

OCTOBER, 2018, 1SFC132050D0201

Ethernet Communication setup PLC with PSTX

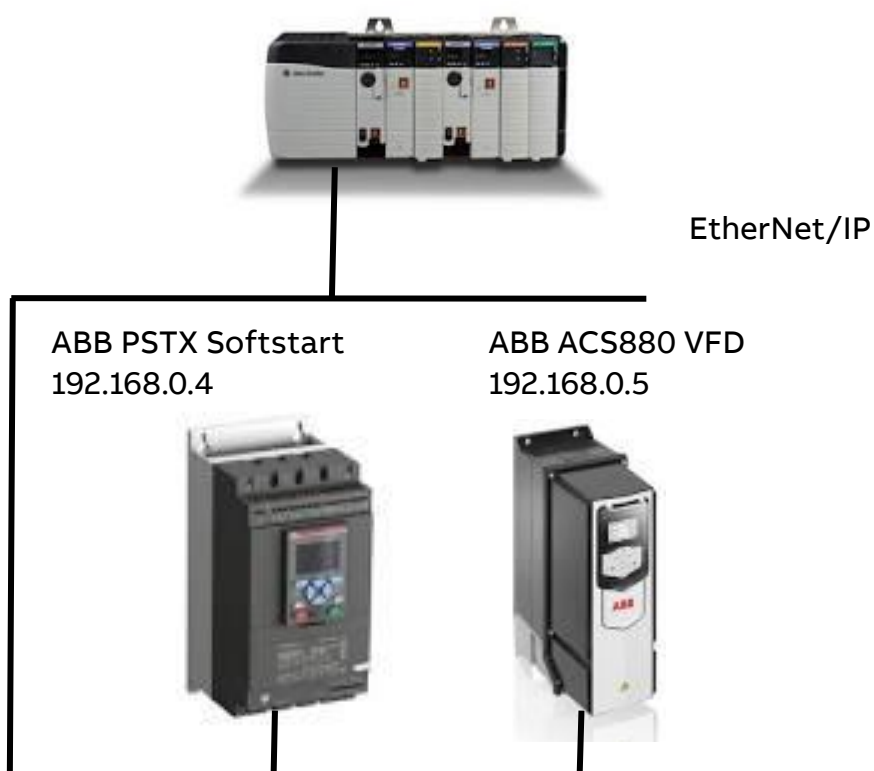
Hardware:

- ABB PSTX soft start
- **Eds file used: AB_EIPT_1_PSTX_1_1.ed5**
- Anybus 1 port Ethernet module V2.1
- ABB ACS 880 VFD
- RSLogix 5k V

Sections:

- [How to setup Ethernet/IP configuration using a generic Ethernet module](#)
- [How to Configure communications utilizing the AB_EIPT_1_PSTX_1_1.ed5 file](#)
- [PLC sample tag database](#)
- [PSTX parameter list](#)

This describes how to configure an Anybus Ethernet/IP adapter module with a Rockwell PLC using RSLogix 5000 to communicate to ABB PSTX Softstart. Below you can find an overview of the system described in this document.



Install the Anybus module in the PSTX softstarter:

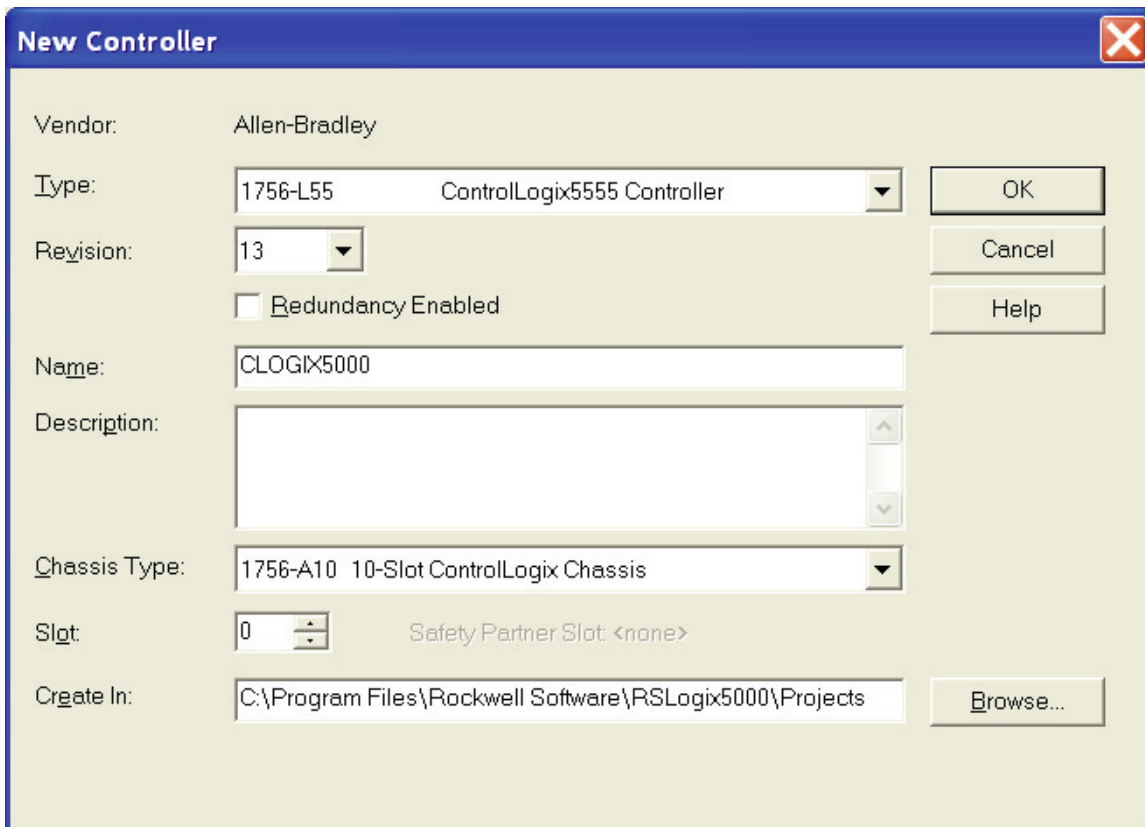


Ethernet/IP configuration using a generic Ethernet module

To configure the PLC and the Ethernet/IP network the tool RSLogix 5000 is used. First the PLC needs to be configured and secondly the Ethernet/IP network. Start the RSLogix 5000 program and follow the steps below.

PLC configuration

1. Either create a new project or use an existing. To create a new configuration, open the file menu and select new. In the appearing dialogue select the desired type of PLC, in this case the type 1756-L55 is used. Also enter a name for the controller and select chassis type, slot number and project path. To accept the settings, press OK.



