

460MRSDM Gateway

User Guide

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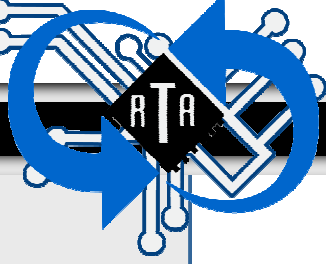
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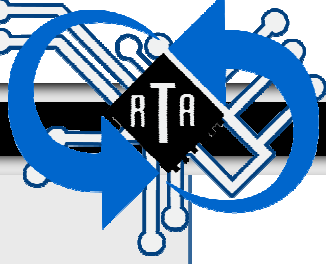
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Overview

The 460MRSDM Gateway device seamlessly connects a Modbus RTU master device to up to 31 DeviceNet Slave devices. By following this guide, you will be able to configure the 460MRSDM Gateway for basic operation. You will set the device's network settings and parameters to the proper configuration for initial operation and physically place the device in the network.

For further customization and advanced use, feel free to consult the provided user's manual. In addition, Real Time Automation would be happy to provide support to help you utilize the device.



Required Tools and Data

You will need the following tools:

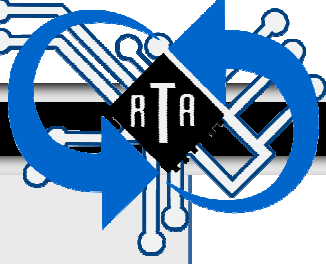
- ◆ The 460MRSDM Gateway
- ◆ The provided CD-ROM
- ◆ A Working PC (Windows based)
- ◆ The supplied Ethernet crossover cable
- ◆ A 7-30 VDC power source (T-strip)

You will also need to verify the following Modbus RTU Communication Characteristics:

- ◆ Slave Address
- ◆ Mode (RS-232, RS-485 (2-wire), or RS-422 (4-wire))
- ◆ Baud Rate
- ◆ Parity
- ◆ Data Bits
- ◆ Stop Bits
- ◆ Data Timeout

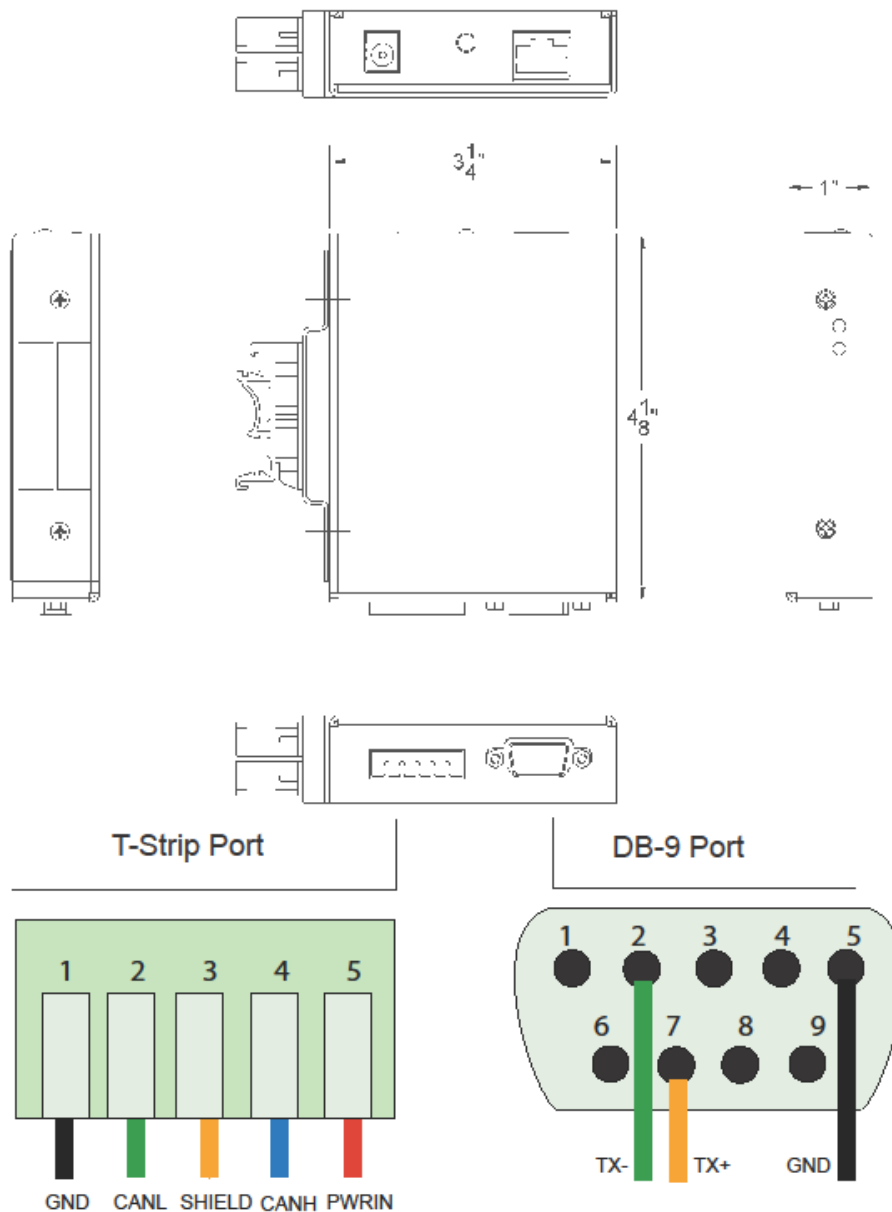
You will also need to verify the following DeviceNet Master communication characteristics:

