

## DTS Modbus Wi-Fi/Ethernet/Serial Gateway Modbus RS-485 – Ethernet Converter / Gateway with Wi-Fi

### Quick Start Guide

### Revision R21A

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## 1 SCOPE

### 1.1 IDENTIFICATION

This document describes the usage of the DTS Modbus Wi-Fi/Ethernet/Serial Gateway, and how to get started by configuring the serial and network settings.

### 1.2 INTRODUCTION

The DTS Modbus Wi-Fi/Ethernet/Serial Gateway is a Modbus RS-485 to Ethernet Converter/Gateway with Wi-Fi.

- Bridges Modbus TCP Ethernet and RS-485 RTU serial networks
- Modbus TCP – up to 10 Masters on hardwired Ethernet and Wi-Fi interfaces simultaneously
- Modbus RTU – Up to 32 slave devices
- Multiple connection points: 1 x Ethernet, 2 x RS-485: R1 – Slave devices, R2 – RTU Master, Wi-Fi
- Serial data rate: up to 115.2 kbps
- Wi-Fi interface can be configured as a Wi-Fi Client or Access Point / Hotspot
- Ultra-compact DIN rail mount
- 12 – 24Vdc OR 24Vac input required (power supply not included, sold separately)

### 1.3 ADDITIONAL INFORMATION AND DOCUMENTATION

Please see the following documents for more detailed information:

- DTS-Modbus-WiFi-Ethernet-Serial-Gateway-datasheet

## 2 PACKAGE CONTENTS

The DTS Modbus Wi-Fi/Ethernet/Serial Gateway kit contains the following items:

- The Gateway is a SMC ProtoAir FPA-W44-**1997**, with a Measurlogic part number **CCOM-0030A**.
- The following connector plugs are supplied:
  - 1 x 3-Way BLACK plug for the 24V power
  - 1 x 3-Way GREEN Plug for the R1 (RS-485 Modbus RTU Client Port)
  - 1 x 3-Way GREEN Plug for the R2 (RS-485 Modbus RTU Server Port)
- The Wi-Fi Antenna

Please contact Measurlogic if any of the above items are missing.

## 3 MOUNTING

The DTS IoT Gateway is for indoor use only, and **MUST** be mounted in a NEC compliant enclosure suitable for the environmental conditions.

It is DIN rail mountable, so can be mounted onto a normal DIN rail. Alternatively, Measurlogic's right-angle bracket may be used. See <https://www.measurlogic.com/product/right-angle-mounting-bracket/> for details.

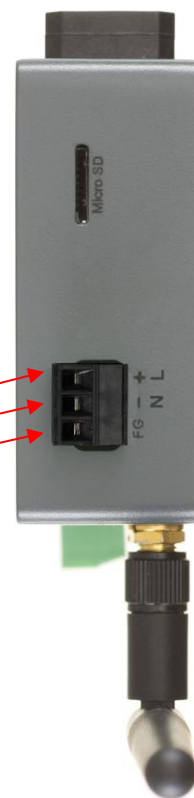
## 4 PHYSICAL CONNECTIONS

### 4.1 POWER SUPPLY

The DTS IoT Gateway accepts 12-24VDC or 24VAC on pins L+ and N-. The power supply must be able to deliver 125mA @ 24V or 250mA @ 12Vdc (about 3W).

The MLG-10-24 (CPSU-0011) is a suitable 24Vdc output, 10W, 100Vac - 265Vac, DIN rail mountable power supply. Contact Measurlogic for details.