New Controller

Vendor: Allen-Bradley

Type: 1756-L55 ControlLogix5555 Controller

Revision: 13

Redundancy Enabled

Name: CLOGIX5000

Description:

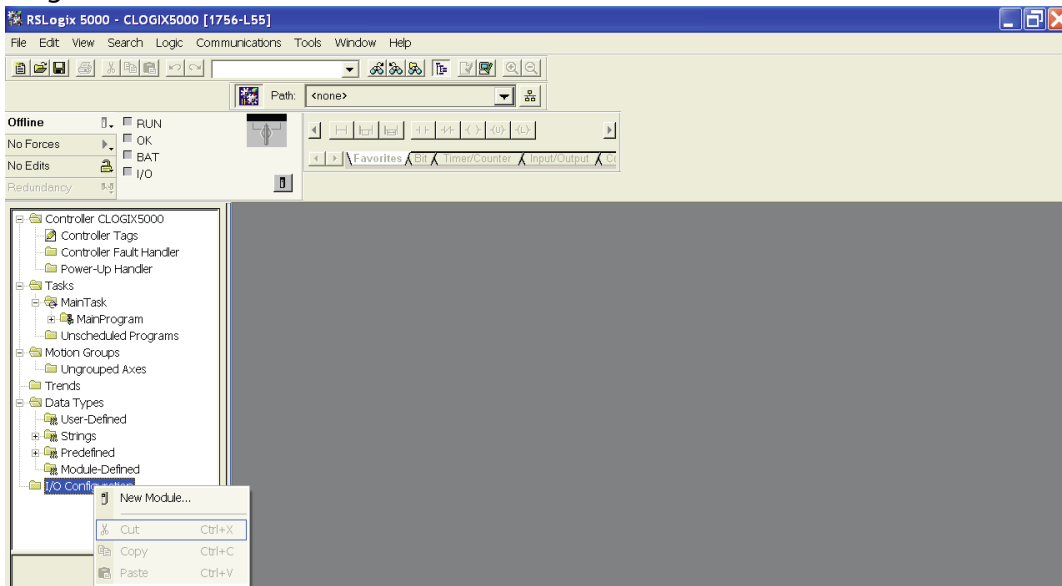
Chassis Type: 1756-A10 10-Slot ControlLogix Chassis

Slot: 0 Safety Partner Slot: <none>

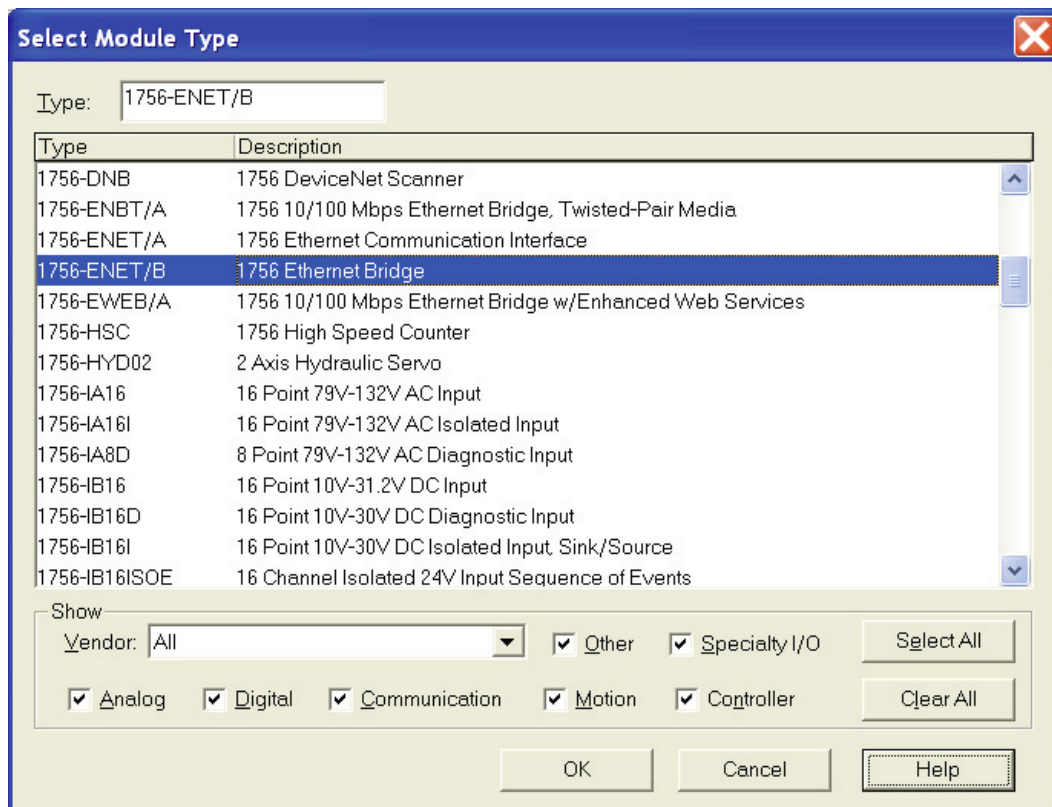
Create In: C:\Program Files\Rockwell Software\RSLogix5000\Projects

Buttons: OK, Cancel, Help, Browse...

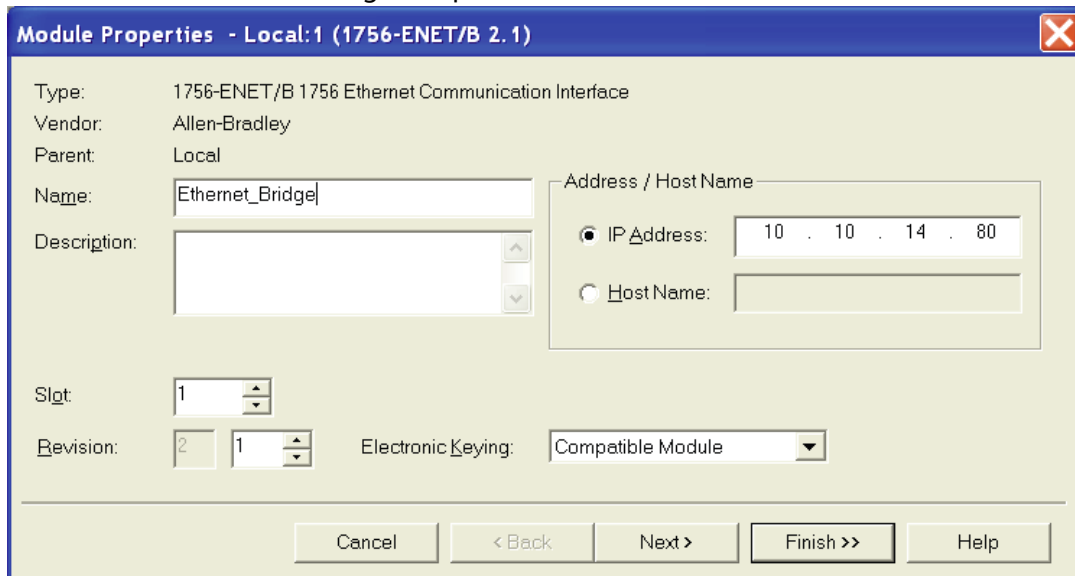
- Then add the Ethernet I/O module. Right click on the I/O configuration directory in the navigation list to the left as seen below.



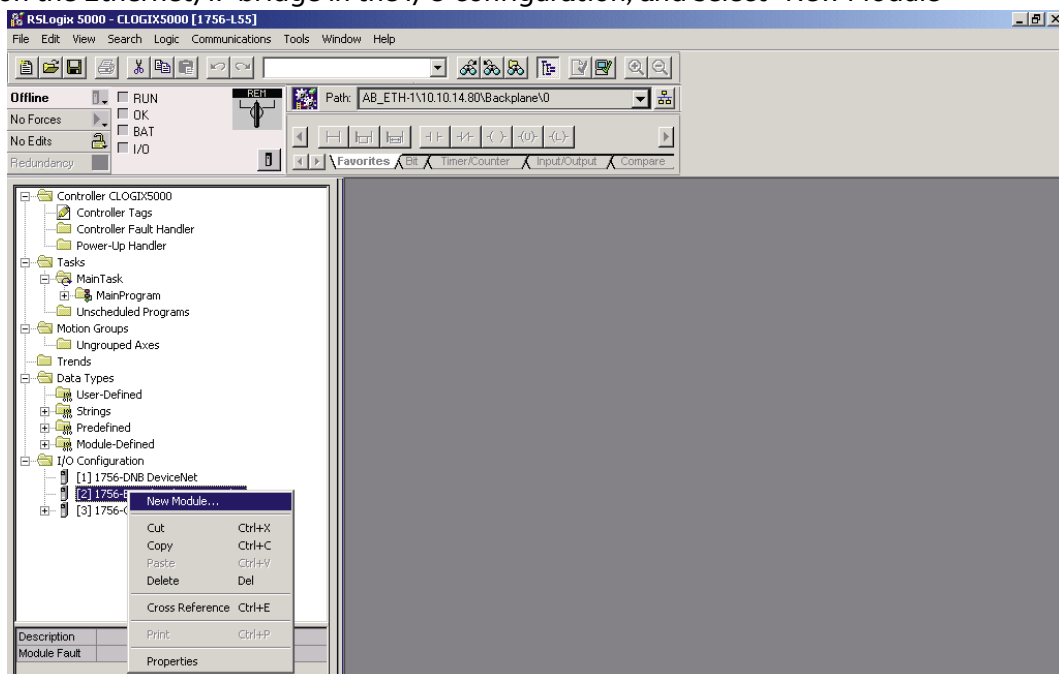
- Click on new module and select the desired Ethernet module, in this case the Ethernet Bridge. This module is the scanner module in the PLC.



