Technical Note

Migrating from an existing MVI46-GSC to PLX31-EIP-ASCII gateway

Document Code: TN-PLX31EIPASCII_Migrating from MVI46-GSC_01-1904

Date: May 7, 2019

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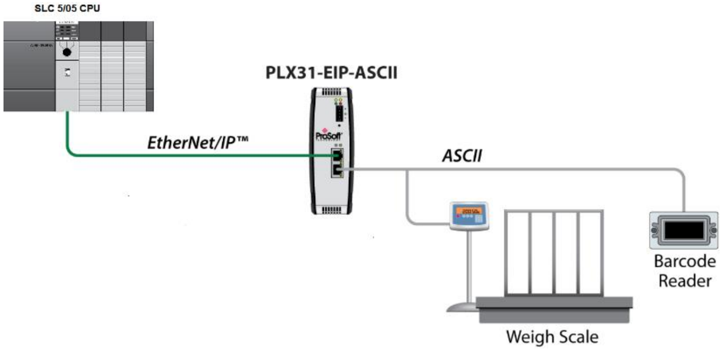
Applicable products include:

Converting from:

- **MVI46-GSC**
- **SLC 5/05 CPU**

Converting to:

- **PLX31-EIP-ASCII**



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Migrating from an existing MVI46-GSC to the new PLX31-EIP-ASCII is a simple and straight forward process. These modules use different configuration software for the configuration, but both remain easy to use.

****NOTE** This document is only applicable for applications where a SLC 5/05 CPU is being used.**

It is highly recommended to review the PLX31-EIP-ASCII training video on ProSoft Technology's YouTube channel: https://www.youtube.com/watch?v=AqQi6kr2O5k

- MVI46-GSC is configured in **RSLogix 500**
- PLX31-EIP-ASCII uses **ProSoft Configuration Builder (PCB)**

You can download PCB free of charge on the ProSoft Technology website:

- ProSoft Configuration Builder: https://www.prosoft-technology.com/Products/ProSoft-Software/ProSoft-Configuration-Builder#related_downloads

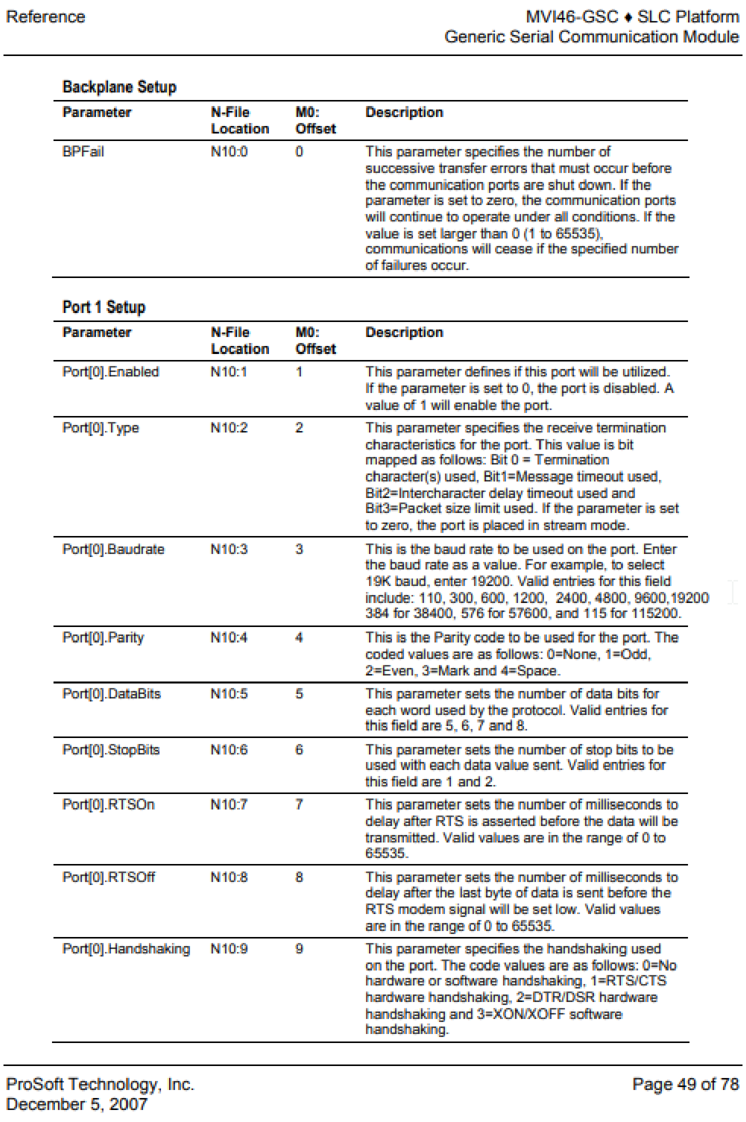
The PLX31-EIP-ASCII is built with a single ASCII port, and the PLX31-EIP-ASCII4 has four independent serial ports.