Power to ProtoAir	ProtoAir Pin Label	Pin Assignment
Power In (+)	L +	V +
Power In (-)	N -	V -
Frame Ground	FG	FRAME GND



### 4.2 COMMUNICATIONS

The Ethernet and two RS-485 interfaces on the DTS Gateway are:



- ← Ethernet Port
- ← R2 Modbus RTU Server (for Modbus RTU Master)
- ← R1 Modbus RTU Client (Attach slave devices)

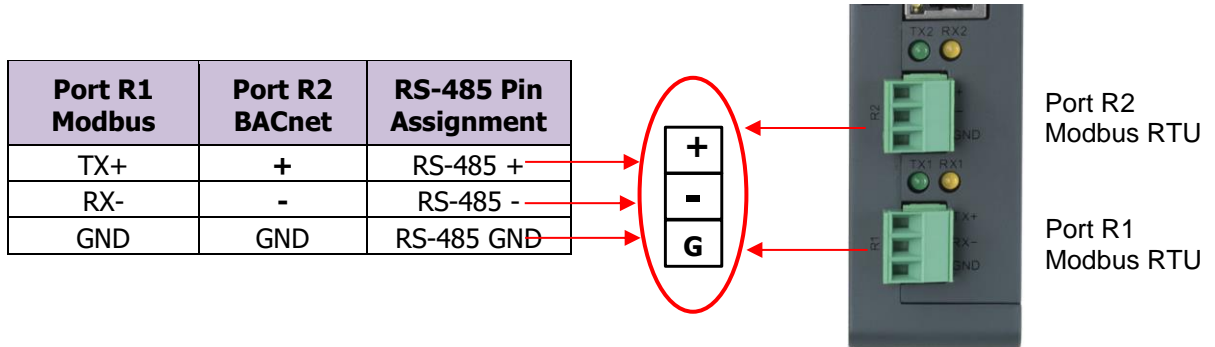
#### 4.2.1 Ethernet Modbus TCP Port

The Ethernet Modbus TCP port on the DTS Gateway is the RJ-45 connector on the side of the unit.

- This is used to connect the DTS Gateway to the local network.
- Up to 10 Modbus TCP Masters on hardwired Ethernet can use the gateway simultaneously.

## 4.2.2 RS-485 Meters

The DTS IoT Gateway has a 3-way green connector for connecting the RS-485 busses for Modbus RTU and BACnet MS/TP meters. The "+" and "-" polarity of the signal connections is shown on the casing and in the diagram below. Remember to also connect the "G" common reference conductor.



### 4.2.2.1 Modbus RTU Server on Port R2

This port is intended to serve an external Modbus RTU Master, which can be at a different baud rate to that on R1. The default communication parameters for this port are: 9600,8,N,1.

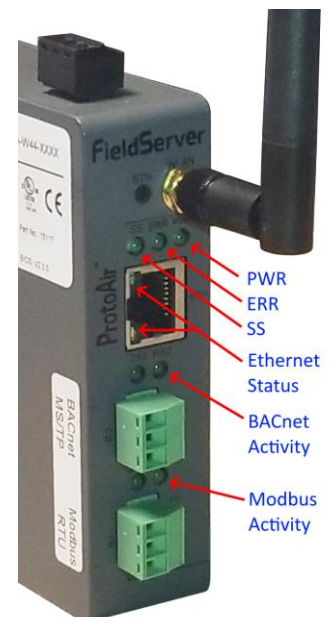
### 4.2.2.2 Modbus RTU Devices on Port R1

Any serial Modbus RTU slave device can be attached to the R1 port as indicated on the white sticker. The default communication parameters for this port are: 9600,8,N,1.

## 4.3 STATUS LEDs

The status LEDs are as follows:

- **PWR** – This is the power light and should always show steady green when the unit is powered.
- **ERR** – The SYS ERR LED will go on solid indicating there is a system error Report to Measurlogic if this occurs.
- **SS** – The SS LED flash regular when the unit has completed the boot process.
- **TX & RX** – These are the green and yellow activity LEDs on the Ethernet and serial ports. These will flash to show activity on these ports.



## 5 COMMISSIONING THE DTS GATEWAY

Now that you have been introduced to the physical connections of the DTS Gateway, you can proceed to power up the device.

### 5.1 POWERING ON

- Connect the power supply to the DTS IoT Gateway as described in section 4.1.
- Switch on the power on and confirm that the "PWR" LED comes ON.

