RC31

RS-232 / RS-422 / RS-485

To

Ethernet Converter Module

Wisco
Industrial Instruments

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Chapter 1 : INTRODUCTION

RC31 Ethernet Serial Converter Module provides Ethernet to Serial connections converter for RS-232, RS-422 or RS-485 devices. Existing Windows based serial software using standard Windows API does not have to modify to communicate over an Ethernet LAN to a serial device. The **RC31 Module** virtual com port will make this an easy transition.

Features

- **Interfacing Serial Port provide** for RS-232, RS-422, RS-485 independently from each other
- **10/100 Mbps Ethernet**
- **LAN Communications**
- **TCP or UDP Client or Server operation** – Configurable
- **Configuration** of Module can be accomplished using program **Internet Explorer**

Product Specifications

LAN	
Ethernet	10/100 Mbps (RJ45)
Serial	
Interface	RS232, RS-422, RS-485
RS-232 Signals	Rx, Tx, Gnd
RS-422 Signals	Rx+, Rx-, Tx+, Tx-
RS-485 Signals	+, -
Parity	None, Even, Odd
Data bit	7, 8
Stop bit	1, 2
Baud Rate	4800 bps to 115.2 Kbps
Power & Environment	
Power Supply	110 or 220 VAC
Operating Temperature	0 °C to 50 °C
Dimension	50 x 70 x 130 mm

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Default Setting

Server Name	RC31
MAC Address	00:50:C2:3D:4x:xx
DHCP	Disable
IP Address	192.168.1.127
Net Mask	255.255.255.0
Default Gateway	192.168.1.1
Baud Rate	115200
Data	8
Parity	None
Stop	1
Flow Control	None
Serial Interface	RS-232
Protocol	TCP
Local Port	1000
Connection Mode	Server
TCP Client Connection	Power ON
TCP Activity Timeout	100 seconds
Force Transmit	100 milliseconds
TCP Remote Port	1000
Packet Length	1024 bytes
Delimiter Enable	UnUsedDelimiter
Delimiter Control	StripDelimiter

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Communication Modes

Virtual COM Mode

The Virtual COM mode requires the installation of a driver. The driver establishes a transparent connection between host and serial device by mapping the IP : Port of the **RC31** port to a virtual COM port on the host computer.

The driver grab data sent to the virtual COM port, packs it into a TCP/IP packet, and then redirects it through the computer's Ethernet card. At the other end of the connection, the **RC31** accepts the Ethernet frame, unpacks the TCP/IP packet, and then transparently sends it to the appropriate serial device attached to one of the **RC31**'s serial ports.

To use this mode, the **RC31** must be set to either TCP/server or UDP/server with a designated communication port number.