Audience:
You would be interested in this Technical Note if you are currently using a MVI46-GSC that is located in the same rack as a **SLC 5/05 CPU.**

Migrating the MVI46-GSC to the PLX31-EIP-ASCII

The following steps will guide you through migrating an existing MVI46-GSC to a PLX31-EIP-ASCII.

The configuration of the MVI46-GSC is done through RSLogix 500. Many of the same settings are available for the PLX31-EIP-ASCII using PCB.



Reference

MVI46-GSC ♦ SLC Platform
Generic Serial Communication Module

Backplane Setup

Parameter	N-File Location	M0: Offset	Description
BPFail	N10:0	0	This parameter specifies the number of successive transfer errors that must occur before the communication ports are shut down. If the parameter is set to zero, the communication ports will continue to operate under all conditions. If the value is set larger than 0 (1 to 65535), communications will cease if the specified number of failures occur.

Port 1 Setup

Parameter	N-File Location	M0: Offset	Description
Port[0].Enabled	N10:1	1	This parameter defines if this port will be utilized. If the parameter is set to 0, the port is disabled. A value of 1 will enable the port.
Port[0].Type	N10:2	2	This parameter specifies the receive termination characteristics for the port. This value is bit mapped as follows: Bit 0 = Termination character(s) used, Bit1=Message timeout used, Bit2=Intercharacter delay timeout used and Bit3=Packet size limit used. If the parameter is set to zero, the port is placed in stream mode.
Port[0].Baudrate	N10:3	3	This is the baud rate to be used on the port. Enter the baud rate as a value. For example, to select 19K baud, enter 19200. Valid entries for this field include: 110, 300, 600, 1200, 2400, 4800, 9600,19200 384 for 38400, 576 for 57600, and 115 for 115200.
Port[0].Parity	N10:4	4	This is the Parity code to be used for the port. The coded values are as follows: 0=None, 1=Odd, 2=Even, 3=Mark and 4=Space.
Port[0].DataBits	N10:5	5	This parameter sets the number of data bits for each word used by the protocol. Valid entries for this field are 5, 6, 7 and 8.
Port[0].StopBits	N10:6	6	This parameter sets the number of stop bits to be used with each data value sent. Valid entries for this field are 1 and 2.
Port[0].RTSOn	N10:7	7	This parameter sets the number of milliseconds to delay after RTS is asserted before the data will be transmitted. Valid values are in the range of 0 to 65535.
Port[0].RTSOff	N10:8	8	This parameter sets the number of milliseconds to delay after the last byte of data is sent before the RTS modem signal will be set low. Valid values are in the range of 0 to 65535.
Port[0].Handshaking	N10:9	9	This parameter specifies the handshaking used on the port. The code values are as follows: 0=No hardware or software handshaking, 1=RTS/CTS hardware handshaking, 2=DTR/DSR hardware handshaking and 3=XON/XOFF software handshaking.

ProSoft Technology, Inc.
December 5, 2007

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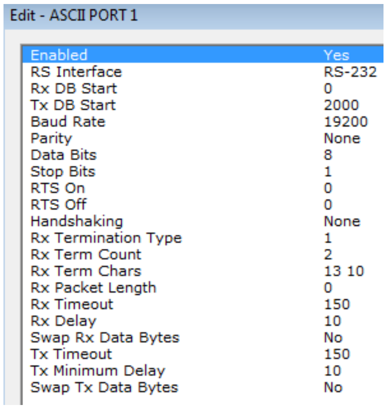
On the left, the MVI46-GSC user manual details the location of each configuration parameter. These same configuration parameters are also available in PCB, as shown below:



