

460ECMS Gateway

User Guide

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Overview

The 460ECMS Gateway device seamlessly connects up to 31 Ethernet/IP Servers to a Modbus TCP Client device. By following this guide, you will be able to configure the 460ECMS 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 460 User 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:

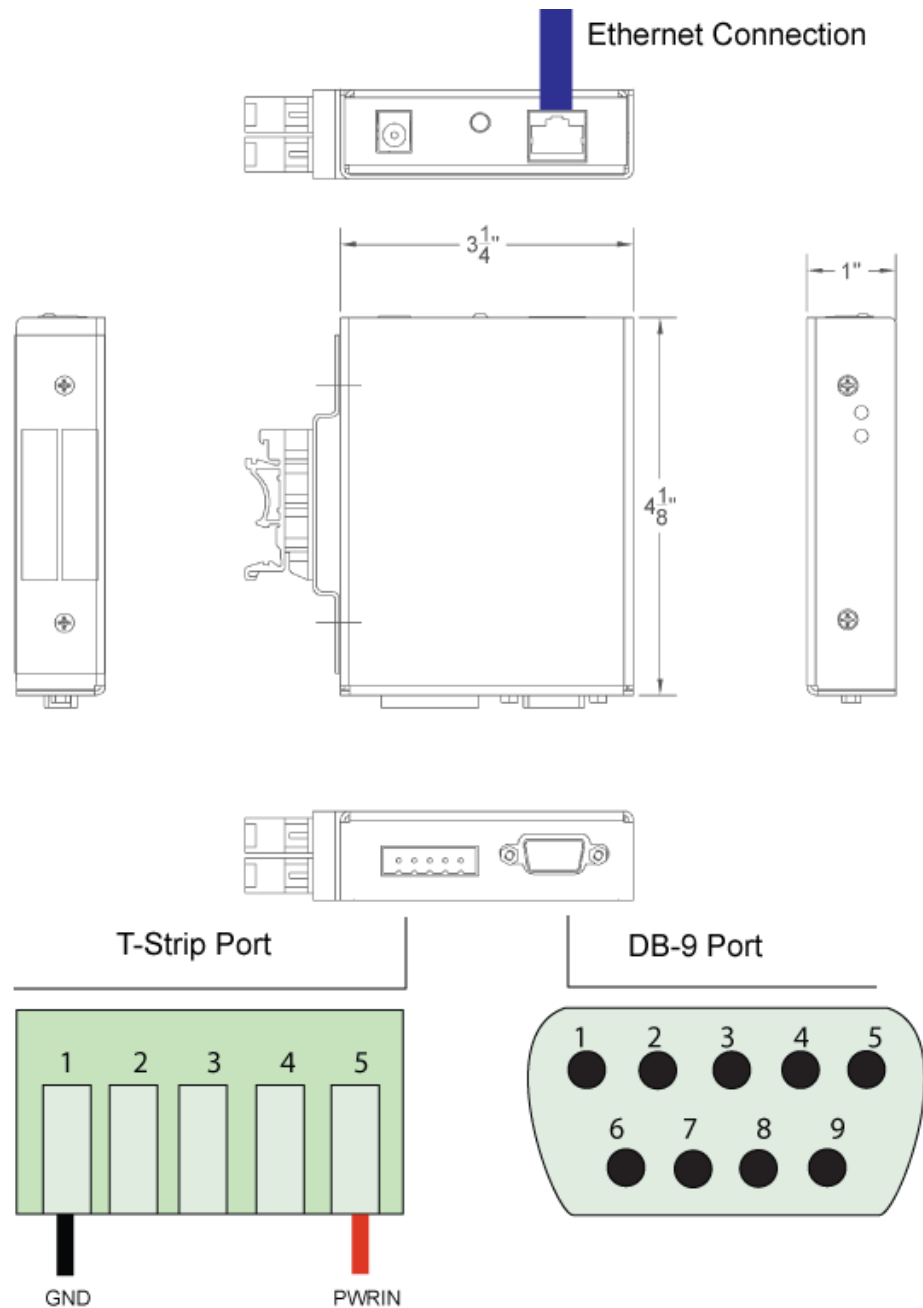
- ◆ **The 460ECMS Gateway**
- ◆ **The provided CD-ROM**
- ◆ **A working PC (Windows based)**
- ◆ **The supplied Ethernet crossover cable**
- ◆ **A 7-30 VDC power source (T-strip)**



Port Connections

The factory default port settings on the 460ECMS gateway are for Port 0 (T-strip) to be set for pin 1 to be ground and pin 5 to be power. Port 1 (DB9) is set to RS232 by default.

If these default port are not compatible with your equipment they can be configured differently. For specific jumper settings refer to the end of this manual, appendix A. For assistance changing port configurations contact our customer support department.