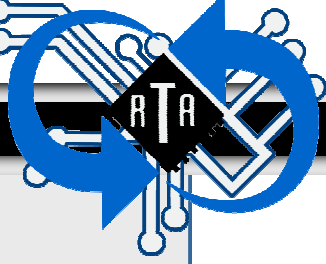
- ◆ MAC ID
- ◆ Baud Rate



Port Settings

The factory default port settings on the 460MRSDM Gateway are for Port 0 (T-strip) to be set for CAN and Port 1 (DB9) to be set for RS485. If the default port settings for the 460 Gateway are not compatible with your equipment they can be configured differently. For specific jumper settings refer to the end of this manual, appendix A.





Accessing the Main Page

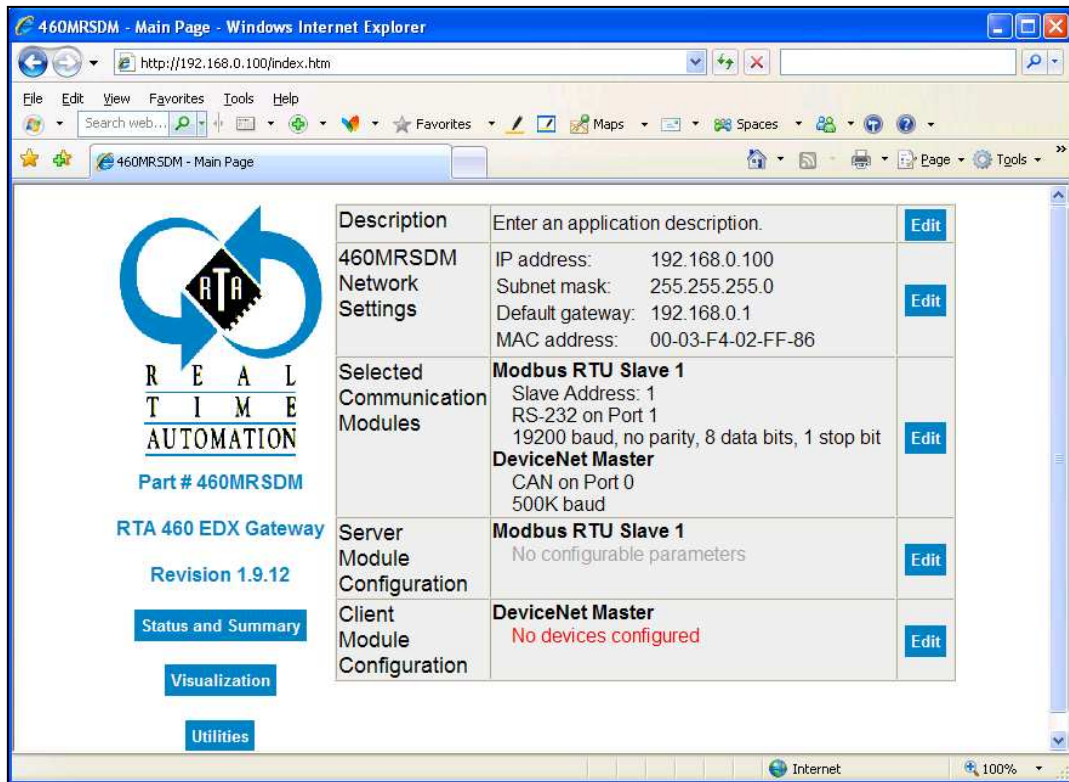
Before you can configure the gateway itself, you must configure the network settings to connect the gateway. The following steps will connect the gateway properly.