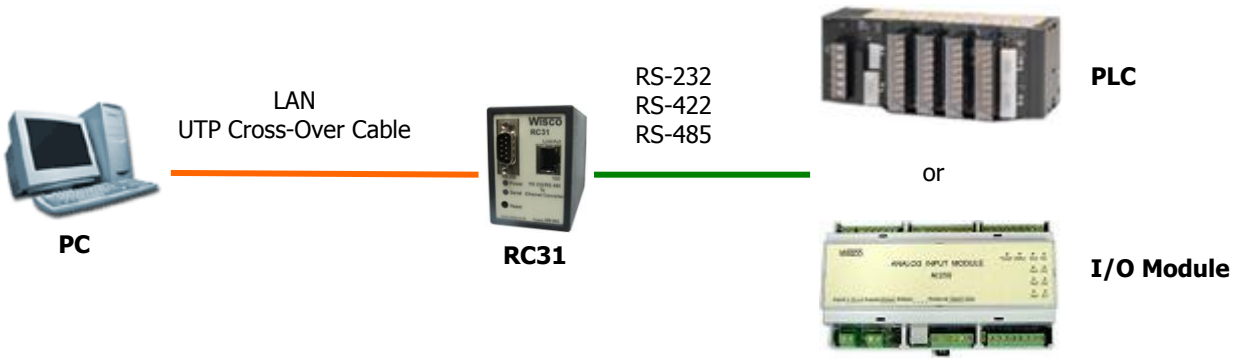

Figure 1. Sample of Virtual COM Port Mode via Point to Point

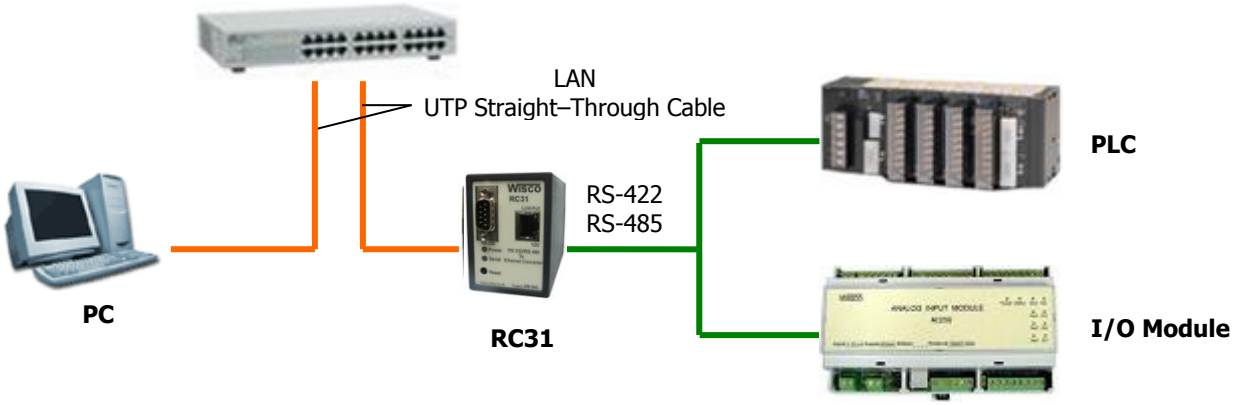

Figure 2. Sample of Virtual COM Port Mode via LAN Network

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Direct IP Mode

In Direct IP mode, **RC31** is configured as a TCP or UDP server with a unique IP : Port address on a TCP/IP network. **RC31** waits passively to be contacted by the host computer, allowing the host computer to establish a connection with and get data from the serial device. The data is sent directly to and from the serial port on the server. When using UDP protocol the server can be configured to broadcast data to and receive data from multiple IP addresses.

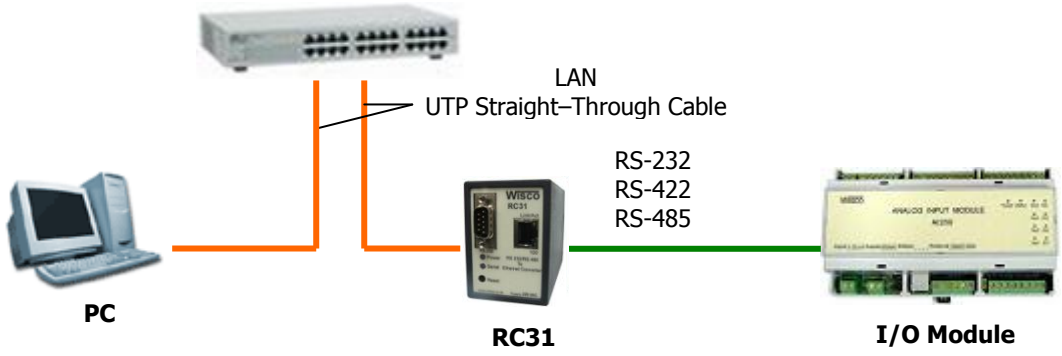

Figure 3. Sample of Direct IP Mode

Paired Mode

Paired Mode employs two **RC31** that can be used to remove the distance limitation imposed by the RS-232 interface. One **RC31** is connected from its RS-232 port to the COM port of a PC or other type of computer, and the serial device is connected to the RS-232 port of the other **RC31**. The two **RC31** are then connected to the LAN. Two **RC31** are connected to a network, one configured as a TCP or UDP client and the other as a TCP/UDP server. When setting up the client the remote IP address section must contain the address of the server.