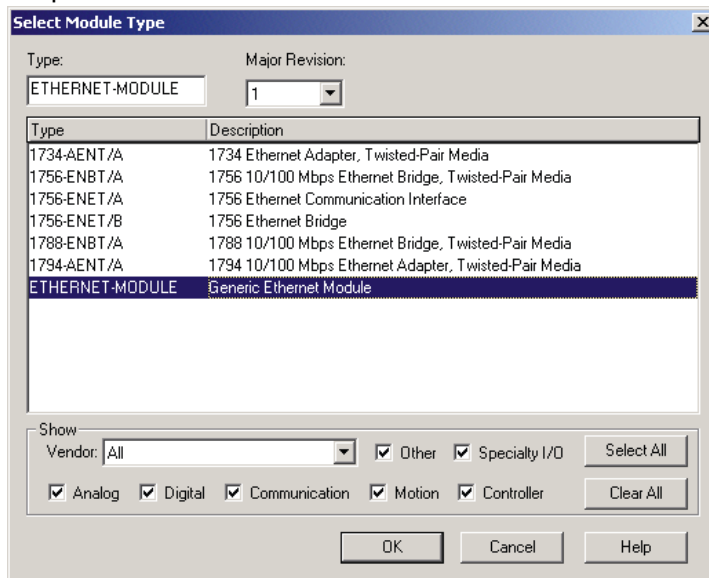
- Then enter the desired settings and press finish. IP address for the test 192.168.0.100



- Next, we will configure the Ethernet/IP network and add the PSTX Anybus-S Slave module to the configuration in the PLC. Begin with setting the program in “Offline” mode then right click on the Ethernet/IP bridge in the I/O configuration, and select “New Module”

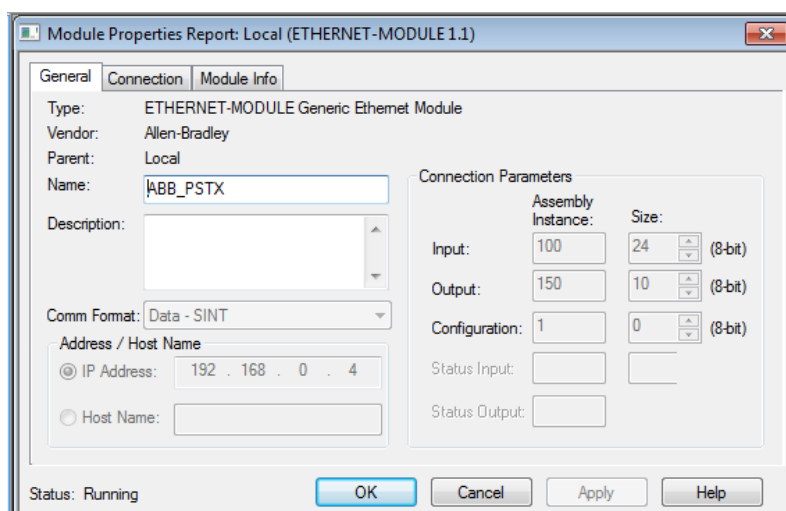


- Now a dialogue window will appear. In this dialogue window, select “Generic Ethernet module” and press OK.

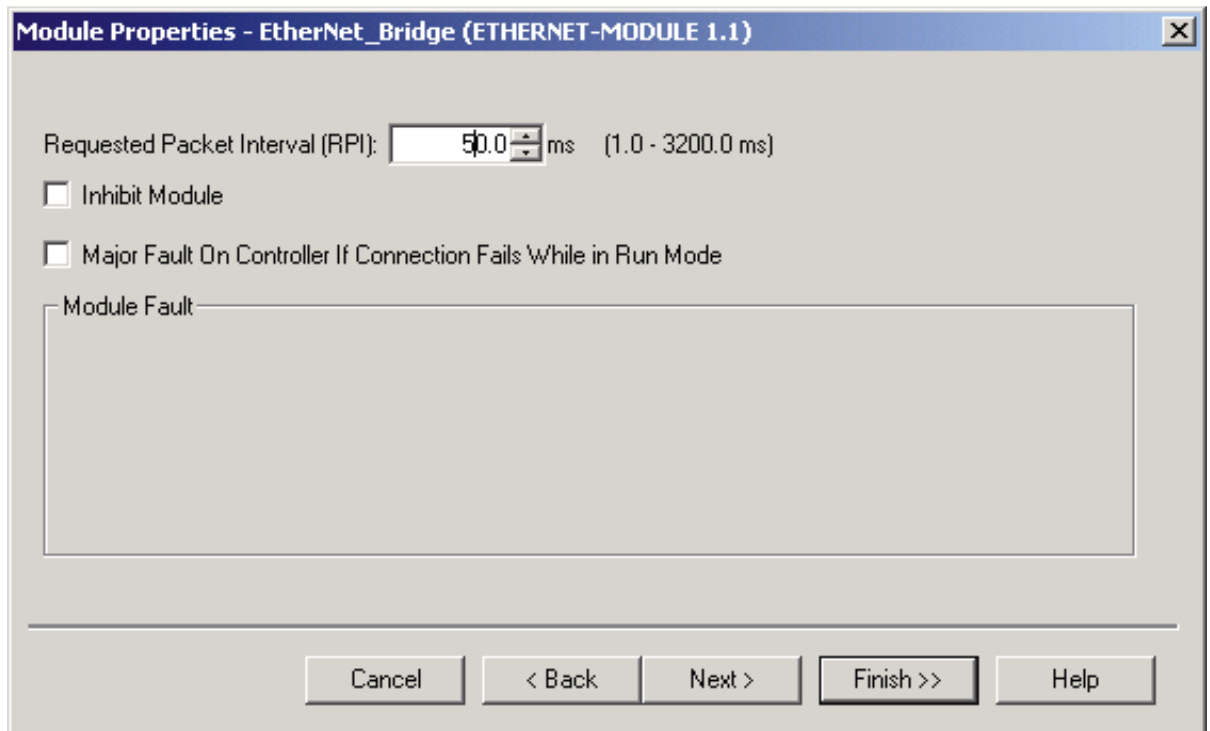


- In the next dialogue window, RSLogix 5000 will ask for information regarding the communication to the PSTX “Anybus-S Slave module”. First enter a name for the PSTX. In the example below, we call it “ABB_PSTX”. This name will create a tag in RSLogix 5000, which can be used to access the memory location in the PLCs memory where the data for the PSTX will be stored. A description can also be added, but that is optional. Next you will select the “Comm Format”, which tells RSLogix5000 the format of the data. In our example, we have selected Data-SINT, which will represent the data in the PSTX Softstart as a field of 8-bit values. I/O data is accessed in input instance 100 and output instance 150, so these values have to be entered as the instance values for input and output.