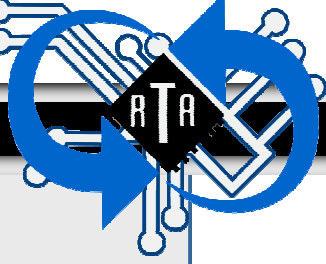
- 1) Connect a 7-30 VDC power source to the device.
- 2) Using the crossover cable (supplied) connect the device to the PC .
- 3) Insert the provided CD-ROM.
- 4) Run the **IPSetup** program from the CD-ROM.
- 5) Configure the **IP Address** for your network.
- 6) Click **Set**.
- 7) Click **Launch Webpage**. The main page should appear.

NOTE

Browser configuration is only Internet Explorer compatible. The use of FireFox is not supported.

Default IP address is 192.168.0.100

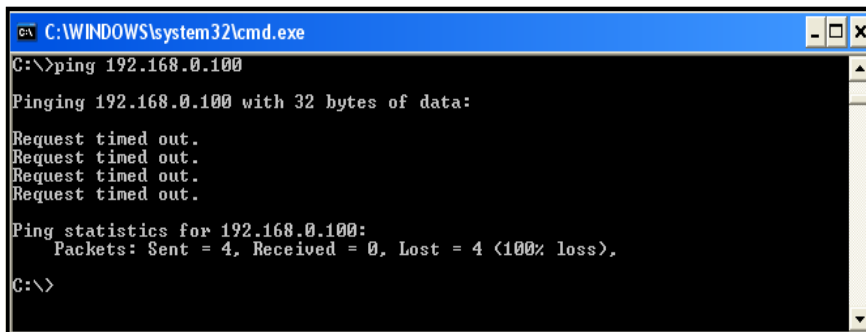




Error: Main Page Does Not Launch

If the Device Configuration Page does not launch, the IP Address is most likely set incorrectly. Correct the IP Address and try again. If you do not know the IP Address, use the following procedure.

- 1) Open an MS-DOS Command Prompt.
- 2) Type **ipconfig** and press **enter**.
- 3) Note the IP Address.
- 4) To test the communication between the PC and the unit, type **ping (###.###.###.###)** in the prompt and press **enter**. The **(###.###.###.###)** is a placeholder for the IP Address you used in step 5 of network configuration, which is **192.168.0.100** by default. If the device is connected to the network the ping will show a response. If you get no response check the crossover cable.

