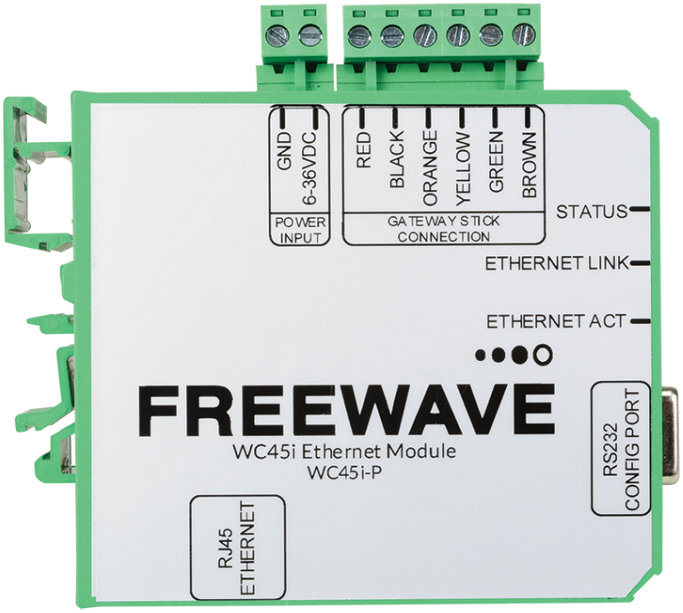
FREEWAVE

# WC45i-GW-P Ethernet Module

## User & Reference Manual




Part Number: LUM0088AA
Revision: Mar-2018

**Safety Information**

The products described in this manual can fail in a variety of modes due to misuse, age, or malfunction and is not designed or intended for used in systems requiring fail-safe performance, including life safety systems. Systems with the products must be designed to prevent personal injury and property damage during product operation and in the event of product failure.

**Warning!** Remove power before connecting or disconnecting the interface or RF cables.

FreeWave Technologies, Inc. warrants the FreeWave® WC45i-GW-P Ethernet Module (Product) that you have purchased against defects in materials and manufacturing for a period of three years from the date of shipment, depending on model number. In the event of a Product failure due to materials or workmanship, FreeWave will, at its discretion, repair or replace the Product. For evaluation of Warranty coverage, return the Product to FreeWave upon receiving a Return Material Authorization (RMA). The replacement product will remain under warranty for 90 days or the remainder of the original product warranty period, whichever is longer.

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FreeWave's Warranty does **not apply** in the following circumstances:

1. If Product repair, adjustments, or parts replacements are required due to accident, neglect, or undue physical, electrical, or electromagnetic stress.
2. If Product is used outside of FreeWave specifications as stated in the Product's data sheet.
3. If Product has been modified, repaired, or altered by Customer unless FreeWave specifically authorized such alterations in each instance in writing.

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# Preface

## Contact FreeWave Technical Support

For up-to-date troubleshooting information, check the **Support** page at www.freewave.com.

FreeWave provides technical support Monday through Friday, 8:00 AM to 5:00 PM Mountain Time (GMT -7).

- Call toll-free at 1-866-923-6168.
- In Colorado, call 303-381-9200.
- Contact us through e-mail at moreinfo@freewave.com.

## Other WAVECONTACT Information


Use the FreeWave http://support.freewave.com/ website to download the latest version of these documents.
Registration is required to use this login.

| Document | Description | FreeWave Part Number |
|---|---|---|
| User Manual | The User Manual provides setup, configuration, and safety information for the WC45i-GW-P. | LUM0088AA |
| Quick Start Guide | The Quick Start Guide provides the out-of-the-box setup of the WC45i-GW-P. | QSG0038AA |

# Document Styles

This document uses these styles:

- Parameter setting text appears as: **[Page=radioSettings]**
- File names appear as: **configuration.cfg**.
- File paths appear as: **C:\Program Files (x86)\FreeWave Technologies**.
- User-entered text appears as: **xxxxxxxxx**.

**Caution**: Indicates a situation that **MAY** cause damage to personnel, the radio, data, or network.

**Example**: Provides example information of the related text.

**FREEWAVE Recommends**: Identifies FreeWave recommendation information.

**Important!**: Provides crucial information relevant to the text or procedure.

**Note**: Emphasis of specific information relevant to the text or procedure.


Provides time saving or informative suggestions about using the product.


**Warning!** Indicates a situation that **WILL** cause damage to personnel, the radio, data, or network.

# 1. Overview - WC45i-GW-P Ethernet Module

Thank you for purchasing the WC45i-GW-P Ethernet Module.

The WC45i-GW-P Ethernet Module has these features:

- Wide range DC power input: +6 to +36VDC.
- Power Over Ethernet (POE) support with automatic switchover to DC supply
- Modbus TCP Connection
- Remote access to the Gateway through the WC Toolkit
- DIN Rail mounted Ethernet module
- Status LEDs

## 1.1. Operation

The WC45i-GW-P provides a Modbus TCP server allowing all register data contained in the Gateway to be accessed by any Modbus TCP client.

A TCP port allows remote configuration / debug of the Gateway using WC Toolkit.

**Note**: This provides the same functionality as a direct connection to the Gateway with a serial port.

# 2. Equipment

## 2.1. Included Equipment

The WC45i-GW-P package contains these items:

| Included Equipment - WC45i-GW-P | |
|---|---|
| **Qty** | **Description** |
| 1 | WC45i-GW - Gateway with Modbus Interface |
| 1 | WC45i-P - Ethernet Interface Module with Modbus TCP connection |
| 1 | WC45i-GW-P Ethernet Module Quick Start Guide |

### 2.1.1. User-supplied Equipment

- Small, flathead screwdriver
- Mounting equipment for the WC45i-GW-P.
- CAT5e / CAT6 Ethernet cable
- DC Adapter Power Supply (+6 to +36VDC)
- Barrel connector with Ground and Power flying leads
- Computer for WAVECONTACT device configuration.

**Note**: See Available Accessories (on page 86) for additional equipment.

# 3. WC45i-GW-P Connections



# 3.1. Connections

**Important!**: The WC45i-GW-P Ethernet Module is configured using the **WC Toolkit**.
Download the **WC Toolkit** software from http://support.freewave.com/.
Registration is required to use this login.

**Note**: The **RS232 Config / Debug** connector on the WC45i-GW **MUST** be used for WC Toolkit access.
The Config / Debug port is accessed over a TCP/IP network using a WC45i-GW-P.

- When used with a WC45i-GW-P Ethernet Module, the 6-position terminal block is connected to the color coded WC45i-GW-485 Modbus Gateway connector on the WC45i-GW-P.
- The WC45i-GW-P Ethernet Module provides screw terminals for connection to a WC45i-GW-485 Modbus Gateway.
  - See Connections - WC45i-GW-P (on page 11) to connect the 6 wires to the WC45i-GW-485 Modbus Gateway:

Power is supplied by either:

- the Power Input screw terminals (+6 to +36VDC) and/or
- Power over Ethernet (PoE).


If both power sources are connected, the WC45i-GW-P automatically switches to the active power source if the other power source fails.

### 3.1.1. Connections - WC45i-GW-P

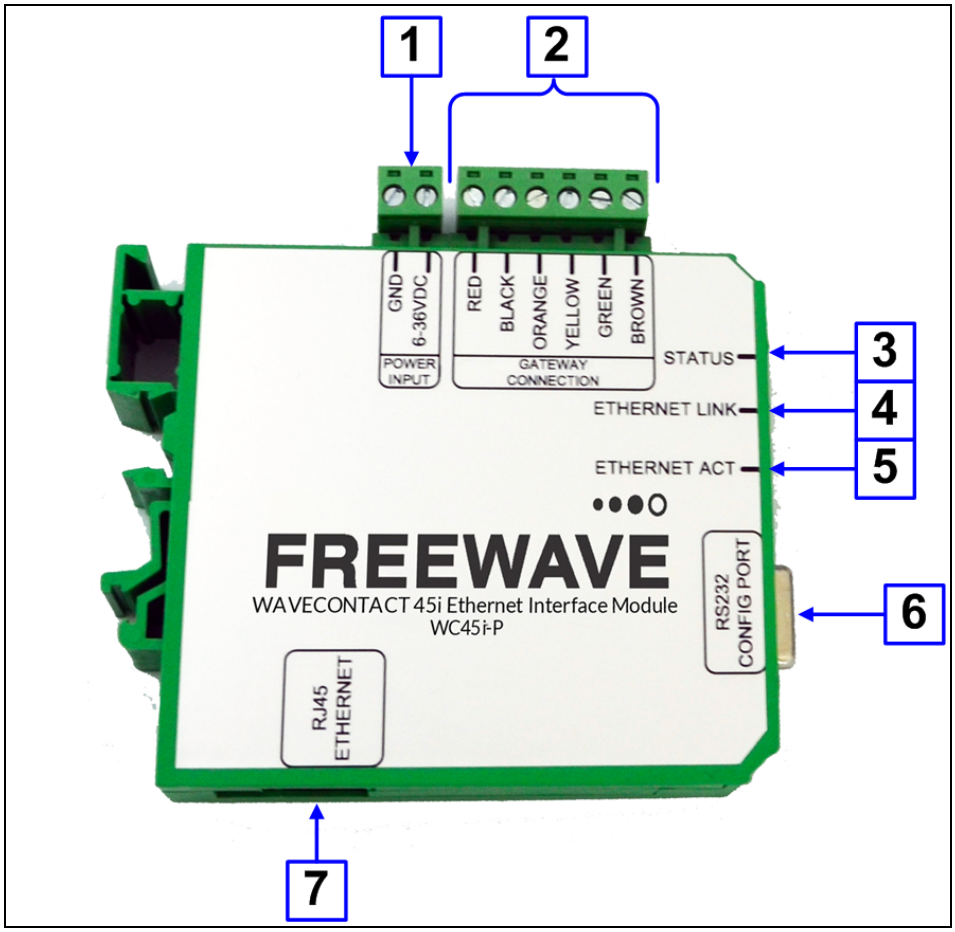



**Figure 1: WC45i-GW-P Ethernet Module Connections**

| WC45i-GW-P Ethernet Module Connections | | |
|---|---|---|
| **Location #** | **Title** | **Description** |
| 1 | Power Input<br>GND<br>+6 to +36VDC Power | <br>External power ground.<br>Power Source from an external power supply of +6 to +36VDC. |
| 2 | Red<br>Black<br>Orange<br>Yellow<br>Green<br>Brown | Positive Power (+6 to +36VDC) supply to the Gateway.<br>WC45i-GW-P Ground<br>RS232 Config / Debug connector TX<br>RS232 Config / Debug connector RX<br>RS485 to RSD module<br>RS485 to RSD module |
| 3 | Status LED | See LEDs (on page 85) for detailed information. |

| WC45i-GW-P Ethernet Module Connections | | |
|---|---|---|
| **Location #** | **Title** | **Description** |
| 4 | Ethernet Link LED | See LEDs (on page 85) for detailed information. |
| 5 | Ethernet ACT LED | See LEDs (on page 85) for detailed information. |
| 6 | **RS232 Config / Debug** connector | The **RS232 Config / Debug** connector is for the USB to Serial DB9 programming cable (FreeWave Part # WC-USB-DB9). |
| 7 | RJ-45 Ethernet connector | The RJ-45 Ethernet connector is for Ethernet configuration and retrieving sensor data via Modbus TCP. |

## 3.2. Power and Gateway Connections

**Important!**: Verify the items listed in Equipment (on page 8) are available before starting this procedure.
It is assumed that the reader and installer have completed the FreeWave installation and setup training to follow the procedures in this document.

1. All wiring should be neat and orderly.
2. On the WC45i-GW-P terminal blocks:
   a. Connect the configuration wires of the Gateway to their respective color-designated screw terminal connections.
   b. Use the screw terminal connection to connect the Power Source from an external power supply of +6 to +36VDC.
   c. Use the GND screw terminal connection to connect the External power ground.
3. Connect the CAT5e / CAT6 Ethernet cable to the WC45i-GW-P RJ-45 port and the Ethernet connection on the computer.

   The WC45i-GW-P connections are similar to Figure 2 and Figure 3:


**Figure 2: WC45i-GW-P Ethernet Module Connections**

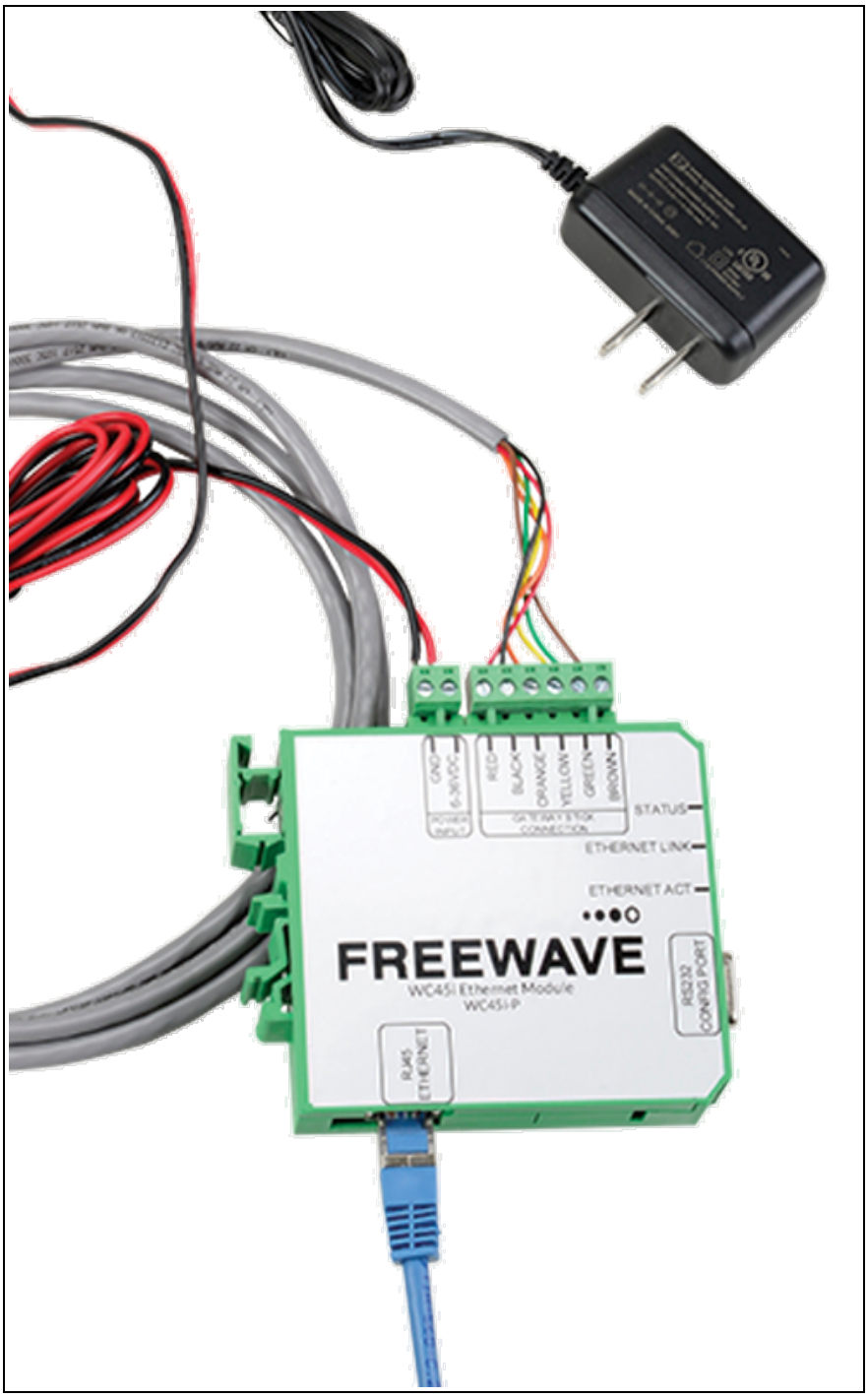



**Figure 3: WC45i-GW-P Ethernet Module Connections - close-up**

4. If this is the first time the WC45i-GW-P is installed, wait for the drivers to install.

> **Important!**: Depending on the computer and connection, the driver installation can take 3-6 minutes.

5. Continue with:
   - WC Toolkit Installation (on page 17)
   - Setup the Computer IP Address Configuration (on page 27)

# 4. WC Toolkit Installation

**Note**: The images in this procedure are for Windows® 7 and/or Firefox®.
The dialog boxes and windows may appear differently on each computer.

1. Click http://support.freewave.com/.
   The **FreeWave Support** site opens.

   **Important!**: Registration is required to use this login.

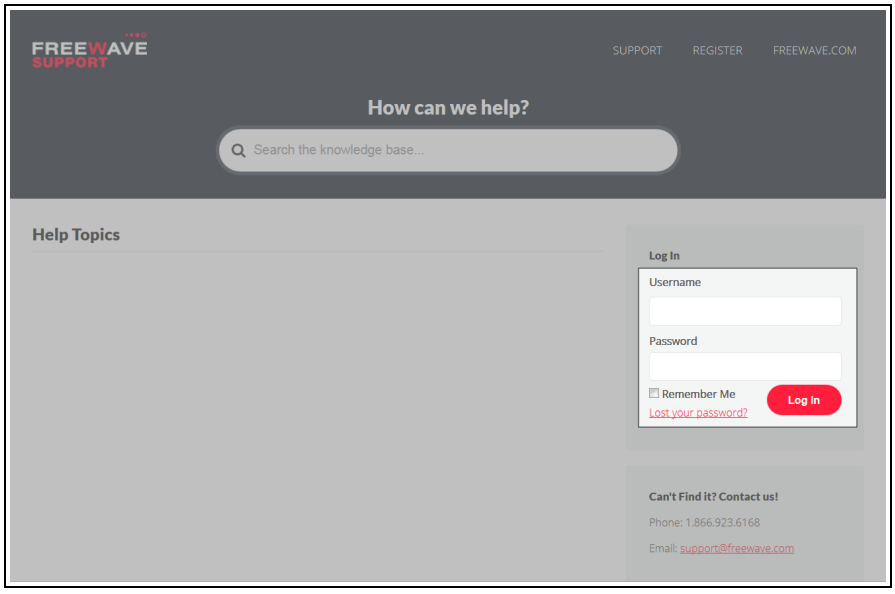



**Figure 4: FreeWave Login window**

2. Enter the **User Name** and **Password**.

3. Click 

.
A successful Login message briefly appears.
The **Help Topics** window opens.
4. Click the **Software** link.

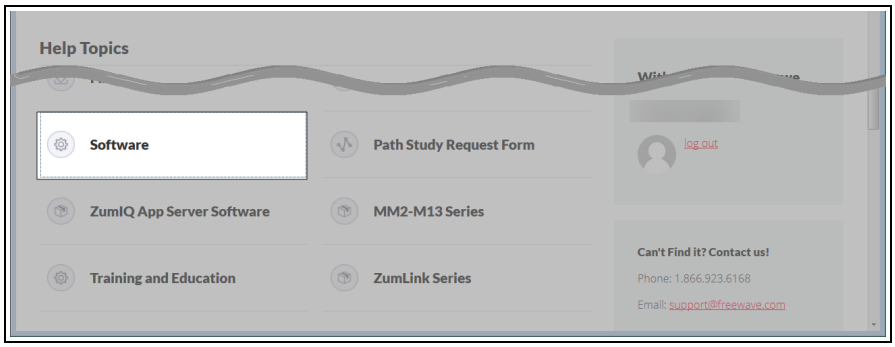



**Figure 5: Help Topics window**

The **Software** window opens.
5. Click the **WAVECONTACT Toolkit** link.

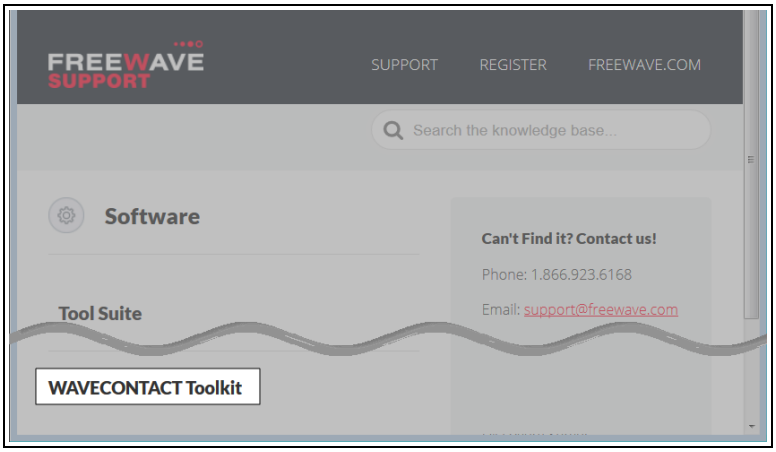



**Figure 6: Software window**

The available software appears in the window.
6. Select and click the attachment.

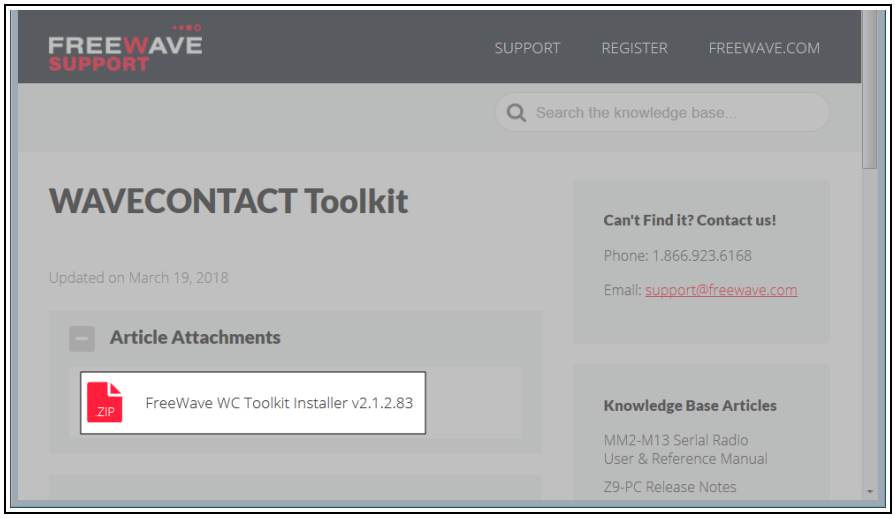



**Figure 7: WAVECONTACT Toolkit window**

The **Opening** dialog box opens.