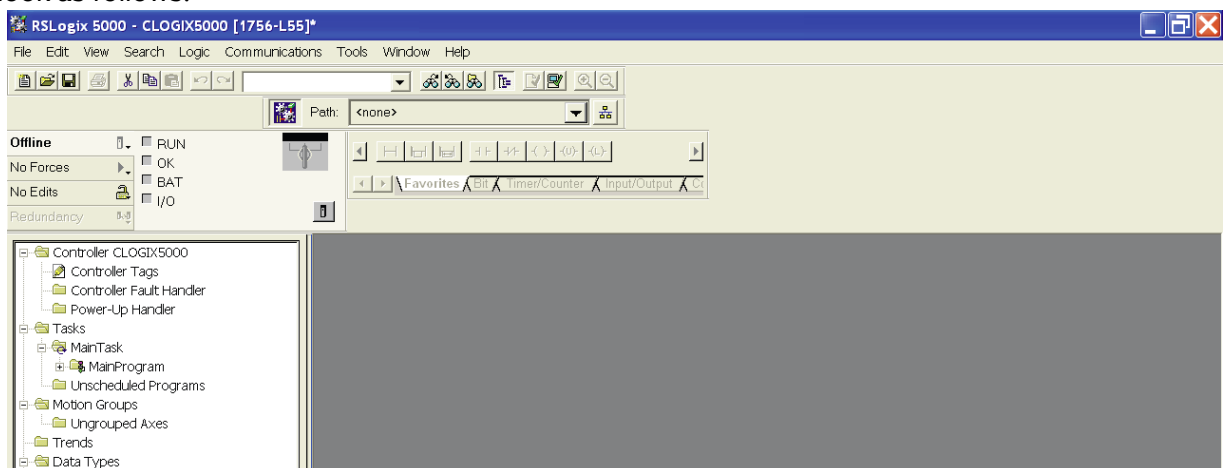
The Anybus-S Slave module does not have a configuration assembly instance by default, but RSLogix5000 requires a value for this anyway. An instance value of 0 is not a valid instance number, but any non-zero value will work, here we have selected the value 1. The data size of the configuration instance has to be set to 0, otherwise the configuration instance will be accessed, and the connection will be refused. As a final step we enter the IP address that we have configured for the module, here 192.168.0.4 and select ok.



- In this dialogue we will enter a value for the time between each scan of the module. In this example, we have set the interval to 50 ms to reduce the network load. Make sure that “Inhibit Module” isn’t checked. After this, press finish.

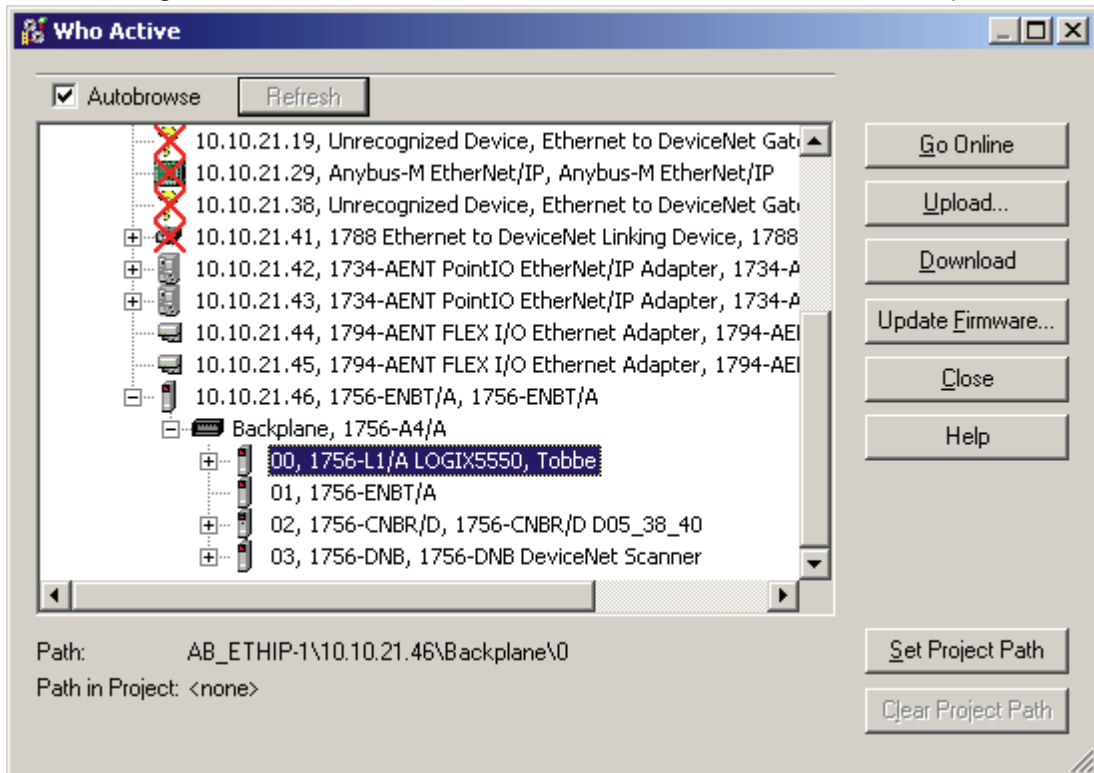


- Now the PSTX has been added to the I/O configuration in RSLogix 5000. The main screen will look as follows.