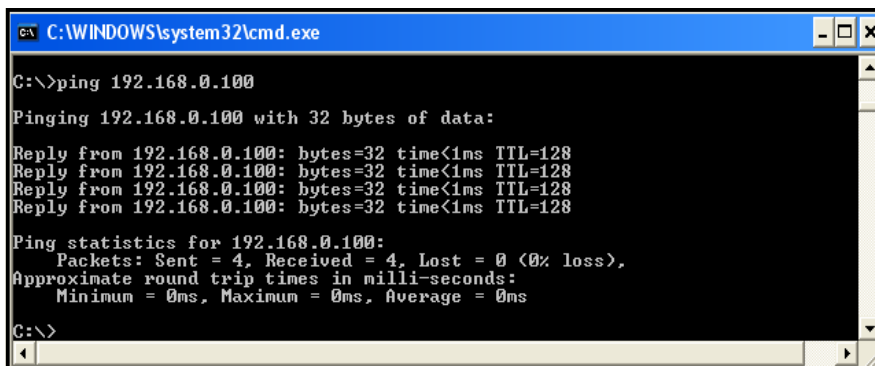


```
C:\WINDOWS\system32\cmd.exe
C:\>ping 192.168.0.100

Pinging 192.168.0.100 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.0.100:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

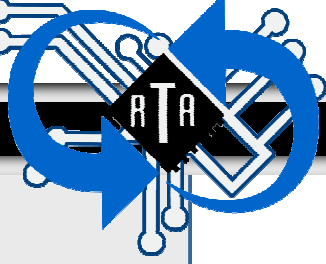


```
C:\WINDOWS\system32\cmd.exe
C:\>ping 192.168.0.100

Pinging 192.168.0.100 with 32 bytes of data:
Reply from 192.168.0.100: bytes=32 time<1ms TTL=128
Reply from 192.168.0.100: bytes=32 time<1ms TTL=128
Reply from 192.168.0.100: bytes=32 time<1ms TTL=128
Reply from 192.168.0.100: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.0.100:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

