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RAW TCP SLC 5/05[®] DATA MESSENGER
Catalog #490NBS

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DEFAULT IP ADDRESS 192.168.0.100

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REVISION HISTORY

Revision History for revision 1.0:

Date	Name	Revision	Description
05/24/05	JHM	1.0	Initial Revision
05/28/09	RAD	1.2	Added String information

INTRODUCTION

Overview

The RAW TCP SLC 5/05 Gateway is designed to move your RAW TCP data to and from Rockwell Automation SLC 5/05 Programmable Controllers. Data can be simultaneously transferred between a SLC 5/05 Controller and up to six RAW TCP devices. Each RAW TCP device is assigned two numeric data files in the SLC 5/05 controller. There is one for receiving data from your RAW TCP device and one for sending data to your RAW TCP device. Only a single rung of ladder logic is required to support each data transfer.

RAW TCP messages received from a device are identified using a Message Length. Whenever the message is recognized the data is immediately transferred to the programmable controller.

RAW TCP data is automatically transferred from the SLC 5/05 controller to your RAW TCP device whenever the controller moves data into the transmit file. Start and End delimiters data can be automatically added to the data stream as it is transmitted.

Unit configuration is performed using the internal web server. TCP Gateway communication parameters, SLC 5/05 data files and message delimiters are independently specified for each channel.

If you need help with IP addressing, you can download an application at <http://www.rtaautomation.com/support/downloads/IPSetup.exe> to display the currently assigned addresses and set your own values.

Contents of this Manual

This manual provides detailed instructions on the 490NBS Raw TCP SLC 5/05 Data Messenger.

This manual does not describe the Rockwell Automation SLC 5/05 controller, serial communications, RS232 or RS485, or how to troubleshoot an Ethernet network.

SOFTWARE SPECIFICATIONS

Programmable Controllers Supported:	Rockwell Automation SLC 5/05
Max Message Size:	200 Characters
Message Identification:	Message Size and/or Start and End Delimiters
SLC 5/05 Numeric registers::	Two sets of numeric Registers per communications channel
IP Addressing:	Fixed
Power Requirements:	12 VDC 500ma
Temperature Range:	0-70 Degrees C
Dimensions:	4.2" x 3"

RAW TCP COMMUNICATIONS

Overview

The Dual Channel RAW TCP SLC 5/05 Data Messenger has two independent channels to send and/or receive simultaneous RAW TCP data from up to six devices as shown in Figure 1.



Figure 1 - System Configuration

COMMUNICATION PARAMETERS

TCP IP Address

The TCP IP Address is the IP Address of the device on the specified channel. Setting this to 0 will allow any device to connect to this channel.

TCP Port

The TCP Port is the port number on which the Gateway will be listening. This must be unique for the two Gateway channels.

RAW TCP TO SLC 5/05 PARAMETERS

Buffer Transmit Length

The Buffer Transmit Length is the maximum number of characters that can be transferred to a SLC 5/05 controller in a single message whenever a TCP message is received. (Note: The Buffer Transmit Length must be at least two bytes smaller than the SLC 5/05 Tag Size).

There are two message transmit buffers for each channel. The message is parsed and placed in the first buffer when received. When the SLC is ready, the buffer is transferred to the second buffer and sent to the SLC.

Messages are transferred from the transmit buffer queue to the SLC 5/05 Programmable Controller on completion of the handshaking protocol described in the next section.

Note: setting this parameter to zero disables the RAW TCP to SLC feature.

SLC 5/05 TO RAW TCP PARAMETERS

Buffer Transmit Length

The Buffer Transmit Length is the maximum number of characters that can be transferred from a SLC 5/05 controller to your RAW TCP device in a single message. The Buffer Transmit Length must be equal to or greater than the Tag data size in the SLC 5/05 controller. If using strings, the default length is 82 bytes.

Note: setting this parameter to zero disables the SLC to RAW TCP feature.

Poll Time

The Poll Time Period indicates how often the Messenger Gateway checks the SLC 5/05 Data Messenger for outgoing messages. This value is application dependent. Setting it too slow and there will be unnecessary delay before messages are transmitted to the RAW TCP device. Setting the value too fast and the gateway may consume too much Ethernet bandwidth and SLC processing cycles.

The Poll Time Period can be set from zero to 10,000 milliseconds (ten seconds). Setting it to zero consumes maximum Ethernet bandwidth.

The Poll Time period is independently set for each channel.

Start Delimiter

The One or Two Character Start Delimiter is inserted prior to the beginning of the data received from the SLC 5/05 controller. The Start Delimiter is independently enabled for each channel.

Setting the Start Delimiter count to zero disables the Start Delimiter.

End Delimiter

A One or Two Character End Delimiter is appended to the end of the data received from the SLC 5/05 controller.