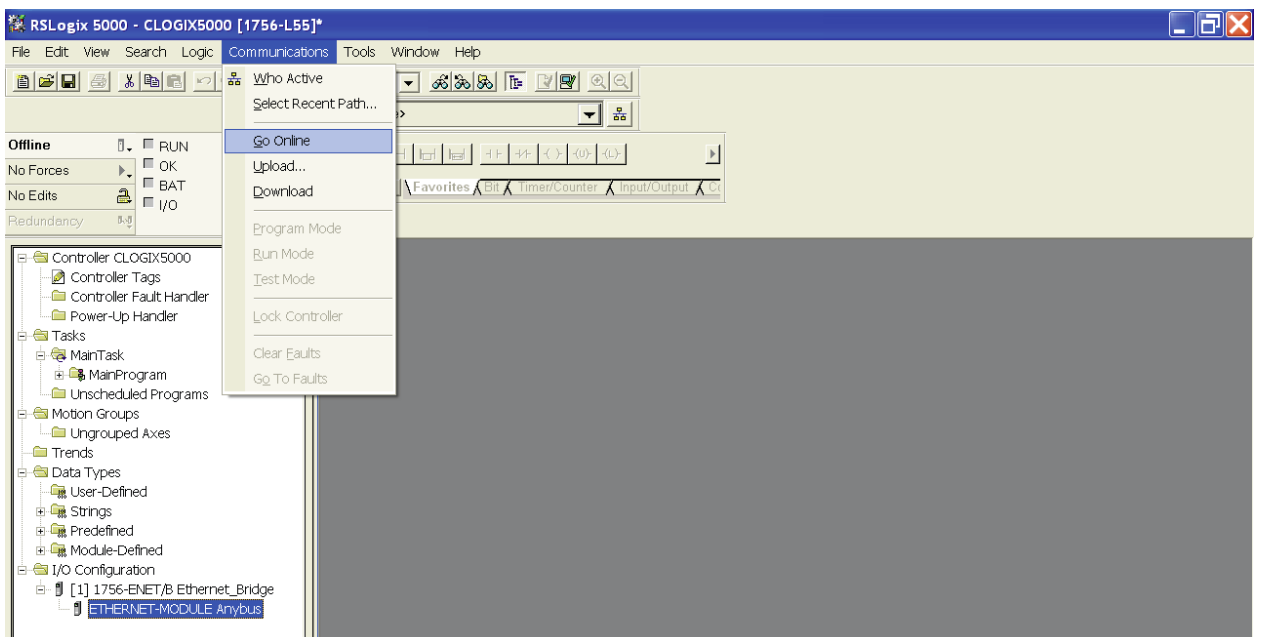


Downloading the configuration to the PLC

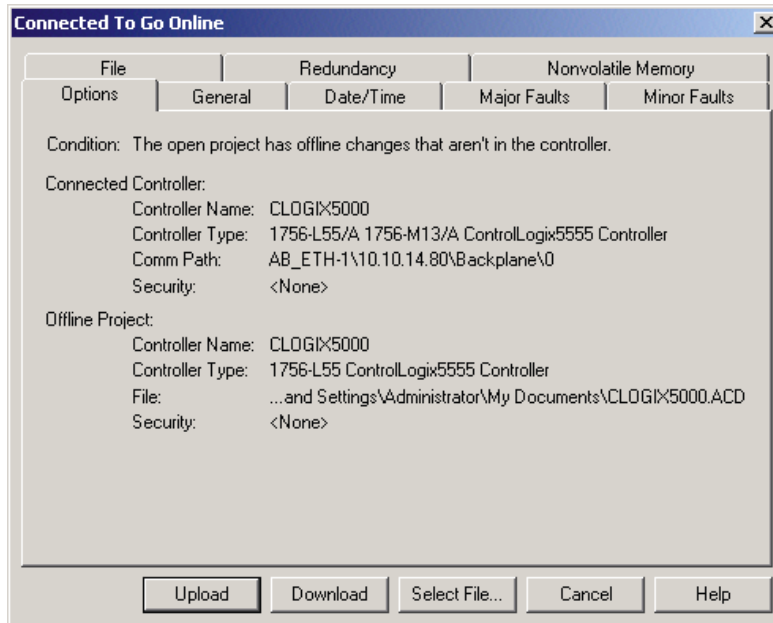
10. First select the communication path. This can be done by opening the Communications menu and selecting the Who Active command. Select the desired communication path as seen below



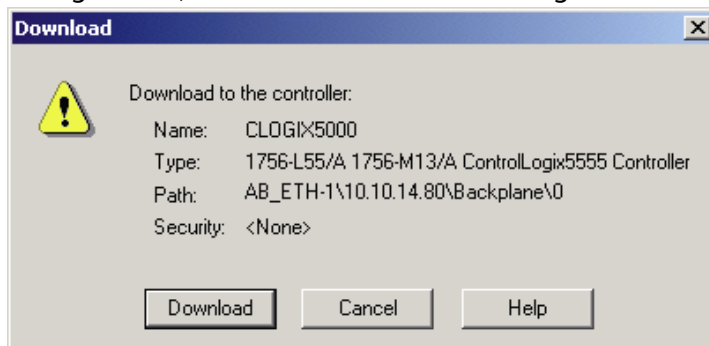
11. Select "Go Online" from the "Communications" menu.



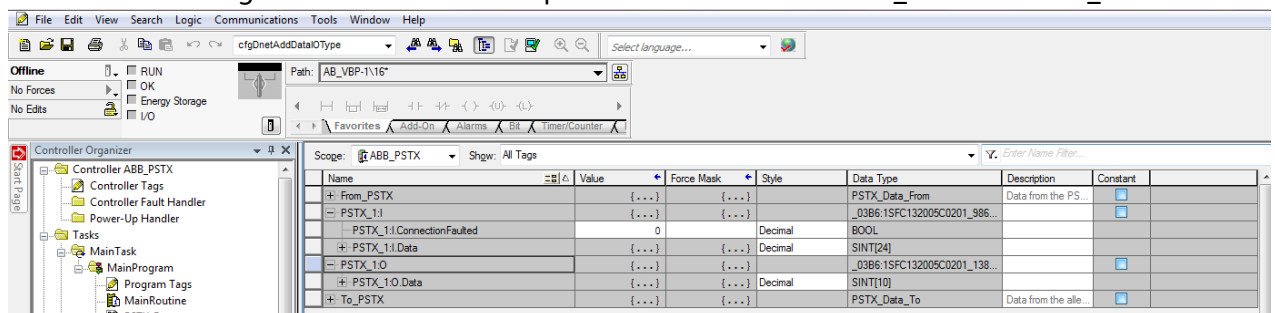
12. A new window appears, select “Download”.



13. A new window will pop-up with the question if you actually want to download the configuration, select “Download”. The configuration will now be downloaded to the PLC.

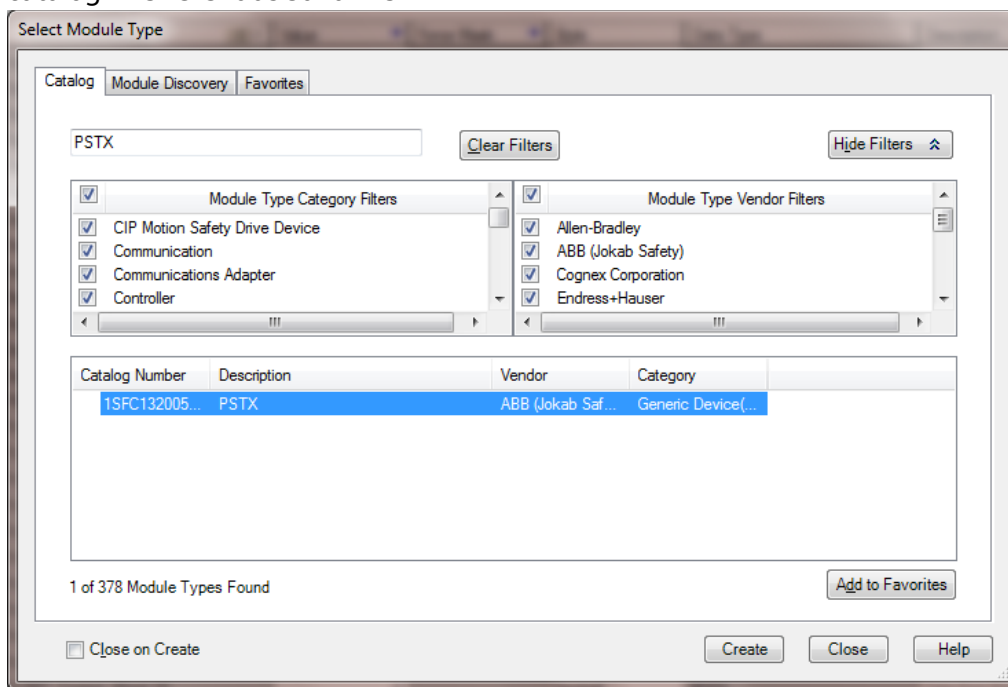


14. After you go online with the PLC you will be able to view the data to and from the ABB PSTX soft start in the tag database. In this example we created a UDT “From_PSTX” and “To_PSTX”

