

# ETHERNET/IP & PROFINET MODULE

## INSTRUCTIONS FOR ASAC-0/ASAC-1/ASAB

Issued on 20/12/13

R. 00

- This manual is integrant and essential to the product. Carefully read the instructions contained herein as they provide important hints for use and maintenance safety.
- This device is to be used only for the purposes it has been designed to. Other uses should be considered improper and dangerous. The manufacturer is not responsible for possible damages caused by improper, erroneous and irrational uses.
- Elettronica Santerno is responsible for the device in its original setting.
- Any changes to the structure or operating cycle of the device must be performed or authorized by the Engineering Department of Elettronica Santerno.
- Elettronica Santerno assumes no responsibility for the consequences resulting by the use of non-original spareparts.
- Elettronica Santerno reserves the right to make any technical changes to this manual and to the device without prior notice. If printing errors or similar are detected, the corrections will be included in the new releases of the manual.
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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 Module allows a Santerno soft starter to connect to an Ethernet network and be controlled or monitored using an Ethernet communication model.

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

The Ethernet Module operates at the application layer. Lower levels are transparent to the user.

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

### 1.3 Compatibility

The Ethernet Module is compatible with the following Santerno soft starters:

- ASAC – 24 VAC/VDC and 110/240 VAC control voltage.  
**The Ethernet Module is not suitable for use with ASAC starters using 380/440 VAC control voltage.**
- ASAB – all models.

### 1.4 About This Manual

This manual contains information for the following devices:

- ZZ0071013 Ethernet/IP Module
- ZZ0071014 Profinet Module

Ensure you are using the correct information for your device.

### 1.5 Disclaimer

The examples and diagrams in this manual are included solely for illustrative purposes. The information contained 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.

## 2 Installation

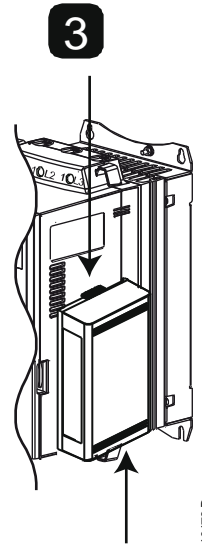
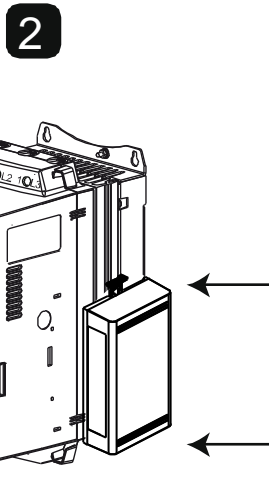
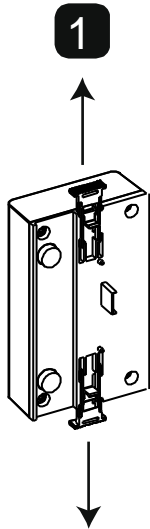


### CAUTION

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

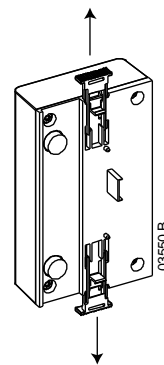
1. Remove control power and mains supply from the soft starter.
2. Fully pull out the top and bottom retaining clips on the module.
3. Line up the module with the comms port slot.
4. Push in the top and bottom retaining clips to secure the module to the starter.
5. Insert the network connector.
6. Apply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



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Remove the module using the following procedure:

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



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### 3 Connection

#### 3.1 Soft Starter Connection

The Ethernet Module is powered from the soft starter.

ASAC: For the Ethernet Module to accept serial commands, a link must be fitted across terminals A1-02 on the soft starter.

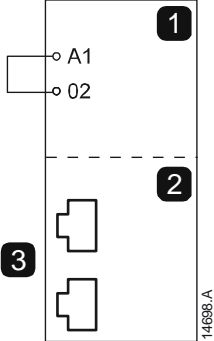
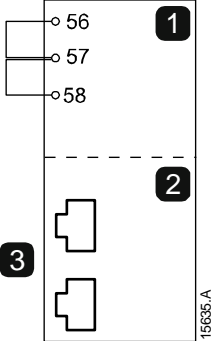
**The Ethernet Module is not suitable for use with ASAC starters using 380/440 VAC control voltage.**

ASAB: 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

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

ASAC		ASAB	
			
<b>1</b>	ASAC A1, 02: Stop input	<b>1</b>	ASAB (Remote mode) 56, 57: Stop input 58, 57: Reset input
<b>2</b>	Ethernet Module	<b>2</b>	Ethernet Module
<b>3</b>	RJ45 Ethernet ports	<b>3</b>	RJ45 Ethernet ports

#### 3.2 Network Connection

##### 3.2.1 Ethernet Ports

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

##### 3.2.2 Cables

The Ethernet Module connects to the switch using Category 5, 5e, 6 or 6e cable.