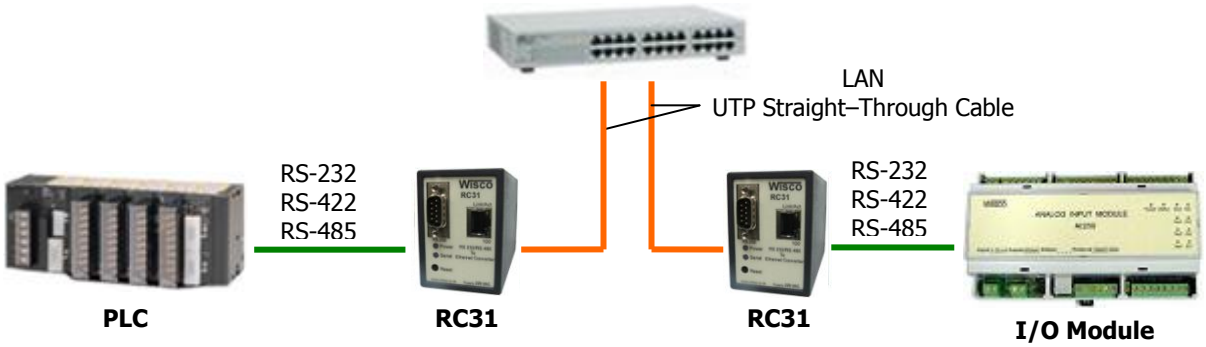

Figure 4. Sample of Paired Mode

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Chapter 2: MAKING THE HARDWARE CONNECTIONS

Package Check List

The **RC31 Module** is shipped with the following items included:

- RC31 Module
- Power Supply
- This User Manual
- CD-ROM disc with manual

RC31 Connections and Indicators

The **RC31 Module** has Connector and Indicators:

- Two indicator LEDs
- One Ethernet connector (RJ-45 Female)
- A power connector
- One serial port connector (DB-9M)

Panel Layout

Figure 5. Typical Hardware Setup

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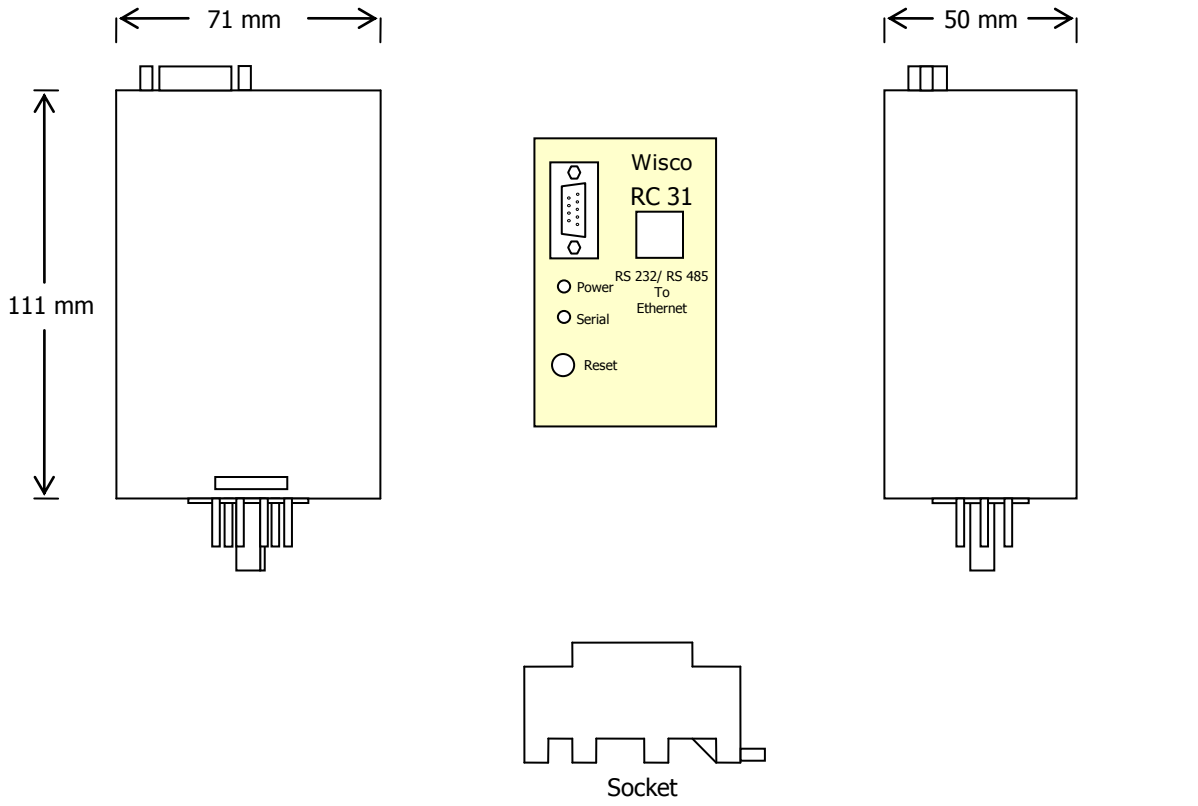
Dimensions