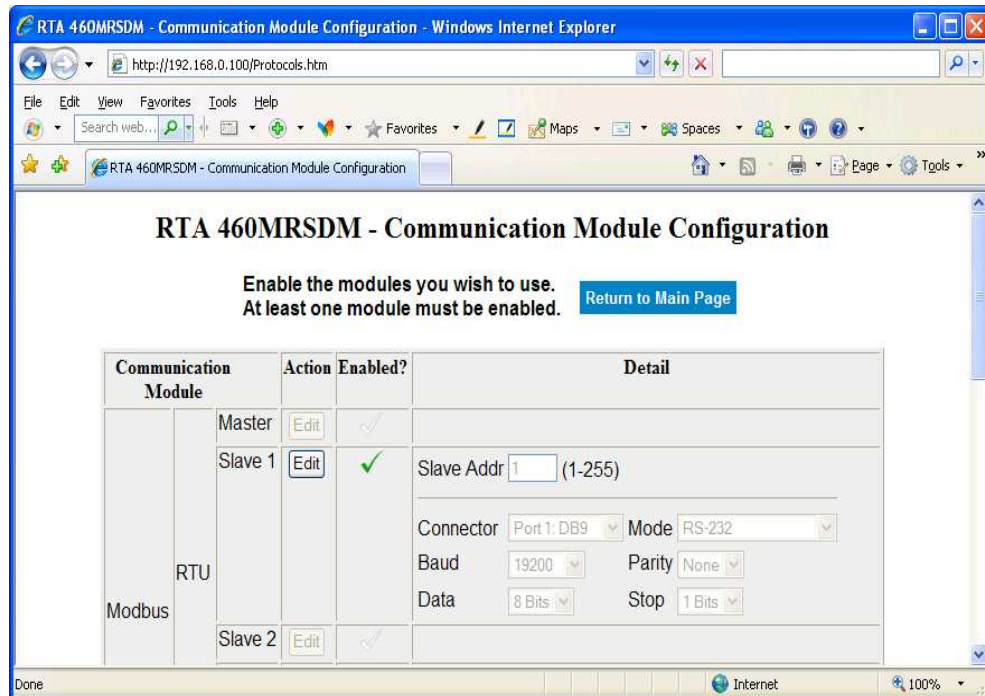
C:\>
```



Modbus RTU Device Settings

Now that the device is on the network, you will configure the slave device settings. As a reminder, you will need to know the slave address, mode, baud rate, parity, data and stop bit settings of your Modbus RTU device in order to complete the device configuration.

- 1) If you would like to change the device description, click **Edit** on the main page in the Description row, otherwise skip to step 4.
- 2) Type the desired description into the text box.
- 3) Click **Save**.
- 4) In the Selected Communication Modules row, click **Edit**.
- 5) In the Modbus RTU Slave 1 module row, click **Edit**.
- 6) Change the **Slave Address** to match which slave the Modbus RTU Master is communicating with.
- 7) Select the appropriate settings in the **Mode, Baud, Parity, Data and Stop Bits** fields. The settings should match your Modbus device.
- 8) Click **Save**.

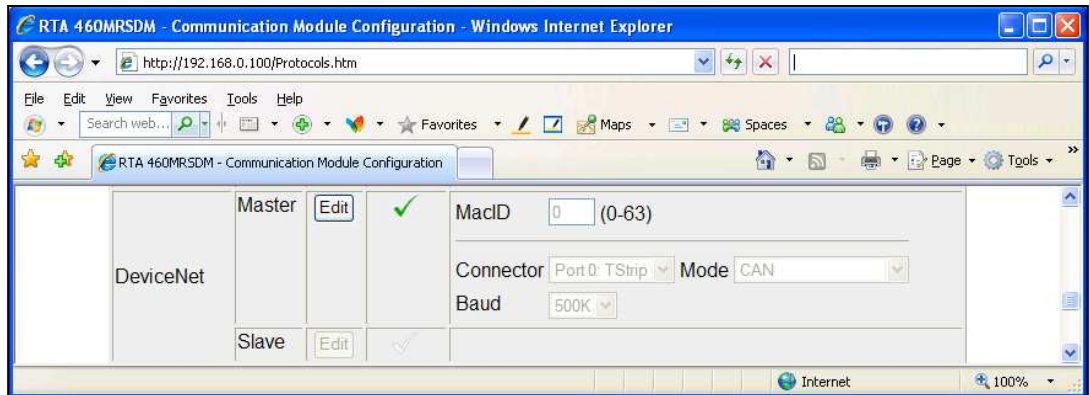




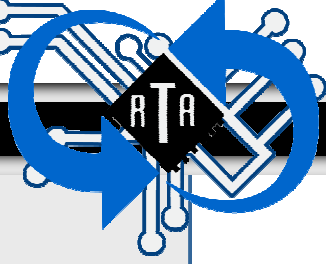
DeviceNet Master Settings

Now you will configure the DeviceNet Master settings. You will need to know the MAC ID and Baud Rate settings of your DeviceNet slave device(s) in order to complete device configuration.

- 1) In the DeviceNet Master row, click **Edit**.



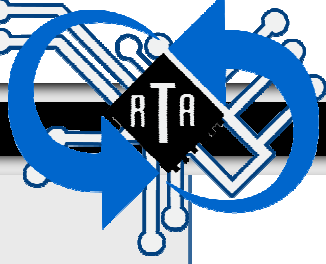
- 2) Change the **MAC ID** to an unused address (0-63), with 0 being the highest priority (Default).
- 3) Select the appropriate **Baud Rate**. All DeviceNet devices must have the same Baud Rate.
- 4) Click **Save**.



Add Remote DeviceNet Slave

- 1) From the main page, click on the **Edit** button within the **Client Module Configuration** row.
- 2) Click the **Add Remote DeviceNet Slave** button.
- 3) Click the **Edit** button.
- 4) Add a **Device Label** to give your slave device a specific name.
- 5) Enter the **Mac ID** you wish to assign to your slave device.
- 6) **Data In** is for sending data and **Data Out** is for receiving data.
Assembly Length is the number of bytes required to send and receive data.
- 7) Click **Save**.
- 8) If you need to set up multiple slaves, they must be configured in their own Device Buffer. If you need additional Device Buffers, click the **Add Remote DeviceNet Slave** button for each additional slave.
- 9) When you are done making changes to a Device Buffer, click **Save** and you will see a summary of your selections for reads/writes.

Device Buffer #	Comm Module	Device Address	Data In		Data Out	
			Registers (or Coils)	Program Tags	Registers (or Coils)	Program Tags