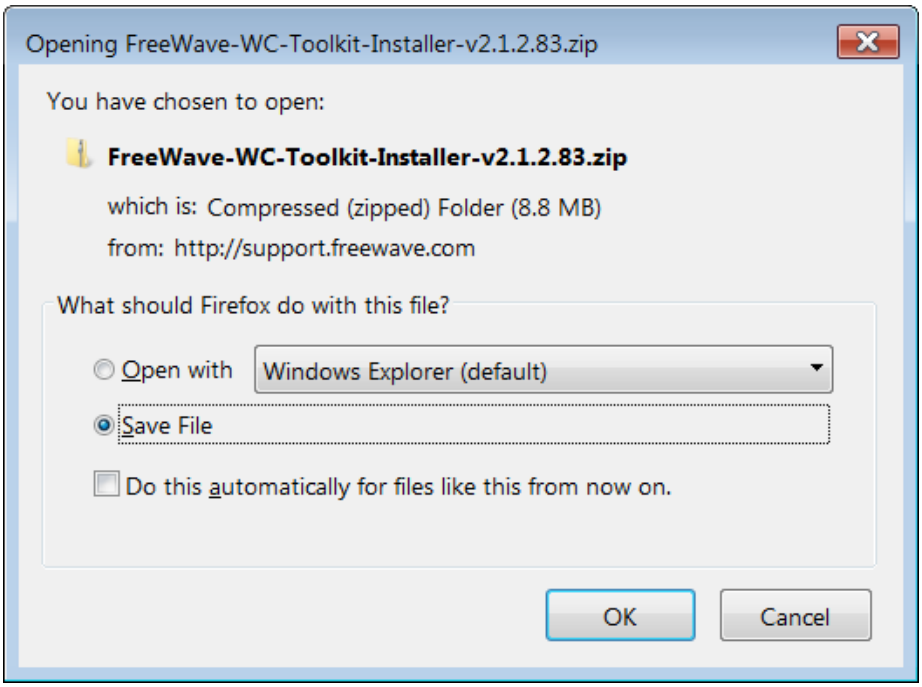



**Figure 8: WC Toolkit Opening dialog box**

> **Note**: This procedure shows Firefox® dialog boxes.
> Other browsers will have different dialog boxes and procedures.

7. Click **OK**.
   The **Enter name of file to save to** dialog box opens.

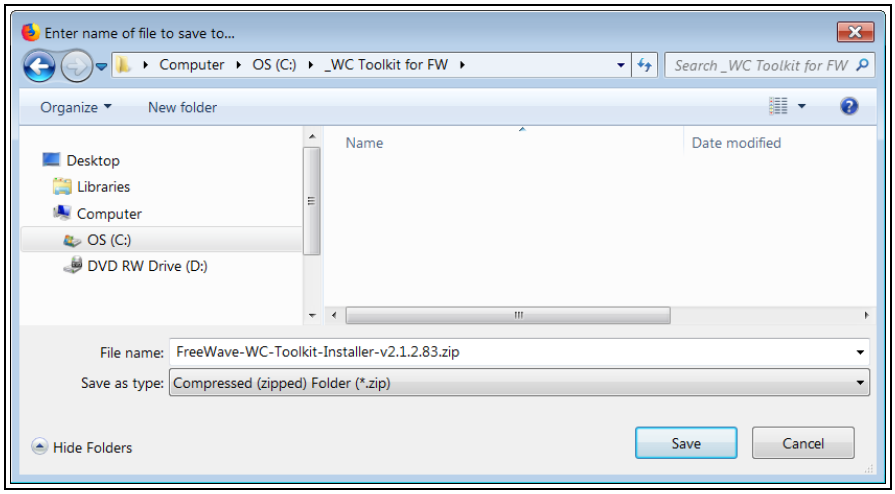



**Figure 9: Enter name of file to save to dialog box**

8. Search for and select a location to save the **.zip** file to and click **Save**.
   The **Enter name of file to save to** dialog box closes.
9. Open a Windows® Explorer window and find the location where the **.zip** file was saved.
10. Double-click the **.zip** file.
11. Extract the **.exe**file from the **.zip** file into a parent location.
12. Double-click the **.exe** file to run the WC Toolkit installer.
    The **Open File - Security Warning** dialog box opens.

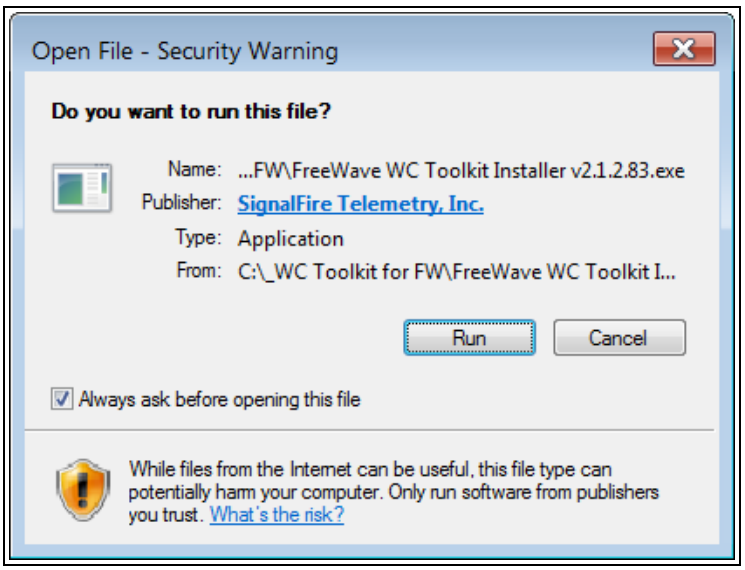



**Figure 10: Open File - Security Warning dialog box**

13. Click **Run**.
    The **User Account Control** dialog box opens.

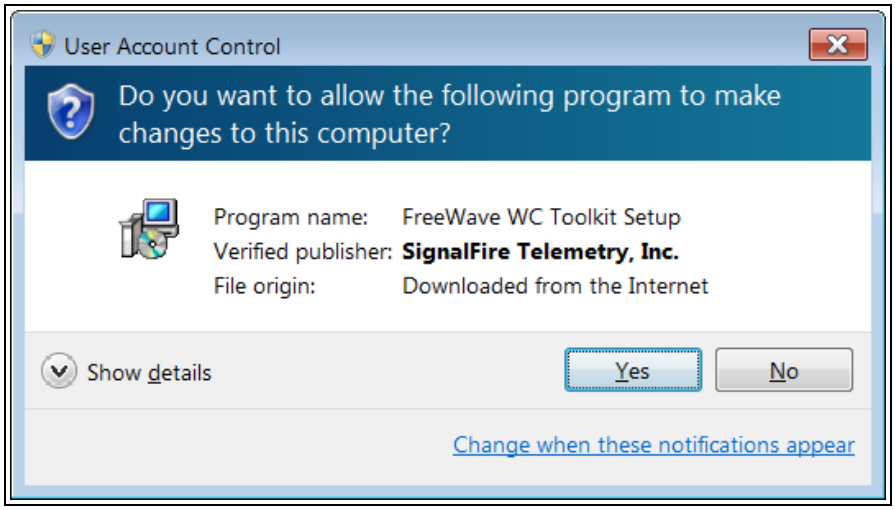



**Figure 11: User Account Control dialog box**

14. Click **Yes**.
    The **WC Toolkit Setup Wizard** starts.

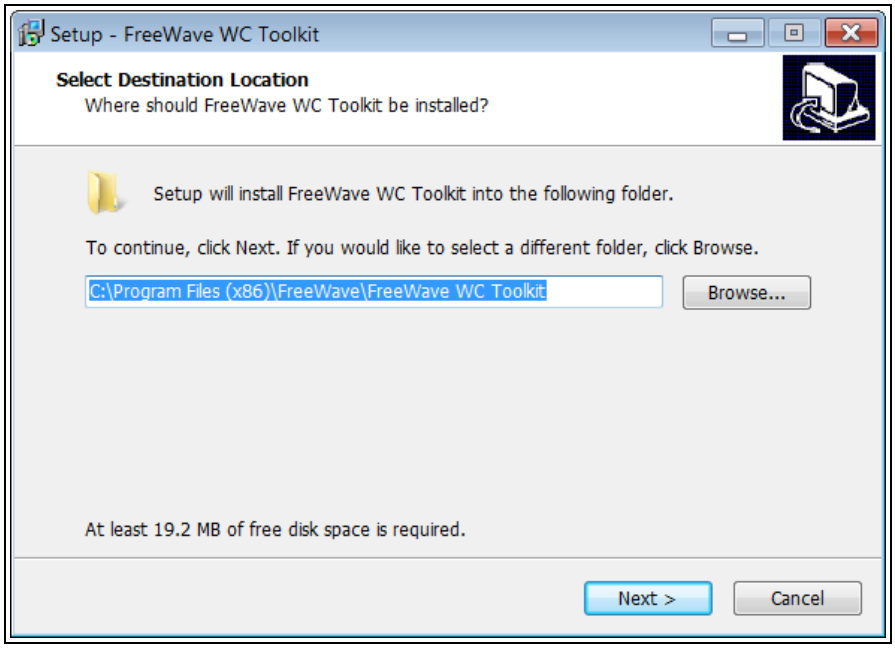



**Figure 12: WC Toolkit Setup Wizard - Select Destination Location window**

15. Click **Next** to continue.
    The **Ready to Install** window opens.

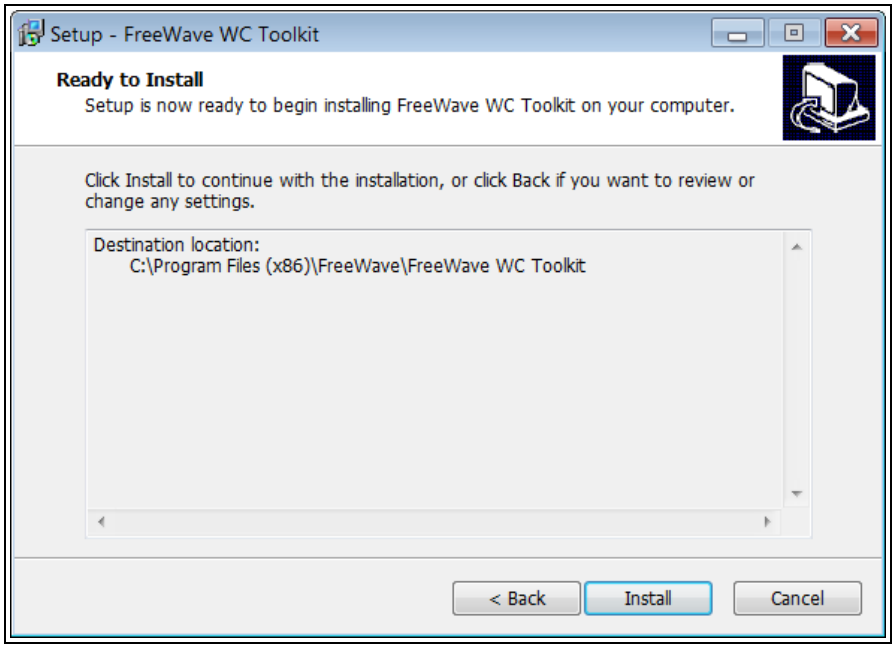



**Figure 13: WC Toolkit Setup Wizard - Ready to Install window**

16. Click **Install**.
    The install process is very quick.
    The **Installation Complete** window opens.

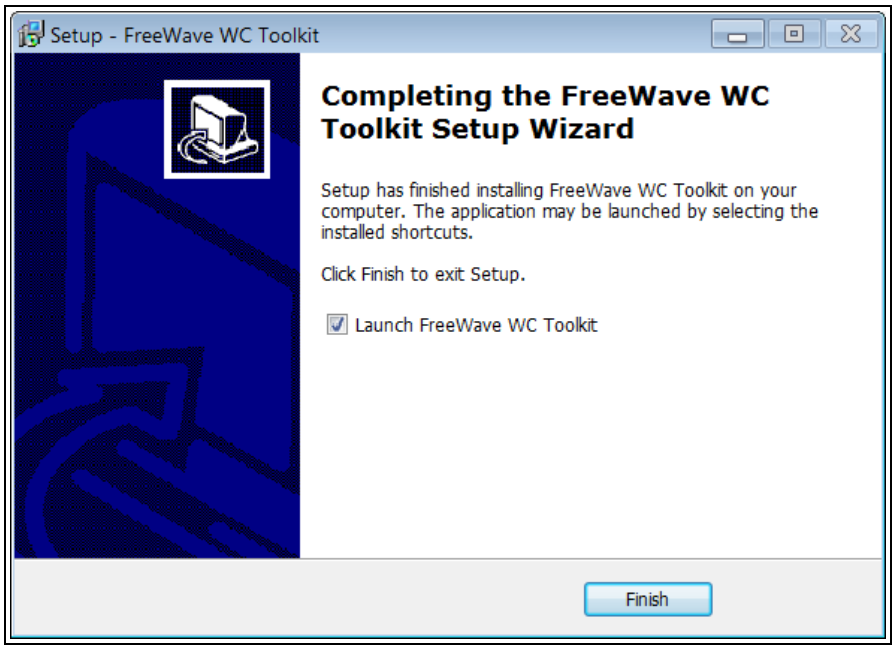



**Figure 14: WC Toolkit Setup Wizard - Installation Complete window**

17. Click **Finish** to open WC Toolkit.
    An **Update** message appears in the WC Toolkit window is an update is available.

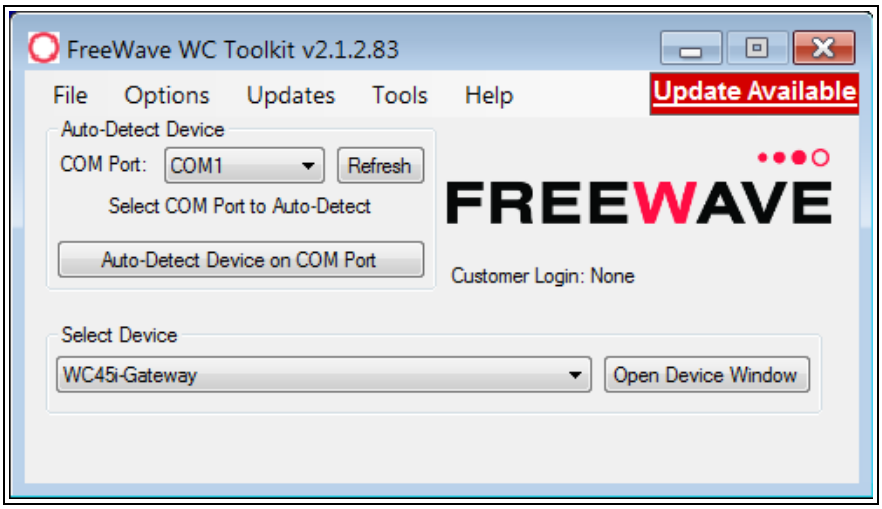



**Figure 15: WC Toolkit - Update Available message**

18. Continue with the WC Toolkit Update (on page 24) procedure.

# 5. WC Toolkit Update

If the WAVECONTACT device is connected to the internet, WC Toolkit automatically searches for an update for either the WC Toolkit itself or the connected device's firmware.

An **Update Available** message appears if an update is available.

> **Note**: An **Update Available** message also appears in the Device Configuration window (on page 54) for any connected WAVECONTACT device when an update is available for that device.
> The update procedure is the same for the device and WC Toolkit.

1. Open the **WC Toolkit** software.
   The **Update Available** message appears in the window. (Figure 16)

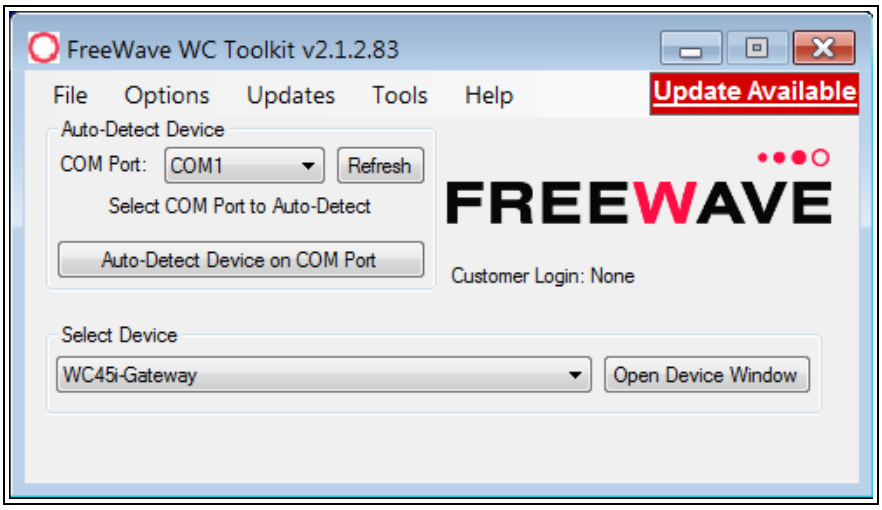



**Figure 16: WC Toolkit - Update Available message**

2. Click the **Update Available** message link.


**Figure 17: Click the Update Available message link**

The **Open File - Security Warning** dialog box opens.

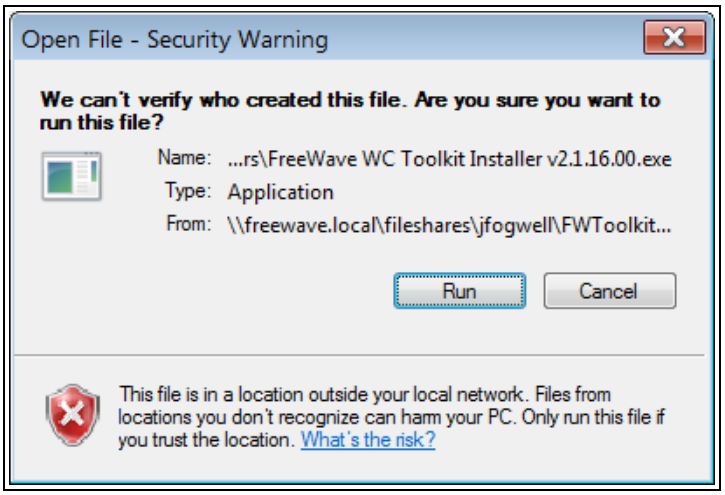



**Figure 18: Open File - Security Warning dialog box**

3. Click **Run**.
   The **User Account Control** dialog box opens.

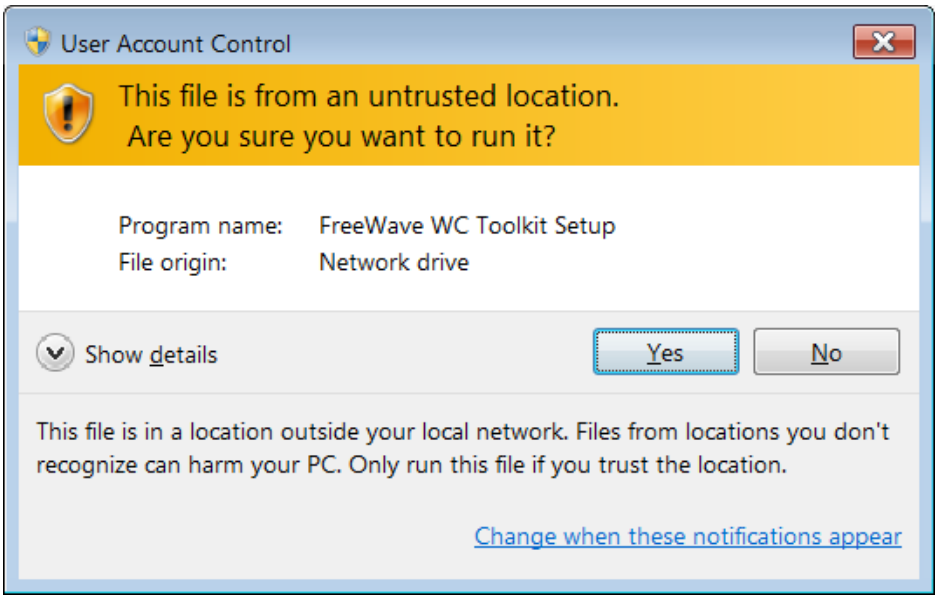



**Figure 19: User Account Control dialog box**

4. Click **Yes**.
   The WC Toolkit update process is very quick.
   When the update is completed, WC Toolkit re-opens the **Select Device** window showing the updated software version in the WC Toolkit window. (Figure 20)

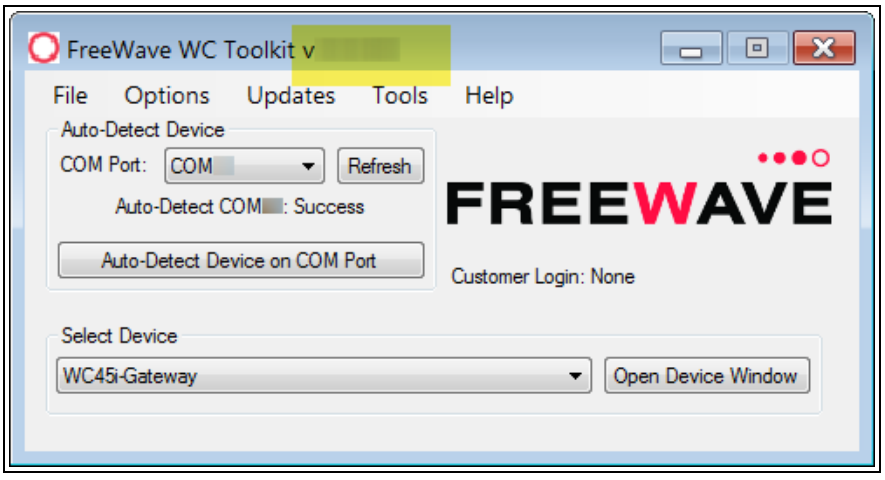



**Figure 20: Select Device window**

5. Continue with configuration of the WC45i-GW-P.

# 6. Setup the Computer IP Address Configuration

The IP address of the computer used for configuration needs to be set so the computer appears in the same network as the Gateway before configuration can continue.