### 5.2 CHANGING THE DTS IOT GATEWAY NETWORK SETTINGS

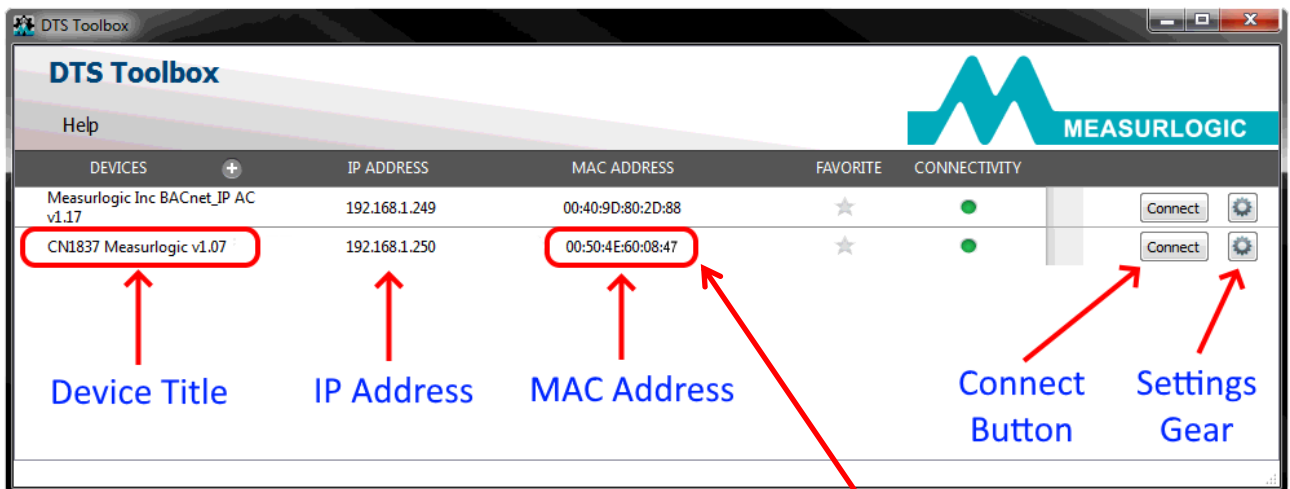
Plug an Ethernet cable between the RJ-45 connector of the DTS Gateway and your Ethernet switch to connect your DTS Gateway to your network. **The default IP Address will be the address that is issued by the DHCP server on your network.** Use DTS Secure Toolbox to determine this address.

#### 5.2.1 Identifying the DTS Gateway in DTS Toolbox

In order to proceed further with the commissioning of the DTS Gateway you will need the Measurlogic DTS Secure Toolbox software utility, which allows for the discovery of the DTS Gateway on the network, even if the network parameters do not match your network.

The DTS Secure Toolbox can be downloaded from <https://www.measurlogic.com/software-drivers/>. To install, first extract all the files in the ZIP file to an actual folder on the hard drive, and then run the setup program.

When you run DTS Toolbox it will automatically discover all Measurlogic DTS Gateways on your network.



The details of the DTS Gateway device will be shown on the line with the "CN1997 Measurlogic vx.xx" title. The MAC address of the device is also shown on the same line.