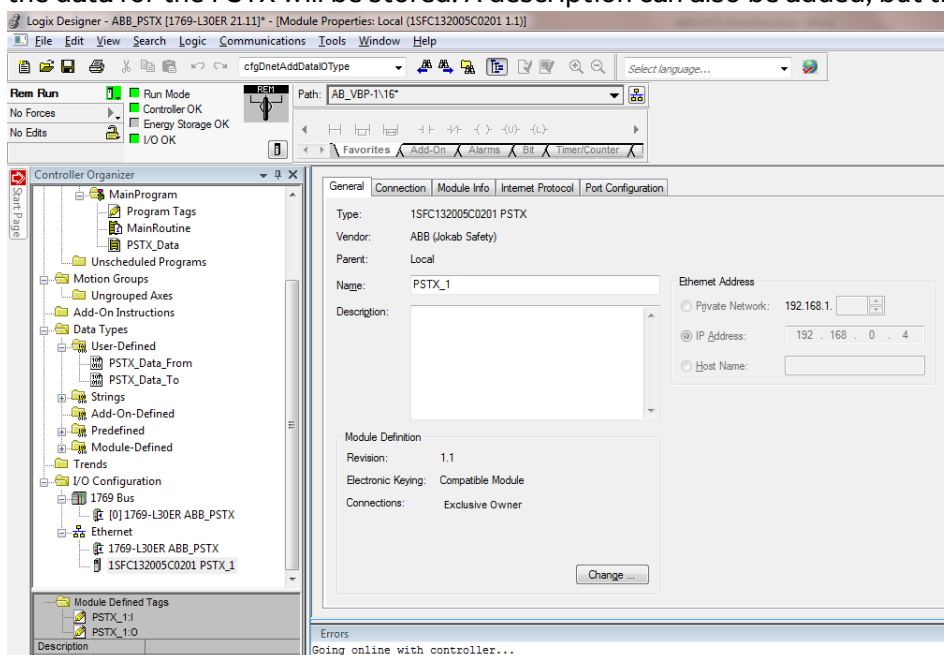


Configuring communications utilizing the AB_EIPT_1_PSTX_1_1.eds file

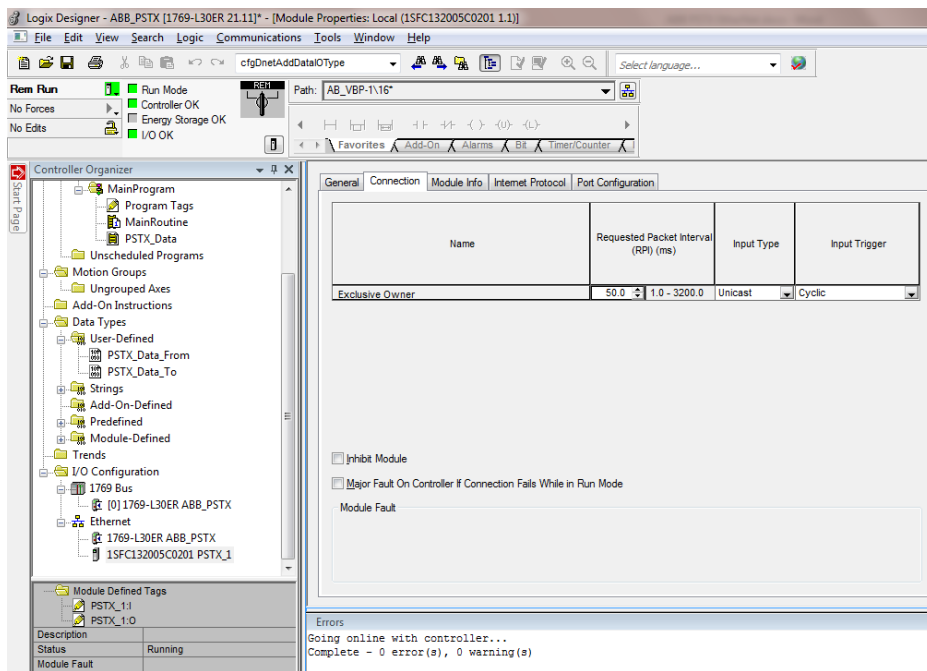
1. After you register the EDS file in RSLINX right click on the Ethernet/IP bridge in the I/O configuration, and select “New Module” browse the modules or use the filters to find the PSTX catalog # 1SFC132005C0201 PSTX



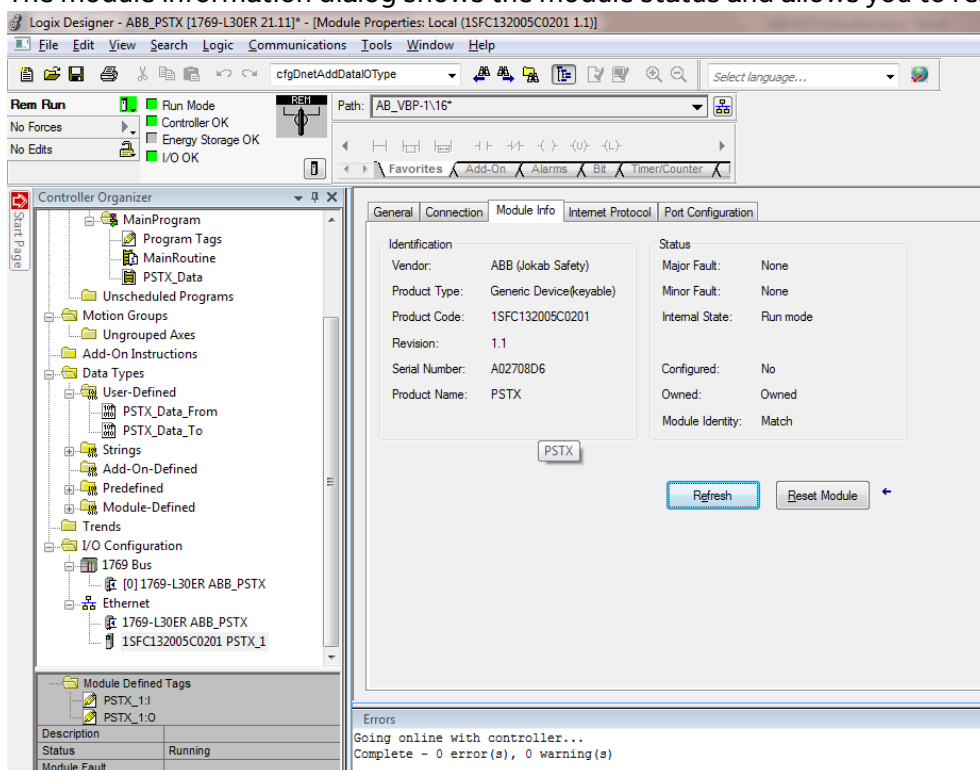
2. Now a dialogue window will appear. In this dialogue window we will assign a name for the PSTX soft start. In the example below, we call it “PSTX_1”. This name will create a tag in RSLogix 5000, which can be used to access the memory location in the PLCs memory where the data for the PSTX will be stored. A description can also be added, but that is optional.



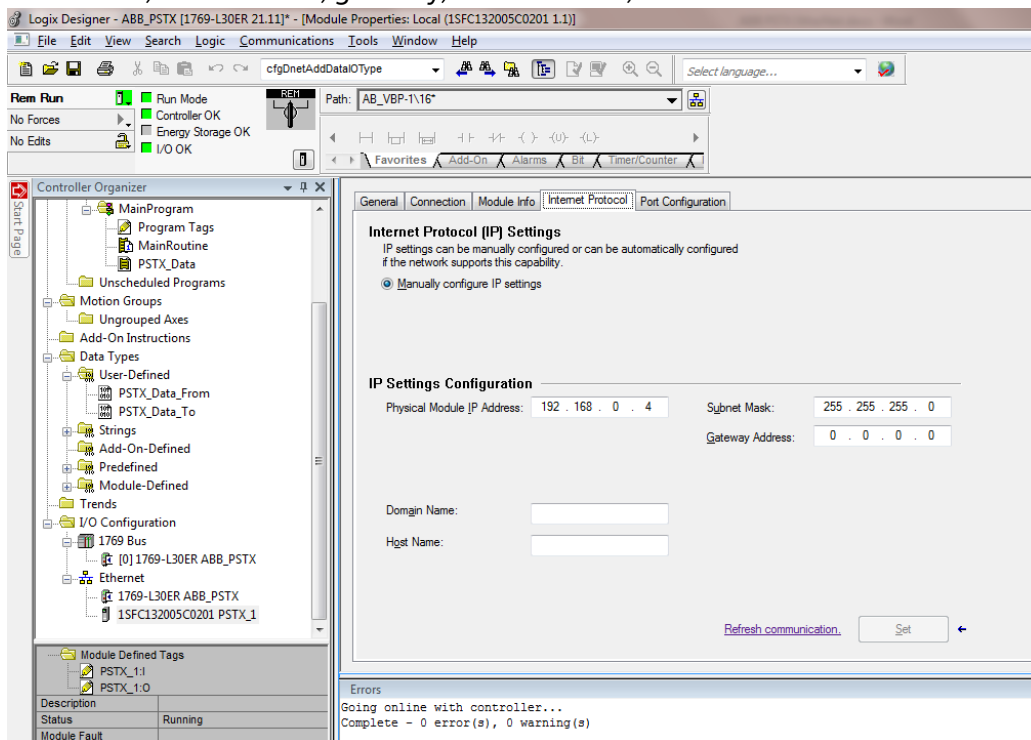
- In this dialogue we will enter a value for the time between each scan of the module. In this example, we have set the interval to 50 MS to reduce the network load. Make sure that “Inhibit Module” isn’t checked. After this, press finish.