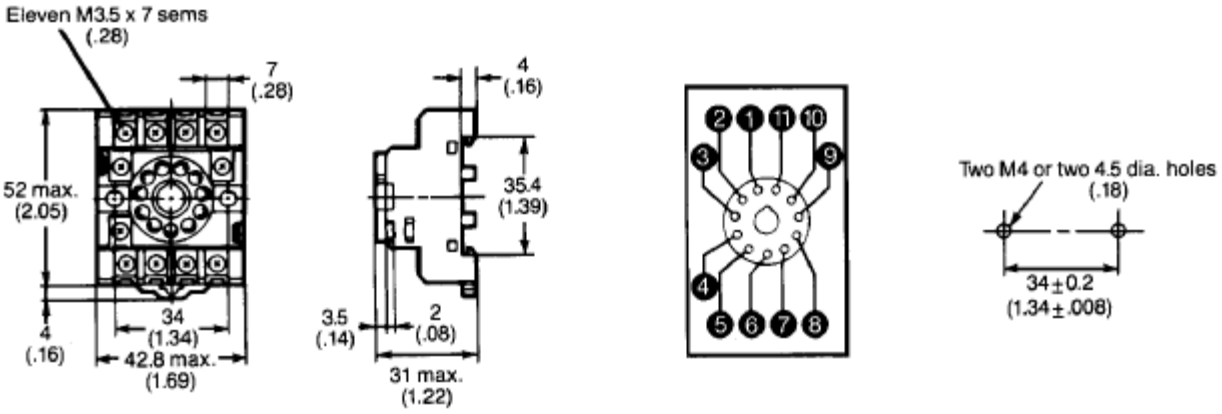


Figure 6. RC31 Module and OMRON PF113A-E Socket

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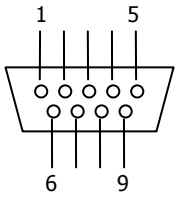
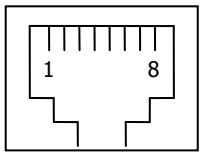
Pin Assignment

RS-232
DB Male



PIN	Signal
2	RxD
3	TxD
5	GND
1,4,6	Short
7	RTS
8	CTS

Ethernet
RJ-45



PIN	Signal
1	TX+
2	TX-
3	RX+
6	RX-

LED Indicators

Name	Function
Power	ON : Power is applied. OFF : No power applied.
Serial	OFF : Serial port is idle. Blink: Serial port is receiving and transmitting data.

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Hardware Connection

Figure 7. Hardware Interfacing

Step 1 : Apply power to the **RC31 Module**. The 'Power' LED will turn ON.
Step 2 : Connect the module to Network uses network cable.
Step 3 : Connect the module to the serial device.