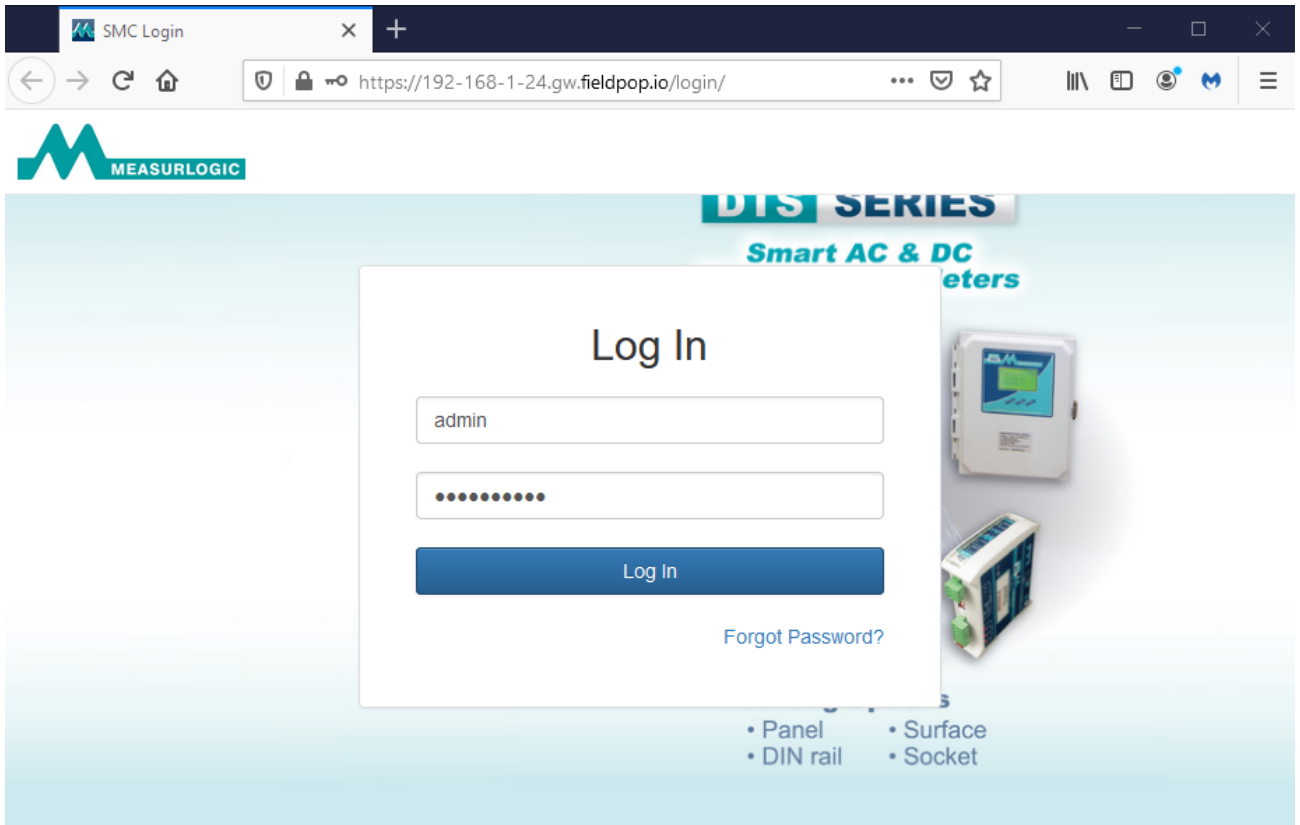
Confirm that the MAC address shown on the DTS Secure Toolbox line is the same as the MAC address shown on the label on the side of the DTS Gateway itself.



## 5.2.2 Connecting to the Internal Webpage in the DTS IoT Gateway

The internal webpages of the DTS Gateway can be accessed by:

1. Typing the IP address of the device directly into the address line of a web browser,
2. Or by first starting DTS Secure Toolbox and pressing the "Connect" button (See section 5.2.1).



- The default username is "admin".
- The unique password can be found on the label on the side of the DTS Gateway.
- Press the "Log in" button to login to the internal webserver.