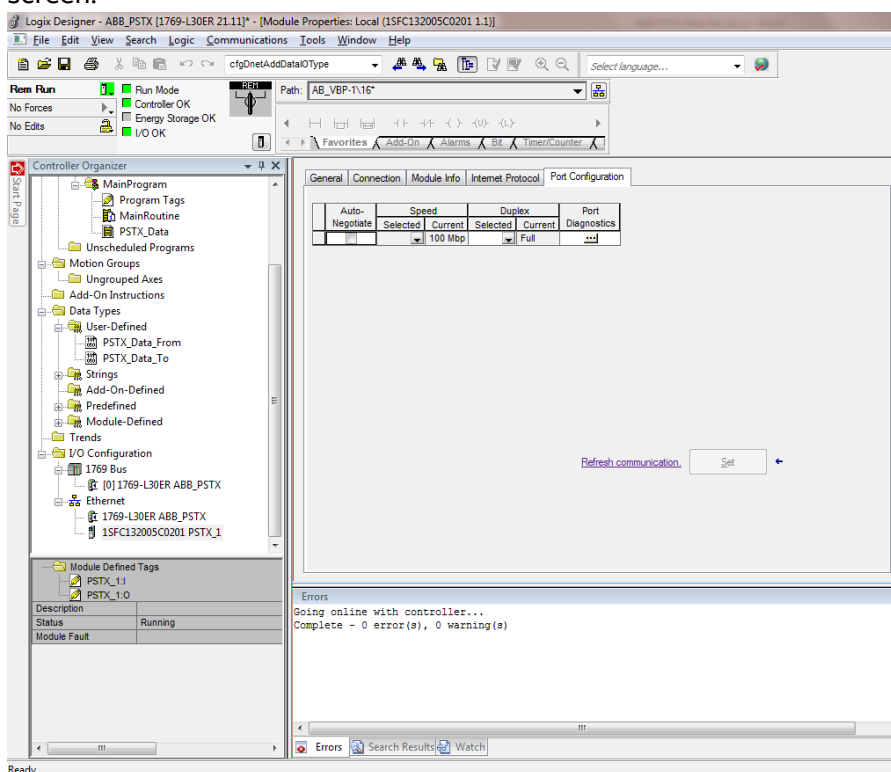
- The module information dialog shows the module status and allows you to reset the module.



- The internet protocol settings dialog allows you to enter a unique ip address for the ABB PSTX softstarter, subnet mask, gateway, domain name, and host name if used.



- The port configuration dialog allows you to manage the port speed, duplex and a diagnostic screen.



Sample tag database:

UDT_From_PSTX

SINT 0

Auto_Mode_Status	BOOL Bit0	Decimal 0 = softstarter control from fieldbus not allowed	Read/Write
Event_status	BOOL Bit1	Decimal 0 = No active fault/warning/protection	Read/Write
Ready_to_start	BOOL Bit 2	Decimal 0=a start will probably cause a fault	Read/Write
FBT_Resp_0	BOOL Bit 3	See fieldbus Tasks	Read/Write
FBT_Resp_1	BOOL Bit 4	See fieldbus tasks	Read/Write
FBT_Toggle_Bit	BOOL Bit 5	See fieldbus tasks	Read/Write
PDI_1	BOOL Bit 6	Programmable digital input, Para. 12.12	Read/Write
PDI_2	BOOL Bit 7	Programmable digital input, Para. 12.13,	Read/Write

SINT 1

PDI_3	BOOL Bit 0	Programmable digital input, Para. 12.14,	Read/Write
PDI_4	BOOL Bit 1	Programmable digital input, Para. 12.15	Read/Write
PDI_5	BOOL Bit 2	Programmable digital input, Para. 12.16,	Read/Write
PDI_6	BOOL Bit 3	Programmable digital input, Para. 12.17	Read/Write
PDI_7	BOOL Bit 4	Programmable digital input, Para. 12.18	Read/Write
PDI_8	BOOL Bit 5	Programmable digital input, Para. 12.19	Read/Write
PDI_9	BOOL Bit 6	Programmable digital input, Para. 12.20	Read/Write
PDI_10	BOOL Bit 7	Programmable digital input, Para. 12.21	Read/Write

SINT 2&3	FBT_Return_Value	INT	Decimal	See fieldbus tasks	Read/Write
SINT 4&5	PAI_1	INT	Programmable analog input, Para 12.22		Read/Write
SINT 6&7	PAI_2	INT	Programmable analog input, Para 12.23		Read/Write
SINT 8&9	PAI_3	INT	Programmable analog input, Para 12.24		Read/Write
SINT 10&11	PAI_4	INT	Programmable analog input, Para 12.25		Read/Write
SINT 12&13	PAI_5	INT	Programmable analog input, Para 12.26,		Read/Write
SINT 14&15	PAI_6	INT	Programmable analog input, Para 12.27		Read/Write
SINT 16&17	PAI_7	INT	Programmable analog input, Para 12.28		Read/Write
SINT 18&19	PAI_8	INT	Programmable analog input, Para 12.29		Read/Write
SINT 20&21	PAI_9	INT	Programmable analog input, Para 12.30		Read/Write
SINT 22&23	PAI_10	INT	Programmable analog input, Para 12.31		Read/Write

UDT To_PSTX

SINT 0

Start	BOOL Bit0	Decimal	Commence start when signal is set	Read/Write
Stop	BOOL Bit1	Decimal	Commence a stop when signal is negated	Read/Write
Fault_Reset	BOOL Bit2	Decimal	Reset signal for possible events	Read/Write
Auto_Mode	BOOL Bit3	Decimal	This must be set for controlling the motor	Read/Write
Slow_Speed_REV	BOOL Bit4	Decimal	Perform slow speed reverse when the signal is set	Read/Write
Slow_Speed_FWD	BOOL Bit5	Decimal	Perform slow speed forward when the signal is set	Read/Write
Spare	BOOL Bit6	Decimal		Read/Write
Start_1	BOOL Bit7	Decimal	Start 1 if sequence start	Read/Write