**Note**: The images in this procedure are for Windows® 7 and/or Firefox®.
The dialog boxes and windows appear differently on each computer.

1. On the computer, click the Windows® **Start** button and select **Control Panel**.
2. View the **Control Panel** window by **Category** and click **Network and Internet > View Network Status and Tasks**.
3. Click the **Change Adapter Settings** link.

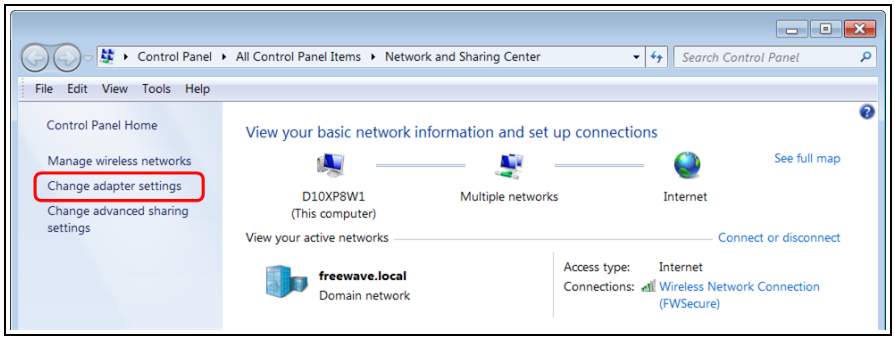



**Figure 21: Change Adapter Settings Link**

4. Double-click the **Local Area Connection** link.

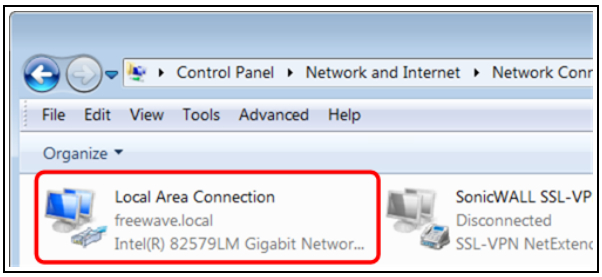



**Figure 22: Local Area Connection Link**

The **Local Area Connection Status** dialog box opens.

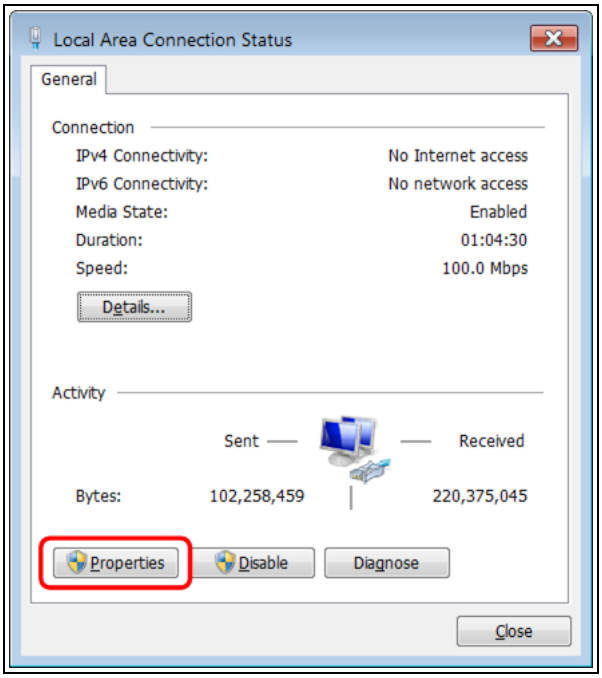



**Figure 23: Local Area Connection Status dialog box**

5. Click **Properties**.
   The **Local Area Connection Properties** dialog box opens.
6. Select the **Internet Protocol Version 4 (TCP/IPv4)** option.

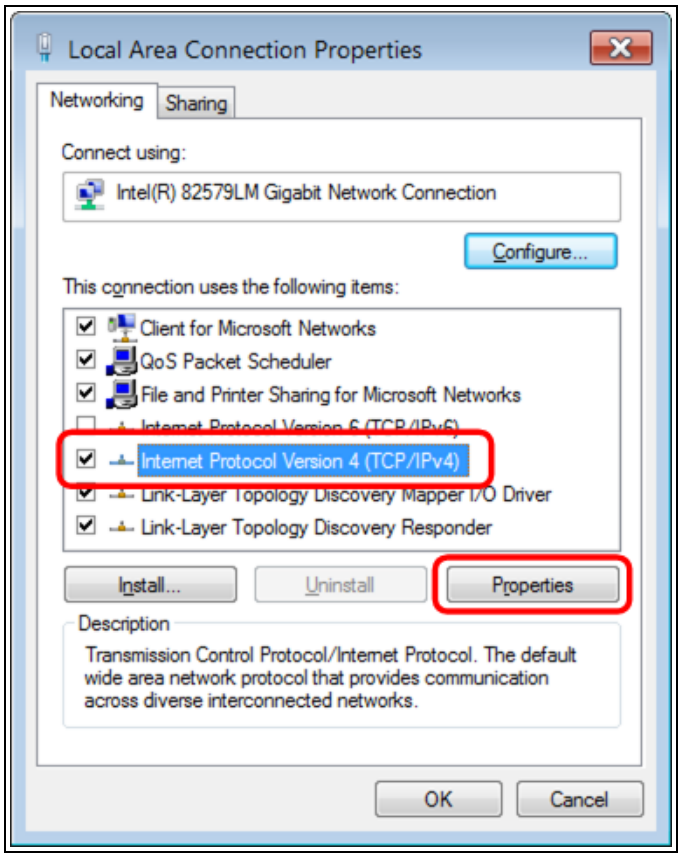



**Figure 24: Local Area Connection Properties dialog box**

7. Click **Properties**.
   The **Internet Protocol Version 4 (TCP/IPv4) Properties** dialog box opens.
8. Make a note of the current settings (to reverse this procedure later).
9. Select the **Use the following IP address** option button.
10. In the **IP Address** text box, enter an IP Address that is **in the same subnet range but a DIFFERENT IP Address** than the device.

> **Example**: Enter an **IP Address** from **192.168.1.101** to **192.168.111.254** (but NOT **192.168.1.100**) and the **Subnet Mask** to **255.255.255.0**.

> **Note**: The default WAVECONTACT IP Address is **192.168.1.100**. The default subnet mask is **255.255.255.0**.

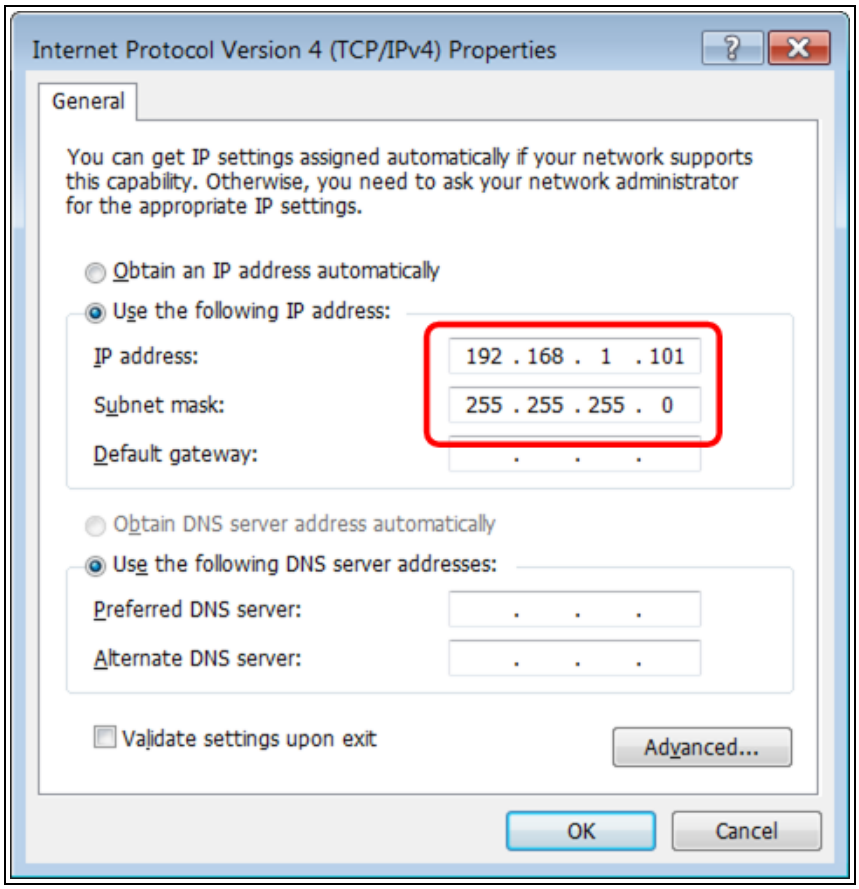



**Figure 25: Local Area Connection Properties dialog box**

> **Note**: An IP Address is NOT required in the **Default Gateway** text box.

11. Click to save the changes and close the dialog box.
12. Click **Close** twice to close the **Local Area Connection Properties** and **Local Area Connection Status** dialog boxes.
13. Continue with these procedures:
    - Change the WC45i-P Password (on page 31)
    - Change to a Different Static IP Address (on page 34)
    - Add a Username (on page 37)
    - Delete a Username (on page 41)
    - IP Address Recovery (on page 44)
    - Remote WC Toolkit Access (on page 46)
    - Remote Endpoint Configuration (on page 49)

# 7. Change the WC45i-P Password

**Warning!** If the default password is changed, be careful to type the new password correctly and remember it.
If password is lost the device must be returned to FreeWave to be reset.

## Procedure

1. Complete the Power and Gateway Connections (on page 13).
2. On the computer, complete the Setup the Computer IP Address Configuration (on page 27) procedure.
3. Open a web browser.
4. In the address bar, enter the Gateway IP Address.

   **Note**: The default WAVECONTACT IP Address is **192.168.1.100**.

5. Refresh the browser window (press <F5>).
   The **Authentication Required** window opens.

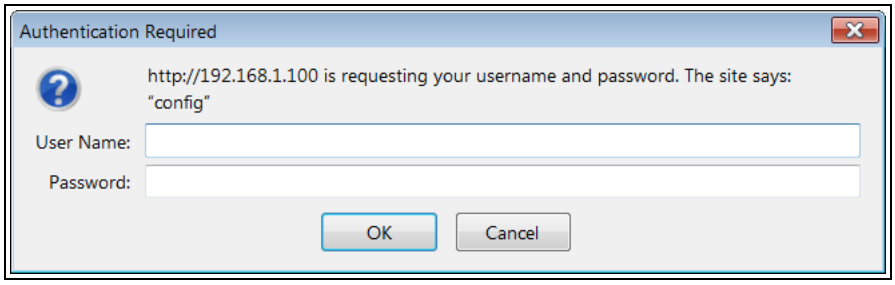



**Figure 26: Authentication Required window**

6. Enter the **User Name** and **Password**.

   **Note**: The default **User Name** is **admin** and the default **Password** is **freewave**.
   If the **User Name** or **Password** were changed, enter the applicable information in the appropriate text box.

7. Click **OK**.
   The **FreeWave WC45i Ethernet Module** software opens.
   The **Device Status** window is active.

   **Note**: See Device Status window for detailed information about this window.

8. Click the **HTTP** tab.
9. Click the **Authentication** button.
   The **HTTP Authentication** window opens.
10. In the **URI** text box, enter a forward slash (**/**).
11. In the **Auth Type** area, select the **Digest** option button.
12. In the **Username** text box, type **admin**.
13. In the **Password** text box, type the new password.

    **Note**: If the **User Name** or **Password** were changed, enter the applicable information in the appropriate text box.

    The **HTTP Authentication** window is similar to Figure 27.

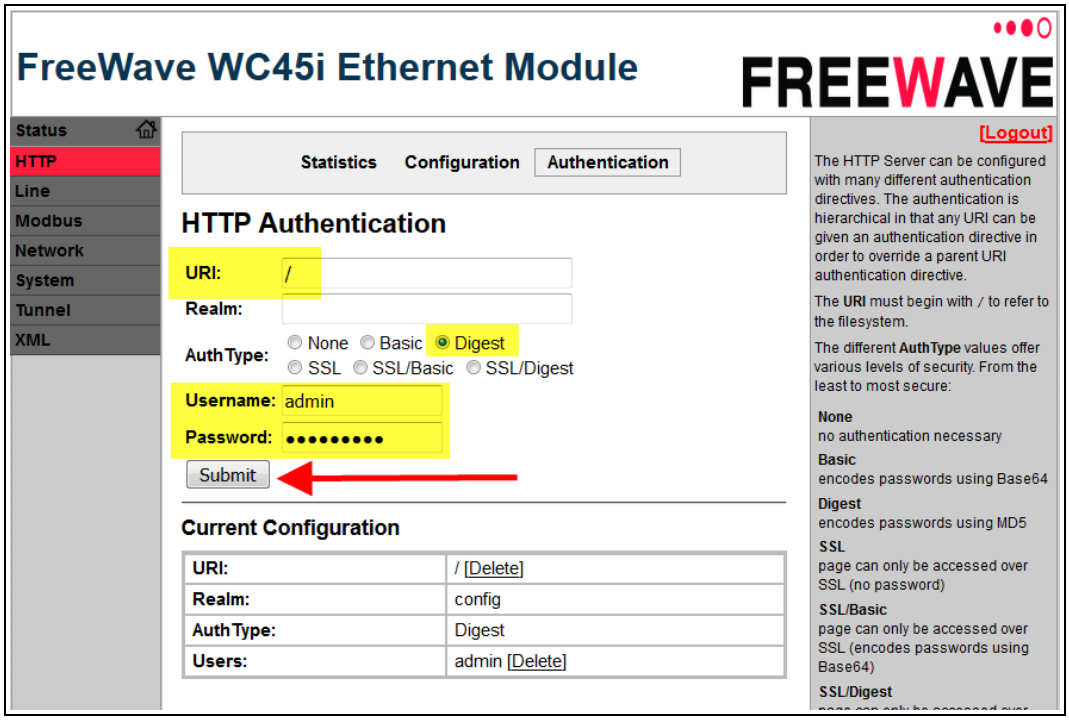



**Figure 27: HTTP Authentication window with Changed Password**

14. Click the **Submit** button.
    The window refreshes with a confirmation message.

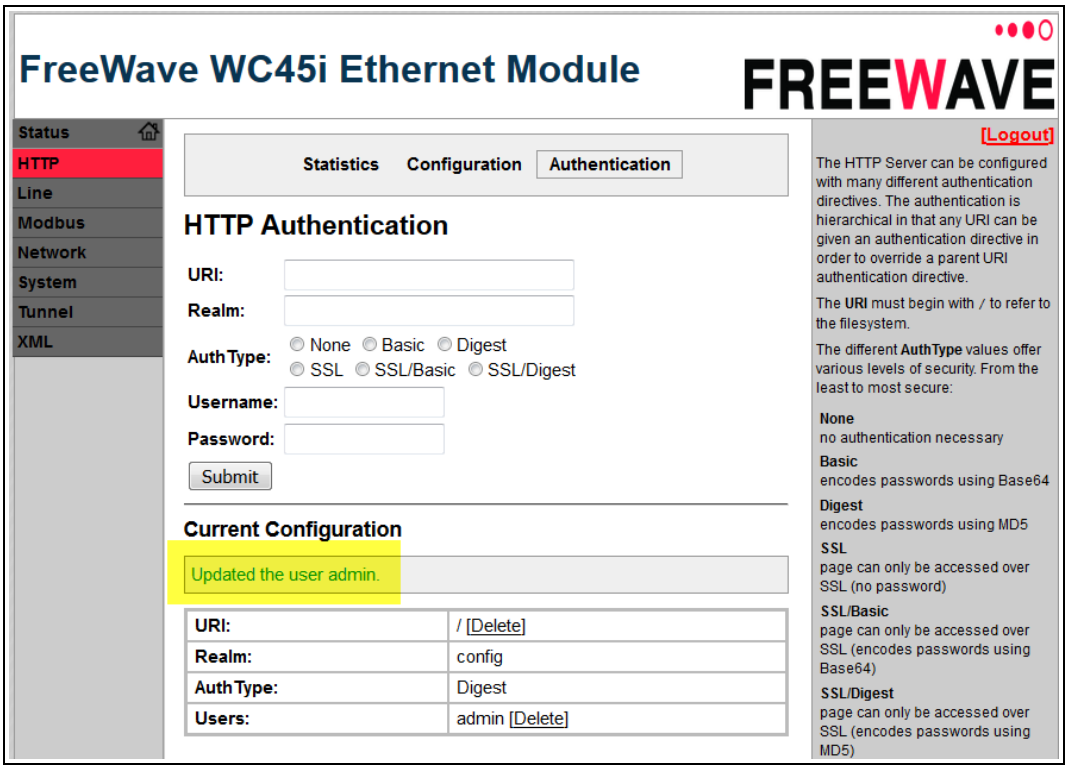



**Figure 28: Updated Confirmation Message**

The **Authentication Required** window opens.

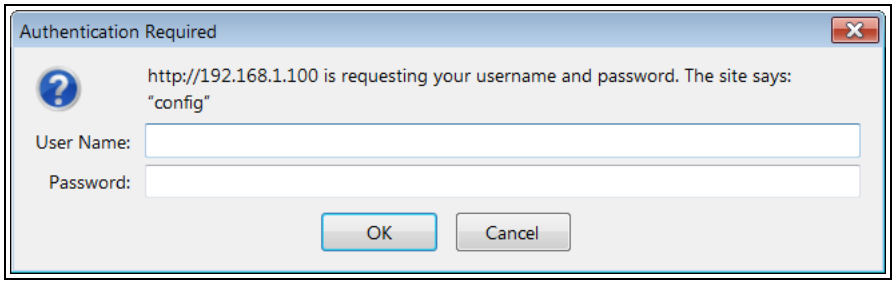



**Figure 29: Authentication Required window**

15. Enter the **User Name** and the new **Password**.
16. Click **OK**.
    The **FreeWave WC45i Ethernet Module** software opens.
    The **Device Status** window is active.
17. Optional: Continue with other configuration WC45i-GW-P procedures.
18. Logout and close the **FreeWave WC45i Ethernet Module** software.
19. Remove the CAT5e / CAT6 Ethernet cable from the WC45i-P and the computer.
20. As applicable, replace the Endpoint cover.
21. Mount the Gateway device.

# 8. Change to a Different Static IP Address

1. Complete the Power and Gateway Connections (on page 13).
2. On the computer, complete the Setup the Computer IP Address Configuration (on page 27) procedure.
3. Open a web browser.
4. In the address bar, enter the Gateway IP Address.

   **Note**: The default WAVECONTACT IP Address is **192.168.1.100**.

5. Refresh the browser window (press <F5>).
   The **Authentication Required** window opens.

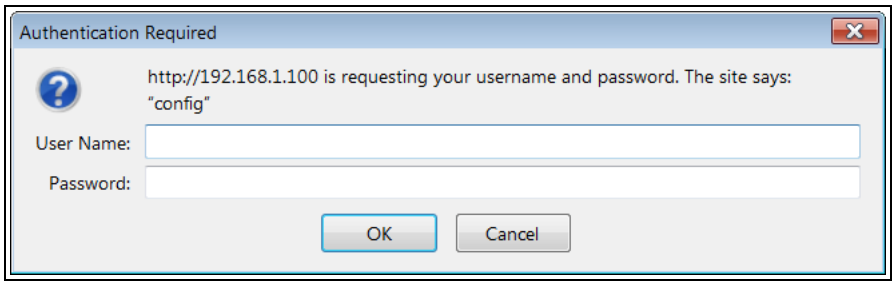



**Figure 30: Authentication Required window**

6. Enter the **User Name** and **Password**.

   **Note**: The default **User Name** is **admin** and the default **Password** is **freewave**.
   If the **User Name** or **Password** were changed, enter the applicable information in the appropriate text box.

7. Click **OK**.
   The **FreeWave WC45i Ethernet Module** software opens.
   The **Device Status** window is active.

   **Note**: See Device Status window for detailed information about this window.

8. Click the **Network** tab.
   The **Network Interface Configuration** window opens.
9. Verify the correct **Network** is selected (e.g., **Network 1**).
10. Click the **Interface** button.
11. Click the **Configuration** button.
    The **Network Interface Configuration** window opens.
12. In the **IP Address** text box, enter the new static IP Address.
13. In the **Default Gateway** text box, enter the new Gateway IP address.
    The window is similar to Figure 31.
14. Click the **Submit** button.

