ControlLogix Write to Tag

Integration guide for the GW EIP/ASCII… into ControlLogix using write to tag

Quick Reference Guide

QRG_921_EN_01_ControlLogix-Write-to-Tag-with-GW-EIP-ASCII.docx

Pos.	Qty.	Order-No.	Type-Description	Description
1	1	2702772	GW EIP/ASCII 1E/1DB9	EtherNet/IP to ASCII gateway, one Ethernet port, one serial port
		2702773	GW EIP/ASCII 1E/2DB9	EtherNet/IP to ASCII gateway, one Ethernet port, two serial ports
		2702774	GW EIP/ASCII 2E/2DB9	EtherNet/IP to ASCII gateway, two Ethernet ports, two serial ports
		2702776	GW EIP/ASCII 2E/4DB9	EtherNet/IP to ASCII gateway, two Ethernet ports, four serial ports
2	1			ControlLogix PLC
3	1			RSLogix 5000 version 29.00

1 Overview

This document describes how to use RSLogix 5000 to read and write messages to the GW EIP/ASCII… using write to tag. This method writes the serial data directly into a tag on the PLC. This option should only be used in the PLC can scan and consume the serial data faster than the serial data can produce it. The “Write to Tag” option requires the least amount of programing and is the recommended method to transmit data to a controller. When the GW EIP/ASCII… receives a serial or socket packet, the data packet is immediately written to a tag data location on the PLC. When using the Write to Tag option, the GW EIP/ASCII… writes the data to the PLC, however, the PLC does not write data back to the GW EIP/ASCII serial ports.

This document assumes the user understands basic electrical concepts including serial and Ethernet communication and is proficient in programming using RSLogix 5000.

2 GW EIP/ASCII… web manager

Open a web browser and navigate to the IP address of the GW EIP/ASCII…. To log-in to the web manager use the following credentials:

- Username: Admin
- Password: admin

3 Serial port configuration

Navigate to the Serial Port Configurations tab under Serial Settings and Port 1 Configuration. Confirm the Baud rate, Parity, Data bits, Stop bits, and Flow control to match those of the serial communication device. Refer to Figure 1: Serial port configuration.

Make sure you always use the latest documentation.
It can be downloaded at: www.phoenixcontact.net/products

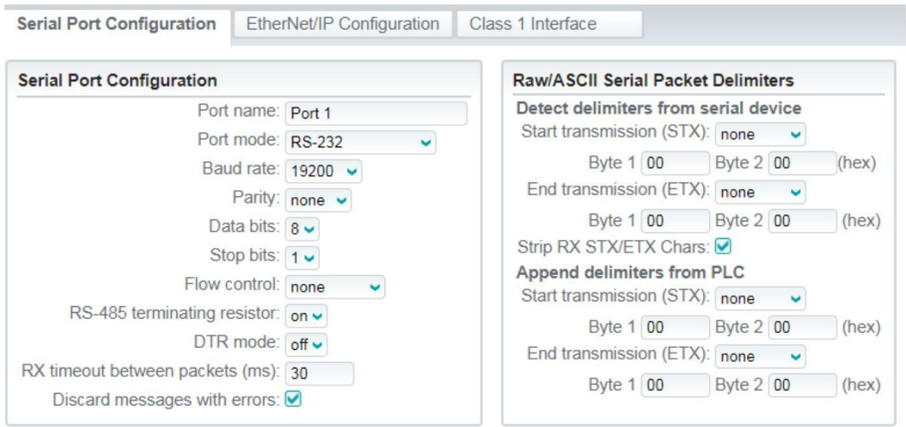

Figure 1: Serial port configuration

Take note of the Start transmission (STX) and End transmission (ETX) settings. When the Start transmission (STX) setting is enabled, the GW EIP/ASCII... detects an STX byte sequence which is configured as one or two bytes when it receives a serial packet. If none is selected, the GW EIP/ASCII... accepts the first byte received after the last End Transmission (ETX) byte(s) as the start of the next data packet. If one byte is selected, the GW EIP/ASCII... starts to collect data when the STX byte is detected. If the first byte is not the STX byte, it discards the byte. The GW EIP/ASCII... continues to discard the bytes until it finds an STX byte. If two bytes is selected, the GW EIP/ASCII... starts to collect data when both of the STX bytes are detected. If the STX bytes cannot be found, it discards the bytes. The GW EIP/ASCII... continues to discard the bytes until it finds the two STX bytes.

