fitted 7 to 15 = Reserved

19~31 Reserved

¹ Product type code:

4 = CSX Series 6 = EMX3

11 = MVS and MVX

² Reading register 3 (Changed parameter value) will reset registers 2 (Changed parameter number) and 4 (Parameters have changed). Always read registers 2 and 4 before reading register 3.

³ Bits 10~15 of register 4 report the soft starter's trip or warning code. If the value of bits 0~4 is 6, the soft starter has tripped. If bit 5 = 1, a warning has activated and the starter is continuing to operate.

⁴ For models EMX3-0053B and smaller this value will be 10 times greater than the value displayed on the keypad.

⁵ Powerscale functions as follows:

0 = multiply Power by 10 to get W

1 = multiply Power by 100 to get W

- 2 = Power is represented in kW
- 3 = multiply Power by 10 to get kW

6.5 Parameter Management (Read/write)

Parameter values can be read from or written to the soft starter.

If Output Register 57 of the scanner is set greater than zero (0), the Ethernet/IP Interface will write all parameter registers to the soft starter.

Enter the required parameter values in the output registers of the scanner. The value of each parameter is stored in a separate register. Each register corresponds to two bytes.

- Register 57 (bytes 114-115) corresponds to parameter 1A *Motor Full Load Current*
- The EMX3 has 159/168 parameters. Register 224 (bytes 448-449) corresponds to parameter 20F *Pedestal Detect*.
- The MVS and MVX have 152 parameters. Register 208 (bytes 416-417) corresponds to parameter 20M *Voltage Calibration*.



NOTE

When writing parameter values, the Ethernet/IP Interface will update all parameter values in the soft starter. Always enter a valid value for every parameter.



CAUTION

Do not change the default values of the Factory parameters (parameter group 20). Changing these values may cause unpredictable behaviour in the soft starter.

6.6 Trip/Warning Codes

The trip code is reported in bytes 2-3 and 17 of the Status Commands.

Code	Тгір Туре	CSX	CSX <i>i</i>	EMX3	MVS/
	Notrin	•	•	•	
11	Input A trip	•	•	•	•
20	Motor overload (thermal model)		•	•	•
20	Heatsink overtemperature		•	•	•
23	1 1 phase loss			•	•
20	12 phase loss			•	•
25	L3 phase loss			•	•
26	Current imbalance		•	•	•
27 ¹	Ground fault		•	•	•
28	Instantaneous overcurrent			•	•
29	Undercurrent			•	•
50	Power loss/Power circuit	•	•	•	•
54	Phase sequence		•	•	•
55	Frequency	•	•	•	•
60	Unsupported option (function not available in			•	•
	inside delta)				
61	FLC too high			•	•
62	Parameter out of Range			•	•
70	Miscellaneous			•	•
75	Motor thermistor		•	٠	•
101	Excess start time		•	•	•
102	Motor connection			•	•
104	Internal fault x (where x is the fault code detailed in the table below).			٠	•
105	Bypass fail (bypass contactor)			•	•
110	Input B trip			•	•
113	Starter communication (between interface and soft starter)	٠	•	٠	٠
114	Network communication (between interface	•	•	•	•
	and network)				
115	L1-T1 shorted			•	•
116	L2-T2 shorted			•	•
117	L3-T3 shorted			•	•
118	Motor 2 overload (thermal model)			•	•
119 ²	Time-overcurrent (Bypass overload)		•	•	
120	SCR overtemperature				•
121	Battery/clock			•	•

Code	Тгір Туре	CSX	CSX <i>i</i>	EMX3	MVS/ MVX
122	Thermistor circuit			٠	
123	RTD A overtemperature			•	
124 ¹	RTD B overtemperature			•	
125 ¹	RTD C overtemperature			•	
126 ¹	RTD D overtemperature			•	
127 ¹	RTD E overtemperature			•	
128 ¹	RTD F overtemperature			•	
129 ¹	RTD G overtemperature			•	
131	RTD circuit fail			•	
132	Analog input trip			•	•

¹ Available with EMX3 only if the appropriate option card is fitted.

² For EMX3, time-overcurrent protection is only available on internally bypassed models.

Internal Fault x

The table below details the internal fault code associated with trip code 104.

Internal fault	Message displayed on the keypad
70 ~ 72	Current Read Err Lx
73	Power On in Simulation mode
74 ~ 76	Motor connection Tx
77 ~ 79	Firing fail SCRx
80 ~ 82	VZC Fail Px
83	Low Control Volts
84 ~ 98	Internal fault X
	Contact your local supplier with the fault code (X).



NOTE

Only available on EMX3 and MVS/MVX soft starters. For parameter details, refer to the soft starter user manual.

7.Network Design

The Ethernet/IP Interface supports star, line and ring topologies.

7.1 Star Topology

In a star network, all controllers and devices connect to a central network switch.



7.2 Line Topology

In a line network, the controller connects directly to one port of the first Ethernet/IP Interface. The second Ethernet port of the Ethernet/IP Interface connects to another interface, which in turn connects to another interface until all devices are connected.



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NOTE

The Ethernet/IP Interface has an integrated switch to allow data to pass through in line topology. The Ethernet/IP Interface must be receiving control power from the soft starter for the switch to operate.

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NOTE

If the connection between two devices is interrupted, the controller cannot communicate with devices after the interruption point.



NOTE

Each connection adds a delay to communication with the next interface. The maximum number of devices in a line network is 32. Exceeding this number may reduce the reliability of the network.

7.3 Ring Topology

In a ring topology network, the controller connects to the first Ethernet/IP Interface, via a network switch. The second Ethernet port of the Ethernet/IP Interface connects to another interface, which in turn connects to another interface until all devices are connected. The final interface connects back to the switch.



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NOTE

The network switch must support loss of line detection.

7.4 Combined Topologies

A single network can include both star and line components.



8. Specifications

Enclosure
Dimensions
Weight
Protection IP20
Mounting
Spring-action plastic mounting clips (x 2)
Connections
Soft starter 6-way pin assembly
Contacts Gold flash
Network RJ45
Settings
IP address
Device name
Network
Link speed 10 Mbps, 100 Mbps (auto detect)
Full duplex
Auto crossover
Power
Consumption (steady state, maximum)
Reverse polarity protected
Galvanically isolated
Certification
RCM IEC 60947-4-2
CE EN 60947-4-2
EtherNet√IP [™]
UDVA conformance tested