##### 3.2.3 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°.

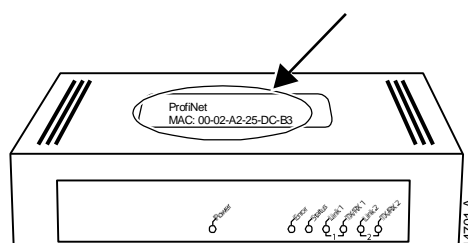
#### 3.3 Network Establishment

The controller must establish communications with each module before the network can begin passing process data.

#### 3.4 Addressing

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

- The module will receive a dynamic IP address when it is connected to the network, or can be assigned a static IP address during configuration.
- The symbolic name 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 module.



## 4 Operation: Profinet Module

The Profinet Module has been designed for use in a system complying with the Profinet standard. For successful operation, the controller must also support all functions and interfaces described in this document.

### 4.1 Device Classification

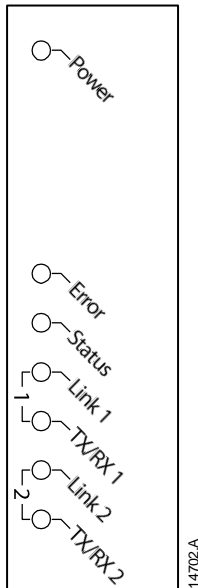
The Profinet Module is a Profinet IO-Device and must be managed by an IO-Controller over Ethernet.

### 4.2 Master Configuration

Import the latest GSDML file into your Master configuration tool. This file is available from [santerno.com](http://santerno.com).

If your Master uses on-screen icons, two graphic bitmap files are available from the website. SSPM\_N.bmp indicates normal mode. SSPM\_D.bmp indicates diagnostic mode.

### 4.3 LEDs



LED name	LED Status	Description
Power	Off	Module is not powered up.
	On	Module is receiving power.
Error	Off	No error.
	Flashing	No data exchange.
	On	No physical link or slow physical link. No configuration.
Status	Off	No error.
	Flashing	DCP signal service initiated via the bus.
	On	Operating normally.
Link x	Off	No network connection.
	On	Connected to a network.
TX/RX x	Flashing	Transmitting data.

## 4.4 Device Configuration

To permanently configure attributes in the Profinet Module, use the Ethernet Device Configuration Tool and untick "Store settings temporary".



### NOTE

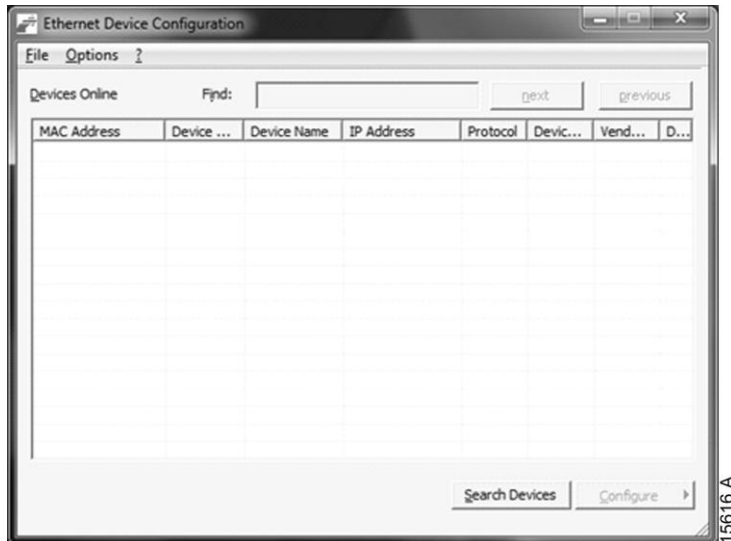
The Error LED flashes whenever the module is receiving power but is not connected to a network. The Error LED will flash throughout the configuration process.