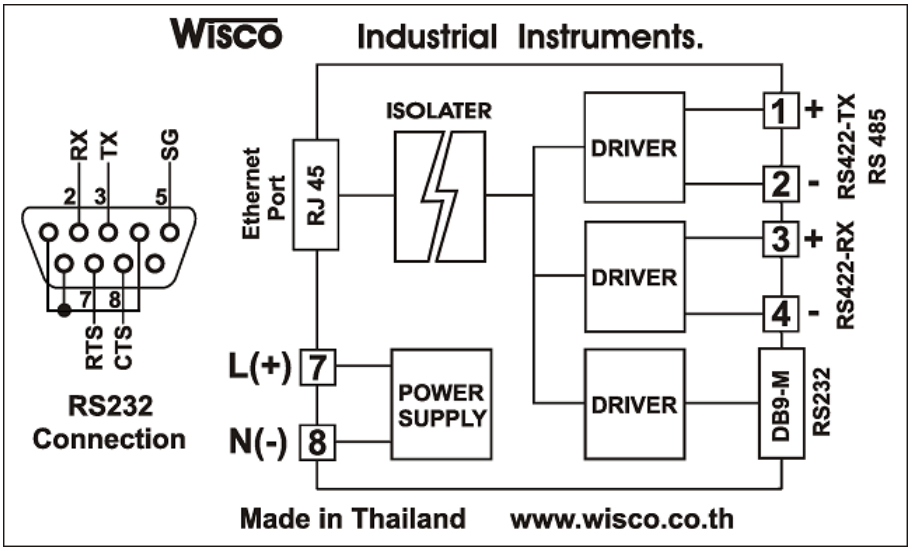

Figure 8. Socket Interfacing (see Module)

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Chapter 3: WEB-SERVER CONFIGURATIONS

RC31 Module Configuration

Step 1 : Open a standard web browser (Netscape Navigator, or Internet Explorer).

Step 2 : In the address bar, enter the IP address or host DHCP name as listed below:

- http://xxx.xxx.xxx.xxx (where xxx.xxx.xxx.xxx is the IP address assigned to the **RC31 Module**).
- http://RC31/ (where "RC31" is the name assigned to the **RC31 Module** if DHCP is enabled).

Step 3 : Press Enter. The Web-Manager for **RC31 Module** opens in a browser window. The following overview page appears. (Figure 9.)

Figure 9. Web Server Overview

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Network Setting

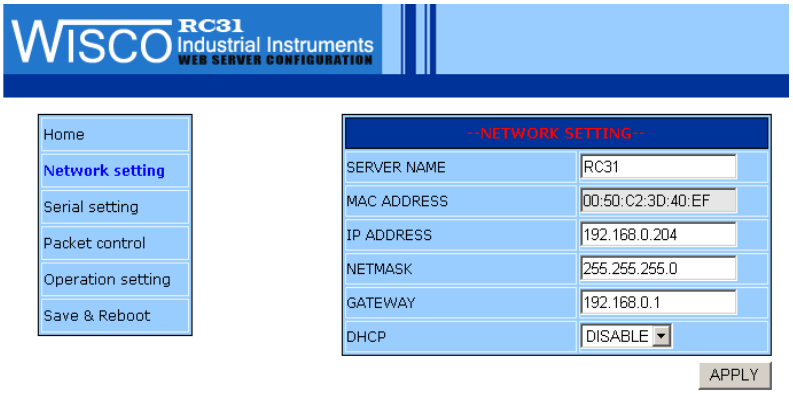

Figure 10. Network Setting

Server Name

This is the name under which host can be accessed in local area network. Default is **RC31**.

IP Address

An IP address is a number assigned to a network device (such as a computer) as a permanent address on the network. Computers use the IP address to identify and talk to each other over the network. Choose a proper IP address which is unique and valid in your network environment.

