

ETHERNET/IP FOR PSTX SOFT STARTER

Scope:

This document will describe how to setup the PSTX on EtherNet/IP and interface with a Rockwell PLC with Studio 5000 software.

Explanation:

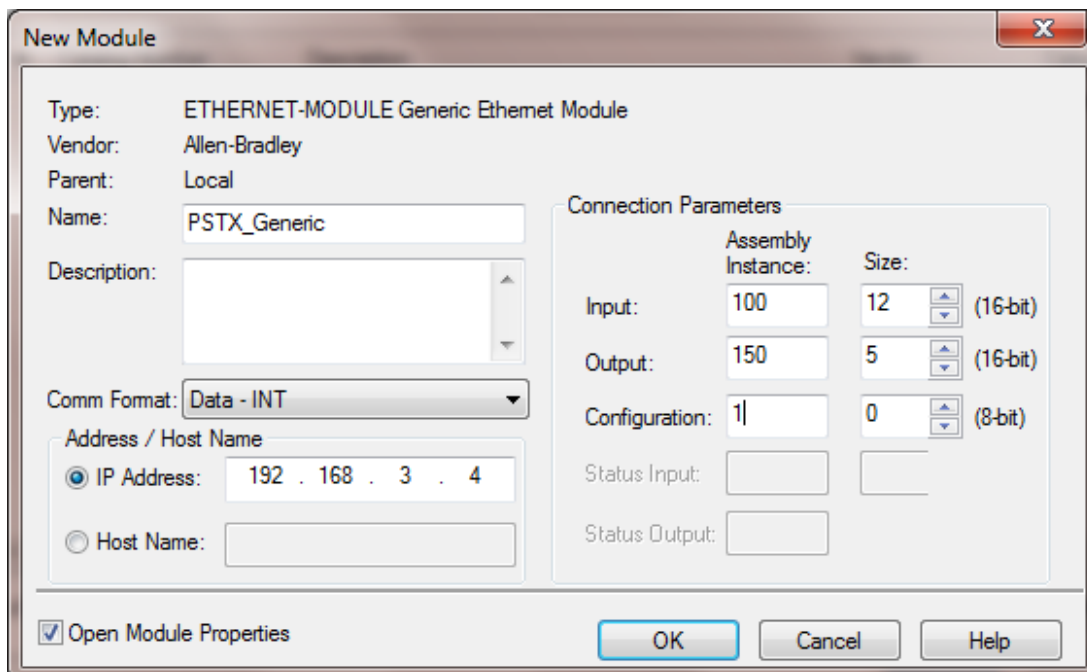
The PSTX first needs to be programmed for EtherNet/IP:

- 12.02 FB interface connector** = Anybus
- 12.03 Fieldbus control;** = On (for control via EtherNet/IP)
- 12.05 IP address** = IP address of the PSTX
- 12.06 Gateway** = Gateway address if used
- 12.07 Subnet Mask** = Subnet Mask
- 12.08 DHCP** = OFF
- 12.11-12.21** =Settings for different status bits to monitor
- 12.22-12.31 Fieldbus AI** =Programmable to monitor values over fieldbus

Setup of the Rockwell PLC:

The PLC needs to be setup with the Generic module with assemblies:

- 100 size 12 words in**
- 150 size 5 words out**



Author: Bill Nyback- Industrial Application Engineering		Date: 11/1/2018
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Below is the Status word and data to be received back from the PSTX.

Status word and additional programmable bits with parameters 12.11-12.21

Word in input data area	Digital input byte	Bit	Data	Description
0	0	0	Auto Mode status ¹	0 = softstarter control from fieldbus not allowed
		1	Event status	0 = No active fault/warning/protection
		2	Ready To Start	0 = A start will probably cause a fault, 1 = A start will probably not cause a fault
		3	FBT Response 0	See Fieldbus Tasks
		4	FBT Response 1	See Fieldbus Tasks
		5	FBT Toggle Bit	See Fieldbus Tasks
		6	Programmable Digital Input 1	Function of programmable digital input, see table 1.2
		7	Programmable Digital Input 2	
	1	8 (0)	Programmable Digital Input 3	
		9 (1)	Programmable Digital Input 4	
		10 (2)	Programmable Digital Input 5	
		11 (3)	Programmable Digital Input 6	
		12 (4)	Programmable Digital Input 7	
		13 (5)	Programmable Digital Input 8	
		14 (6)	Programmable Digital Input 9	
		15 (7)	Programmable Digital Input 10	

1) Auto mode reflects the control state of the Softstarter. This is affected by a combination of:

- The Auto mode input signal from the PLC (Digital output telegram).
- The state of the Local/Remote switch on the Fieldbus Plug Accessory.
- The state of the Local/Remote switch on the HMI.
- The parameter 'Fieldbus control'.
- The digital input 'Fieldbus disable'.

Additional input words programmable via parameters 12.22-12.31

To PLC from softstarter.

All analog data is represented as 16-bit values.

A protocol for Fieldbus tasks is used to read and write parameters. It is applicable for all Fieldbuses.

Word in input data area	Analog input word	Data	Representation
1	0	FBT Return Value	See Fieldbus Tasks
2	1	Programmable Analog Input 1	Function of programmable analog input, see table 1.4 .
3	2	Programmable Analog Input 2	
4	3	Programmable Analog Input 3	
5	4	Programmable Analog Input 4	
6	5	Programmable Analog Input 5	
7	6	Programmable Analog Input 6	
8	7	Programmable Analog Input 7	
9	8	Programmable Analog Input 8	
10	9	Programmable Analog Input 9	
11	10	Programmable Analog Input 10	

The PSTX offers 10 bits that are programmable in 12.11-12.21 to monitor different binary values of the users choosing. It also has 10 other integers that are programmable in 12.22 to 12.31 to monitor any other parameter data that a user would want to get from the soft starter.

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Below is the Control word:

Word in output data area	Digital output byte	Bit	Data	Description
0	0	0	Start	Commence a start when signal is set.
		1	Stop	Commence a stop when signal is negated.
		2	Fault reset	Reset signal for possible events.
		3	Auto mode	This must be set for controlling the motor.
		4	Slow speed reverse	Perform slow speed reverse when signal is set.
		5	Slow speed forward	Perform slow speed when signal is set.
		6	Spare	
1	2	7	Start1	Start1 if sequence start.
		8 (0)	Start2	Start2 if sequence start.
		9 (1)	Start3	Start3 if sequence start.
		10 (2)	Motor heating	Perform motor heating when signal is set.
		11 (3)	Stand still brake	Perform stand still brake when signal is set.
		12 (4)	Start reverse	Commence a reverse start when signal is set.
		13 (5)	Spare	
		14 (6)	Emergency mode	Set to "1" to enable emergency mode.
		15 (7)	FBT Toggle Bit	See Fieldbus Tasks.
		16 (0)	User defined trip	Set to "1" to trigger user defined protection.
		17 (1)	Switch to remote control	Switch to remote control when signal is set (rising edge triggered).
		18 (2)	Pump cleaning automatic	Perform automatic pump cleaning when signal is set.
		19 (3)	Pump cleaning forward	Perform forward pump cleaning when signal is set.
20 (4)	Pump cleaning reverse	Perform reverse pump cleaning when signal is set.		

A couple of things to note:

Bit 3 needs to be set to a 1 before the PSTX will accept a start command via EtherNet/IP.

The Stop bit (Bit 1) is normally closed, so this needs to be a 1 unless a stop is requested.

Documents or other reference material:

Soft starters Type PSTX30...PSTX1250 Installation and commissioning manual 1SFC132081M0201

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