### 4.4.1 Ethernet Device Configuration Tool

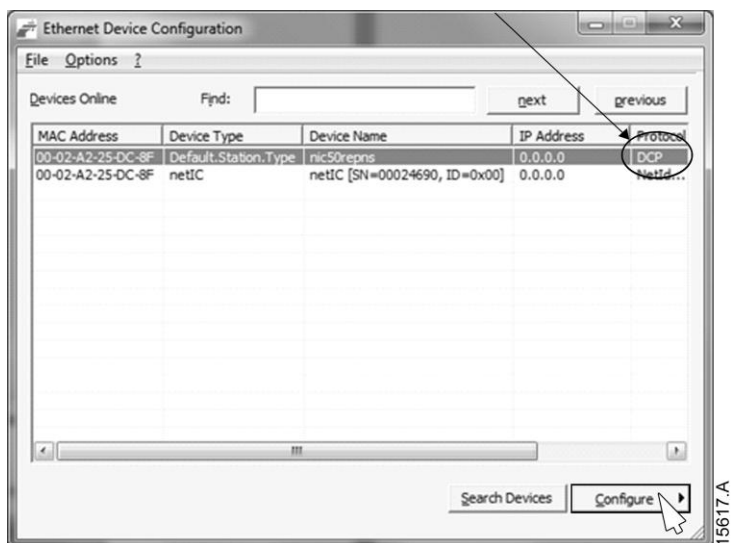
The Ethernet Device Configuration Tool can be downloaded from [santerno.com](http://santerno.com).

To configure the device using the Ethernet Device Configuration Tool:


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



5. Click on Search Devices. The software will search for connected devices.
6. The search results will contain two entries for each connected device. Select the DCP Protocol entry for the required device.



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



IP Configuration for 00-02-A2-25-DC-8F

☒ Use static IP address

IP address: 0 . 0 . 0 . 0

Subnet mask: 0 . 0 . 0 . 0

Default gateway: 0 . 0 . 0 . 0

☐ Get IP Address via DHCP

Authentication method: MAC address

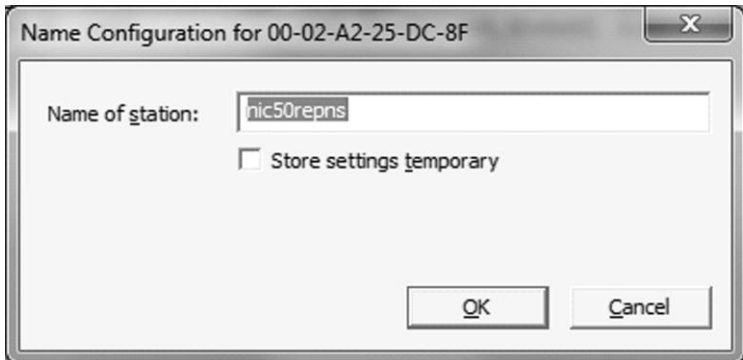
Client ID:

☐ Store settings temporary

OK Cancel

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8. To configure a device name, click Configure then select Device Name.



Name Configuration for 00-02-A2-25-DC-8F

Name of station: nic50repns

☐ Store settings temporary

OK Cancel

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## 5 Operation: Ethernet/IP Module

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

### 5.2 Scanner Configuration

An EDS file is available from [santerno.com](http://santerno.com).

If the scanner does not support EDS files, the module can be configured directly in the scanner.

### 5.3 Device Attributes

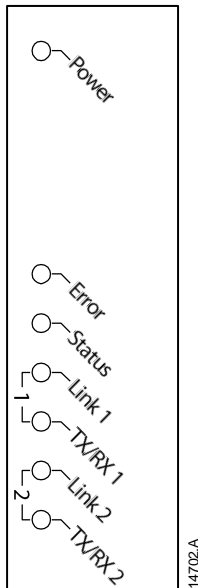
The EDS file contains all required attributes of the Ethernet/IP Module. If your scanner does not support an EDS file, the same information can be entered in order to configure the module manually.

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

Assembly Object
The number of parameters and the parameter values depends on the soft starter model. Refer to the soft starter user manual for details.

### 5.4 LEDs



LED name	LED Status	Description
Power	Off	Module is not powered up.
	On	Module is receiving power.
Error	Off	Module is not powered up or does not have an IP address.
	Flashing	Connection timeout.
	On	Duplicate IP address.
Status	Off	Module is not powered up or does not have an IP address.
	Flashing	Module 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.