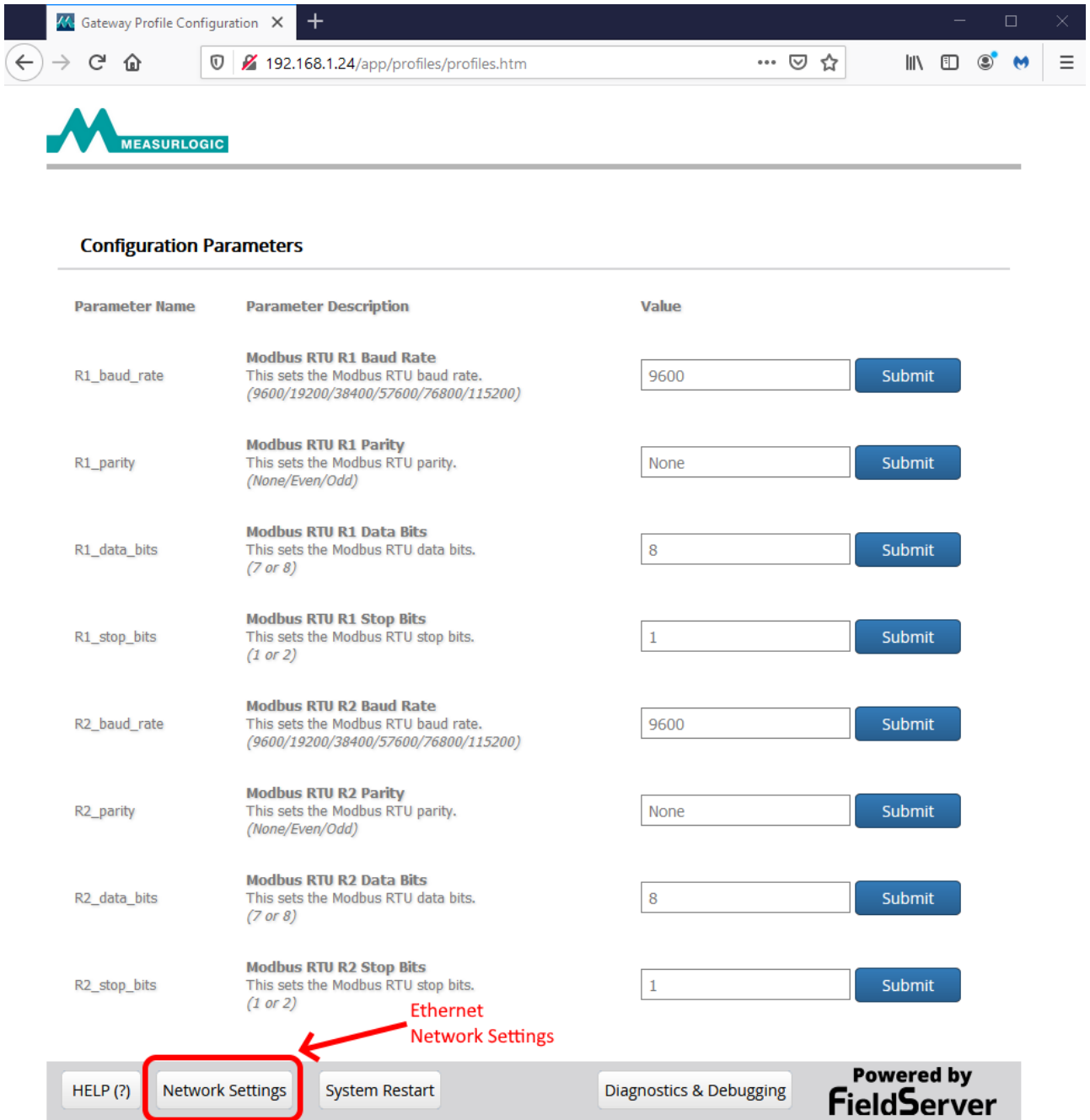
The home web page is the "Configuration Parameters" page shown in the next section.

## 5.2.3 Configuration Parameters

These are the communication configurations of the two serial ports R1 and R2. The default parameters are detailed in sections 4.2.2.1 and 4.2.2.2.

**Do not change any of these settings unless you have a specific requirement for other parameters.** The default parameters are shown in these two screenshots if you need to revert to the defaults.

## 5.2.3.1 Modbus RTU Parameters:



The screenshot shows a web browser window with the URL `192.168.1.24/app/profiles/profiles.htm`. The page title is "Gateway Profile Configuration". The Measurlogic logo is in the top left. The main content area is titled "Configuration Parameters" and contains a table of settings for two Modbus RTU profiles (R1 and R2).