- *Byte 1:* Specifies the character that represents the first STX byte. The GW EIP/ASCII... looks for this character in the first STX byte, if the length is one byte or two bytes. Specify a value between 0 and FF in hexadecimal format.
- *Byte 2:* Specifies the character that represents the second STX byte. The GW EIP/ASCII... looks for this character in the second STX byte, only if the length is two bytes. Specify a value between 0 and FF in hexadecimal format.

When the End transmission (ETX) setting is enabled, the GW EIP/ASCII... detects an ETX byte sequence that is configured as one byte or two bytes marking the end of the serial packet. The length indicates the number of ETX bytes; if none is selected, this function is disabled and the GW EIP/ASCII... uses the Rx Timeout Between Packets to indicate the end of data packet. If one byte is selected, the serial data is checked for one ETX byte to identify the end of a serial packet. If two bytes is selected, the serial data is checked for two ETX bytes to identify the end of a serial packet.

- *Byte 1:* Specifies the character that represents the first ETX byte. The GW EIP/ASCII... looks for this character in the first ETX byte, if the length is one byte or two bytes. Specify a value between 0 and FF in hexadecimal format.
- *Byte 2:* Specifies the character that represents the second ETX byte. The GW EIP/ASCII... looks for this character in the second ETX byte, only if the length is two bytes. Specify a value between 0 and FF in hexadecimal format.

Disabling STX and ETX delimiters can help with testing and troubleshooting.

4 Write to Tag

The “Write to Tag” option requires the least amount of programming and is the recommended method to transmit data to a controller. When the GW EIP/ASCII... receives a serial or socket packet, the data packet is immediately written to a file data location on the PLC.

Note: The PLC must be able to scan and consume the serial data faster than the serial device can produce it to avoid the GW EIP/ASCII… overwriting the data.

4.1 GW EIP/ASCII configuration for tag/file

Navigate to the EtherNet/IP Configuration tab under Serial Settings and Port 1 Configuration. Change the settings in the web manager of the GW EIP/ASCII… to support Write to Tag/File. Refer to Table 1: Write to Tag/File settings. Apply these changes to enable write to tag on the ControlLogix controller. Refer to Figure 2: Write to tag/file settings.

Table 1: Write to Tag/File settings

SETTING	VALUE	DESCRIPTION
PLC type	ControlLogix	Type of controller. ControLogix messages are formatted differently than MicroLogix messages. Refer to the user manual for additional details.
Transfer mode to PLC	Write to Tag/File	Communication method
Transfer mode from PLC	Write Msg	Not necessary for Tag/File
PLC IP address	192.168.254.32	IP address of the controller
PLC controller slot number	0	Slot number where the controller resides
Maximum PLC update rate (ms)	10	Spaces the messages to the PLC to prevent overwriting data
Maximum RX packet size (bytes)	244	Specifies the maximum acceptable size of a received packet
Maximum TX packet size (bytes)		Only necessary for Class 1 communication
Oversized RX packets	Truncate	Specifies how to process oversized received packets
RX data tag/file	Port1	This tag name must match the tag name created in the controller

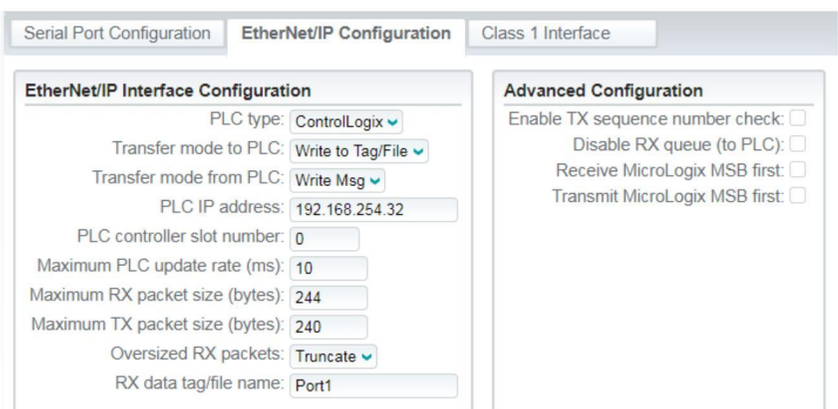

Figure 2: Write to tag/file settings

Navigate to RSLogix 5000 to create a new tag. In the project tree on the left-hand side double click on “Controller Tags”. Refer to Figure 3: Controller Tags.