## 5.5 Device Configuration

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



### NOTE

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

### 5.5.1 On-board Web Server

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

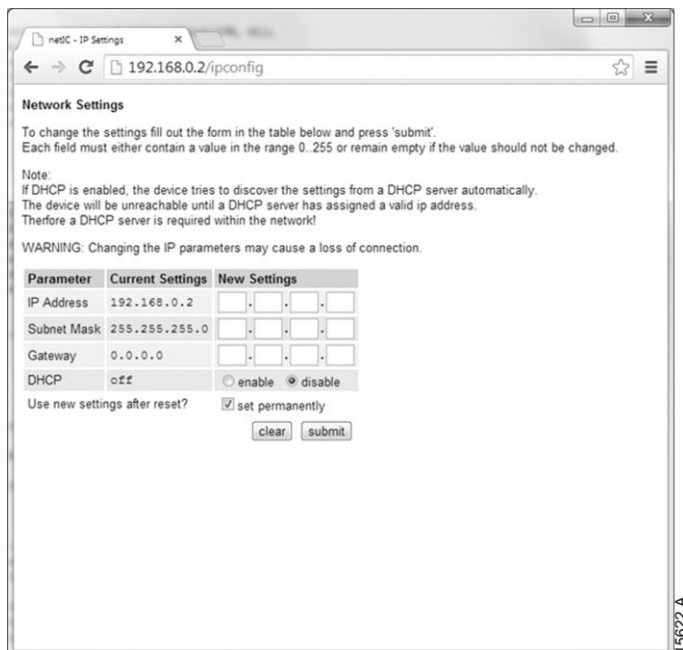


### NOTE

The default address for a new Ethernet/IP Module is 192.168.0.2. The default subnet mask is 255.255.255.0. The web server will only accept connections from devices using the same class of IP address and same subnet mask. Use the Ethernet Device Configuration Tool to temporarily change the address class of the module to match the local PC, if required.

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

1. Attach the module to a soft starter.
2. Connect one Ethernet port on the module 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.  
The default address for a new Ethernet/IP Module is 192.168.0.2.



The screenshot shows a web browser window with the address bar set to 192.168.0.2/ipconfig. The page title is "netC - IP Settings". The main content area is titled "Network Settings" and contains instructions: "To change the settings fill out the form in the table below and press 'submit'. Each field must either contain a value in the range 0..255 or remain empty if the value should not be changed." Below this is a "Note" about DHCP and a "WARNING" about changing IP parameters. A table for settings is shown with columns for "Parameter", "Current Settings", and "New Settings". The parameters are IP Address (192.168.0.2), Subnet Mask (255.255.255.0), Gateway (0.0.0.0), and DHCP (off). The DHCP row has radio buttons for "enable" and "disable", with "disable" selected. Below the table is a checkbox for "Use new settings after reset?" which is checked and labeled "set permanently". At the bottom are "clear" and "submit" buttons.

Parameter	Current Settings	New Settings
IP Address	192.168.0.2	<input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>
Subnet Mask	255.255.255.0	<input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>
Gateway	0.0.0.0	<input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>
DHCP	off	<input type="radio"/> enable <input checked="" type="radio"/> disable

Use new settings after reset? ☒ set permanently

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



### 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 module.

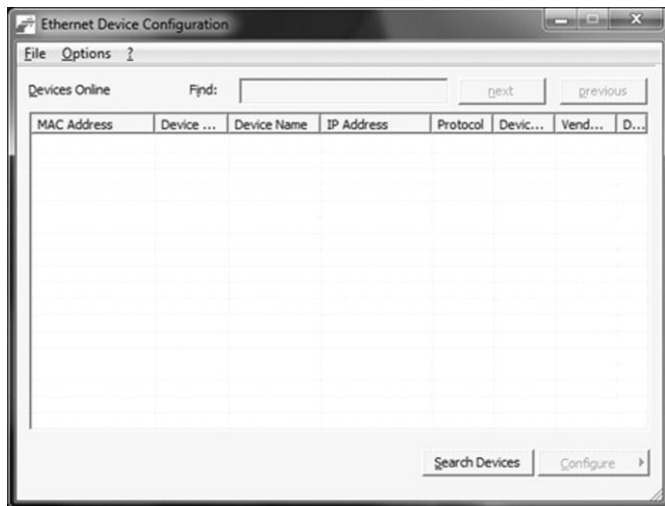
### 5.5.2 Ethernet Device Configuration Tool

The Ethernet Device Configuration Tool can be downloaded from [santerno.com](http://santerno.com).

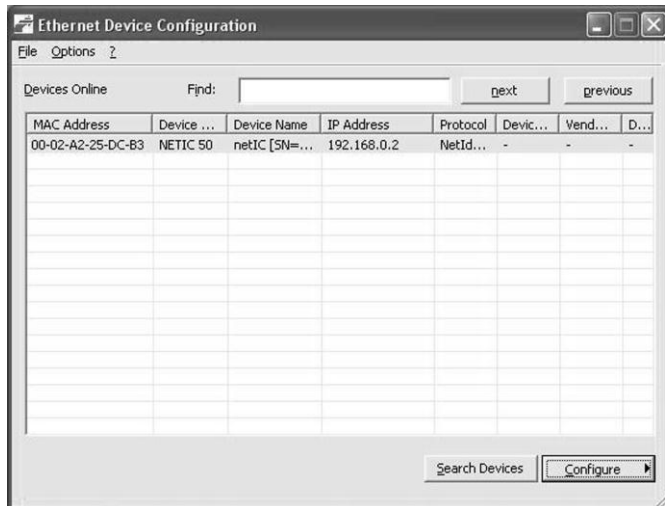
To permanently configure attributes in the Ethernet/IP Module, use the on-board web server. Changes made via the Ethernet Device Configuration Tool cannot be stored permanently in the Ethernet/IP Module.