Parameter Name	Parameter Description	Value
R1_baud_rate	<b>Modbus RTU R1 Baud Rate</b> This sets the Modbus RTU baud rate. (9600/19200/38400/57600/76800/115200)	9600 <input type="button" value="Submit"/>
R1_parity	<b>Modbus RTU R1 Parity</b> This sets the Modbus RTU parity. (None/Even/Odd)	None <input type="button" value="Submit"/>
R1_data_bits	<b>Modbus RTU R1 Data Bits</b> This sets the Modbus RTU data bits. (7 or 8)	8 <input type="button" value="Submit"/>
R1_stop_bits	<b>Modbus RTU R1 Stop Bits</b> This sets the Modbus RTU stop bits. (1 or 2)	1 <input type="button" value="Submit"/>
R2_baud_rate	<b>Modbus RTU R2 Baud Rate</b> This sets the Modbus RTU baud rate. (9600/19200/38400/57600/76800/115200)	9600 <input type="button" value="Submit"/>
R2_parity	<b>Modbus RTU R2 Parity</b> This sets the Modbus RTU parity. (None/Even/Odd)	None <input type="button" value="Submit"/>
R2_data_bits	<b>Modbus RTU R2 Data Bits</b> This sets the Modbus RTU data bits. (7 or 8)	8 <input type="button" value="Submit"/>
R2_stop_bits	<b>Modbus RTU R2 Stop Bits</b> This sets the Modbus RTU stop bits. (1 or 2)	1 <input type="button" value="Submit"/>

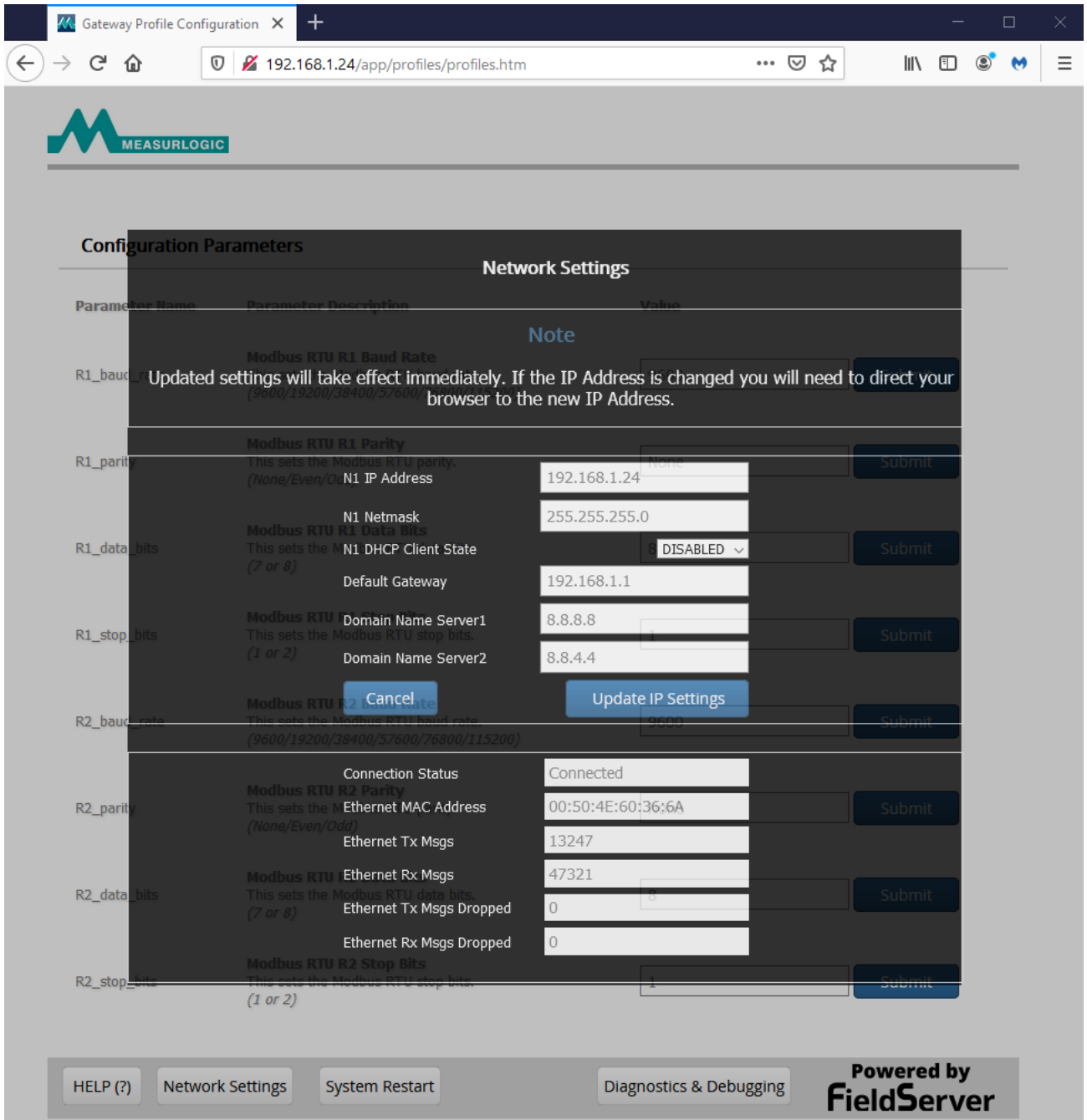
At the bottom of the page, there is a navigation bar with buttons: "HELP (?)", "Network Settings", "System Restart", and "Diagnostics & Debugging". The "Network Settings" button is highlighted with a red box and a red arrow pointing to it from the text "Ethernet Network Settings".