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 via the T-strip.
- 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 Settings based on 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



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Part # 460ECMS

Ethernet/IP / Modbus TCP

Revision 1.12.15

Status and Summary

Visualization

Utilities

| Description | Enter an application description. | Edit |
|---------------------------------------|---|------|
| 460ECMS Network Settings | IP address: 192.168.0.101 Subnet mask: 255.255.255.0 Default gateway: 192.168.0.1 MAC address: 00-03-F4-03-6D-89 | Edit |
| Selected Communication Modules | Modbus TCP Server No configurable parameters Ethernet/IP Client No configurable parameters | Edit |
| Server Module Configuration | Modbus TCP Server No configurable parameters | Edit |
| Client Module Configuration | Ethernet/IP Client 1 device configured | Edit |



Error: Main Page Does Not Launch

If the Main 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 Accessing the Main Page, 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 TCP Server & Ethernet/IP Client

- 1) Click **Selected Communication Modules**.
- 2) Note that neither of these protocols have configurable settings.
- 3) Verify that both are enabled and click **Return to Main Page**.

RTA 460ECMS - Communication Module Configuration

Enable the modules you wish to use.
At least one module must be enabled. [Return to Main Page](#)

| Communication Module | Action | Enabled? | Detail |
|----------------------|---------|-------------------------------------|----------------------------|
| Modbus | Master | <input type="checkbox"/> | |
| | Slave 1 | <input type="checkbox"/> | |
| | Slave 2 | <input type="checkbox"/> | |
| | Slave 3 | <input type="checkbox"/> | |
| | Slave 4 | <input type="checkbox"/> | |
| | Client | <input type="checkbox"/> | |
| | Server | <input checked="" type="checkbox"/> | No configurable parameters |
| Ethernet/IP | Client | <input checked="" type="checkbox"/> | No configurable parameters |
| | Server | <input type="checkbox"/> | |
| Ethernet/IP Tag | Client | <input type="checkbox"/> | |
| DeviceNet | Master | <input type="checkbox"/> | |
| | Slave | <input type="checkbox"/> | |
| BACnet IP Server | | <input type="checkbox"/> | |
| Basic TCP | | <input type="checkbox"/> | |
| Serial Module 1 | | <input type="checkbox"/> | |



Modbus TCP Server Serial Configuration

- 1) From the Main Page click on the **Edit** button on the far right of the Server Module Configuration.
- 2) This page shows the basic configuration of the Modbus TCP Server.

RTA 460ECMS - Internal Device Configuration

[Main Page](#)

Slave, Server, and Basic Serial Configuration

| Action | Device Buffer # | Comm Module | Device Address | Data In | | Data Out | |
|--------|-----------------|-------------------|----------------|--------------------------------------|-----------------|--------------------------------------|-------------------|
| | | | | Registers (or Coils) | Program Tags | Registers (or Coils) | Program Tags |
| | 1 | Modbus TCP Server | | 404001 - 408000 [4000] Int (2 bytes) | %IW10 - %IW4009 | 400001 - 404000 [4000] Int (2 bytes) | %QW4096 - %QW8095 |



Add Remote Ethernet/IP Server

- 1) From the Main Page click on the **Edit** button on the far right of the Client Module Configuration. This will bring you to the External Device Configuration page. Here you can add or edit the parameters for multiple devices connected to the device.
- 2) Select **Add Remote Ethernet/IP Server**.
- 3) The window will expand to allow you to edit multiple variables.

| Device Buffer # | Comm Module | Device Address | Data In | | Data Out | |
|-----------------|--------------------|---|---|---|----------------------|--------------|
| | | | Registers (or Coils) | Program Tags | Registers (or Coils) | Program Tags |
| 2 | Ethernet/IP Client | Device Label ECMS test | Input Instance Instance # 100 | Output Instance Instance # 112 | | |
| | | Server IP Address 192.168.0.100 | Instance Length 400 0-400 in bytes | Instance Length 400 0-400 in bytes | | |
| | | Config Instance # 150 0 for no config | Req Packet Interval 100 ms, 50-60000 | Req Packet Interval 100 ms, 50-60000 | | |
| | | Config Instance Length 0 0-400 | | | | |
| | | Config Data Filename 8.3 max | | | | |
| | | <input checked="" type="checkbox"/> Run/Idle Header Used? | | | | |
| | | Data Alignment 2 bytes, asis | | | | |

NOTE: This information is identical to the information you would normally enter into a PLC when configuring your Ethernet/IP Server device to communicate with a PLC.

- 3) Under the Device Address column, enter a label to recognize the device.
- 4) Enter the **Server IP address**.
- 5) Enter the **Configuration Instance number** and **Instance Length** in the boxes provided.
- 6) If your IO device is consuming data check the box alongside **Run/Idle Header Used?**.
- 7) Set the **Data Alignment** to match the settings of your IO device.
- 8) For the **Data In column** enter your device's input instance number, length in bytes, and the required packet interval in milliseconds.
- 9) Click **Save**. Click the **Main Page** button.