To configure the device using the Ethernet Device Configuration Tool:

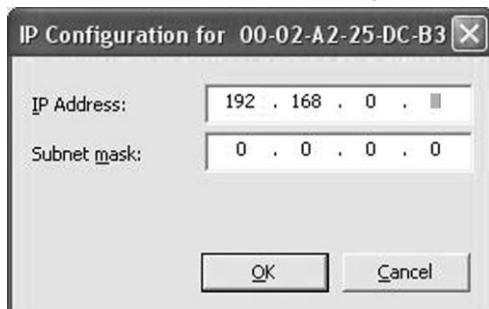
1. Attach the module to a soft starter.
2. Connect one Ethernet port on the module to the Ethernet port of the PC.
3. Apply control power to the soft starter.
4. Start the Ethernet Device Configuration Tool.



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



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



## 6 Packet Structures



### NOTE

Some soft starters do not support some functions.

### 6.1 Ensuring Safe and Successful Serial Control

Data written to the Ethernet Module will remain in its registers until the data is overwritten or the module is reinitialised. The Operation Type determines whether the module will act on a command once or continuously (refer to Operation Type on page 11). The Ethernet Module will not transfer successive duplicate commands to the soft starter.



### NOTE

If the soft starter is started via serial 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 serial communications), a control command should be immediately followed by a status query to confirm the command has been actioned.

If the starter does not respond as expected:

- send a reset command or
- resend the start command with a different Operation Type

### 6.2 Operation Type

The operation type for each command can be set to 0 or 1.

0 = execute once

1 = execute continuously

### 6.3 Control and Status Commands

#### 6.3.1 Command Types and Values

Command Type	Command Value	Description
1 (Control starter)	0	Stop
	1	Start
	2	Reset
	4	Quick stop (coast to stop)
	8	Force trip
	16	Enable parameter set 1
	32	Enable parameter set 2 (secondary motor)
	64	Enable local mode
2 (Retrieve starter status)	128	Enable remote mode
	1	Starter state
	2	Trip code
	4	Motor current
	8	Motor temperature
3 (Retrieve communications status)	16	Retrieve all
	1	Module version
	2	netIC firmware version
	3	netIC firmware MAC Address
	4	netIC serial number
	5	netIC protocol class
	6	Starter product code
	7	Starter protocol (1= AP ASCII, 2 = binary)

### 6.3.2 Command Structures

The structure for control commands sent to the Ethernet Module is:

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
Command type (low byte)	Command type (high byte)	Command value (low byte)	Command value (high byte)	Reserved	Reserved	Operation type (low byte)	Operation type (high byte)

The structure for responses to control commands is:

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
Echo command type (low byte)	Echo command type (high byte)	Echo command value (low byte)	Echo command value (high byte)	Command response (low byte)	Command response (high byte)

The structure for status queries sent to the Ethernet Module is:

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
Command type (low byte)	Command type (high byte)	Command value (low byte)	Command value (high byte)	Reserved	Reserved	Operation type (low byte)	Operation type (high byte)

The structure for responses to status queries is:

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
Echo command type (low byte)	Echo command type (high byte)	Echo command value (low byte)	Echo command value (high byte)	Query status (low byte)	Query status (high byte)	Query result (low byte)	Query result (high byte)
Byte 8	Byte 9	...	...	...	...	Query result n (low byte)	Query result n (high byte)
Query result 2 (low byte)	Query result 2 (high byte)						

#### Command Response

The Ethernet Module will return one of the following values in response to a command:

0 = ignore (ERR)

6 = acknowledge (ACK)

10 = local communication error (NAK)

#### Query Status

The Ethernet Module will return one of the following values in response to a status query:

0 = invalid result

1 = valid result

## 6.4 Read/Write Data

### 6.4.1 Start Index

The start index for parameter queries corresponds to the listing of parameters in the starter.