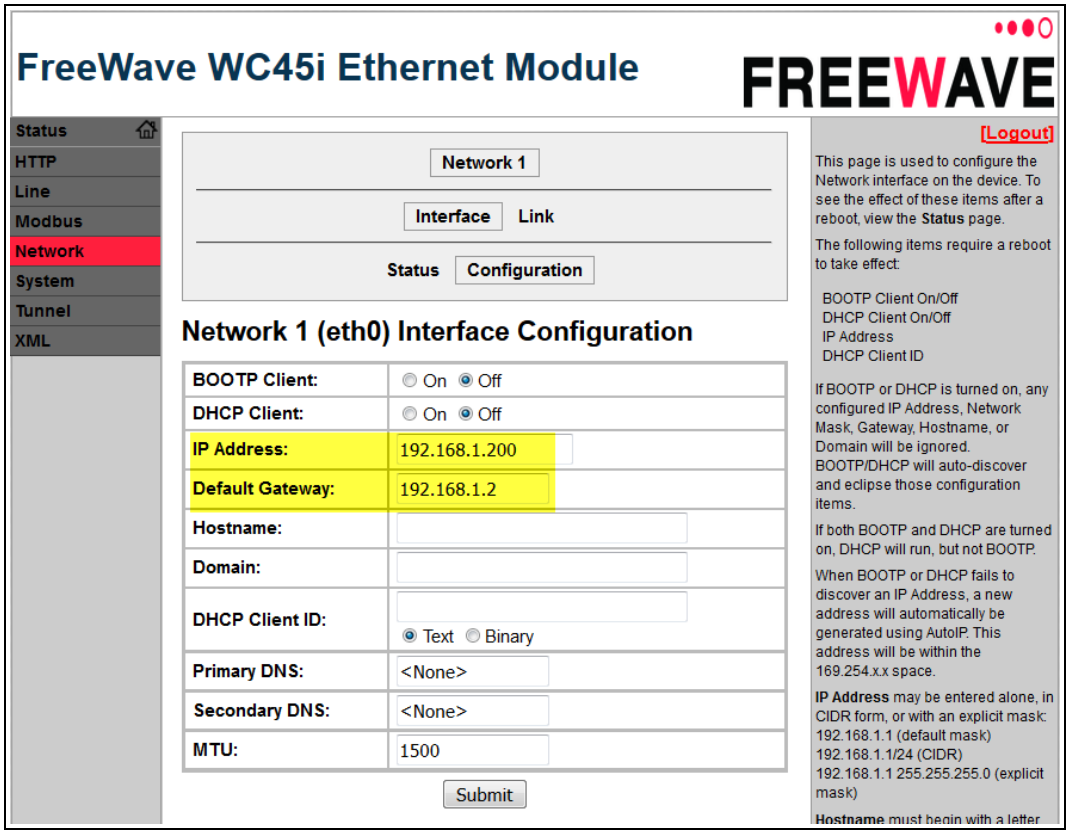



**Figure 31: Changed IP Address and Default Gateway**

The window refreshes with a confirmation message.

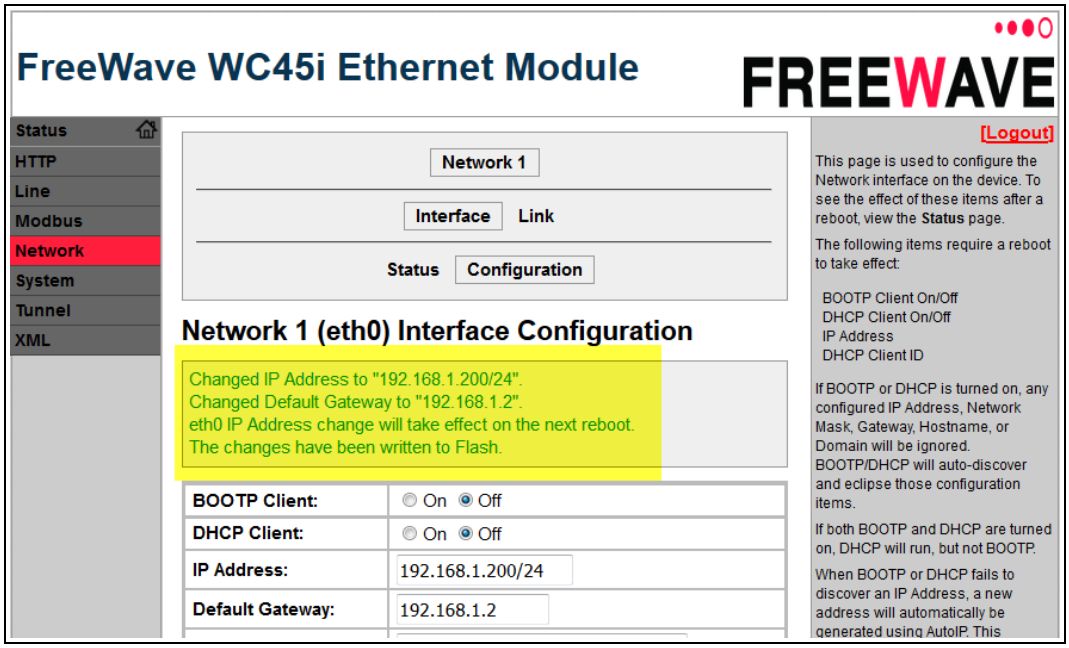



**Figure 32: Network Interface Configuration window with Changed IP Address**

15. Reboot the WC45i-P for the changes to take effect.
16. Refresh the browser window (press <F5>).
    The **Authentication Required** window opens.
17. Enter the **User Name** and **Password**.
18. Click **OK**.
    The **FreeWave WC45i Ethernet Module** software opens.
    The **Device Status** window is active.
19. Optional: Continue with other configuration WC45i-GW-P procedures.
20. Logout and close the **FreeWave WC45i Ethernet Module** software.
21. Remove the CAT5e / CAT6 Ethernet cable from the WC45i-P and the computer.
22. As applicable, replace the Endpoint cover.
23. Mount the Gateway device.

# 9. Add a Username

1. Complete the Power and Gateway Connections (on page 13).
2. On the computer, complete the Setup the Computer IP Address Configuration (on page 27) procedure.
3. Open a web browser.
4. In the address bar, enter the Gateway IP Address.

   **Note**: The default WAVECONTACT IP Address is **192.168.1.100**.

5. Refresh the browser window (press <F5>).
   The **Authentication Required** window opens.

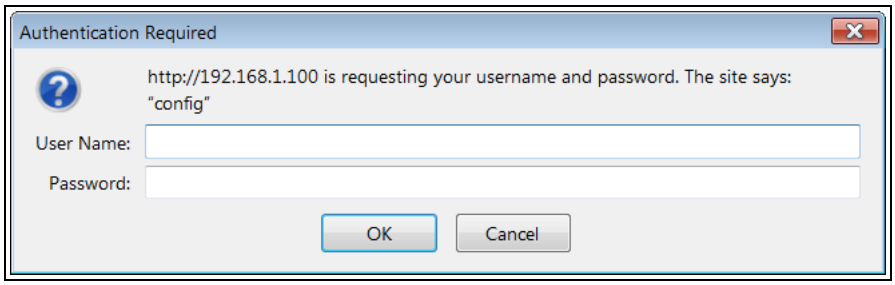



**Figure 33: Authentication Required window**

6. Enter the **User Name** and **Password**.

   **Note**: The default **User Name** is **admin** and the default **Password** is **freewave**.
   If the **User Name** or **Password** were changed, enter the applicable information in the appropriate text box.

7. Click **OK**.
   The **FreeWave WC45i Ethernet Module** software opens.
   The **Device Status** window is active.

   **Note**: See Device Status window for detailed information about this window.

8. Click the **HTTP** tab.
9. Click the **Authentication** button.
   The **HTTP Authentication** window opens.
10. In the **URI** text box, enter a forward slash (**/**).
11. In the **Auth Type** area, select the **Digest** option button.
12. In the **Username**text box, enter the new Username.
13. In the **Password** text box, enter the password for the new Username.

    **Note**: If the **User Name** or **Password** were changed, enter the applicable information in the appropriate text box.

    The **HTTP Authentication** window is similar to Figure 34.

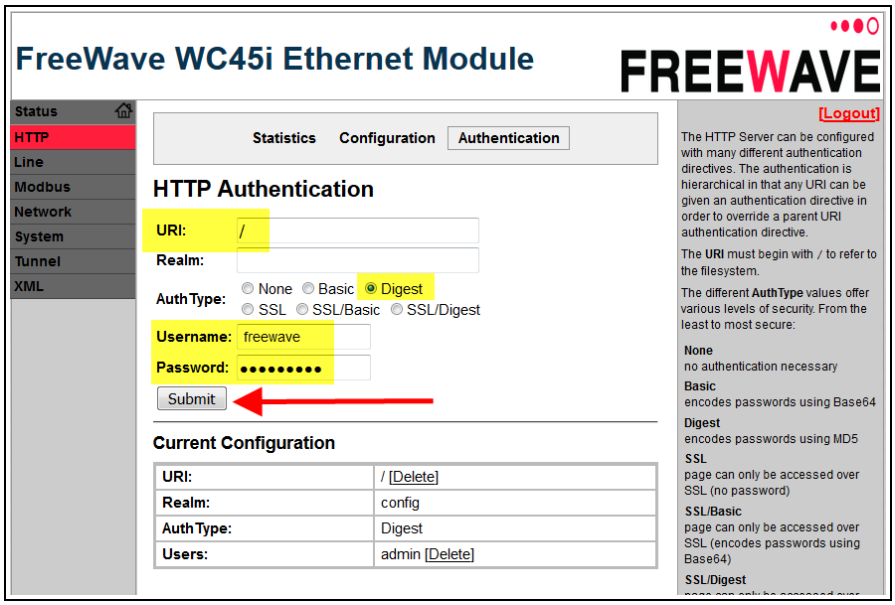



**Figure 34: HTTP Authentication window with Changed Username**

14. Click the **Submit** button.
    The window refreshes with a confirmation message.

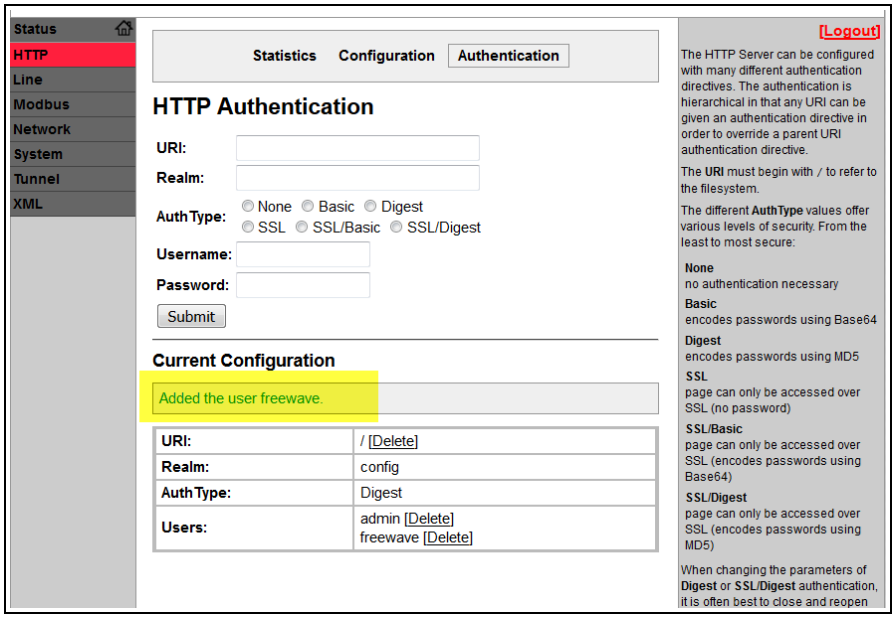



**Figure 35: New Username Added Confirmation Message**

15. Click the **Logout** link.

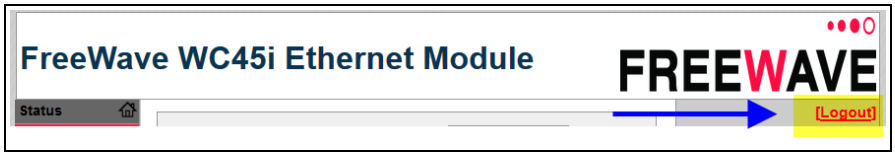



**Figure 36: Logout Link**

A confirmation message appears.

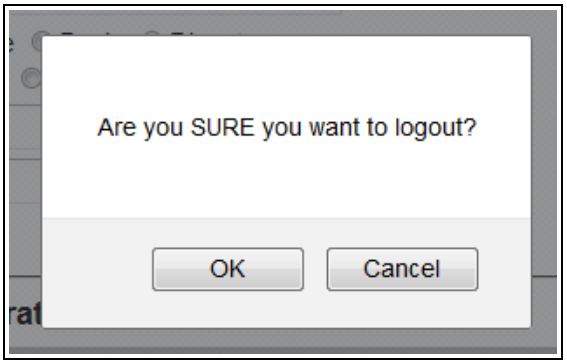
16. 


**Figure 37: Logout Confirmation Message**

17. Click **OK** to logout.

The window refreshes with a confirmation message.

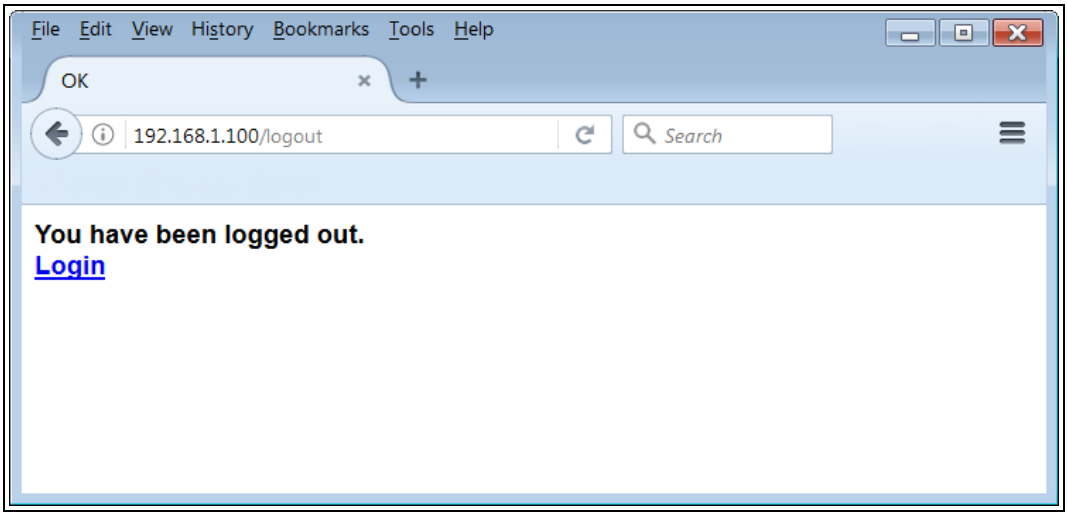



**Figure 38: Logged Out Confirmation Message**

18. Click the **Login** link.
    The **Authentication Required** window opens.

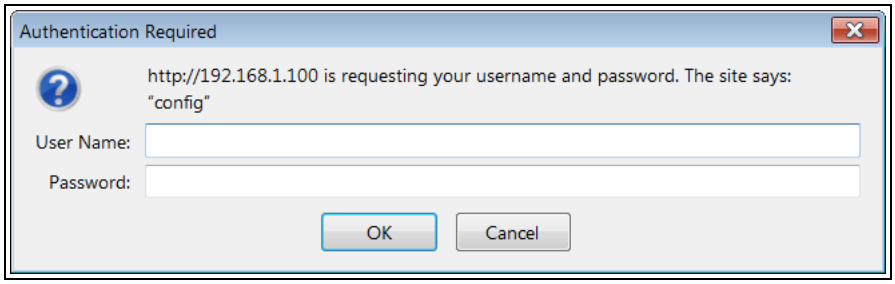



**Figure 39: Authentication Required window**

19. Enter the **User Name** and **Password** of the added user.
20. Click **OK**.
    The **FreeWave WC45i Ethernet Module** software opens.
    The **Device Status** window is active.
21. Optional: Continue with other configuration WC45i-GW-P procedures.
22. Logout and close the **FreeWave WC45i Ethernet Module** software.
23. Remove the CAT5e / CAT6 Ethernet cable from the WC45i-P and the computer.
24. As applicable, replace the Endpoint cover.
25. Mount the Gateway device.

# 10. Delete a Username

1. Complete the Power and Gateway Connections (on page 13).
2. On the computer, complete the Setup the Computer IP Address Configuration (on page 27) procedure.
3. Open a web browser.
4. In the address bar, enter the Gateway IP Address.

   **Note**: The default WAVECONTACT IP Address is **192.168.1.100**.

5. Refresh the browser window (press <F5>).
   The **Authentication Required** window opens.

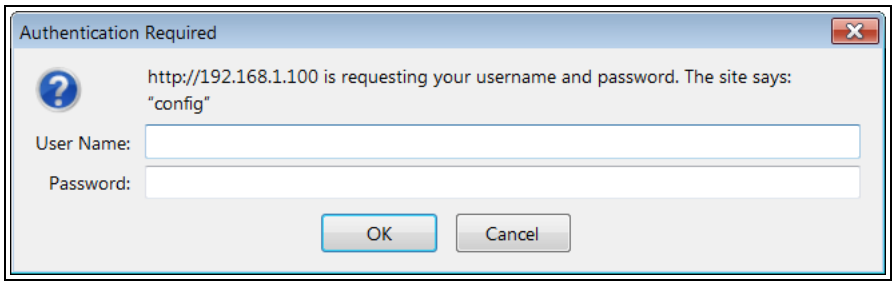



**Figure 40: Authentication Required window**

6. Enter the **User Name** and **Password**.

   **Note**: The default **User Name** is **admin** and the default **Password** is **freewave**.
   If the **User Name** or **Password** were changed, enter the applicable information in the appropriate text box.

7. Click **OK**.
   The **FreeWave WC45i Ethernet Module** software opens.
   The **Device Status** window is active.

   **Note**: See Device Status window for detailed information about this window.

8. Click the **HTTP** tab.
9. Click the **Authentication** button.
   The **HTTP Authentication** window opens.
10. Click the **Delete** link next to the User to remove.

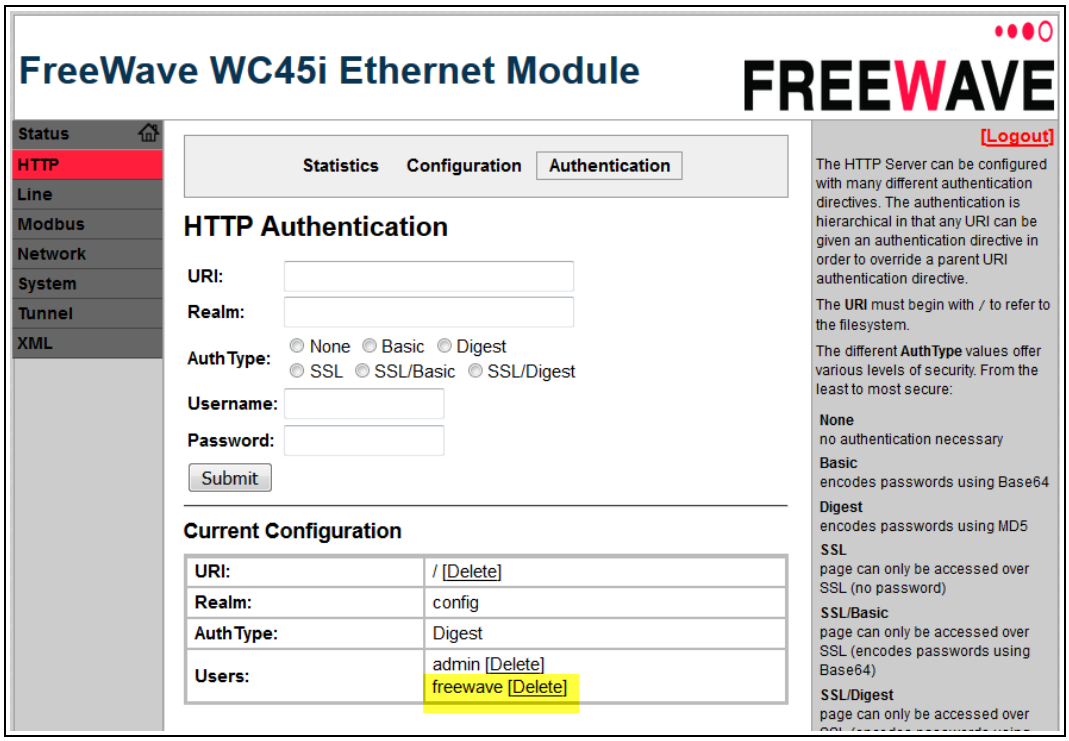



**Figure 41: Delete User from List**

A confirmation message appears.

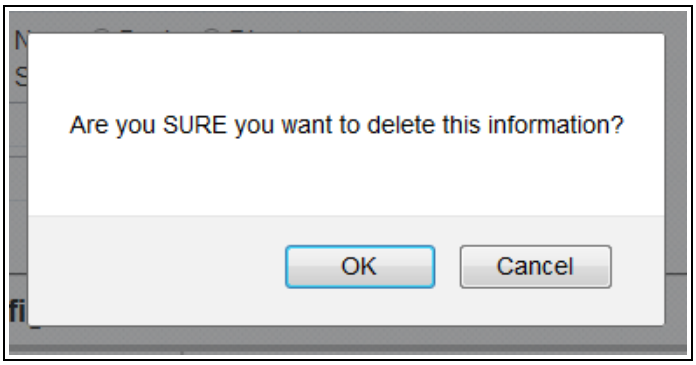



**Figure 42: Delete Confirmation message**

11. Click **OK** to confirm the deletion.
    The window refreshes with a confirmation message.

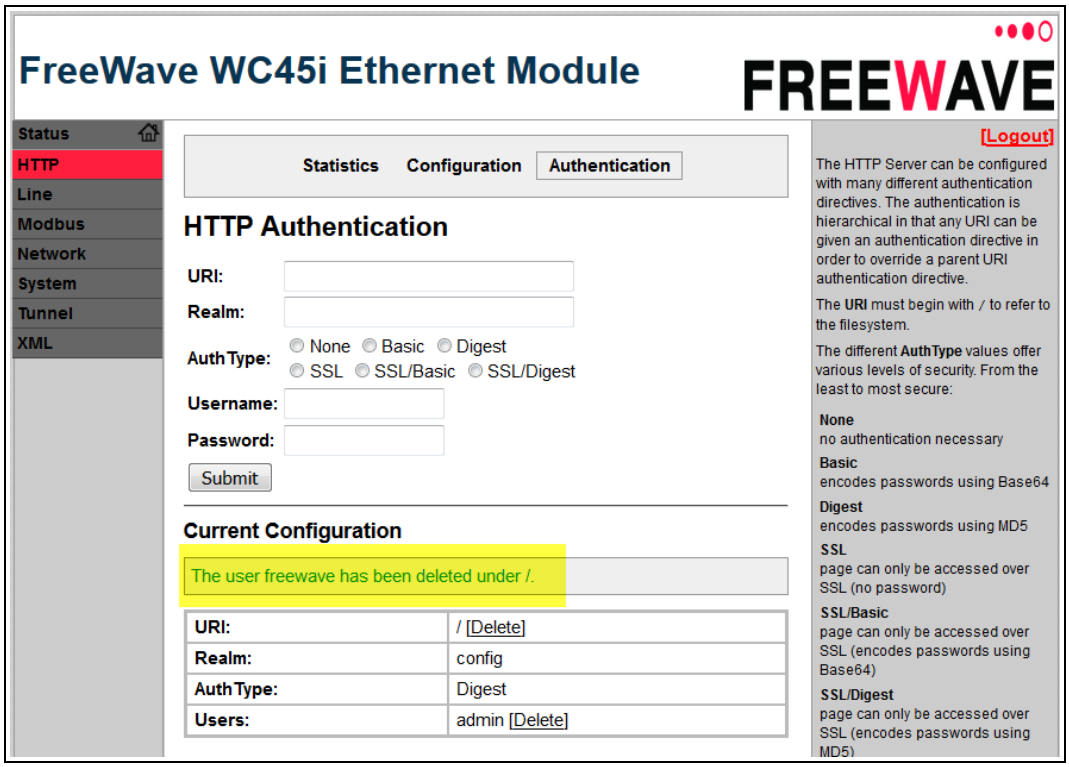



**Figure 43: Delete Confirmation message**

12. Optional: Continue with other configuration WC45i-GW-P procedures.
13. Logout and close the **FreeWave WC45i Ethernet Module** software.
14. Remove the CAT5e / CAT6 Ethernet cable from the WC45i-P and the computer.
15. As applicable, replace the Endpoint cover.
16. Mount the Gateway device.