Setting the End Delimiter count to zero disables the End Delimiter.

ETHERNET CONFIGURATION

The Dual Channel RAW TCP SLC 5/05 Data Messenger transfers RAW TCP data to and from a SLC 5/05 Programmable Controller using EtherNet/IP™ communications. In an EtherNet/IP network, the Dual Channel SLC 5/05 Data Messenger is an EtherNet/IP Client while the SLC 5/05 Programmable Controller is an EtherNet/IP Server.

SLC 5/05 IP Addressing

The Dual Channel RAW TCP SLC 5/05 Data Messenger must be configured with the IP Address of the SLC 5/05 Programmable Controller. The IP Address is retained in non-volatile memory across power cycles.

The Dual Channel RAW TCP SLC 5/05 Data Messenger is shipped with the SLC 5/05 IP Address set to 0.0.0.0.

SLC 5/05 Numeric data files

Two Numeric data files must be defined in the SLC 5/05 Programmable Controller with one numeric data file for each active channel. The Data Messenger uses the numeric data file/offset to write the integer length of the RAW TCP message followed by the actual RAW TCP character string. The maximum size of the RAW TCP character string that will be written to the data table is equal to the maximum size of the RAW TCP message string received from the raw TCP device on that channel.

The Dual Channel RAW TCP SLC 5/05 Data Messenger is shipped with Raw TCP Gateway 0 Numeric Data File set to “N7:0” and Raw TCP Gateway 1 is set to “N7:0” for each direction.

SLC 5/05 Handshaking

The Dual Channel RAW TCP SLC 5/05 Data Messenger implements a simple handshaking protocol using the integer data size value. The integer size is first word of the numeric data file. Using this value, the Dual Channel RAW TCP SLC 5/05 Data Messenger ensures that an RAW TCP message is not written to the Programmable Controller until the previous message is processed.

Before writing an RAW TCP message to the SLC 5/05 SLC, the integer data size is read. The next RAW TCP message is not written until the integer size is set to zero by the Programmable Controller. After writing the RAW TCP message the integer data size is set to the size of the message.

The data size value must be set to zero by the Programmable Controller prior to initiating communications with an RAW TCP device.

If using strings, you need to set the length to zero before the module will send new data to the plc.

Dual Channel RAW TCP SLC 5/05 Data Messenger IP Addressing

The IP Address, Subnet Mask and Default Gateway address of the Dual Channel RAW TCP SLC 5/05 Data Messenger must be set prior to enable it for operation on the Ethernet network. The addresses are set using the internal web server.

MODULE CONFIGURATION

Overview

The Dual Channel RAW TCP SLC 5/05 Data Messenger is configured using the internal web server and any standard browser. Figure 2 shows the main web page of the web interface.

A selected block of configuration data can be revised by hitting the edit button for that block as shown in Figure 2.

RTA
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RTA
uLogix SLC 5/05®
Raw TCP Messenger

[Diagnostics Page](#)

Description
RTA SLC 5/05 Msngr: Enter descr.

SLC 5/05 communication is enabled
SLC 5/05 IP address = 192.100.100.75

Raw TCP Gateway 0 is enabled
IP Address = 0.0.0.0
Port = 50200

Raw TCP to SLC 5/05
Buffer transmit length = 200
SLC 5/05 FileAddress = N7:0

SLC 5/05 to Raw TCP
Buffer transmit length = 40
Poll Time = 10000
SLC 5/05 FileAddress = N14:0
End delimiter byte1 = [CR] 13 0x0D
End delimiter byte2 = [LF] 10 0x0A

Raw TCP Gateway 1 is disabled

[Edit](#)

Network Settings
IP address: 192.100.100.166
Subnet mask: 255.255.255.0
Default gateway: 192.168.0.1

[Edit](#)

MAC address: 00-03-F4-01-5E-6A
Revision: 1.0

Figure 2 - Web Server Main Page

Description

The Description block contains a text string that identifies the application to the user. The text string is not transmitted to the SLC 5/05 Programmable Controller.

SLC 5/05 IP Address

The current address of the SLC 5/05 Programmable Controller.

Raw TCP Gateway 0

The Gateway 0 configuration block contains the tcp and messaging parameters. Included in this block is the TCP IP address, TCP Port, Start Character(s), Termination Character(s), and Maximum Message Size.

Raw TCP Gateway 1

The Gateway 1 configuration block contains the tcp and messaging parameters. Included in this block is the TCP IP address, TCP Port, Start Character(s), Termination Character(s), and Maximum Message Size.

Network Settings

The Network Settings Configuration block contains the IP Address, Subnet Mask and Default Gateway address of the Dual Channel RAW TCP SLC 5/05 Data Messenger.