Index 0 = parameter 1A

### 6.4.2 Command Types

Command Type	Description
4	Read parameters
5	Write parameters
6	Read registers

### 6.4.3 Command Structures

The packet structure for reading parameters or registers from the starter is:

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
Command type (low byte)	Command type (high byte)	Start index (low byte)	Start index (high byte)	Number of parameters/ registers (low byte)	Number of parameters/ registers (high byte)	Operation type (low byte)	Operation type (high byte)

The packet structure for responses to data read is:

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
Echo command type (low byte)	Echo command type (high byte)	Echo start index (low byte)	Echo start index (high byte)	Echo number of parameters/ registers (low byte)	Echo number of parameters/ registers (high byte)	Query status (low byte)	Query status (high byte)
Byte 8	Byte 9	...	...	...	...	Index n result (low byte)	Index n result (high byte)
Index 1 result (low byte)	Index 1 result (high byte)						

The packet structure for writing parameters to the starter is:

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
Command type (low byte)	Command type (high byte)	Start index (low byte)	Start index (high byte)	Number of parameters (low byte)	Number of parameters (high byte)	Operation type (low byte)	Operation type (high byte)
Byte 8	Byte 9	...	...	...	...	Index n value (low byte)	Index n value (high byte)
Index 1 value (low byte)	Index 1 value (high byte)						

The packet structure for responses to parameter write is:

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
Echo command type (low byte)	Echo command type (high byte)	Echo start index (low byte)	Echo start index (high byte)	Echo number of parameters (low byte)	Echo number of parameters (high byte)	Query status (low byte)	Query status (high byte)
Byte 8	Byte 9	...	...	...	...	Echo index n value (low byte)	Echo index n value (high byte)
Echo index 1 value (low byte)	Echo index 1 value (high byte)						



#### NOTE

This function can only be used to upload consecutive parameters.

#### 6.4.4 Register Addresses



##### NOTE

All registers are multiple read/write unless otherwise stated.

Some soft starters do not support some functions.

Register Address	Description	Bits	Details
0	Version	0 to 5 6 to 8 9 to 15	Binary protocol version number Product parameter list version Product type code <sup>1</sup>
1	Device details		
2 <sup>2</sup>	Changed parameter number	0 to 7 8 to 15	0 = no parameters have changed 1~255 = index number of the last parameter changed Total number of parameters available in the starter
3 <sup>2</sup>	Changed parameter value	0 to 13 14 to 15	Value of the last parameter that was changed, as indicated in register 2 <i>Reserved</i>
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) 6 = Tripped 7 = Programming mode 8 = Jog forward 9 = Jog reverse
		5	1 = Warning
		6	0 = Uninitialised 1 = Initialised
		7	0 = Local control 1 = Remote control
		8	0 = Parameter(s) have changed since last parameter read 1 = no parameters have changed <sup>2</sup>
		9	0 = Negative phase sequence 1 = Positive phase sequence
		10 to 15	Refer to Trip Codes on page 16 <sup>3</sup>
5	Current	0 to 13 14 to 15	Average rms current across all three phases <sup>4</sup> <i>Reserved</i>
6	Current	0 to 9 10 to 15	Current (% motor FLC) <i>Reserved</i>
7	Motor temperature	0 to 7 8 to 15	Motor 1 thermal model (%) Motor 2 thermal model (%)
8 <sup>5</sup>	Power	0 to 11 12 to 13 14 to 15	Power Power scale <i>Reserved</i>
9	% Power factor	0 to 7 8 to 15	100% = power factor of 1 <i>Reserved</i>
10	<i>Reserved</i>	0 to 15	
11 <sup>4</sup>	Current	0 to 13 14 to 15	Phase 1 current (rms) <i>Reserved</i>
12 <sup>4</sup>	Current	0 to 13 14 to 15	Phase 2 current (rms) <i>Reserved</i>
13 <sup>4</sup>	Current	0 to 13 14 to 15	Phase 3 current (rms) <i>Reserved</i>
14	<i>Reserved</i>		
15	<i>Reserved</i>		
16	<i>Reserved</i>		
17	Parameter list version number	0 to 7 8 to 15	Parameter list minor revision Parameter list major version

Register Address	Description	Bits	Details
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 to 15 = <i>Reserved</i>
19~ 31	<i>Reserved</i>		

<sup>1</sup> Product type code:

4 = ASAC

9 = ASAB

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> For models ASAB-0053B and smaller this value will be 10 times greater than the value displayed on the keypad.