# 11. IP Address Recovery

At bootup, the WC45i-GW-485 Modbus Gateway reads the IP Address settings from the WC45i-GW-P Ethernet Module and stores the settings in the WC45i-GW-485's memory.

**Important!**: DO NOT connect the RS232 cable when the WC45i-P is powered on.

1. On the computer, complete the Setup the Computer IP Address Configuration (on page 27) procedure.
2. Complete the Power and Gateway Connections (on page 13).
3. Verify the WC Toolkit software is installed on the computer connected to the WC45i-GW-P.
4. Connect to the WC45i-Gateway using WC Toolkit.
5. On the **Tools** menu, click **Detect Ethernet Gateways**.

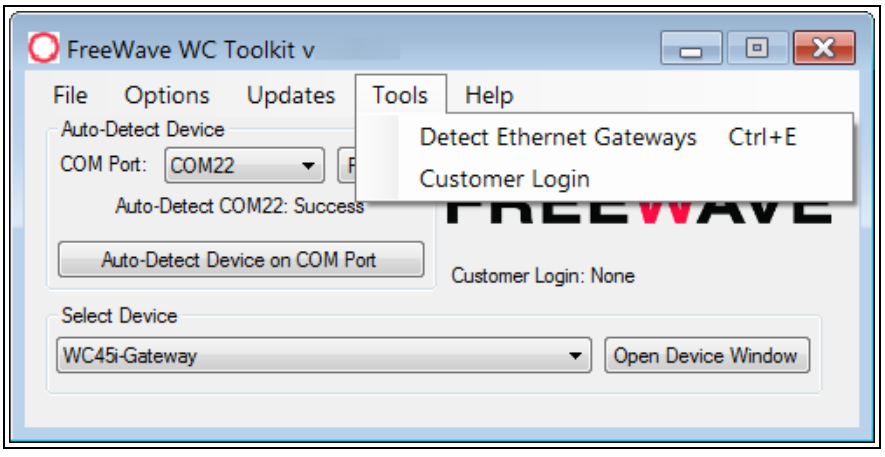



**Figure 44: Tools menu > Detect Ethernet Gateways**

The **Detect Ethernet Gateways** window opens.

> **Note**: See Detect Ethernet Gateways window (on page 61) for detailed information about this window.

6. Click the **Detect Local Gateways** button.
   The IP Address assigned to the WC45i-GW-P Ethernet Module is detected. (Figure 45)

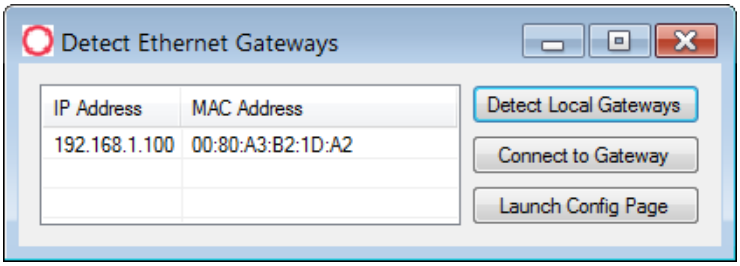



**Figure 45: Detect Ethernet Gateways window**

> **Note**: The **Detect Ethernet Gateways** window shows the IP Address from when the Gateway was last powered on.

> **Important!**: If the IP Address settings are changed, the system must be powered down for at least 15 seconds and then powered back up for the WC45i-P to read the new IP Address settings.

7. Optional: Continue with these procedures:
   - Change the WC45i-P Password (on page 31)
   - Change to a Different Static IP Address (on page 34)
   - Add a Username (on page 37)
   - Delete a Username (on page 41)
   - IP Address Recovery (on page 44)
   - Remote WC Toolkit Access (on page 46)
   - Remote Endpoint Configuration (on page 49)

# 12. Remote WC Toolkit Access

This procedure allows remote access to the Gateway Config / Debug connector port.

## Procedure

1. Verify the WC Toolkit software is installed on the computer connected to the WC45i-GW-P.

   **Note**: See WC Toolkit Installation (on page 17) and WC Toolkit Update (on page 24).

2. Complete the Power and Gateway Connections (on page 13).
3. Connect the Serial end of the WC-USB-DB9 cable to the **RS232 Config / Debug** connector port and the USB connection to the computer.
4. On the computer, complete the Setup the Computer IP Address Configuration (on page 27) procedure.
5. Open the **WC Toolkit** software.
   The **Select Device** window opens. (Figure 46)

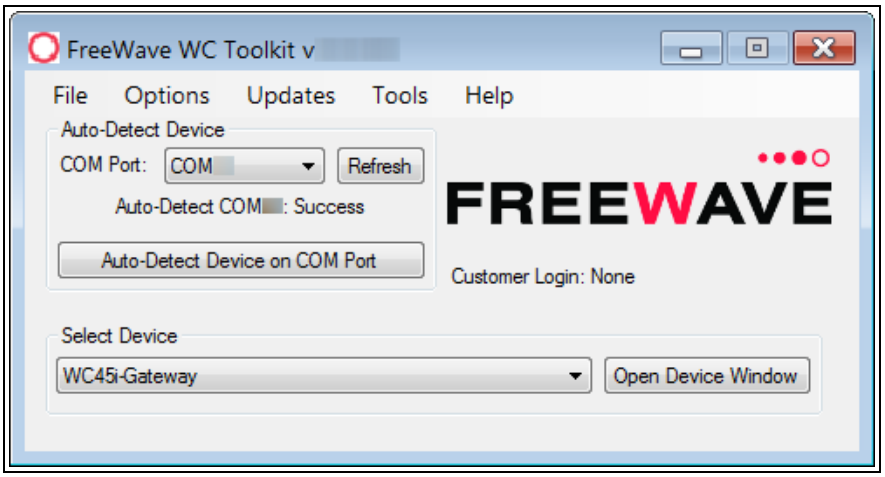



**Figure 46: Select Device window**

6. Click the **Select Device** list box arrow and select WC45i-P.
7. Click the **Open Device Window** button to open the Device Configuration window (on page 54).
8. Click the **TCP Connection** check box to specify that the connection is made via Ethernet.
9. Click the **IP Addr: Port** list box arrow and select the IP address of the WC45i-Gateway.
10. Do one of these actions:
    - Click the **Open** button to re-connect the WAVECONTACT device to the IP Address.
    - Click the **Connect / Update** button to re-connect to the IP Address of the WAVECONTACT device.

    The **Device Configuration** window updates to show the connected Endpoints.

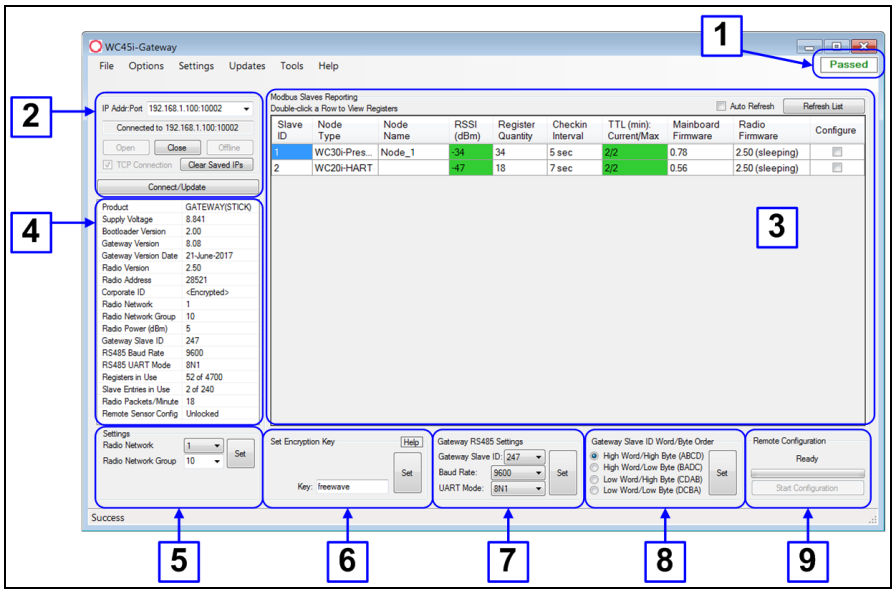



**Figure 47: Device Configuration window: WC45i-GW-P**

**Note**: When the connection is made to the IP Address, full access to the Gateway is available as if a direct serial connection is used.
This includes full remote configuration capability.

11. Optional: Continue with Remote Endpoint Configuration (on page 49).
12. Logout and close the **FreeWave WC45i Ethernet Module** software.
13. Remove the CAT5e / CAT6 Ethernet cable from the WC45i-P and the computer.
14. As applicable, replace the Endpoint cover.
15. Mount the Gateway device.

# 13. Remote Endpoint Configuration

The allows configuration changes to be made to any of the connected WAVECONTACT remote Endpoints wirelessly.

- The requires an initial configuration using the Config / Debug connector.
  - The Config / Debug port is accessed over a TCP/IP network using a WC45i-GW-P.

**Note**: This procedure assumes WC Toolkit has been installed.
Download the **WC Toolkit** software from http://support.freewave.com/.
Registration is required to use this login.

## Procedure

**Note**: The terms node and Endpoint are used interchangeably in this document.

1. Open the Device Configuration window (on page 54).
2. In the **Configure** column, select the check-box next to the Endpoint to configure.

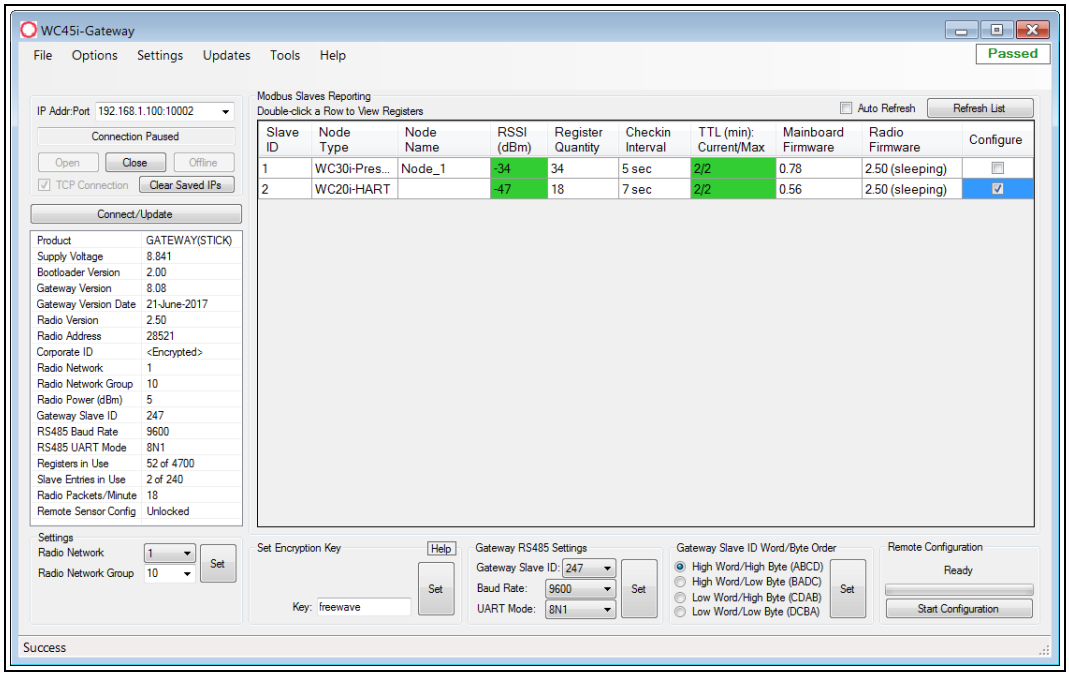



**Figure 48: Detail of Endpoint in Modbus Slaves Reporting Table**

3. Click the **Start Configuration** button to activate a **Remote Configuration** session.
   - If the Endpoint has a **Non-Sleeping** radio, the **Remote Configuration** session is ready immediately.
   - If it is a **Sleeping** device, wait for the Endpoint to either check-in or send a beacon so it can be commanded into **Configuration** mode.
     - A WC20i Endpoint sends a beacon every 2½ minutes.
     - All other **Sleeping** Endpoints send a beacon every 5½ minutes.
   - When the device has entered a **Remote Configuration** session, a message indicating the **Slave is Ready** appears.

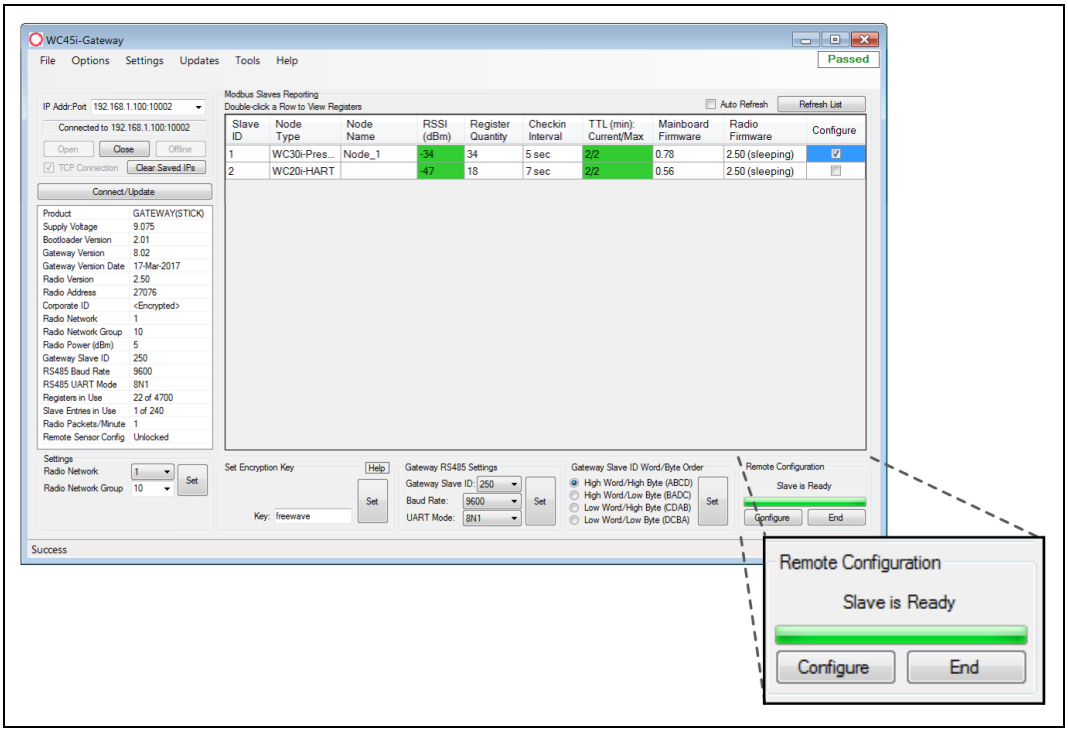



**Figure 49: Remote Configuration area - Slave is Ready**

4. Click the **Configure** button to open the Edit Configuration window (on page 63).

> **Important!**: The **Remote Configuration** session automatically times out after 10 minutes of inactivity and the Endpoint will resume normal operation.

> **Note**: The **Edit Configuration** window is unique for the selected Endpoint device. Figure 50 shows the **Edit Configuration** window for a WC20i-HART Endpoint.

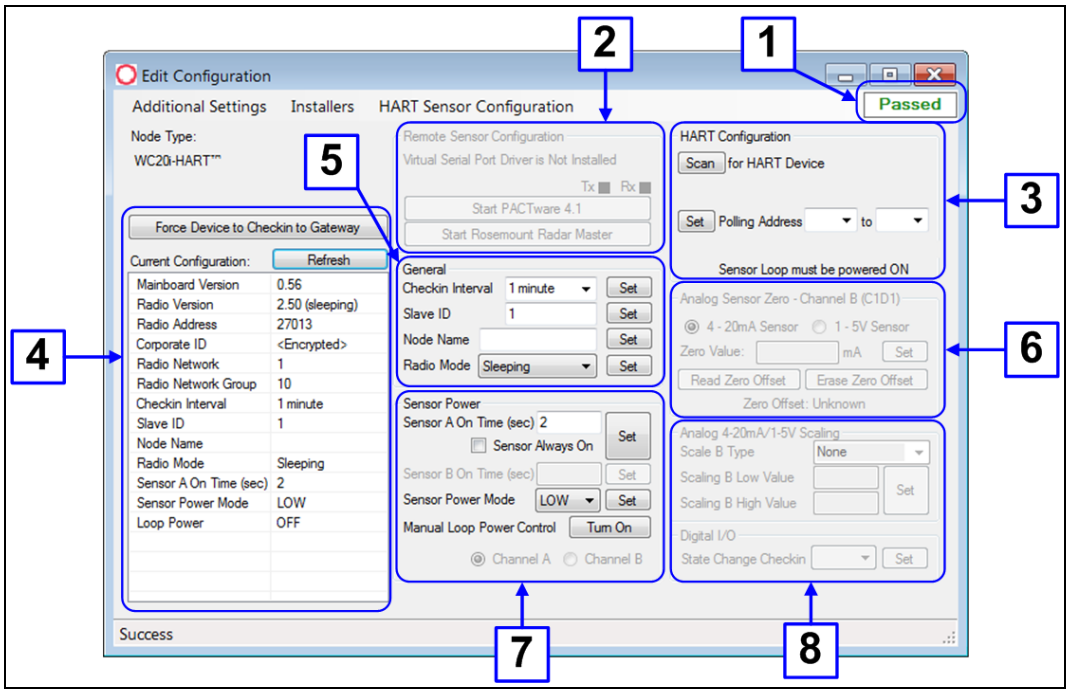



**Figure 50: Edit Configuration window - WC20i-HART**

5. Make any necessary changes in the active areas of the window and click the corresponding **Set** button to save the changes.
6. When finished changing the configuration, close the **Edit Configuration** window and return to the **Device Configuration** window.
7. Click the **End** button to stop the **Remote Configuration** session.

> **Note**: The Remote Configuration session automatically times-out after 10 minutes of inactivity.

8. Optional: On the Endpoint, press the **Check-in** button to apply power to the configured sensor, read the sensor values, and send the collected sensor data to the Gateway.
9. Verify the Gateway is communicating with the Endpoints.

> **Note**: A successful connection on the WAVECONTACT Endpoint is indicated with Green blinking TX and ACT lights and a Red blinking light for RX.
> If the connection is NOT successful, a Green blinking TX light appears for 10 seconds.

10. Close the WC Toolkit software.
11. Remove the CAT5e / CAT6 Ethernet cable from the WC45i-P and the computer.
12. As applicable, replace the Endpoint cover.
13. Mount the Gateway device.

# 14. WC Toolkit Software Environment

The WC Toolkit software environment uses these windows to configure all WAVECONTACT devices:

- Device Configuration window (on page 54)
- Detect Ethernet Gateways window (on page 61)
- Edit Configuration window (on page 63)

# 14.1. Device Configuration window

The **Device Configuration** window is used to configure the settings on the WC45i-GW-P.

- If one or more remote Endpoints are configured with the correct network settings they send their data to the Gateway.
- The Gateway shows the Endpoint type, Endpoint name, RSSI signal strength, programmed Endpoint check-in interval, the Time To Live (TTL), and the Endpoints radio and main firmware versions.