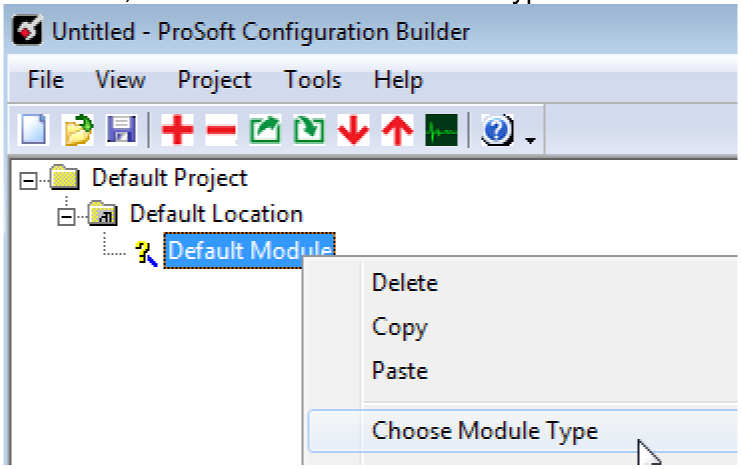
Edit - ASCII PORT 1

Enabled	Yes
RS Interface	RS-232
Rx DB Start	0
Tx DB Start	2000
Baud Rate	19200
Parity	None
Data Bits	8
Stop Bits	1
RTS On	0
RTS Off	0
Handshaking	None
Rx Termination Type	1
Rx Term Count	2
Rx Term Chars	13 10
Rx Packet Length	0
Rx Timeout	150
Rx Delay	10
Swap Rx Data Bytes	No
Tx Timeout	150
Tx Minimum Delay	10
Swap Tx Data Bytes	No

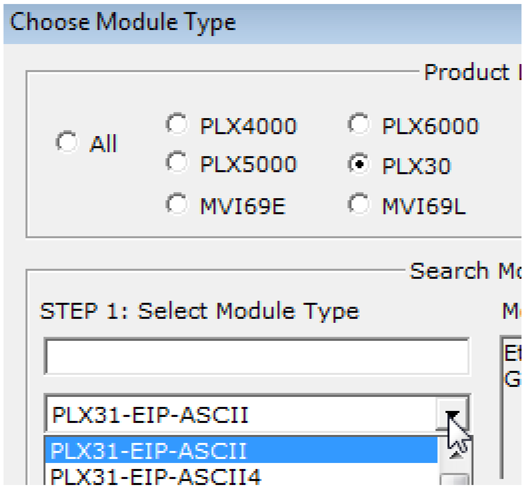
With the MVI46-GSC, the serial data is transferred to the SLC CPU via the M0 and M1 files across the backplane. As shown in the YouTube video: https://www.youtube.com/watch?v=AqQi6kr2O5k , the serial data is transferred to a Logix CPU with a Class 1 I/O connection. Since the SLC 5/05 doesn't support this type of connection, the serial data will be transferred to/from the SLC 5/05 and to/from the PLX31 ASCII port using EtherNet/IP Class 3 message.

Below are the steps to transfer ASCII data from the PLX31 to the SLC 5/05 CPU:

1. Start a new project in ProSoft Configuration Builder (PCB), and right-click on Default Module, and select Choose Module Type

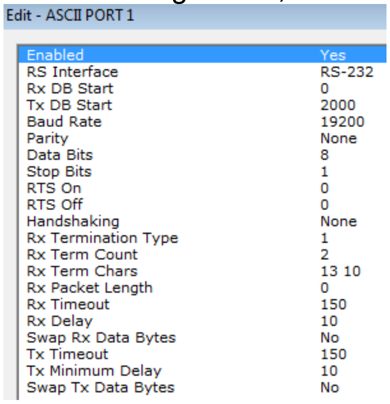


2. In the Choose Module Type window, select either the PLX31-EIP-ASCII or ASCII4 and click OK



3. Expand the PLX31 and expand ASCII Port 1

For this configuration, the defaults will be used:



Edit - ASCII PORT 1

Enabled	Yes
RS Interface	RS-232
Rx DB Start	0
Tx DB Start	2000
Baud Rate	19200
Parity	None
Data Bits	8
Stop Bits	1
RTS On	0
RTS Off	0
Handshaking	None
Rx Termination Type	1
Rx Term Count	2
Rx Term Chars	13 10
Rx Packet Length	0
Rx Timeout	150
Rx Delay	10
Swap Rx Data Bytes	No
Tx Timeout	150
Tx Minimum Delay	10
Swap Tx Data Bytes	No

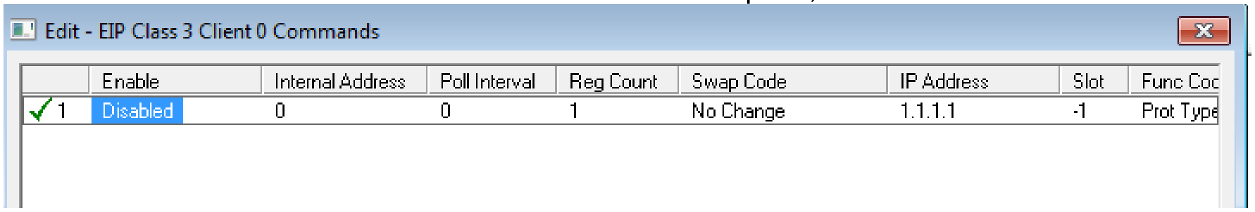
Using the above image, we can verify that the PLX31 ASCII port is configured using the same serial settings as the end serial device (or devices, if using RS-485).