Validating Gateway Communication

- 1) 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.
- 2) If your Modbus Server Client settings do not match the server settings of the 460 device 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 460ECMS - Device Summary and Status

Device: Device 3 - Ethernet/IP Client

Show: Summary
 Status
 Only Non-Zero Values

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

| Device Status | | | | | |
|---------------|-----|-----------------------|-----------|-----------|-----------------------|
| Program | | Description | Value Dec | Value Hex | Explanation |
| Addr | Tag | | | | |
| %IW4420 | | StatusBits | 32768 | 8000 | Enabled NOT Connected |
| %IW4421 | | IncomingReadMsgCount | 0 | 0 | |
| %IW4422 | | IncomingWriteMsgCount | 1099 | 44B | |
| %IW4423 | | OutgoingMsgCount | 1210 | 4BA | |
| %IW4424 | | TimeoutMsgCount | 4 | 4 | |
| %IW4425 | | ErrorMsgCount | 0 | 0 | |
| %IW4426 | | LastErrorCode | 0 | 0 | |

| Input Buffer Area | | | | |
|-------------------|-----|------|-----------|-----------|
| Program | | Reg# | Value Dec | Value Hex |
| Addr | Tag | | | |
| %IW4431 | | 102 | 25 | 19 |
| %IW4432 | | 104 | 4 | 04 |
| %IW4432 | | 105 | 234 | EA |
| %IW4433 | | 106 | 3 | 03 |

| Output Buffer Area | | | | |
|--------------------|-----|------|-----------|-----------|
| Program | | Reg# | Value Dec | Value Hex |
| Addr | Tag | | | |



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



Completing the Installation

Now that the 460ECMS 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.

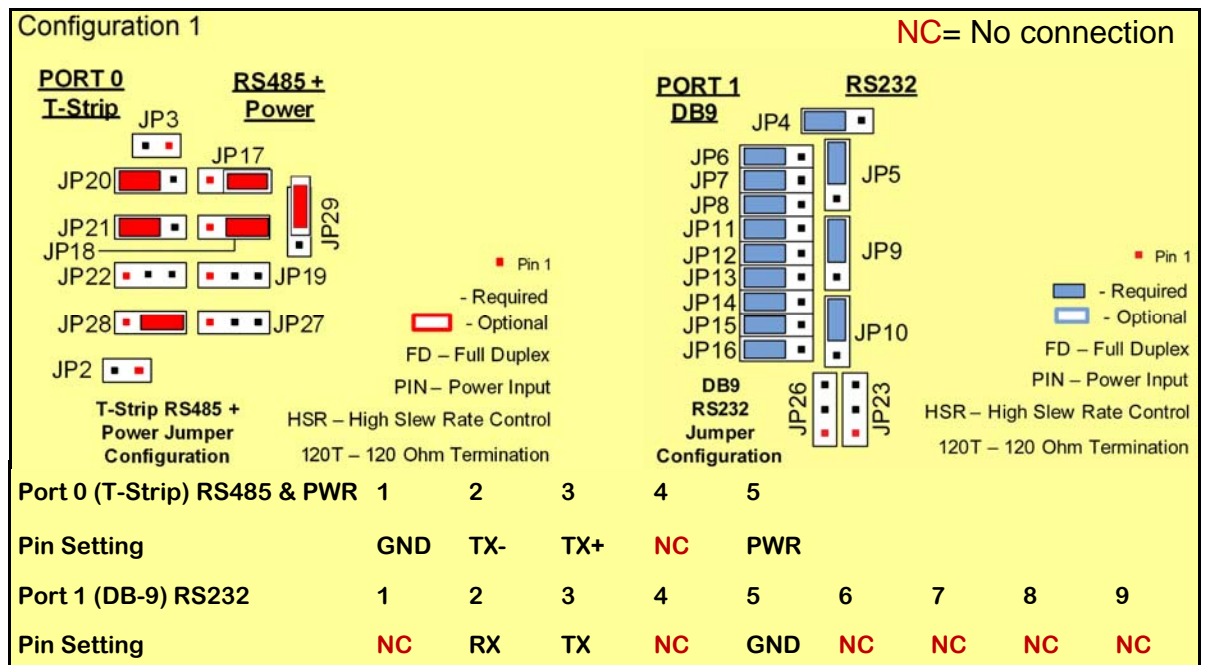
- 1) Disconnect the crossover cable and power supply from the device.
- 2) Move the device to its intended location.
- 3) Connect an Ethernet cable from the network port on the 460ECMS Gateway to a hub/switch that is on the same network as the EtherNet/IP Server(s) and Modbus TCP Client.
- 4) Connect the 7-30 VDC power source to the device via the T-strip.



Appendix A: Jumper Configurations

- 1) To change port settings on the 460EDX Gateway use the following steps:
- 2) 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.
- 3) Remove the two small Phillips-head screws from each long side of the Gateway unit.
- 4) Remove the green T-Strip connector. Slide the cover off towards the ports. The jumpers are just behind the ports.
- 5) Move the jumper shunts to reflect the desired settings.
- 6) Replace the Gateway unit's cover. Replace the four screws. Replace the green T-Strip connector.

Only one RS232, RS422, RS485, or CAN port setting can be active at a time for each 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 |



Real Time Automation, Inc.
150 South Sunny Slope Road Suite 130
Brookfield WI 53005
Toll free 1-800-249-1612
Local (262) 439-4999
www.rtaautomation.com
support@rtaautomation.com