Net Mask

A subnet mask represents all of the network hosts at one geographic location, in one building, or on the same local area network. When a packet is sent out over the network, the **RC31 Module** will use the subnet mask to check whether the desired TCP/IP host specified in the packet is on the local network segment. If the address is on the same network segment as the **RC31 Module**, a connection is established directly from the **RC31 Module**. Otherwise, the connection is established through the given default gateway.

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Gateway

A gateway is a network gateway that acts as an entrance to another network. Usually, the computers that control traffic within the network or at the local Internet service provider are gateway nodes. **RC31 Module** needs to know the IP address of the default gateway computer in order to communicate with the hosts outside the local network environment. For correct gateway IP address information, consult the network administrator.

DHCP

If you have a DHCP server and the Device Server's Server Service DHCP is enabled, the Device Server can obtain its IP address and several configuration parameters from the DHCP server when it boots up. DHCP server is part of numerous LAN management systems. The DHCP field has two selections, 'Enable' or 'Disable'.

Serial Setting

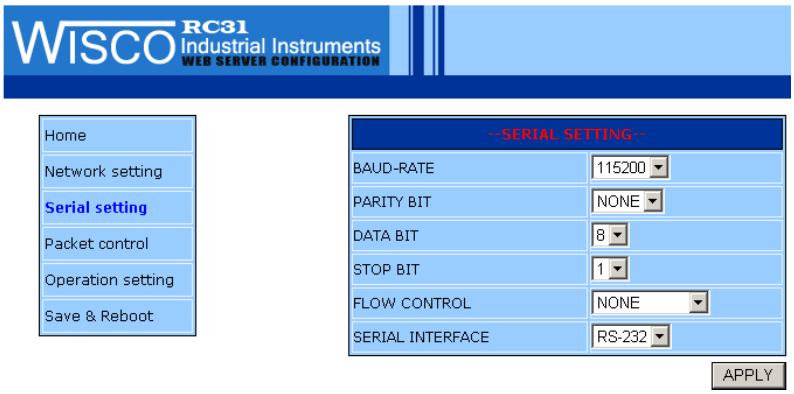

Figure 11. Serial Setting

Baud Rate

The serial port baud rate on the **RC31 Module** must match the serial baud rate of the connected device.

Data/Parity/Stop

Set this to match the data format used by the serial device connected.

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Flow Control

The Flow Control setting must match the requirements of the serial device connected.

Serial Interface Mode

Serial Interface allows configuration following modes of operation:

- **RS-232** – When this mode is selected, **RC31 Module** will use an RS-232 serial port for communication.
- **RS-422** – When this mode is selected, **RC31 Module** will use an RS-422 Serial port for communication. (will use in the new module)
- **RS-485 –** When this mode is selected, **RC31 Module** will use an RS-485 serial port for communication.

Packet Setting

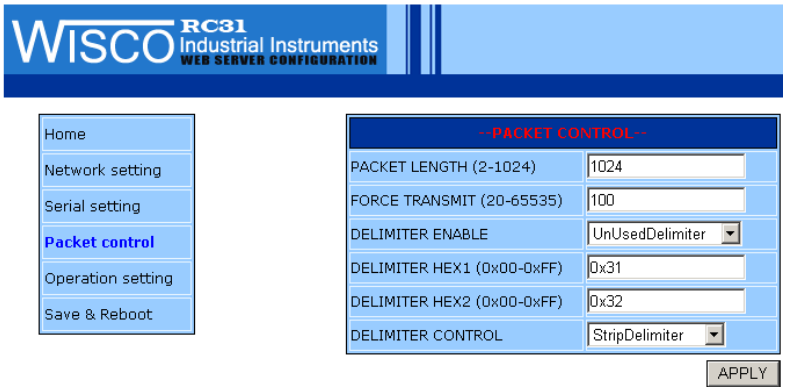

Figure 12. Packet Setting

Packing Length

Default = 1024, The Delimiter Process will be followed, regardless of the length of the data packet. If the data length (in bytes) matches the configured value, the data will be forced out. The data length can be configured for 1 to 1024 bytes. Set to 1024 if you need to limit the maximum length.