In the above ASCII Port 1 configuration, assume a serial device is sending the text “Product ABC, LOT1, 4/29/2019”, followed by a CR/LF, which is the Rx Term Chars, 13 and 10. In this case, the RX Termination Type will be set to 1, for Termination Characters. Once the PLX31 recognizes these terminating characters, it will pass the serial data to internal database address 0.

NOTE – The string “Product ABC, LOT1, 4/29/2019” doesn’t actually start at address 0. As defined in the PLX3x user manual, here is how the receive data is stored in the DB.

Word Offset	Description
0 (RX DB Start)	Receive sequence number. This register is incremented by the module’s Receive Driver for each new packet received.
1	Number of characters transmitted (0 to 255) from last transmit request on this port.
2	Number of characters received (0 to 255) in the last received terminated string.
3	Receive State
4	Receive Total Count (number of characters received on the port since last reboot).
5	Receive Message Count (number of messages/terminated strings received on the port since the last reboot).
6	Transmit State
7	Transmit Total Count (number of characters transmitted on this port since the last reboot).
8	Configuration Error Code
9 to 136	Byte Values for data received, up to 254 characters.

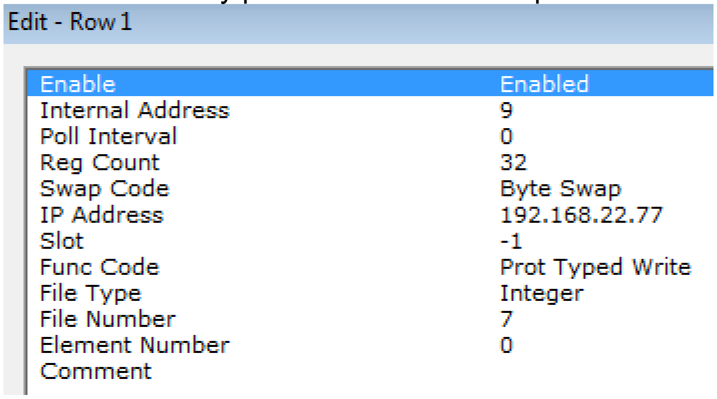
4. Within PCB, Expand EIP Class 3 Client 0
5. When the Edit – EIP Class 3 Client 0 Commands window opens, click on Add Row



Edit - EIP Class 3 Client 0 Commands

	Enable	Internal Address	Poll Interval	Reg Count	Swap Code	IP Address	Slot	Func Coc
✓ 1	Disabled	0	0	1	No Change	1.1.1.1	-1	Prot Type

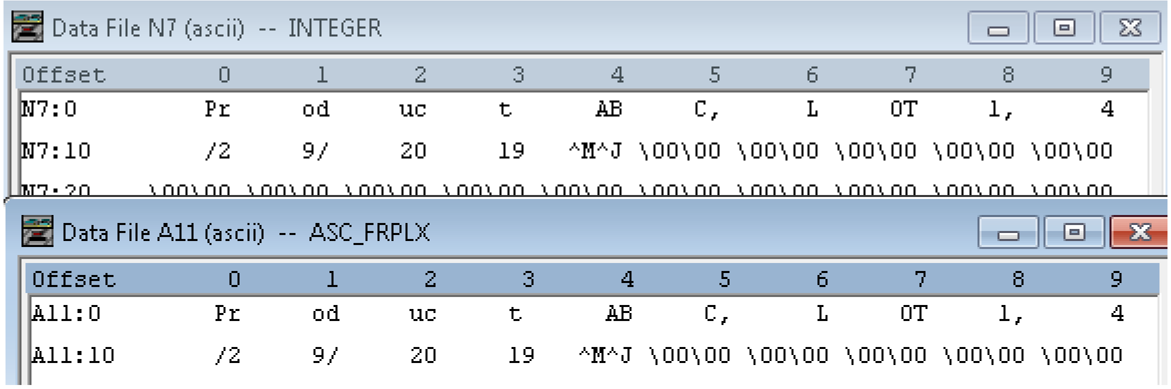
6. Double click on any portion of that row to open the Edit window



Edit - Row 1

Enable	Enabled
Internal Address	9
Poll Interval	0
Reg Count	32
Swap Code	Byte Swap
IP Address	192.168.22.77
Slot	-1
Func Code	Prot Typed Write
File Type	Integer
File Number	7
Element Number	0
Comment	

7. Now define where in the SLC 5/05 the data will be placed. You can use an Integer file and then copy to a String or ASCII file, or you can have the data placed directly in the ASCII file. You will also need to take note of the byte order.