## Access and Window Description

1. Verify the WC Toolkit software is installed on the computer connected to the WC45i-GW-P.

   **Note**: See WC Toolkit Installation (on page 17) and WC Toolkit Update (on page 24).

2. Complete the Power and Gateway Connections (on page 13).
3. Connect the Serial end of the WC-USB-DB9 cable to the **RS232 Config / Debug** connector port and the USB connection to the computer.
4. On the computer, complete the Setup the Computer IP Address Configuration (on page 27) procedure.
5. Open the **WC Toolkit** software.
   The **Select Device** window opens. (Figure 51)

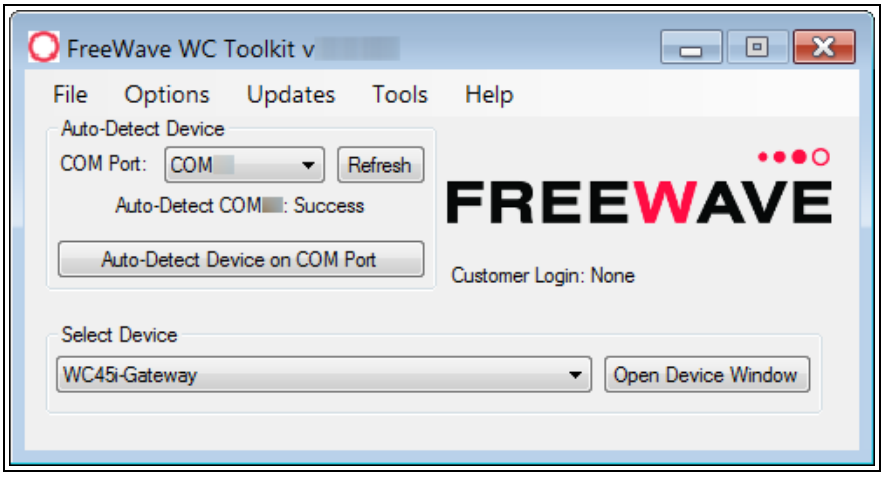



**Figure 51: Select Device window**

3. Click the **Refresh** button to have WC Toolkit search for and list the available COM ports reported by Windows and connected devices in the **COM Port** list box.
4. Click the **COM Port** list box arrow and select the COM port on the computer associated with the connected WC45i-P.
5. Click the **Auto-Detect Device on COM Port** button to have WC Toolkit connect the device to the COM Port selected in the **COM Port** list box.

**Note**: Optional: Click the **Select Device** list box arrow and select WC45i-P.

The **Device Configuration** window opens for the selected device.

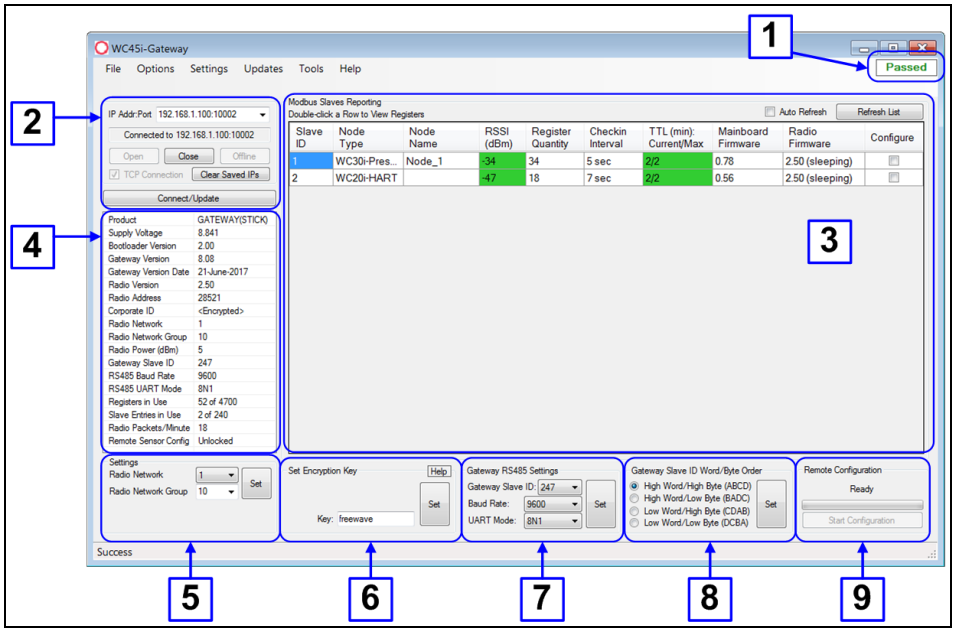



**Figure 52: Device Configuration window: WC45i-GW-P**

| Device Configuration window: WC45i-GW-P | | |
|---|---|---|
| **Control Area** | **Control Title** | **Control Description** |
| | **Set** button | Click the **Set** button to save the information. |
| 1 - **Status of Last Operation** text boxtext box | | The **Status of Last Operation** text box indicates whether the last command from the WC Toolkit to the connected device is **Active** or has **Passed**.<br>**Note**: A **Firmware Update Available** message appears in this text box when the WC Toolkit has detected that a newer version of firmware is available for download than what is installed on the device.<br>**Note**: This information is read-only. |
| 2 - **IP Addr: Port Settings** area | | The **IP Addr:Port Settings** area shows the connected Ethernet IP Address and is used to re-connect to that IP Address if the connection is lost. |
| 2 - **IP Addr: Port Settings** area | **IP Addr: Port**list box | Click the **IP Addr: Port** list box arrow and select the IP address of the WC45i-Gateway. |

| Device Configuration window: WC45i-GW-P | | |
|---|---|---|
| **Control Area** | **Control Title** | **Control Description** |
| 2 - **IP Addr: Port Settings** area | **Connected to** text box | The **Connected to** text box shows the IP Address the WC45i-GW-P is connected to.<br>**Note**: This information is read-only. |
| 2 - **IP Addr: Port Settings** area | **Open** button | Click the **Open** button to re-connect the WAVECONTACT device to the IP Address. |
| 2 - **IP Addr: Port Settings** area | **Close** button | Click the **Close** button to disconnect the WAVECONTACT device from the IP Address. |
| 2 - **IP Addr: Port Settings** area | **Offline** button | Click the **Offline** button to disconnect the WAVECONTACT device from the IP Address but continue to configure the device offline. |
| 2 - **IP Addr: Port Settings** area | **TCP Connection** check box | Click the **TCP Connection** check box to specify that the connection is made via Ethernet. |
| 2 - **IP Addr: Port Settings** area | **Clear Saved IPs** button | Click the **Clear Saved IPs** button to clear the list of IP addresses that were previously accessed. |
| 2 - **IP Addr: Port Settings** area | **Connect / Update** button | Click the **Connect / Update** button to re-connect to the IP Address of the WAVECONTACT device.<br>**Note**: When the connection is made to the IP Address, full access to the Gateway is available as if a direct serial connection is used. This includes full remote configuration capability. |
| 3 - **Modbus Slaves Reporting** table | | The **Modbus Slaves Reporting** table shows all connected remote Endpoints.<br>**Note**: This information is read-only. See the Modbus Slaves Reporting table (on page 59) for detailed information about the table. |
| 4 - **Information** area | | The **Information** area of the **Device Configuration** window shows connection information about the connected WAVECONTACT device.<br>**Note**: This information is read-only. |
| 5 - **Settings** area | | The **Settings** area is used to define the radio mode and radio network. |

| Device Configuration window: WC45i-GW-P | | |
|---|---|---|
| **Control Area** | **Control Title** | **Control Description** |
| 5 - **Settings** area | **Radio Network** list box | Click the **Radio Network** list box arrow and select 0 (zero) to 7 for the assigned number.<br>**Note**: The default value is 1.<br>**Important!**: The **Radio Network** and **Radio Network Group** settings are selected by the user but MUST MATCH the existing Gateway network for successful communication between the Gateway and Endpoint.<br>See WAVECONTACT Network Frequencies (on page 75) for additional information. |
| 5 - **Settings** area | **Radio Network Group** list box | Click the **Radio Network Group** list box arrow and select 0 (zero) to 29 for the network group assigned number.<br>**Note**: The default value is 10.<br>**Important!**: The **Radio Network** and **Radio Network Group** settings are selected by the user but MUST MATCH the existing Gateway network for successful communication between the Gateway and Endpoint.<br>See WAVECONTACT Network Frequencies (on page 75) for additional information. |
| 6 - **Set Encryption Key** area | | The **Set Encryption Key** area is used to activate and define the encryption key for the WAVECONTACT device. |
| 6 - **Set Encryption Key** area | **Help** button | Click to open the Encryption **Help** message. |
| 6 - **Set Encryption Key** area | **Key** text box | In the **Key** text box, enter the encryption key for the device using 6 to 16 characters.<br>**Important!**: A Key CANNOT contain spaces or angle brackets.<br>The Gateway and Endpoints only communicate if they are configured with the same **Key**. |

| Device Configuration window: WC45i-GW-P | | |
|---|---|---|
| **Control Area** | **Control Title** | **Control Description** |
| 7 - **Gateway RS485 Settings** area | | The **Gateway RS485 Settings** area is used to define the RS485 settings and communication timing.<br>**Note**: The Gateway has registers that are read for diagnostics. They are not often used except when remapping Modbus data. When remapping, read all data from this Slave ID. |
| 7 - **Gateway RS485 Settings** area | **Gateway Slave ID** list box | Click the **Gateway Slave ID** list box arrow and select the Modbus Slave ID for the Gateway. |
| 7 - **Gateway RS485 Settings** area | **Baud Rate** list box | Click the **Baud Rate** list box arrow and select the baud rate for the RS485 Modbus port. |
| 7 - **Gateway RS485 Settings** area | **UART Mode** list box | Click the **UART Mode** list box arrow and select the number of data bits, parity, and stop bits used with the RS485 Modbus port. |
| 8 - **Gateway Slave ID Word / Byte Order** area | | The **Gateway Slave ID Word / Byte Order** area is used to set communication timing by selecting one of the byte order options for transmission of Modbus data.<br>. |
| 8 - **Gateway Slave ID Word / Byte Order** area | **High Word / High Byte (ABCD)** option button | Select the **High Word / High Byte (ABCD)** option button to transmit the Modbus data in a High Word / High Byte order. |
| 8 - **Gateway Slave ID Word / Byte Order** area | **High Word / Low Byte (BACD)** option button | Select the **High Word / Low Byte (BACD)** option button to transmit the Modbus data in a High Word / Low Byte order. |
| 8 - **Gateway Slave ID Word / Byte Order** area | **Low Word / High Byte (CDAB)** option button | Select the **Low Word / High Byte (CDAB)** option button to transmit the Modbus data in a Low Word / High Byte order. |
| 8 - **Gateway Slave ID Word / Byte Order** area | **Low Word / Low Byte (DCBA)** option button | Select the **Low Word / Low Byte (DCBA)** option button to transmit the Modbus data in a Low Word / Low Byte order. |
| 9 - **Remote Configuration** area | | The **Remote Configuration** area is used to start and end a **Remote Configuration** session. |

| Device Configuration window: WC45i-GW-P | | |
|---|---|---|
| **Control Area** | **Control Title** | **Control Description** |
| 9 - **Remote Configuration** area | **Start Configuration** button | Click the **Start Configuration** button to activate a **Remote Configuration** session.<br>• If the Endpoint has a **Non-Sleeping** radio, the **Remote Configuration** session is ready immediately.<br>• If it is a **Sleeping** device, wait for the Endpoint to either check-in or send a beacon so it can be commanded into **Configuration** mode.<br>  • A WC20i Endpoint sends a beacon every 2½ minutes.<br>  • All other **Sleeping** Endpoints send a beacon every 5½ minutes.<br>  • When the device has entered a **Remote Configuration** session, a message indicating the **Slave is Ready** appears. |
| 9 - **Remote Configuration** area | **Configure** button | Click the **Configure** button to open the Edit Configuration window (on page 63). |
| 9 - **Remote Configuration** area | **End** button | Click the **End** button to stop the **Remote Configuration** session.<br>**Note**: The Remote Configuration session automatically times-out after 10 minutes of inactivity. |

## 14.1.1. Modbus Slaves Reporting table

| Device Configuration window: Modbus Slaves Reporting table | |
|---|---|
| **Control Title** | **Control Description** |
| **Auto Refresh** check box | Select the **Auto Refresh** check box to automatically update the information in the table every 10 seconds. |
| **Refresh List** button | Click the **Refresh** or **Refresh List** button to update the information in the table. |
| **Slave ID** column | The **Slave ID** column / text box shows the remote source Endpoint Modbus **Slave ID** selected in the **Settings** area of the **Device Configuration** window. |
| **Node Type** column | The **Node Type** column shows the type of Endpoint attached to the WC45i-Gateway. |
| **Node Name** column | The **Node Name** column / text box shows the name assigned to the Endpoint in the **Settings** area of the **Device Configuration** window. |

| Device Configuration window: Modbus Slaves Reporting table | |
|---|---|
| **Control Title** | **Control Description** |
| **RSSI (dbm)** column | The **RSSI (dbm)** column / text box shows the signal strength received from the Endpoint to its neighbor (e.g., a neighbor could be the Gateway if it is not hopping).<br>**Example**: The RSSI is adjusted so if a 500mW device is communicating to a 40mW device the RSSI is shown as being equal in both directions at the lower signal strength.<br>**Notes**<br>• All communications are bi-directional so messages are needed in both directions for communications.<br>• The RSSI and TTL values are color coded (green, yellow, orange, red) to indicate the relative link quality of an Endpoint. Red=Bad link, Yellow=OK link, Green=Good link. |
| **Register Quantity** column | The **Register Quantity** column shows the number of Modbus register data points available the Endpoint has reported to the Gateway. |
| **Checkin Interval** column | The **Checkin Interval** column shows the check-in time selected in the **Checkin Interval** list box of the **Settings** area of the **Device Configuration** window. |
| **TTL (min): Current / Max** column | The **TTL Current** is set to the **TTL Max** each time an update is received from that Endpoint.<br>• The **TTL Current** indicates the number of minutes remaining until the Endpoint is timed out of the Gateway if no updates are received.<br>• The **TTL Max** indicates the maximum TTL for that Endpoint.<br>**Note**: The RSSI and TTL values are color coded (green, yellow, orange, red) to indicate the relative link quality of an Endpoint. Red=Bad link, Yellow=OK link, Green=Good link. |
| **Mainboard Firmware** column | The **Mainboard Firmware** column shows the version of firmware currently installed on the mainboard of the Gateway. |
| **Radio Firmware** column | The **Radio Firmware** column shows the version of radio firmware currently installed on the Endpoint. |
| **Configure** column | In the **Configure** column, select the check-box next to the Endpoint to configure. |

# 14.2. Detect Ethernet Gateways window

The **Detect Ethernet Gateways** window is used to discover Ethernet Gateways currently connected to the network.

## Access and Window Description

1. Verify the WC Toolkit software is installed on the computer connected to the WC45i-GW-P.

   **Note**: See WC Toolkit Installation (on page 17) and WC Toolkit Update (on page 24).

2. Complete the Power and Gateway Connections (on page 13).
3. Connect the Serial end of the WC-USB-DB9 cable to the **RS232 Config / Debug** connector port and the USB connection to the computer.
4. On the computer, complete the Setup the Computer IP Address Configuration (on page 27) procedure.
5. Open the **WC Toolkit** software.
   The **Select Device** window opens. (Figure 53)

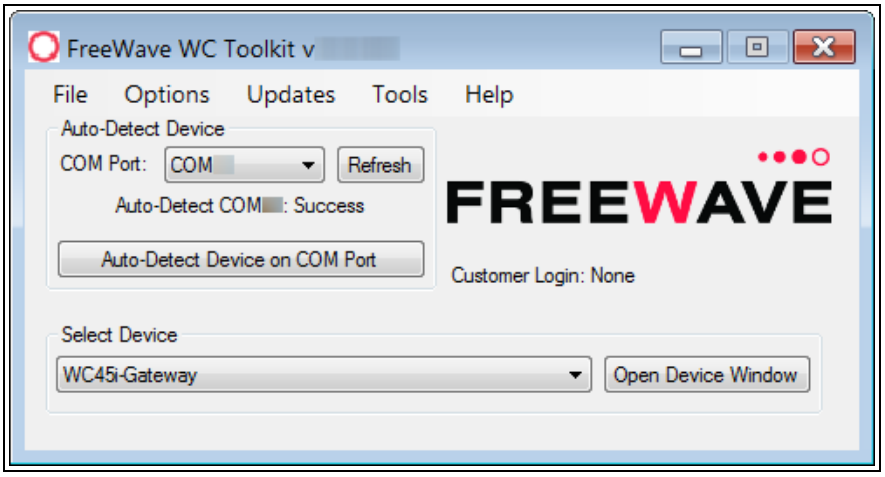



**Figure 53: Select Device window**

3. Connect the WC45i-GW-P Ethernet Module to the network.
   It will automatically obtain an IP Address from a DHCP server.
4. On the **Tools** menu, click **Detect Ethernet Gateways**.

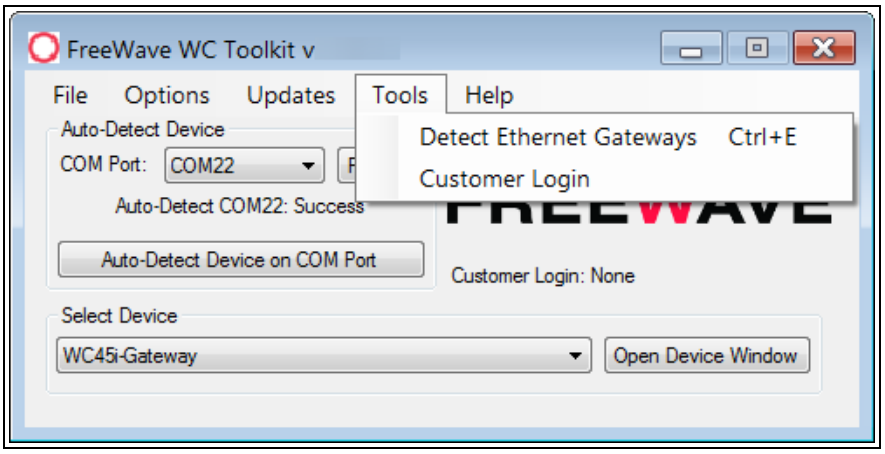



**Figure 54: Tools menu > Detect Ethernet Gateways**

The **Detect Ethernet Gateways** window opens.

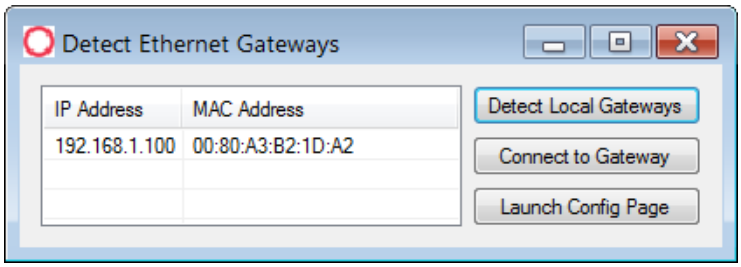



**Figure 55: Detect Ethernet Gateways window**

| **Detect Ethernet Gateways window** | |
|---|---|
| **Control Title** | **Control Description** |
| Ethernet Gateways table | **Note**: The information in this table is read-only.<br><br>**IP Address column**<br>The **IP Address** column / text box shows the detected IP Address of the WC45i-GW-P.<br><br>**MAC Address column**<br>The **MAC Address** column / text box shows the detected MAC Address of the WC45i-GW-P. |
| **Detect Local Gateways** button | Click the **Detect Local Gateways** button to discover the Ethernet Gateways currently connected to the network. |
| **Connect to the Gateway** button | Click the **Connect to the Gateway** button to connect to the selected Gateway IP address. |
| **Launch Config Page** button | Click the **Launch Config Page** button to open a new web browser window to access the Gateway IP address selected in the Detect Ethernet Gateways window. |

# 14.3. Edit Configuration window

The **Edit Configuration** window is used to configure individual Endpoints in the network.

## Access and Window Description

1. Open the Device Configuration window (on page 54).
2. In the **Configure** column, select the check-box next to the Endpoint to configure.
3. Click the **Start Configuration** button to activate a **Remote Configuration** session.

   When the device has entered a **Remote Configuration** session, a message indicating the **Slave is Ready** appears.