2	DeviceNet Master	Device Label <input type="text"/> Slave MacID <input type="text"/>	Assembly Length <input type="text"/> bytes (0-400)	Assembly Length <input type="text"/> bytes (0-400)	Assembly Length <input type="text"/> bytes (0-400)	Assembly Length <input type="text"/> bytes (0-400)



Verifying Gateway Communication

To check the status of the devices and to see the data that has transmitted, use the following steps:

- 1) On the Main Page click on the **Status and Summary** button located on the left hand side of the screen. (Figure 3) The **460MRSDM Device Summary and Status** page will be shown.
- 2) The device drop down menu allows you to switch between the different devices and display their status.
- 3) Under **Show** you can choose to view only values that are greater than zero by checking the **Only Non-Zero Values** checkbox.
- 4) The **Device Status** section displays whether or not the device is connected and enabled.

RTA 460MRSDM - Device Summary and Status

Device: **Device 2 - DeviceNet Master - Slave_1**

Show: Summary Status Only Non-Zero Values

[Main Page](#) [Refresh](#) [Reset Status Counters](#)

Device Status					
Program		Description	Value Dec	Value Hex	Explanation
Addr	Tag				
%IW410		StatusBits	49152	C000	Enabled Connected
%IW411		IncomingReadMsgCount	88	58	
%IW412		IncomingWriteMsgCount	0	0	
%IW413		OutgoingMsgCount	89	59	
%IW414		TimeoutMsgCount	0	0	
%IW415		ErrorMsgCount	0	0	
%IW416		LastErrorCode	0	0	

Input Buffer Area				
Program		Reg#	Value Dec	Value Hex
Addr	Tag			
%IW420		1	0	00
%IW420		2	0	00

Output Buffer Area				
Program		Reg#	Value Dec	Value Hex
Addr	Tag			
%QW4496		1	0	00



Verifying Gateway Communication

If the device is not physically connected correctly or if the device parameters are incorrect the **Device Status** will display **Enabled NOT Connected**. If you receive this error verify that the devices are connected properly.

If your Modbus Slave settings do not match the master settings the **TimeoutMsgCount** value will increase each time the status page is refreshed. If there are errors they will be displayed in the **ErrorMSGCount** field.

RTA 460MRSDM - Device Summary and Status

Device: Device 1 - Local Modbus RTU Slave 1 ▼

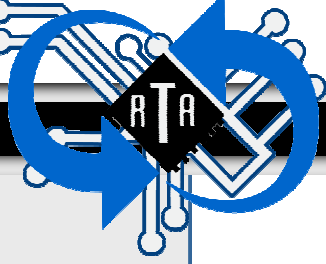
Show: Summary
 Status
 Only Non-Zero Values

Main Page
Refresh
Reset Status Counters

Device Status					
Program		Description	Value Dec	Value Hex	Explanation
Addr	Tag				
%IW0		StatusBits	49152	C000	Enabled Connected
%IW1		IncomingReadMsgCount	2319	90F	
%IW2		IncomingWriteMsgCount	0	0	
%IW3		OutgoingMsgCount	2055	807	
%IW4		TimeoutMsgCount	0	0	
%IW5		ErrorMsgCount	795	31B	
%IW6		LastErrorCode	2	2	Invalid Address for Function

Input Buffer Area				