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Force Transmit

Forces the **RC31 Module**'s TCP/IP protocol software to try to pack serial data received during the specified time into the same data frame. This parameter defines the time interval during which **RC31 Module** fetches the serial data from its internal buffer. If data is incoming through the serial port, **RC31 Module** stores the data in the internal buffer. **RC31 Module** transmits data stored in the buffer via TCP/IP, but only if the internal buffer is full or if the Force transmit time interval reaches the time specified under Force transmit timeout.

Delimiter 1 and Delimiter 2

Once the **RC31 Module** receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it to the **RC31 Module**'s Ethernet port.

Delimiter Enable

Packet delimiter is controlling packets within serial communication. It can prevent packets from being cut thus keep the packets complete. **RC31 Module** provides two ways of parameter setting as inter character terminator.

Delimiter Control

Strip Delimiter: When the Delimiter is received, the Delimiter is deleted (i.e., stripped), and the remaining data is transmitted.

Un-Strip Delimiter: The data will be transmitted when the Delimiter is received and doesn't delete the Delimiter.

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Operation Setting

Figure 13. Operation Setting

TCP Server Mode

Local Port

The "Local TCP port" is the TCP port that **RC31 Module** uses to listen to connections, and that other devices must use to contact **RC31 Module**. This sets the port number for connection. In all modes of operation, Direct IP or Virtual COM, the port number set in the Module Properties menu must match the Virtual COM or socket software port settings.

TCP Alive-Time Out

TCP alive time out defines how many seconds the unit waits during an inactive connection before checking its status. If the unit does not receive a response, it drops that connection. Enter a value between 1 and 65535 seconds. The default setting is 100. After the connection is closed, the **RC31 Module** starts listening for another host's TCP connection.

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TCP Client Mode

Remote IP Address

This is a security feature activated by entering the IP address of the desired client. The **RC31 Module** will only communicate with the listed IP address and all other requests for connection will be filtered out. If Paired Mode is not being used, do not change this setting until the application has been tested and is communicating properly.

TCP Remote Port

As same as TCP Remote IP but this refer to security feature activated by entering the Port of the desired client. This parameter defines the port number on the target host to which a connection is attempted.

TCP Connection At

When the Protocol field is set to TCP Client, this field becomes active, allowing the **RC31 Module** to connect to the server either on Power On or on Data Arrival (first character arriving).

UDP Mode

Destination IP Range

As same as TCP Remote IP, addition with selectable range of Destination of desired client. Only **RC31 Module** that use protocol UDP can use this feature. In UDP mode the **RC31 Module** can be configured to broadcast data to multiple IP address.

Source IP Range

It is filtering IP address when **RC31 Module** receive data from multiple IP address.

Destination Port

As same as TCP Remote Port. Only **RC31 Module** that use protocol UDP can use this feature.

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Save & Reboot

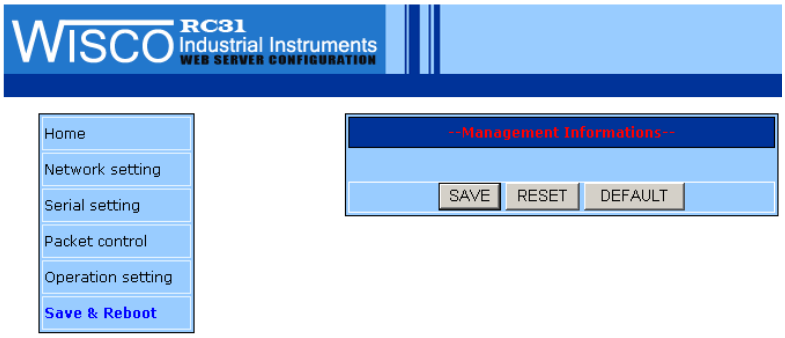

Figure 14. Save & Reboot

After setting the configure in each of page, remember to select **APPLY** button to save the information in the host system registry, remember that none of your configuration changes will be permanent until you select **SAVE** button for save the information into the FLASH. After you clicked **SAVE** button then you must wait until rebooting of **RC31 Module** have been completed.

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