<sup>5</sup> 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

#### 6.4.5 Trip Codes

Description	Profinet	Ethernet/IP
Excess start time	1	101
Motor overload (thermal model)	2	20
Motor thermistor	3	75
Current imbalance	4	26
Frequency	5	55
Phase sequence	6	54
Instantaneous overcurrent	7	28
Power loss / Power circuit	8	50
Undercurrent	9	29
Heatsink overtemperature	10	21
Motor connection	11	102
Input trip	12	11
FLC too high/FLC out of range	13	61
Unsupported option (function not available in inside delta)	14	60
Starter communication (between module and soft starter)	15	113
Network communication (between module and network)	16	114
Internal fault x (where x is the fault code detailed in the table below)	17	104
Parameter out of Range	23	62
L1 phase loss	26	23
L2 phase loss	27	24
L3 phase loss	28	25
L1-T1 shorted	29	115
L2-T2 shorted	30	116
L3-T3 shorted	31	117
Motor 2 overload	32	118
Time-overcurrent / Bypass overload	33 <sup>1</sup>	119
Battery/clock	35	121
Thermistor circuit	36	122

<sup>1</sup> For ASAB, time-overcurrent protection is only available on internally bypassed models.

#### 6.4.6 Internal Fault X

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



## 6.5 Examples

Send start command to soft starter:

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
1	Reserved	1	Reserved	Reserved	Reserved	1	Reserved

Command response (ACK):

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
1	Reserved	1	Reserved	6	Reserved

Retrieve trip code from soft starter:

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
2	Reserved	2	Reserved	Reserved	Reserved	1	Reserved

Trip code query response (255 = no trip - refer to Trip Codes on page 16):

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
2	Reserved	2	Reserved	1	Reserved	255	Reserved

Read parameters from soft starter (read 2 parameters starting at parameter index 5):

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
4	Reserved	5	Reserved	2	Reserved	1	Reserved

Parameter read response: parameter index 5 = 1/0 (2A Start Mode = 1); parameter index 6 = 95/1 (2B Current Limit = 350):

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
4	Reserved	5	Reserved	2	Reserved	1	Reserved
Byte 8	Byte 9	Byte 10	Byte 11				
1	0	95	1				

Write parameters to soft starter (write 2 parameters starting at parameter index 5):

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
5	Reserved	5	Reserved	2	Reserved	1	Reserved
Byte 8	Byte 9	Byte 10	Byte 11				
1	0	95	1				

Parameter write response (ACK): parameter index 5 = 1/0 (2A Start Mode = 1); parameter index 6 = 95/1 (2B Current Limit = 350):

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
5	Reserved	5	Reserved	2	Reserved	1	Reserved
Byte 8	Byte 9	Byte 10	Byte 11				
1	0	95	1				

Read registers from soft starter (read 3 registers starting at register 4):

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
6	Reserved	4	Reserved	3	Reserved	1	Reserved

Read register response (ACK):

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
6	Reserved	4	Reserved	3	Reserved	1	Reserved
Byte 8	Byte 9	Byte 10	Byte 11	Byte 12	Byte 13		
67	3	103	0	99	0		

Byte 8 (01000011) and Byte 9 (00000011): Register 4, Starter state = 0000001101000011:

- bits 0 to 4 00011 = 3 (running)
- bit 5 = 0 (no warning)
- bit 6 = 1 (initialised)
- bit 7 = 0 (local control)
- bit 8 = 1 (no parameters have changed)
- bit 9 = 1 (positive phase sequence)
- bits 10 to 15 = 0 (no trip)

Bytes 10 and 11: Register 5, Average rms current across all three phases = 103 A



### NOTE

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

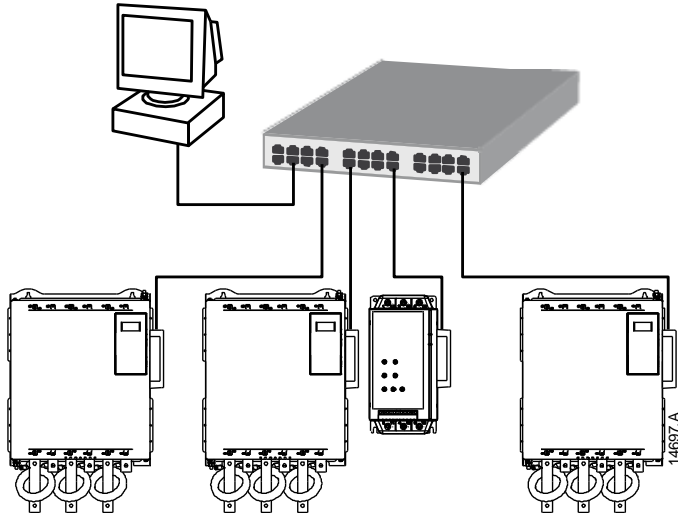
Bytes 12 and 13: Register 6, Current (% motor FLC) = 99%

## 7 Network Design

The Ethernet Module supports star, line and ring topologies.