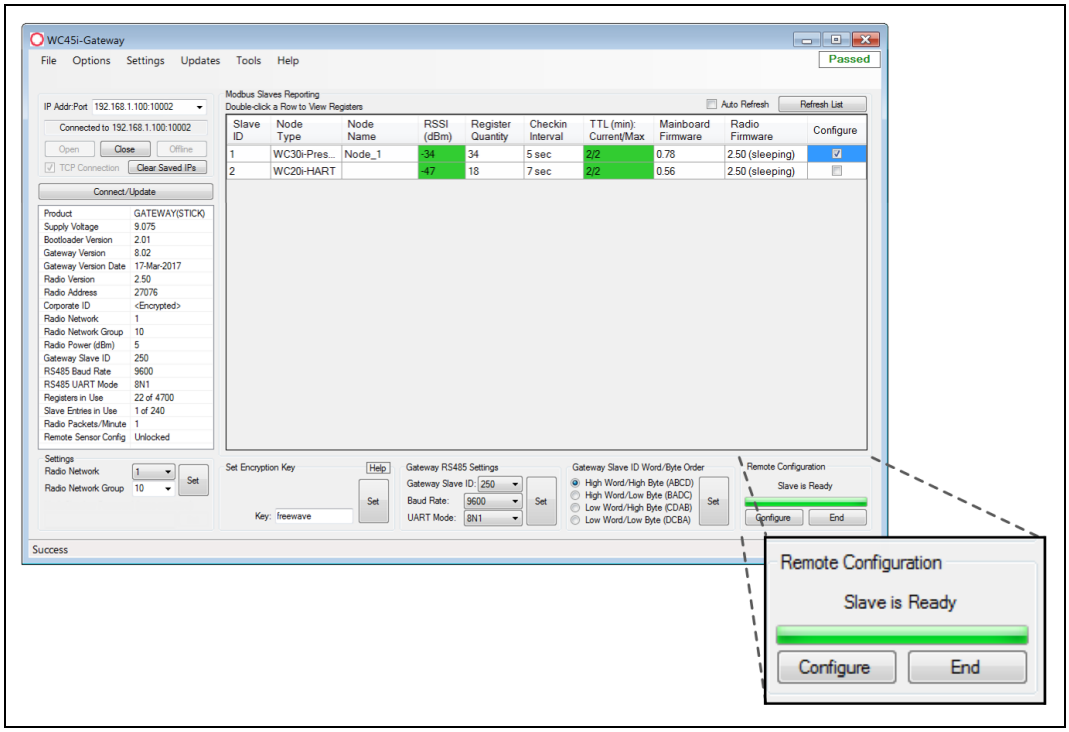



**Figure 56: Remote Configuration area - Slave is Ready**

4. Click the **Configure** button to open the **Edit Configuration** window.

The **Edit Configuration** window opens with device-specific control options depending on the connected sensor:

- Edit Configuration window - General Sensor (on page 64)
- Edit Configuration window - HART Sensor (on page 70)

## 14.3.1. Edit Configuration window - General Sensor

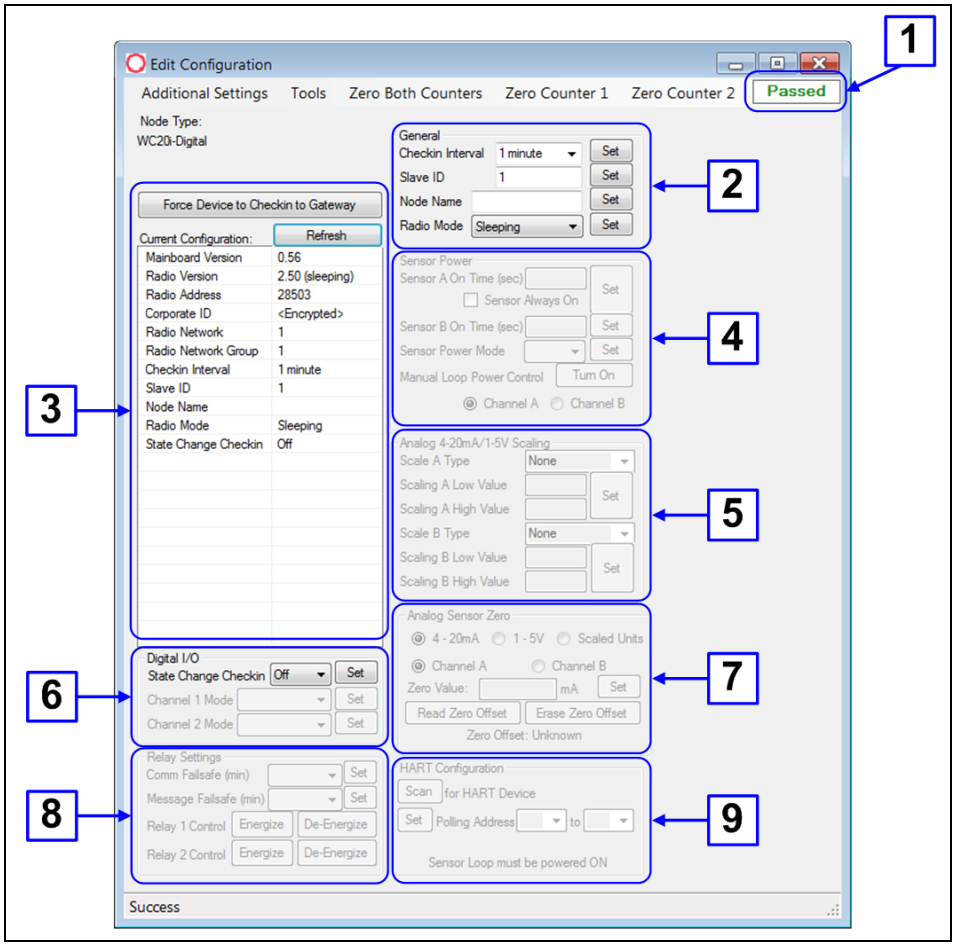



**Figure 57: Edit Configuration window**

| Edit Configuration window - General Sensor | | |
|---|---|---|
| **Control Area** | **Control Title** | **Control Description** |
| | **Set** button | Click the **Set** button to save the information. |
| **Status of Last Operation** text box | | The **Status of Last Operation** text box indicates whether the last command from the WC Toolkit to the connected device is **Active** or has **Passed**.<br>**Note**: A **Firmware Update Available** message appears in this text box when the WC Toolkit has detected that a newer version of firmware is available for download than what is installed on the device.<br>**Note**: This information is read-only. |

| Edit Configuration window - General Sensor | | |
|---|---|---|
| **Control Area** | **Control Title** | **Control Description** |
| 2 - **General** area | **Checkin Interval** list box | Click the **Checkin Interval** list box arrow and select how often the Endpoint wakes up, reads the , and transmits the data to the Gateway. |
| 2 - **General** area | **Slave ID** text box | In the **Slave ID** column / text box, enter the remote source Endpoint Modbus Slave ID.<br>**Important!**: Verify there are no duplicate Slave IDs in a given network.<br>The Gateway only caches one set of data for each Slave ID.<br>A duplicate is overwritten. |
| 2 - **General** area | **Node Name** text box | In the **Node Name** text box, enter a name for the Endpoint using a maximum of 10 characters. |
| 2 - **General** area | **Radio Mode** list box | Click the **Radio Mode** list box arrow and select either **Sleeping** or **Non-Sleeping**. |
| 3 - WC45i-GW-485 **Information** area | | The **Information** area of the **Device Configuration** window shows connection information about the connected WAVECONTACT device.<br>**Note**: This information is read-only. |
| 3 - WC45i-GW-485**Information** area | **Force Device to Checkin to Gateway** button | Click the **Force Device to Checkin to Gateway** button to force the Endpoint to send data to the WC45i-GW-485, WC45i-GW-AN, or WC45i-GW-DIN. |
| 3 - WC45i-GW-485**Information** area | **Refresh** button | Click the **Refresh** button to update the information in this area. |
| 4 - **Sensor Power** area | **Sensor A On Time (sec)** text box | In the **Sensor A On time (sec)** text box, enter the number of seconds .<br>**FREEWAVE Recommends**: Accept the default **Sensor A On time (sec)** value of 2 seconds for most devices.<br>However, radar sensors often require a longer warm-up time. |

| Edit Configuration window - General Sensor | | |
|---|---|---|
| **Control Area** | **Control Title** | **Control Description** |
| 4 - **Sensor Power** area | **Sensor Always On** check box | Select the **Sensor Always On** check box to make the sensor always have power no matter what type of power source is connected to the device.<br><br>**Note**: Having the **Sensor Always On** selected is useful for rapid data collection on a sensor that has a long warm-up time.<br>However, it will shorten the battery life **dramatically** unless a **Solar Powered WC20i** is used. |
| 4 - **Sensor Power** area | **Sensor B On Time (sec)** text box | In the **Sensor B On Time (sec)** text box, enter the number of seconds a second sensor powers on before its value is read. |
| 4 - **Sensor Power** area | **Sensor Power Mode** list box | Click the **Sensor Power Mode** list box arrow and select either HIGH or LOW volts for the WC20i.<br><br>**Note**: HIGH outputs 18.5 volts to the sensor and LOW outputs 12.5 volts.<br>LOW results in longer battery life but some sensors require a higher voltage.<br>In 4-20mA mode HIGH is automatically selected and is the only option.<br>It will supply a minimum of 13.5V to the sensor at full load. |
| 4 - **Sensor Power** area | **Manual Loop Power Control** button | Click the **Manual Loop Power Control** button to send power to the sensor so the sensor can be configured.<br><br>**Note**: The loop times out after a short time if it is not shut off. |
| 4 - **Sensor Power** area | **Channel A** option button | Select the **Channel A** option button to assign the changed settings to Channel A in a 2-channel device. |
| 4 - **Sensor Power** area | **Channel B** option button | Select the **Channel B** option button to assign the changed settings to Channel B in a 2-channel device. |
| 5 - **Analog 4-20mA / 1-5V Scaling** area | **Scale A Type** list box | Click the **Scale A Type** or **Scaling B Type**list box arrow and select either a 4-20mA or 1-5V sensor to scale to an engineering unit equivalent (e.g., 4-20mA = 0-1000 PSI).<br><br>**Note**: If **None** is selected, there is no scaling of the analog readings to engineering units. |

| Edit Configuration window - General Sensor | | |
|---|---|---|
| **Control Area** | **Control Title** | **Control Description** |
| 5 - **Analog 4-20mA / 1-5V Scaling** area | **Scaling A Low Value** text box | In the **Scaling A or B Low Value** text box, manually enter the sensor's lower range value.<br>**Note**: By default, the **Scaling A or B Low Value** corresponds with the lowest reading from the sensor, either 4mA or 1V, depending on the selection in the **Scale A Type** list box or **Scale B Type** list box. |
| 5 - **Analog 4-20mA / 1-5V Scaling** area | **Scaling A High Value** text box | In the **Scaling A or B High Value** text box, manually enter the sensor's upper range value.<br>**Note**: By default, the **Scaling A or B High Value** corresponds with the highest reading from the sensor, either 20mA or 5V, depending on the selection in the **Scale A Type** list box or **Scale B Type** list box. |
| 5 - **Analog 4-20mA / 1-5V Scaling** area | **Scaling B Type** list box | Click the **Scale A Type** or **Scaling B Type**list box arrow and select either a 4-20mA or 1-5V sensor to scale to an engineering unit equivalent (e.g., 4-20mA = 0-1000 PSI).<br>**Note**: If **None** is selected, there is no scaling of the analog readings to engineering units. |
| 5 - **Analog 4-20mA / 1-5V Scaling** area | **Scaling B Low Value** text box | In the **Scaling A or B Low Value** text box, manually enter the sensor's lower range value.<br>**Note**: By default, the **Scaling A or B Low Value** corresponds with the lowest reading from the sensor, either 4mA or 1V, depending on the selection in the **Scale A Type** list box or **Scale B Type** list box. |
| 5 - **Analog 4-20mA / 1-5V Scaling** area | **Scaling B High Value** text box | In the **Scaling A or B High Value** text box, manually enter the sensor's upper range value.<br>**Note**: By default, the **Scaling A or B High Value** corresponds with the highest reading from the sensor, either 20mA or 5V, depending on the selection in the **Scale A Type** list box or **Scale B Type** list box. |
| 6 - **Digital I/O** area | **State Change Checkin** list box | Click the **State Change Checkin** list box arrow and select **Yes** to check on a change of state at the input rather than waiting for the check in time to expire. |
| 6 - **Digital I/O** area | **Channel 1 Mode** list box | Click the **Channel 1 Mode** list box arrow and select either INPUT (analog or digital) or OUTPUT (relay control) for Channel 1. |

| Edit Configuration window - General Sensor | | |
|---|---|---|
| **Control Area** | **Control Title** | **Control Description** |
| 6 - **Digital I/O** area | **Channel 2 Mode** list box | Click the **Channel 2 Mode** list box arrow and select either INPUT (analog or digital) or OUTPUT (relay control) for Channel 2. |
| 7 - **Analog Sensor Zero** area | **4-20mA** option button | Select the **4-20mA** option button to apply the designated sensor reading entered in the **Zero Value** text box when using a 4-20mA input. |
| 7 - **Analog Sensor Zero** area | **1-5V** option button | Select the **1-5V** option button to apply the designated sensor reading entered in the **Zero Value** text box when using a 1-5V input. |
| 7 - **Analog Sensor Zero** area | **Scaled Units** option button | Select the **Scaled Units** option button to scale to an engineering unit equivalent (e.g., 4-20mA = 0-1000 PSI). |
| 7 - **Analog Sensor Zero** area | **Channel A** option button | Select the **Channel A** option button to assign the changed settings to Channel A in a 2-channel device. |
| 7 - **Analog Sensor Zero** area | **Channel B** option button | Select the **Channel B** option button to assign the changed settings to Channel B in a 2-channel device. |
| 7 - **Analog Sensor Zero** area | **Zero Value** text box | In the **Zero Value** text box, enter what the sensor should be reading. |
| 7 - **Analog Sensor Zero** area | **Read Zero Offset** button | Click the **Read Zero Offset** button to force the sensor to use the setting in the **Zero Value** text box. |
| 7 - **Analog Sensor Zero** area | **Erase Zero Offset** button | Click the **Erase Zero Offset** button to erase the value entered in the **Zero Value** text box. |
| 8 - **Relay Settings** area | **Comm Failsafe (min)** list box | Click the **Comm Failsafe (min)** list box arrow and select the time to set the outputs to a de-energized state if the link is lost with the Gateway after the set time.<br>**Note**: This setting is used for **Remote Shutdown Device**. |

| Edit Configuration window - General Sensor | | |
|---|---|---|
| **Control Area** | **Control Title** | **Control Description** |
| 8 - **Relay Settings** area | **Message Failsafe (min)** list box | Click the **Message Failsafe (min)** list box arrow and select the time to set the outputs to a de-energized state if messages are lost from the Gateway after the selected time.<br><br>**Caution**: If a time is selected in the **Message Failsafe (min)** list box, the time entered **must be set higher** than the Modbus Coil Write and Analog Output Write frequency of the Modbus master device. |
| 8 - **Relay Settings** area | **Relay 1 Control** or **Relay 2 Control Energize** button | Click the **Relay 1 Control** or **Relay 2 Control Energize** button to manually test (energize) the relays. |
| 8 - **Relay Settings** area | **Relay 1 Control** or **Relay 2 Control De-Energize** button | Click the **Relay 1 Control** or **Relay 2 Control De-Energize** button to manually test (de-energize) the relays. |
| 9 - **HART Configuration** area | **Scan** button | Click the **Scan** button to scan for the HART ID and show it in the first **Polling Address** list box so it can be changed later using this same window.<br><br>**Important!**: The HART ID **must be set to 1** for the WC20i to communicate with the HART sensor. |
| 9 - **HART Configuration** area | **Polling Address** list boxes | Click the second **Polling Address** list box arrow and select the new HART ID to change the HART sensor to. |

## 14.3.2. Edit Configuration window - HART Sensor

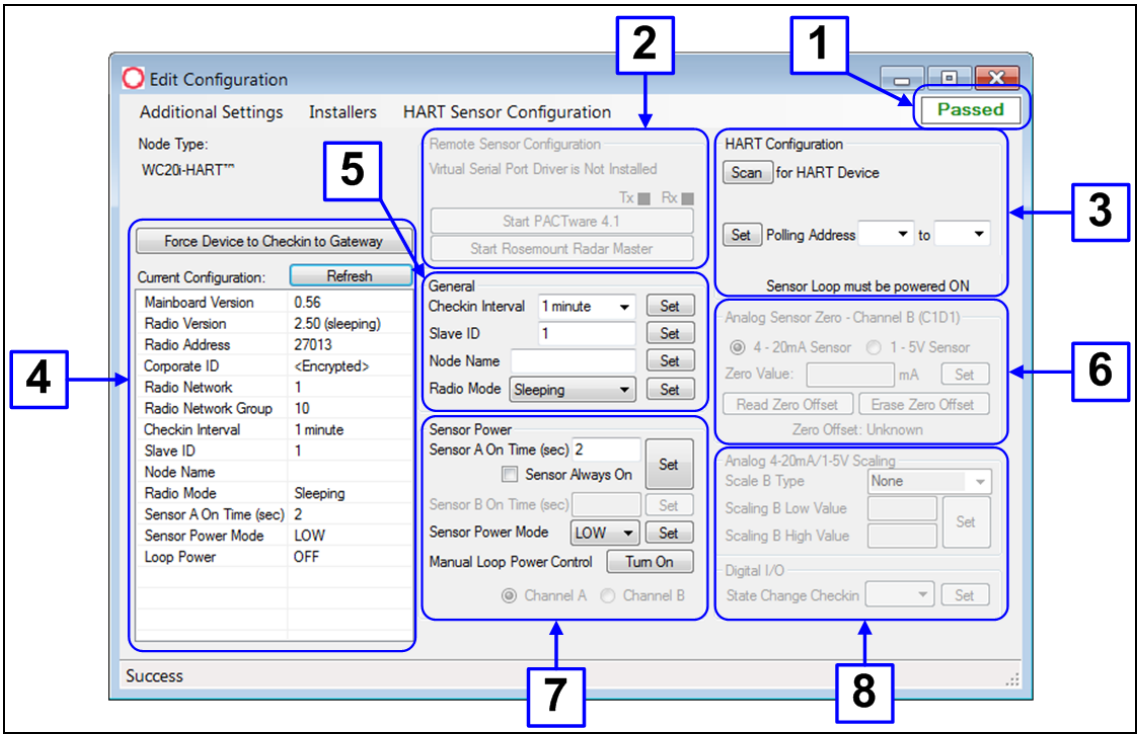



**Figure 58: Edit Configuration window - WC45i-GW-485 - HART**

| Edit Configuration window - WC45i-GW-485 - HART | | |
|---|---|---|
| **Control Area** | **Control Title** | **Control Description** |
| | **Set** button | Click the **Set** button to save the information. |
| **Status of Last Operation** text box | | The **Status of Last Operation** text box indicates whether the last command from the WC Toolkit to the connected device is **Active** or has **Passed**.<br>**Note**: This information is read-only. |
| 2 - **Remote Sensor Configuration** area | **Tx** check box | The **TX** check box shows the transmission of the PACTware™ or RadarMaster.<br>**Note**: This information is read-only. |
| 2 - **Remote Sensor Configuration** area | **Rx** check box | The **Rx** check box shows the receiving of the PACTware™ or RadarMaster.<br>**Note**: This information is read-only. |

| Edit Configuration window - WC45i-GW-485 - HART | | |
|---|---|---|
| **Control Area** | **Control Title** | **Control Description** |
| 2 - **Remote Sensor Configuration** area | **Start PACTware™ 4.1** button | Click the **Start PACTware™ 4.1** button to start PACTware™ used for configuring remote sensors that have a PACTware DTM. |
| 2 - **Remote Sensor Configuration** area | **Start Rosemount Radar Master** button | Click the **Start Rosemount Radar Master** button to start RadarMaster used for configuring a remote Emerson Sensor. |
| 3 - **HART Configuration** area | **Scan** button | Click the **Scan** button to scan for the HART ID and show it in the first **Polling Address** list box so it can be changed later using this same window. |
| 3 - **HART Configuration** area | **Polling Address** list boxes | Click the second **Polling Address** list box arrow and select the new HART ID to change the HART sensor to. |
| 4 - WC45i-GW-485**Information** area | | The **Information** area of the **Device Configuration** window shows connection information about the connected WAVECONTACT device.<br>**Note**: This information is read-only. |
| 4 - WC45i-GW-485**Information** area | **Force Device to Checkin to Gateway** button | Click the **Force Device to Checkin to Gateway** button to force the Endpoint to send data to the WC45i-GW-485, WC45i-GW-AN, or WC45i-GW-DIN. |
| 4 - WC45i-GW-485**Information** area | **Refresh** button | Click the **Refresh** button to update the information in this area. |
| 5 - **General** area | **Checkin Interval** list box | Click the **Checkin Interval** list box arrow and select how often the Endpoint wakes up, reads the , and transmits the data to the Gateway. |
| 5 - **General** area | **Slave ID** text box | In the **Slave ID** column / text box, enter the remote source Endpoint Modbus Slave ID.<br>**Important!**: Verify there are no duplicate Slave IDs in a given network.<br>The Gateway only caches one set of data for each Slave ID.<br>A duplicate is overwritten. |
| 5 - **General** area | **Node Name** text box | In the **Node Name** text box, enter a name for the Endpoint using a maximum of 10 characters. |
| 5 - **General** area | **Radio Mode** list box | Click the **Radio Mode** list box arrow and select either **Sleeping** or **Non-Sleeping**. |

| Edit Configuration window - WC45i-GW-485 - HART | | |
|---|---|---|
| **Control Area** | **Control Title** | **Control Description** |
| 6 - **Analog Sensor Zero - Channel B (C1D1)** area | **4-20mA Sensor** option button | Select the **4-20mA Sensor** option button to apply the designated sensor reading entered in the **Zero Value** text box when using a 4-20mA input. |
| 6 - **Analog Sensor Zero - Channel B (C1D1)** area | **1-5V Sensor** option button | Select the **1-5V Sensor** option button to apply the designated sensor reading entered in the **Zero Value** text box when using a 1-5V input. |
| 6 - **Analog Sensor Zero - Channel B (C1D1)** area | **Zero Value** text box | In the **Zero Value** text box, enter what the sensor should be reading. |
| 6 - **Analog Sensor Zero - Channel B (C1D1)** area | **Read Zero Offset** button | Click the **Read Zero Offset** button to force the sensor to use the setting in the **Zero Value** text box. |
| 6 - **Analog Sensor Zero - Channel B (C1D1)** area | **Erase Zero Offset** button | Click the **Erase Zero Offset** button to erase the value entered in the **Zero Value** text box. |
| 7 - **Sensor Power** area | **Sensor A On Time (sec)** text box | In the **Sensor A On time (sec)** text box, enter the number of seconds .<br>**FREEWAVE Recommends**: Accept the default **Sensor A On time (sec)** value of 2 seconds for most devices.<br>However, radar sensors often require a longer warm-up time. |
| 7 - **Sensor Power** area | **Sensor Always On** check box | Select the **Sensor Always On** check box to make the sensor always have power no matter what type of power source is connected to the device.<br>**Note**: Having the **Sensor Always On** selected is useful for rapid data collection on a sensor that has a long warm-up time.<br>However, it will shorten the battery life **dramatically** unless a **Solar Powered WC20i** is used. |
| 7 - **Sensor Power** area | **Sensor B On Time (sec)** text box | In the **Sensor B On Time (sec)** text box, enter the number of seconds a second sensor powers on before its value is read. |

| Edit Configuration window - WC45i-GW-485 - HART | | |
|---|---|---|
| **Control Area** | **Control Title** | **Control Description** |
| 7 - **Sensor Power** area | **Sensor Power Mode** list box | Click the **Sensor Power Mode** list box arrow and select either HIGH or LOW volts for the WC20i.<br>**Note**: HIGH outputs 18.5 volts to the sensor and LOW outputs 12.5 volts.<br>LOW results in longer battery life but some sensors require a higher voltage.<br>In 4-20mA mode HIGH is automatically selected and is the only option.<br>It will supply a minimum of 13.5V to the sensor at full load. |
| 7 - **Sensor Power** area | **Manual Loop Power Control** button | Click the **Manual Loop Power Control** button to send power to the sensor so the sensor can be configured.<br>**Note**: The loop times out after a short time if it is not shut off. |
| 7 - **Sensor Power** area | **Channel A** option button | Select the **Channel A** option button to assign the changed settings to Channel A in a 2-channel device. |
| 7 - **Sensor Power** area | **Channel B** option button | Select the **Channel B** option button to assign the changed settings to Channel B in a 2-channel device. |
| 8 - **Analog 4-20mA / 1-5V Scaling** area | **Scaling B Type** list box | Click the **Scale A Type** or **Scaling B Type**list box arrow and select either a 4-20mA or 1-5V sensor to scale to an engineering unit equivalent (e.g., 4-20mA = 0-1000 PSI).<br>**Note**: If **None** is selected, there is no scaling of the analog readings to engineering units. |
| 8 - **Analog 4-20mA / 1-5V Scaling** area | **Scaling B Low Value** text box | In the **Scaling A or B Low Value** text box, manually enter the sensor's lower range value.<br>**Note**: By default, the **Scaling A or B Low Value** corresponds with the lowest reading from the sensor, either 4mA or 1V, depending on the selection in the **Scale A Type** list box or **Scale B Type** list box. |
| 8 - **Analog 4-20mA / 1-5V Scaling** area | **Scaling B High Value** text box | In the **Scaling A or B High Value** text box, manually enter the sensor's upper range value.<br>**Note**: By default, the **Scaling A or B High Value** corresponds with the highest reading from the sensor, either 20mA or 5V, depending on the selection in the **Scale A Type** list box or **Scale B Type** list box. |

| Edit Configuration window - WC45i-GW-485 - HART | | |
|---|---|---|
| **Control Area** | **Control Title** | **Control Description** |
| 8 - **Digital I/O** area | **State Change Checkin** list box | Click the **State Change Checkin** list box arrow and select **Yes** to check on a change of state at the input rather than waiting for the check in time to expire. |

# 15. WAVECONTACT Network Frequencies

The frequencies used by the WAVECONTACT network vary depending on the **Radio Network** and **Radio Network Group** selected in the Device Configuration window (on page 54).