Program		Reg#	Value Dec	Value Hex
Addr	Tag			
%IW10		40401	4660	1234
%IW11		40402	22136	5678

Output Buffer Area				
Program		Reg#	Value Dec	Value Hex
Addr	Tag			
%QW4494		40399	1	0001



Confirming Data Transmission

To check the status of the DeviceNet Slave devices from the Modbus RTU Slave side, use the following steps:

- 1) From the Main Page, click the **Status and Summary** button.
- 2) Select the **Status** check box.
- 3) If there are errors or timeouts, then there will be values greater than zero in the **TimeoutMsgCount** and/or **ErrorMsgCount** fields.

To check the status of each of the 32 devices on the network, look at the last two words (399 and 400) of the **Output Buffer Area** of Device 1 (Modbus RTU Slave). Each of the 32 devices is represented by a bit. If that device's bit is 1, then the status of that device is fine. If the device's bit is 0, either an error or a timeout has occurred, or the unit is not configured correctly.

RTA 460MRSDM - Device Summary and Status

Device: Device 1 - Local Modbus RTU Slave 1

Show: Summary
 Status
 Only Non-Zero Values

Main Page
Refresh
Reset Status Counters

Device Status					
Program		Description	Value Dec	Value Hex	Explanation
Addr	Tag				
%IW0		StatusBits	49152	C000	Enabled Connected
%IW1		IncomingReadMsgCount	6	6	
%IW2		IncomingWriteMsgCount	0	0	
%IW3		OutgoingMsgCount	6	6	
%IW4		TimeoutMsgCount	0	0	
%IW5		ErrorMsgCount	0	0	
%IW6		LastErrorCode	0	0	

Input Buffer Area				
Program		Value Dec	Value Hex	
Addr	Tag			
%IW10		40401 4660	1234	
%IW11		40402 22136	5678	

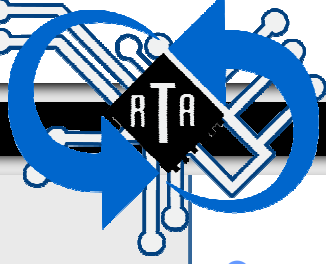
Output Buffer Area				
Program		Value Dec	Value Hex	
Addr	Tag			
%QW4494		40399	1	0001



Configuring Multiple Devices

If you are configuring multiple devices the same way, you can repeat the configuration by saving your work into a file. To do so, follow these steps.

- 1) From the Main Page, click the **Utilities** button.
- 2) Click the **Save Configuration to File** button.
- 3) Click **Save**.
- 4) Browse to the location you want to save the file.
- 5) Click **OK**.
- 6) Remove the first gateway.
- 7) Repeat the network configuration section to connect the next device.
- 8) Once you launch the webpage, click the **Utilities** button.
- 9) Click **Browse** within the **Save and Restore 460MRSDM Configuration** section... and browse to the file you saved.
- 10) Click **Open**.
- 11) Click the **Restore from File** button.
- 12) The unit will reboot automatically and load with the new configuration.



Completing the Installation