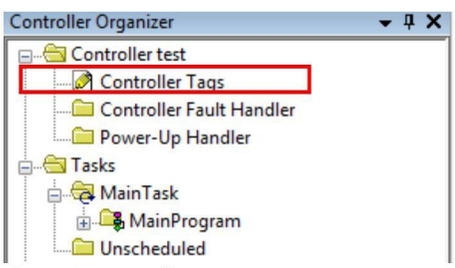

Figure 3: Controller Tags

In the Controller Tags field click on “Edit Tags” on the bottom of the screen. Add a new tag that is the same name as the tag created in Figure 2: Write to tag/file settings. Make the variable type SINT with a length of 248. A length of 248 ensures that there is enough room for the message, and the header information. Refer to Figure 4: Create new tag.

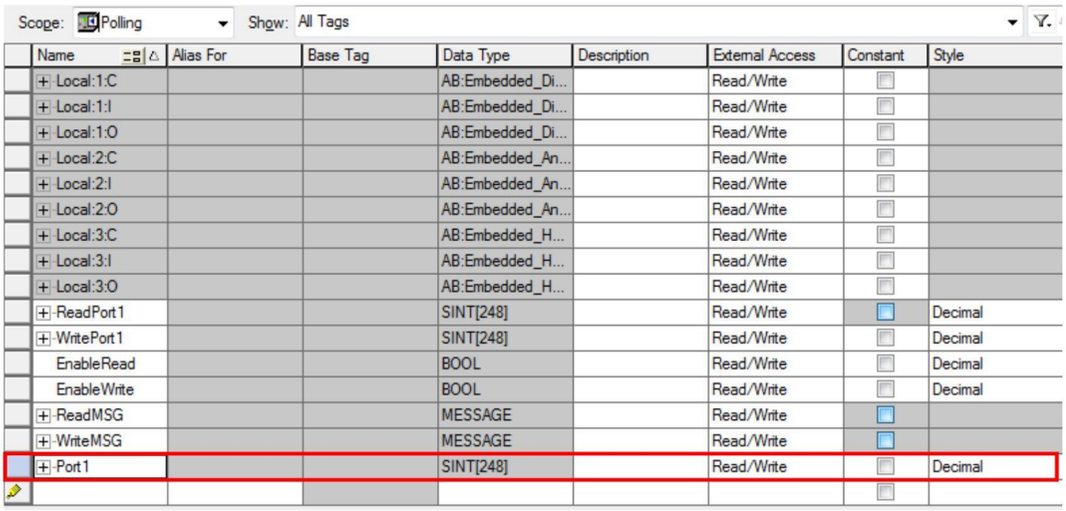

Figure 4: Create new tag

When a serial packet is sent or received, the packet may be viewed in the web manager of the GW EIP/ASCII…Refer to Figure 5: Packet received. This is very helpful when determining if a packet is dropped or if there are STX and ETX bytes.

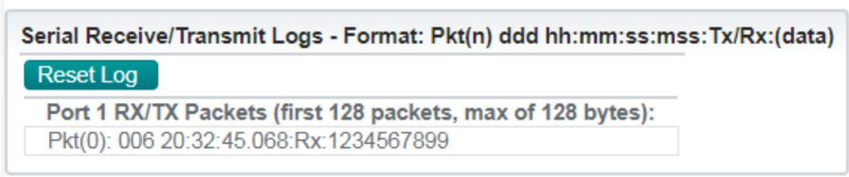

Figure 5: Packet received

The tag in RSLogix 5000 shows that the PLC has written in the data. Each byte has a specific format for communication. Refer to Table 2: Message Format.

Table 2: Message Format

BYTE	VALUE	DESCRIPTION
0	86	Sequence number
1	0	
2	10	Message length
3	0	
4	49	Start of data

In RSLogix, the tag for communication should follow the format shown in Table 2: Message Format**Error! Reference source not found.**. Refer to Figure 6: Port 1 data.

Port1	{...}	{...}	Decimal	SINT[248]
Port1[0]	86		Decimal	SINT
Port1[1]	0		Decimal	SINT
Port1[2]	10		Decimal	SINT
Port1[3]	0		Decimal	SINT
Port1[4]	49		Decimal	SINT
Port1[5]	50		Decimal	SINT
Port1[6]	51		Decimal	SINT
Port1[7]	52		Decimal	SINT
Port1[8]	53		Decimal	SINT
Port1[9]	54		Decimal	SINT
Port1[10]	55		Decimal	SINT
Port1[11]	56		Decimal	SINT
Port1[12]	57		Decimal	SINT
Port1[13]	57		Decimal	SINT

Figure 6: Port 1 data