**Example**: Using the Radio Network Group Selection: 0, 1, 2, or 3 (on page 76) table, the **Radio Network** and **Radio Network Group** settings of 0 (zero) and 0 (zero) (respectively) uses the frequencies between 908.20 and 918.20.
The **Radio Network** and **Radio Network Group** settings of 0 (zero) and 2 (respectively) uses 905.00 to 915.00.

# 15.1. Radio Network Group Selection: 0, 1, 2, or 3

In the Device Configuration window (on page 54), these are the **High** and **Low Frequencies** when the **Radio Network Group** list box selection is 0, 1, 2, or 3.

| Radio Network selection | Radio Network Group selection: 0 or 1 | Low Frequency | High Frequency | Radio Network selection | Radio Network Group selection: 2 or 3 | Low Frequency | High Frequency |
|---|---|---|---|---|---|---|---|
| 0 | **0** | 908.20 | 918.20 | 0 | **2** | 905.00 | 915.00 |
| 1 | **0** | 908.40 | 918.40 | 1 | **2** | 905.20 | 915.20 |
| 2 | **0** | 908.60 | 918.60 | 2 | **2** | 905.40 | 915.40 |
| 3 | **0** | 908.80 | 918.80 | 3 | **2** | 905.60 | 915.60 |
| 4 | **0** | 909.00 | 919.00 | 4 | **2** | 905.80 | 915.80 |
| 5 | **0** | 909.20 | 919.20 | 5 | **2** | 906.00 | 916.00 |
| 6 | **0** | 909.40 | 919.40 | 6 | **2** | 906.20 | 916.20 |
| 7 | **0** | 909.60 | 919.60 | 7 | **2** | 906.40 | 916.40 |
| | | | | | | | |
| 0 | **1** | 909.80 | 919.80 | 0 | **3** | 906.60 | 916.60 |
| 1 | **1** | 910.00 | 920.00 | 1 | **3** | 906.80 | 916.80 |
| 2 | **1** | 910.20 | 920.20 | 2 | **3** | 907.00 | 917.00 |
| 3 | **1** | 910.40 | 920.40 | 3 | **3** | 907.20 | 917.20 |
| 4 | **1** | 910.60 | 920.60 | 4 | **3** | 907.40 | 917.40 |
| 5 | **1** | 910.80 | 920.80 | 5 | **3** | 907.60 | 917.60 |
| 6 | **1** | 911.00 | 921.00 | 6 | **3** | 907.80 | 917.80 |
| 7 | **1** | 911.20 | 921.20 | 7 | **3** | 908.00 | 918.00 |

# 15.2. Radio Network Group Selection: 4, 5, 6, or 7

In the Device Configuration window (on page 54), these are the **High** and **Low Frequencies** when the **Radio Network Group** list box selection is 4, 5, 6, or 7.

| Radio Network selection | Radio Network Group selection: 4 or 5 | Low Frequency | High Frequency | Radio Network selection | Radio Network Group selection: 6 or 7 | Low Frequency | High Frequency |
|---|---|---|---|---|---|---|---|
| 0 | **4** | 908.20 | 918.20 | 0 | **6** | 905.00 | 915.00 |
| 1 | **4** | 908.40 | 918.40 | 1 | **6** | 905.20 | 915.20 |
| 2 | **4** | 908.60 | 918.60 | 2 | **6** | 905.40 | 915.40 |
| 3 | **4** | 908.80 | 918.80 | 3 | **6** | 905.60 | 915.60 |
| 4 | **4** | 909.00 | 919.00 | 4 | **6** | 905.80 | 915.80 |
| 5 | **4** | 909.20 | 919.20 | 5 | **6** | 906.00 | 916.00 |
| 6 | **4** | 909.40 | 919.40 | 6 | **6** | 906.20 | 916.20 |
| 7 | **4** | 909.60 | 919.60 | 7 | **6** | 906.40 | 916.40 |
| | | | | | | | |
| 0 | **5** | 909.80 | 919.80 | 0 | **7** | 906.60 | 916.60 |
| 1 | **5** | 910.00 | 920.00 | 1 | **7** | 906.80 | 916.80 |
| 2 | **5** | 910.20 | 920.20 | 2 | **7** | 907.00 | 917.00 |
| 3 | **5** | 910.40 | 920.40 | 3 | **7** | 907.20 | 917.20 |
| 4 | **5** | 910.60 | 920.60 | 4 | **7** | 907.40 | 917.40 |
| 5 | **5** | 910.80 | 920.80 | 5 | **7** | 907.60 | 917.60 |
| 6 | **5** | 911.00 | 921.00 | 6 | **7** | 907.80 | 917.80 |
| 7 | **5** | 911.20 | 921.20 | 7 | **7** | 908.00 | 918.00 |

# 15.3. Radio Network Group Selection: 8, 9, 10, 11

In the Device Configuration window (on page 54), these are the **High** and **Low Frequencies** when the **Radio Network Group** list box selection is 8, 9, 10, or 11.

| Radio Network selection | Radio Network Group selection: 8 or 9 | Low Frequency | High Frequency | | Radio Network selection | Radio Network Group selection: 10 or 11 | Low Frequency | High Frequency |
|---|---|---|---|---|---|---|---|---|
| 0 | **8** | 908.20 | 918.20 | | 0 | **10** | 905.00 | 915.00 |
| 1 | **8** | 908.40 | 918.40 | | 1 | **10** | 905.20 | 915.20 |
| 2 | **8** | 908.60 | 918.60 | | 2 | **10** | 905.40 | 915.40 |
| 3 | **8** | 908.80 | 918.80 | | 3 | **10** | 905.60 | 915.60 |
| 4 | **8** | 909.00 | 919.00 | | 4 | **10** | 905.80 | 915.80 |
| 5 | **8** | 909.20 | 919.20 | | 5 | **10** | 906.00 | 916.00 |
| 6 | **8** | 909.40 | 919.40 | | 6 | **10** | 906.20 | 916.20 |
| 7 | **8** | 909.60 | 919.60 | | 7 | **10** | 906.40 | 916.40 |
| | | | | | | | | |
| 0 | **9** | 909.80 | 919.80 | | 0 | **11** | 906.60 | 916.60 |
| 1 | **9** | 910.00 | 920.00 | | 1 | **11** | 906.80 | 916.80 |
| 2 | **9** | 910.20 | 920.20 | | 2 | **11** | 907.00 | 917.00 |
| 3 | **9** | 910.40 | 920.40 | | 3 | **11** | 907.20 | 917.20 |
| 4 | **9** | 910.60 | 920.60 | | 4 | **11** | 907.40 | 917.40 |
| 5 | **9** | 910.80 | 920.80 | | 5 | **11** | 907.60 | 917.60 |
| 6 | **9** | 911.00 | 921.00 | | 6 | **11** | 907.80 | 917.80 |
| 7 | **9** | 911.20 | 921.20 | | 7 | **11** | 908.00 | 918.00 |

# 15.4. Radio Network Group Selection: 12, 13, 14, 15

In the Device Configuration window (on page 54), these are the **High** and **Low Frequencies** when the **Radio Network Group** list box selection is 12, 13, 14, or 15.

| Radio Network selection | Radio Network Group selection: 12 or 13 | Low Frequency | High Frequency | Radio Network selection | Radio Network Group selection: 14 or 15 | Low Frequency | High Frequency |
|---|---|---|---|---|---|---|---|
| 0 | **12** | 908.20 | 918.20 | 0 | **14** | 905.00 | 915.00 |
| 1 | **12** | 908.40 | 918.40 | 1 | **14** | 905.20 | 915.20 |
| 2 | **12** | 908.60 | 918.60 | 2 | **14** | 905.40 | 915.40 |
| 3 | **12** | 908.80 | 918.80 | 3 | **14** | 905.60 | 915.60 |
| 4 | **12** | 909.00 | 919.00 | 4 | **14** | 905.80 | 915.80 |
| 5 | **12** | 909.20 | 919.20 | 5 | **14** | 906.00 | 916.00 |
| 6 | **12** | 909.40 | 919.40 | 6 | **14** | 906.20 | 916.20 |
| 7 | **12** | 909.60 | 919.60 | 7 | **14** | 906.40 | 916.40 |
| | | | | | | | |
| 0 | **13** | 909.80 | 919.80 | 0 | **15** | 906.60 | 916.60 |
| 1 | **13** | 910.00 | 920.00 | 1 | **15** | 906.80 | 916.80 |
| 2 | **13** | 910.20 | 920.20 | 2 | **15** | 907.00 | 917.00 |
| 3 | **13** | 910.40 | 920.40 | 3 | **15** | 907.20 | 917.20 |
| 4 | **13** | 910.60 | 920.60 | 4 | **15** | 907.40 | 917.40 |
| 5 | **13** | 910.80 | 920.80 | 5 | **15** | 907.60 | 917.60 |
| 6 | **13** | 911.00 | 921.00 | 6 | **15** | 907.80 | 917.80 |
| 7 | **13** | 911.20 | 921.20 | 7 | **15** | 908.00 | 918.00 |

# 15.5. Radio Network Group Selection: 16, 17, 18, or 19

In the Device Configuration window (on page 54), these are the **High** and **Low Frequencies** when the **Radio Network Group** list box selection is 16, 17, 18, or 19.

| Radio Network selection | Radio Network Group selection: 16 or 17 | Low Frequency | High Frequency | Radio Network selection | Radio Network Group selection: 18 or 19 | Low Frequency | High Frequency |
|---|---|---|---|---|---|---|---|
| 0 | **16** | 908.20 | 918.20 | 0 | **18** | 905.00 | 915.00 |
| 1 | **16** | 908.40 | 918.40 | 1 | **18** | 905.20 | 915.20 |
| 2 | **16** | 908.60 | 918.60 | 2 | **18** | 905.40 | 915.40 |
| 3 | **16** | 908.80 | 918.80 | 3 | **18** | 905.60 | 915.60 |
| 4 | **16** | 909.00 | 919.00 | 4 | **18** | 905.80 | 915.80 |
| 5 | **16** | 909.20 | 919.20 | 5 | **18** | 906.00 | 916.00 |
| 6 | **16** | 909.40 | 919.40 | 6 | **18** | 906.20 | 916.20 |
| 7 | **16** | 909.60 | 919.60 | 7 | **18** | 906.40 | 916.40 |
| | | | | | | | |
| 0 | **17** | 909.80 | 919.80 | 0 | **19** | 906.60 | 916.60 |
| 1 | **17** | 910.00 | 920.00 | 1 | **19** | 906.80 | 916.80 |
| 2 | **17** | 910.20 | 920.20 | 2 | **19** | 907.00 | 917.00 |
| 3 | **17** | 910.40 | 920.40 | 3 | **19** | 907.20 | 917.20 |
| 4 | **17** | 910.60 | 920.60 | 4 | **19** | 907.40 | 917.40 |
| 5 | **17** | 910.80 | 920.80 | 5 | **19** | 907.60 | 917.60 |
| 6 | **17** | 911.00 | 921.00 | 6 | **19** | 907.80 | 917.80 |
| 7 | **17** | 911.20 | 921.20 | 7 | **19** | 908.00 | 918.00 |

# 15.6. Radio Network Group Selection: 20, 21, 22, 23

In the Device Configuration window (on page 54), these are the **High** and **Low Frequencies** when the **Radio Network Group** list box selection is 20, 21, 22, or 23.

| Radio Network selection | Radio Network Group selection: 20 or 21 | Low Frequency | High Frequency | Radio Network selection | Radio Network Group selection: 22 or 23 | Low Frequency | High Frequency |
|---|---|---|---|---|---|---|---|
| 0 | **20** | 908.20 | 918.20 | 0 | **22** | 905.00 | 915.00 |
| 1 | **20** | 908.40 | 918.40 | 1 | **22** | 905.20 | 915.20 |
| 2 | **20** | 908.60 | 918.60 | 2 | **22** | 905.40 | 915.40 |
| 3 | **20** | 908.80 | 918.80 | 3 | **22** | 905.60 | 915.60 |
| 4 | **20** | 909.00 | 919.00 | 4 | **22** | 905.80 | 915.80 |
| 5 | **20** | 909.20 | 919.20 | 5 | **22** | 906.00 | 916.00 |
| 6 | **20** | 909.40 | 919.40 | 6 | **22** | 906.20 | 916.20 |
| 7 | **20** | 909.60 | 919.60 | 7 | **22** | 906.40 | 916.40 |
| | | | | | | | |
| 0 | **21** | 909.80 | 919.80 | 0 | **23** | 906.60 | 916.60 |
| 1 | **21** | 910.00 | 920.00 | 1 | **23** | 906.80 | 916.80 |
| 2 | **21** | 910.20 | 920.20 | 2 | **23** | 907.00 | 917.00 |
| 3 | **21** | 910.40 | 920.40 | 3 | **23** | 907.20 | 917.20 |
| 4 | **21** | 910.60 | 920.60 | 4 | **23** | 907.40 | 917.40 |
| 5 | **21** | 910.80 | 920.80 | 5 | **23** | 907.60 | 917.60 |
| 6 | **21** | 911.00 | 921.00 | 6 | **23** | 907.80 | 917.80 |
| 7 | **21** | 911.20 | 921.20 | 7 | **23** | 908.00 | 918.00 |

# 15.7. Radio Network Group Selection: 24, 25, 26, 27

In the Device Configuration window (on page 54), these are the **High** and **Low Frequencies** when the **Radio Network Group** list box selection is 24, 25, 26, or 27.

| Radio Network selection | Radio Network Group selection: 24 or 25 | Low Frequency | High Frequency | Radio Network selection | Radio Network Group selection: 26 or 27 | Low Frequency | High Frequency |
|---|---|---|---|---|---|---|---|
| 0 | **24** | 908.20 | 918.20 | 0 | **26** | 905.00 | 915.00 |
| 1 | **24** | 908.40 | 918.40 | 1 | **26** | 905.20 | 915.20 |
| 2 | **24** | 908.60 | 918.60 | 2 | **26** | 905.40 | 915.40 |
| 3 | **24** | 908.80 | 918.80 | 3 | **26** | 905.60 | 915.60 |
| 4 | **24** | 909.00 | 919.00 | 4 | **26** | 905.80 | 915.80 |
| 5 | **24** | 909.20 | 919.20 | 5 | **26** | 906.00 | 916.00 |
| 6 | **24** | 909.40 | 919.40 | 6 | **26** | 906.20 | 916.20 |
| 7 | **24** | 909.60 | 919.60 | 7 | **26** | 906.40 | 916.40 |
| | | | | | | | |
| 0 | **25** | 909.80 | 919.80 | 0 | **27** | 906.60 | 916.60 |
| 1 | **25** | 910.00 | 920.00 | 1 | **27** | 906.80 | 916.80 |
| 2 | **25** | 910.20 | 920.20 | 2 | **27** | 907.00 | 917.00 |
| 3 | **25** | 910.40 | 920.40 | 3 | **27** | 907.20 | 917.20 |
| 4 | **25** | 910.60 | 920.60 | 4 | **27** | 907.40 | 917.40 |
| 5 | **25** | 910.80 | 920.80 | 5 | **27** | 907.60 | 917.60 |
| 6 | **25** | 911.00 | 921.00 | 6 | **27** | 907.80 | 917.80 |
| 7 | **25** | 911.20 | 921.20 | 7 | **27** | 908.00 | 918.00 |

# 15.8. Radio Network Group Selection: 28 or 29

In the Device Configuration window (on page 54), these are the **High** and **Low Frequencies** when the **Radio Network Group** list box selection is 28 or 29.

| Radio Network selection | Radio Network Group selection: 28 or 29 | Low Frequency | High Frequency |
|---|---|---|---|
| 0 | **28** | 908.20 | 918.20 |
| 1 | **28** | 908.40 | 918.40 |
| 2 | **28** | 908.60 | 918.60 |
| 3 | **28** | 908.80 | 918.80 |
| 4 | **28** | 909.00 | 919.00 |
| 5 | **28** | 909.20 | 919.20 |
| 6 | **28** | 909.40 | 919.40 |
| 7 | **28** | 909.60 | 919.60 |
| | | | |
| 0 | **29** | 909.80 | 919.80 |
| 1 | **29** | 910.00 | 920.00 |
| 2 | **29** | 910.20 | 920.20 |
| 3 | **29** | 910.40 | 920.40 |
| 4 | **29** | 910.60 | 920.60 |
| 5 | **29** | 910.80 | 920.80 |
| 6 | **29** | 911.00 | 921.00 |
| 7 | **29** | 911.20 | 921.20 |

# Appendix A: Technical Specifications

| WC45i-GW-P Ethernet Module Technical Specification | |
|---|---|
| **Specification** | **Description** |
| Network Interface | • Ethernet 10/100 base TX with Auto Negation<br>• HP Auto MDIX. RJ45 Connector |
| Network Standards | TCP/IP, DHCP, Telnet, and HTTP |
| Supply | • +6 to +36VDC (screw terminals) (80mA at 12VDC)<br>• Power Over Ethernet with auto switchover |
| Serial Port | RS232 serial port provides direct communication to the Gateway using WC Toolkit. |
| Modbus TCP Server | The Modbus TCP server supports 16 simultaneous server connections. |
| **Default Settings** | |
| IP Address | DHCP or (192.168.1.100 if ordered with default static IP) |
| Host Name | WAVECONTACT GW |
| Modbus TCP Port | 502 |
| SignalFire Toolkit Port | 10002 |
| Web Configuration Login | admin |
| Web Configuration Password | freewave |

# Appendix B: LEDs

The WC45i-GW-P uses three green LEDs available for field diagnostics.

| Status LEDs | Description |
|---|---|
| Slow Flash (3 second pause) ( ) | System is running and at least one remote Endpoint is connected. |
| Fast Flash (1 second pause) ( ) | System is running but no remote Endpoints have connected. |
| Solid On ( ) | No communication with the Endpoint. |
| **Ethernet Link** | |
| Solid On ( ) | Valid Ethernet Link detected. |
| Off | No Ethernet Link detected. |
| **Ethernet ACT** | |
| Blink On ( ) | Blinks On to indicate Ethernet traffic. |

# Appendix C: Available Accessories

These accessories are available from FreeWave for the WAVECONTACT products.

| Available Accessories | |
|---|---|
| **FreeWave Part #** | **Description** |
| WC-USB-DB9 | USB to Serial DB9 programming cable |
| WC45-Whip | Whip Antenna<br>Suitable for use in fiberglass or plastic enclosure with direct mount to DIN mounted card. |
| WC45-PM | Panel Mount Antenna<br>Mount outside of an enclosure. |

# Appendix D: FreeWave Legal Information

**Export Notification**

**FreeWave Technologies, Inc. products may be subject to control by the Export Administration Regulations (EAR) and/or the International Traffic in Arms Regulations (ITAR). Export, re-export, or transfer of these products without required authorization from the U.S. Department of Commerce, Bureau of Industry and Security, or the U.S. Department of State, Directorate of Defense Trade Controls, as applicable, is prohibited. Any party exporting, re-exporting, or transferring FreeWave products is responsible for obtaining all necessary U.S. government authorizations required to ensure compliance with these and other applicable U.S. laws. Consult with your legal counsel for further guidance.**

**FCC Notifications**

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: 1) This device may not cause harmful interference and 2) this device must accept any interference received, including interference that may cause undesired operation.

The content of this guide covers FreeWave Technologies, Inc. models sold under FCC ID: N/A.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of these measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**FCC Notification of Power Warning**

The WC45i-GW-P Ethernet Module covered in this document has a maximum transmitted output power of +14dBm.

The antennas used MUST provide a separation distance of at least 20 cm from all persons and MUST NOT be co-located or operate in conjunction with any other antenna or transmitter.

**IC Notifications**

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a maximum (or lesser) gain approved for this transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.r.i.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industri e Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d' un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les ri sques de brouillage radioélectrique à l'intention des autres utilisat eurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établisseme nt d'une communication satisfaisante.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Ce dispositif est conforme aux normes permis-exemptes du Canada RSS d'industrie. L'opération est sujette aux deux conditions suivantes : (1) ce dispositif peut ne pas causer l'interférence, et (2) ce dispositif doit accepter n'importe quelle interférence, y compris l'interférence qui peut causer le fonctionnement peu désiré du dispositif.

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