Data File N7 (ascii) -- INTEGER

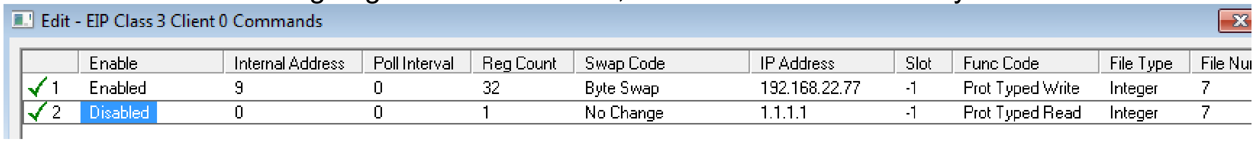
Offset	0	1	2	3	4	5	6	7	8	9
N7:0	Pr	od	uc	t	AB	C,	L	OT	l,	4
N7:10	/2	9/	20	19	^M^J	\00\00	\00\00	\00\00	\00\00	\00\00
N7:20	\00\00	\00\00	\00\00	\00\00	\00\00	\00\00	\00\00	\00\00	\00\00	\00\00

Data File A11 (ascii) -- ASC_FRPLX

Offset	0	1	2	3	4	5	6	7	8	9
A11:0	Pr	od	uc	t	AB	C,	L	OT	l,	4
A11:10	/2	9/	20	19	^M^J	\00\00	\00\00	\00\00	\00\00	\00\00

Below are the steps to transfer ASCII data from the SLC 5/05 CPU to the PLX31:

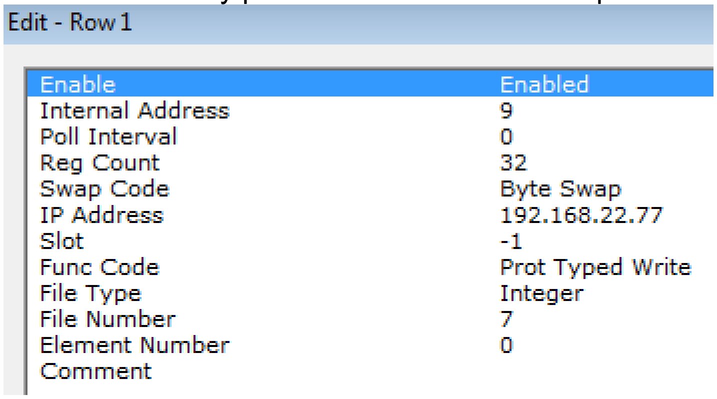
1. Within PCB, Expand EIP Class 3 Client 0
2. When the Edit – EIP Class 3 Client 0 Commands window opens, highlight the first row (Write to SLC) and choose Copy Row, then Paste Row *Only do this if it's going to the same PLC. If going to a different PLC, click Add Row and modify as needed.



Edit - EIP Class 3 Client 0 Commands

	Enable	Internal Address	Poll Interval	Reg Count	Swap Code	IP Address	Slot	Func Code	File Type	File Nu
✓ 1	Enabled	9	0	32	Byte Swap	192.168.22.77	-1	Prot Typed Write	Integer	7
✓ 2	Disabled	0	0	1	No Change	1.1.1.1	-1	Prot Typed Read	Integer	7

3. Double click on any portion of that new row to open the Edit window



Edit - Row 1

Enable	Enabled
Internal Address	9
Poll Interval	0
Reg Count	32
Swap Code	Byte Swap
IP Address	192.168.22.77
Slot	-1
Func Code	Prot Typed Write
File Type	Integer
File Number	7
Element Number	0
Comment	

Now define where in the SLC 5/05 the ASCII data is coming from, and where to place the data in the gateway. The data should be formatted as follows:

Word Offset	Description
0 (TX DB Start)	Transmit sequence number. This number is incremented by the user's application for each new packet to transmit.
1	Number of characters received (0 to 256) from last receive request.
2	Inter-character delay for this message (milliseconds between characters)
3	Number of characters to transmit on Port (0 to 255)
4 to 131	Data to transmit on port

Any time the gateway sees a change in word 0 of the TX DB Start, it will transmit the number of characters defined in word offset 3 of TX DB Start while spacing the characters as defined in word 2.