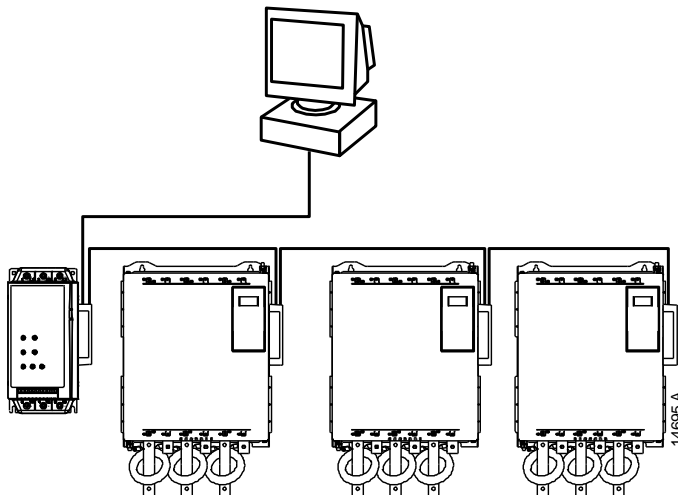
### 7.1 Star Topology

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 Module. The second Ethernet port of the Ethernet Module connects to another module, which in turn connects to another module until all devices are connected.



#### NOTE

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



#### NOTE

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

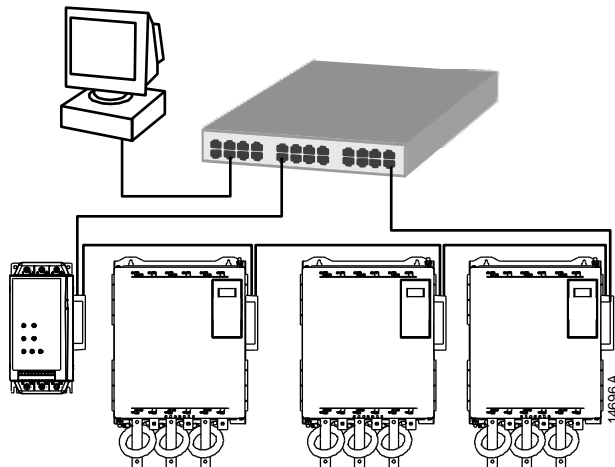


#### NOTE

Each connection adds a delay to communication with the next module. 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 Module, via a network switch. The second Ethernet port of the Ethernet Module connects to another module, which in turn connects to another module until all devices are connected. The final module connects back to the switch.

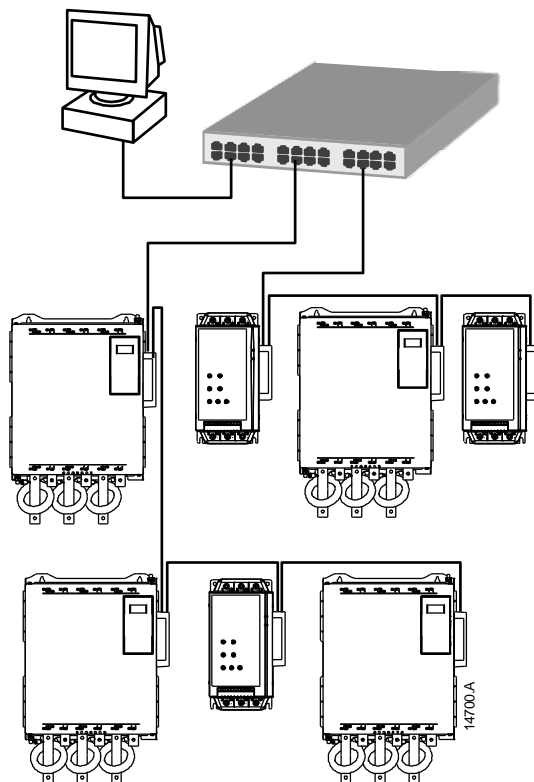


#### NOTE

The network switch must support loss of line detection.

### 7.4 Combined Topologies

A single network can include both star and line components.



## Specifications

### Enclosure

Dimensions ..... 40 mm (W) x 166 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  
     Contacts ..... Gold flash  
 Network ..... RJ45  
 External power supply ..... 2-way removable screw type  
     Maximum cable size ..... 2.5 mm<sup>2</sup>

### Settings

IP address ..... Automatically assigned, configurable  
 Device name ..... Automatically assigned, configurable

### Power

Consumption (steady state, maximum) ..... 35 mA at 24 VDC  
 Reverse polarity protected  
 Galvanically isolated

### Certification

C✓ ..... IEC 60947-4-2  
 CE ..... IEC 60947-4-2

ODVA .....

**EtherNet/IP™**  
conformance tested



Profibus & Profinet International .....