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## 5.2.4 Network Settings Page

Press the "Network Settings" button (shown in the screenshot above) to access the network setting page.



**Configuration Parameters**

Parameter Name	Parameter Description	Value	Action
R1_baud_rate	Modbus RTU R1 Baud Rate <i>(9600/19200/38400/57600)</i>		Submit
R1_parity	Modbus RTU R1 Parity This sets the Modbus RTU parity. <i>(None/Even/Odd)</i>	None	Submit
R1_data_bits	Modbus RTU R1 Data Bits This sets the Modbus RTU data bits. <i>(7 or 8)</i>	8	Submit
R1_stop_bits	Modbus RTU R1 Stop Bits This sets the Modbus RTU stop bits. <i>(1 or 2)</i>	1	Submit
R2_baud_rate	Modbus RTU R2 Baud Rate This sets the Modbus RTU baud rate. <i>(9600/19200/38400/57600/76800/115200)</i>	9600	Submit
R2_parity	Modbus RTU R2 Parity This sets the Modbus RTU parity. <i>(None/Even/Odd)</i>	None	Submit
R2_data_bits	Modbus RTU R2 Data Bits This sets the Modbus RTU data bits. <i>(7 or 8)</i>	8	Submit
R2_stop_bits	Modbus RTU R2 Stop Bits This sets the Modbus RTU stop bits. <i>(1 or 2)</i>	1	Submit
	N1 IP Address	192.168.1.24	Submit
	N1 Netmask	255.255.255.0	Submit
	N1 DHCP Client State	DISABLED	Submit
	Default Gateway	192.168.1.1	Submit
	Domain Name Server1	8.8.8.8	Submit
	Domain Name Server2	8.8.4.4	Submit
	Connection Status	Connected	
	Ethernet MAC Address	00:50:4E:60:36:6A	Submit
	Ethernet Tx Msgs	13247	
	Ethernet Rx Msgs	47321	
	Ethernet Tx Msgs Dropped	0	Submit
	Ethernet Rx Msgs Dropped	0	

**Note**  
Updated settings will take effect immediately. If the IP Address is changed you will need to direct your browser to the new IP Address.

Buttons: Cancel, Update IP Settings, Submit

Footer: HELP (?), Network Settings, System Restart, Diagnostics & Debugging, Powered by FieldServer

Once the desired network settings have been entered, press the "Update IP Settings" button, and press "OK" in the next dialog to submit the new settings.

Ensure that the network settings match your network.