SINT 1

Start_2	BOOL Bit0	Decimal	Start 2 if sequence start	Read/Write
Start_3	BOOL Bit1	Decimal	Start 3 if sequence start	Read/Write
Motor_Heating	BOOL Bit2	Decimal	Perform motor heating when signal is set	Read/Write
Stand_Still_Brake	BOOL Bit3	Decimal	Perform stand still brake when signal is set	Read/Write
Start_Reverse	BOOL Bit4	Decimal	Commence a reverse start when signal is set	Read/Write
Spare_1	BOOL Bit5	Decimal		Read/Write
Emergency_Mode	BOOL Bit6	Decimal	Set to 1 to enable emergency mode	Read/Write
FBT_Toggle_Bit	BOOL Bit7	Decimal	See fieldbus tasks	Read/Write

SINT 2

User_Defined_Trip	BOOL Bit0	Decimal	Set to 1 to trigger user defined protection	Read/Write
Remote	BOOL Bit1	Decimal	Switch to remote control when signal is set (edge triggered)	Read/Write
Spare_2	BOOL Bit2	Decimal		Read/Write
Spare_3	BOOL Bit3	Decimal		Read/Write
Spare_4	BOOL Bit4	Decimal		Read/Write
Spare_5	BOOL Bit5	Decimal		Read/Write
Spare_6	BOOL Bit6	Decimal		Read/Write
Spare_7	BOOL Bit7	Decimal		Read/Write

SINT 3

Spare_8	BOOL Bit0	Decimal		Read/Write
Spare_9	BOOL Bit1	Decimal		Read/Write
Spare_10	BOOL Bit2	Decimal		Read/Write
Spare_11	BOOL Bit3	Decimal		Read/Write
Spare_12	BOOL Bit4	Decimal		Read/Write
Spare_13	BOOL Bit5	Decimal		Read/Write
Spare_14	BOOL Bit6	Decimal		Read/Write
Spare_15	BOOL Bit7	Decimal		Read/Write

SINT 4&5 FBT_Control_Word INT Decimal See fieldbus tasks Read/Write

SINT 6&7 FBT_Argument_2 INT Decimal See fieldbus tasks Read/Write

SINT 8&9 FBT_Argument_3 INT Decimal See fieldbus tasks Read/Write

ABB PSTX soft-starter parameter settings:

Fieldbus control

If you use the softstarter with Fieldbus communication, set the Fieldbus interface to ON before it can take action.

Fieldbus address

If you use the softstarter with Fieldbus communication, set a Fieldbus address for the softstarter. Select a suitable and unoccupied number as the address.

CAUTION The motor can start unexpectedly if there is a start signal present during 1 of the actions below.



Changing from 1 type of control to another (Fieldbus control / hardwire control).

Remember that when Fieldbus auto disable is active, this change can occur automatically.

Re-programming of the programmable inputs.

Reset all Settings (sets programmable input to Enable).

Fieldbus Inputs/Outputs

Functions set in the softstarter as Fieldbus digital inputs (DI) are in fact the digital inputs to the PLC i.e. the data flow from the softstarter through the network to the PLC.

Fieldbus digital outputs (DO) are not configurable. The output (DO) gives a description of data flow from the network to the softstarter i.e. appears as an input, from the softstarter point of view.

Fieldbus communication has these parameters:				
Parameter	Description	Setting range	Default value	Values as tested
12.01 Com3 function	Sets the function of the Com3 port.	None, Test, Modbus RTU slave, Extension IO	Test	None
12.02 FB interface connector	Sets the Fieldbus interface selection.	FbPlug, Modbus RTU, Anybus, None	None	Anybus
12.03 Fieldbus control	Enables control from fieldbus	Off, On	Off	On
12.04 Fieldbus address	Sets the Bus address	0 ... 65535	0	
12.05 Fieldbus ip address	Fieldbus IP: Sets the IPaddress.	0.0.0.0 ... 255.255.255.255	0.0.0.0	192.168.0.4
12.06 Fieldbus ip gateway	Fieldbus IP: Sets the default gateway.	0.0.0.0 ... 255.255.255.255	0.0.0.0	
12.07 Fieldbus ip netmask	Fieldbus IP: Sets the netmask.	0.0.0.0 ... 255.255.255.255	255.255.255.0	
12.08 Fieldbus ip dhcp client	Fieldbus IP: Enables dhcp.	Off, On	Off	
12.09 FB baud rate*	Sets the baud rate of internal modbus-RTU interface, Anybus DeviceNet and Anybus modbus-RTU	1200, 2400, 4800, 9600, 19200, 38400, 57600, 76800, 115200, 125000, 250000, 500000, Auto	* There are restrictions on which baud rates you can use for different protocols. See separate Table below.	19200
12.10 FB parity	Sets parity for Anybus modbus-RTU.	No parity, Odd parity, Even parity	Even parity	
12.11 FB stop bits	Select stop bits for Anybus modbus-RTU.	1 Stop bit, 2 Stop bits	1 Stop bit	
12.12 Fieldbus DI 1	Sets the DI 1 programmable digital input signal.	Emergency mode feedback, Event group 0 ... 6 status, Fault reset feedback, Line, Motor heating feedback, None, Phase sequence, Run reverse status, Run status, Sequence 1 ... 3 Run status, Sequence 1 ... 3 TOR status, Slow speed rev feedback, Slow speed forw feedback,	Line	
12.13 Fieldbus DI 2	Sets the DI 2 programmable digital input signal.		Phase sequence	
12.14 Fieldbus DI 3	Sets the DI 3 programmable digital input signal.		Event group 0 status	
12.15 Fieldbus DI 4	Sets the DI 4 programmable digital input signal.		Event group 1 status	
12.16 Fieldbus DI 5	Sets the DI 5 programmable digital input signal.		Start feedback	
12.17 Fieldbus DI 6	Sets the DI 6 programmable digital input signal.		Stop feedback	
12.18 Fieldbus DI 7	Sets the DI 7 programmable digital input signal.		Eventgroup 2 status	
12.19 Fieldbus DI 8	Sets the DI 8 programmable digital input signal.		Eventgroup 3 status	
12.20 Fieldbus DI 9	Sets the DI 9 programmable digital input signal.		Eventgroup 4 status	

12.21 Fieldbus DI 10	Sets the DI 10 programmable digital input signal.	Stand-still brake feedback, Start 1 ... 3 feedback, Start feedback, Start reverse feedback, Stop feedback, TOR status, User-specified feedback	Eventgroup 5 status	
12.22 Fieldbus AI 1	Sets the AI 1 programmable analog input signal.	Phase L1, L2, L3 current, Active energy (resettable), Active power, Active power (HP), Apparent power, EOL time to cool, EOL time to trip, Mains voltage, Power factor, Motor voltage, Mains frequency, Motor connection Max phase current, Motor current, Motor current percent, Motor run time (resettable), Motor temperature, Motor temperature percent, None,	Phase L1 current	
12.23 Fieldbus AI 2	Sets the AI 2 programmable analog input signal.		Phase L2 current	
12.24 Fieldbus AI 3	Sets the AI 3 programmable analog input signal.		Phase L3 current	
12.25 Fieldbus AI 4	Sets the AI 4 programmable analog input signal.		Max phase current	
12.26 Fieldbus AI 5	Sets the AI 5 programmable analog input signal.		Mains frequency	
12.27 Fieldbus AI 6	Sets the AI 6 programmable analog input signal.		Motor voltage	
12.28 Fieldbus AI 7	Sets the AI 7 programmable analog input signal.		Motor temperature percent	
12.29 Fieldbus AI 8	Sets the AI 8 programmable analog input signal.		Number of starts (resettable)	
12.30 Fieldbus AI 9	Sets the AI 9 programmable analog input signal.		Motor run time (resettable)	
12.31 Fieldbus AI 10	Sets the AI 10 programmable analog input signal.		Number of starts (resettable), Phase sequence, PT100 temperature, PTC resistance, Reactive energy (resettable), Reactive power, Thyristor run time (resettable), Remaining time to start, Thyristor temperature, Thyristor temperature percent, Top event code	Top event code