Default addresses for each of these entries are:

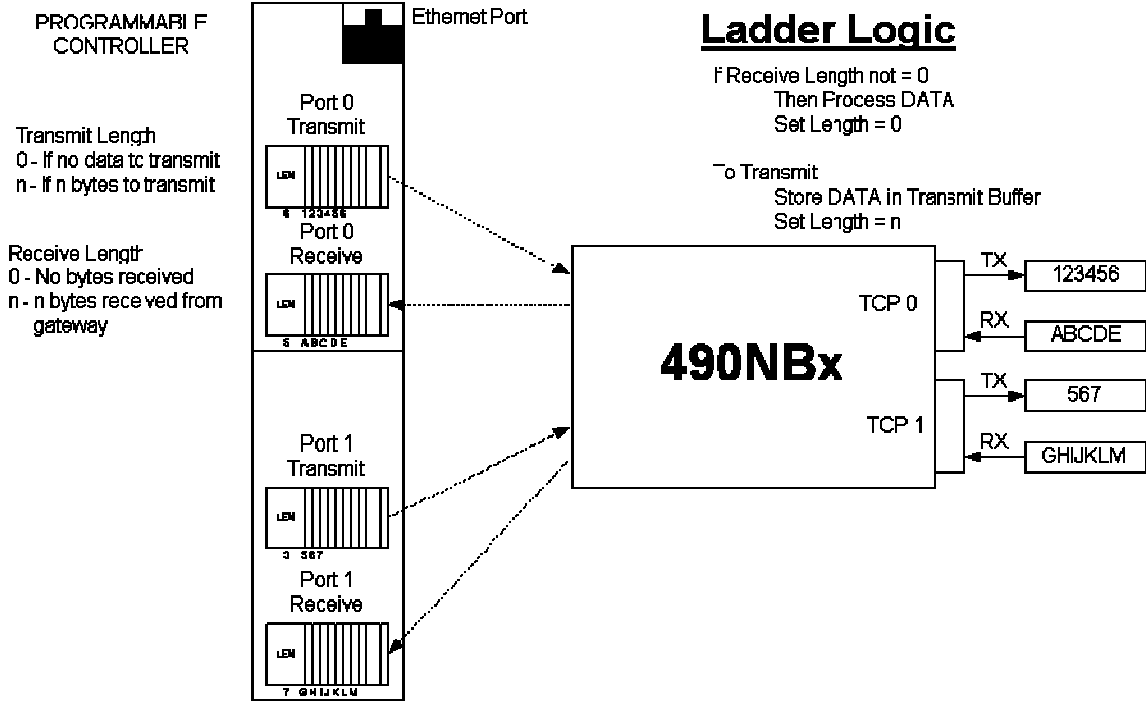
IP Address: 192.168.0.100

Subnet Mask: 255.255.255.0

Default Gateway Address: 192.168.0.2

APPENDIX A

Ladder Logic Diagram



APPENDIX B

PROGRAMMABLE CONTROLLER TO RAW TCP EXAMPLES

Buffer Length	Start Delimiter (Len SD)	End Delimiter (Len ED)	Poll Time	Message	Event	MESSAGE 1
ANY	0	0	ANY	5 ABCDE	GW Poll	ABCDE
ANY	1 \$	1 <cr>	ANY	5 ABCDE	GW Poll	\$ABCDE<cr>
ANY	1 \$	1 <cr>	ANY	5 ABCDE	GW Poll	\$ABCDE<cr>
ANY	1 \$	2 <lf><cr>	ANY	5 ABCDE	GW Poll	\$ABCDE<cr>
ANY	2 *\$	2 <lf><cr>	ANY	5 ABCDE	GW Poll	\$*ABCDE<cr>

APPENDIX C

SLC Firmware requirements

The SLC5E added EIP support in early 1999. There are several hardware platforms being supported (Ser. C, D, and E) with firmware upgrades for each. Although not currently the latest revision, the first **SLC5E** revisions to support IP were:

Series C, Revision N.1

Series D, Revision E.1

Series E, Revision D.1

APPENDIX D

RAW TCP LoopBack Mode

This mode allows the user to test the RAW TCP to SLC setup before connecting the SLC to the Dual RAW TCP Gateway. If the Gateway has the SLC IP Address set to 0.0.0.0 LoopBack mode is enabled (and all communication with the SLC is disabled).

Example:

SLC IP Address: **0.0.0.0**

Enable Raw TCP Gateway 0: **checked**

RAW TCP to SLC

TCP IP Address: **0.0.0.0**

TCP Port: **50200**

Buffer Transmit Length: **10**

Test:

Connect to Raw TCP Gateway 0 with TCP Test Tool or a similar TCP test program.

Send **A12345Z**

Results echoed back to the TCP connection: **A12345Z**

The internal data buffers can be viewed on the Diagnostics page found on the main menu.