Now that the 460MRSDM gateway is configured properly you must place the device in the network. The following instructions will tell you how to take the device from the configuration area to the shop floor or other operating environment.

- 1) Disconnect the crossover cable and power supply from the device.
- 2) Move the device to its intended location.
- 3) Attach the Ethernet cable from the your network to the Ethernet port on the 460MRSDM Gateway.
- 4) Attach the CAN connection from the DeviceNet device to Port 0 (T-strip) of the 460MRSDM Gateway.
- 5) Attach the Modbus devices to Port 1 (DB-9) of the 460MRSDM Gateway.
- 6) Connect the 7-30 VDC power source to the device via the T-strip.

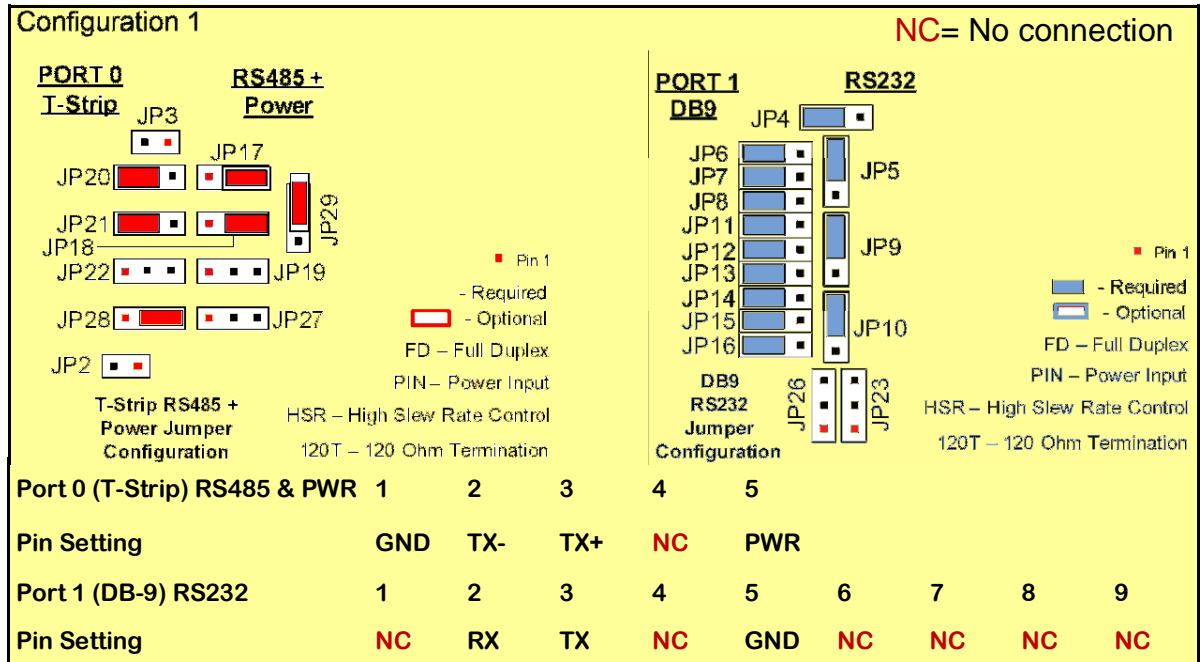


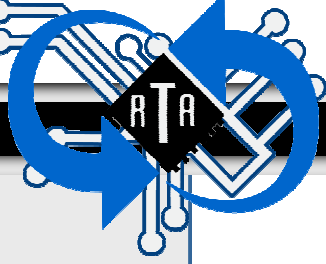
Jumper Configurations

To change port settings on the 460 EDX Gateway use the following steps.

- 1) No cables should be connected to the Gateway unit. If this unit has been in use and you are making a change, disconnect the power cable and any communications cables from the Gateway unit.
- 2) Remove the two small Phillips-head screws from each long side (not connectors) of the Gateway unit.
- 3) Remove the green T-Strip5 connector. Slide the cover off towards the ports. The jumpers are just behind the ports.
- 4) Move the jumper shunts to reflect the desired settings. See Figure 2-1.
- 5) Replace the Gateway unit's cover. Replace the four screws. Replace the green T-Strip5 connector.

Only one RS232, RS485, or CAN port setting can be active per unit. For example, a unit cannot have two ports set for RS232 or two ports set for CAN.





Configuration 2 NC= No connection

CAN

■ Pin 1
 - Required
 - Optional
 FD – Full Duplex
 PIN – Power Input
 HSR – High Slew Rate Control
 120T – 120 Ohm Termination

T-Strip CAN Jumper Configuration

PORT 1 DB9 RS485

■ Pin 1
 - Required
 - Optional
 FD – Full Duplex
 PIN – Power Input
 HSR – High Slew Rate Control
 120T – 120 Ohm Termination

DB9 RS485 Jumper Configuration

Port 0 (T-Strip) CAN	1	2	3	4	5				
Pin Setting	GND	CANL	SHIELD	CANH	PWR				
Port 1 (DB-9) RS485	1	2	3	4	5	6	7	8	9
Pin Setting	NC	TX-	NC	NC	GND	NC	TX+	NC	NC

Configuration 3 NC= No connection

CAN

■ Pin 1
 - Required
 - Optional
 FD – Full Duplex
 PIN – Power Input
 HSR – High Slew Rate Control
 120T – 120 Ohm Termination

T-Strip CAN Jumper Configuration

PORT 1 DB9 RS232

■ Pin 1
 - Required
 - Optional
 FD – Full Duplex
 PIN – Power Input
 HSR – High Slew Rate Control
 120T – 120 Ohm Termination

DB9 RS232 Jumper Configuration

Port 0 (T-Strip) CAN	1	2	3	4	5				
Pin Setting	GND	CANL	SHIELD	CANH	PWR				
Port 1 (DB-9) RS232	1	2	3	4	5	6	7	8	9
Pin Setting	NC	RX	TX	NC	GND	NC	NC	NC	NC



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