

WC45i-GW-485 Modbus Gateway Quick Start Guide

Thank you for purchasing the WC45i-GW-485 Modbus Gateway. This **Quick Start Guide** provides brief procedures for the hardware installation and configuration of the WC45i-GW-485.

Important!: It is assumed that the reader and installer have completed the FreeWave WC45i-GW-485 installation and setup training to follow the procedures in this document.

Note: For more detailed installation, connection, and configuration procedures, download the WC45i-GW-485 **User Manual** from the <http://support.freewave.com/> website. Registration is required to use this website.

The basic steps are:

- A. [Power and Gateway Connections \(on page 1\)](#)
- B. [WC Toolkit Installation \(on page 1\)](#)
- C. [WC Toolkit Update \(on page 2\)](#)
- D. [Configuration \(on page 3\)](#)

Included Equipment

The WC45i-GW-485 package contains these items:

Included Equipment - WC45i-GW-485	
Qty	Description
1	WC45i-GW - Gateway with Modbus Interface and 25ft cable
1	WC45i-BB - Smart Breakout Board
1	WC45i-GW-485 Quick Start Guide

User-supplied Equipment

- Small, flathead screwdriver
- Mounting equipment for the WC45i-GW-485.
- USB to Serial DB9 programming cable (FreeWave Part #: WC-USB-DB9)
- DC Adapter Power Supply (+6 to +30VDC)
- Barrel connector with Ground and Power flying leads
- Computer for WAVECONTACT device configuration.

Power and Gateway Connections

Important!: Verify the items listed in **Included** and **User-supplied Equipment** section are available before starting this procedure.

1. All wiring should be neat and orderly.
2. On the WC45i-BB Smart Breakout Board:
 - a. Connect the configuration wires of the Gateway to their respective color-designated screw terminal connections.
 - b. Connect the Serial end of the WC-USB-DB9 cable to the **RS232 Config / Debug** connector port and the USB connection to the computer.
 - c. Use the PWR screw terminal connection to connect the Power Source from an external power supply of +6 to +30VDC.
 - d. Use the GND screw terminal connection to connect the External power ground.
 - e. Connect the Modbus master to the RS485 Modbus Block.

The WC45i-BB connections are similar to [Figure 1](#):



Figure 1: WC45i-BB Connections

3. If this is the first time the WC45i-GW-485 is installed, wait for the drivers to install.

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

4. Continue with [WC Toolkit Installation \(on page 1\)](#).

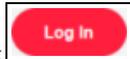
WC Toolkit Installation

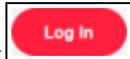
Note: The images in this procedure are for Windows® 7 and/or Firefox®. The dialog boxes and windows may appear differently on each computer.

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

Important!: Registration is required to use this website.

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.

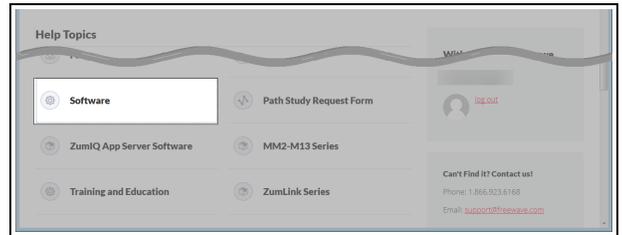


Figure 2: Help Topics window

The **Software** window opens.

5. Click the **WAVECONTACT Toolkit** link. The available software appears in the window.
6. Select and click the attachment.

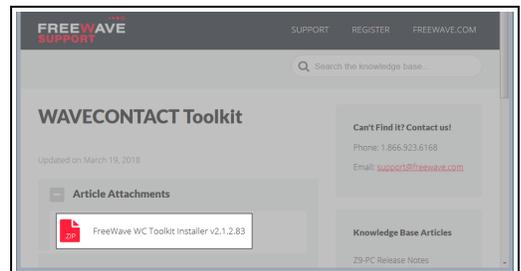


Figure 3: WAVECONTACT Toolkit window

The **Opening** dialog box opens.

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.
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.

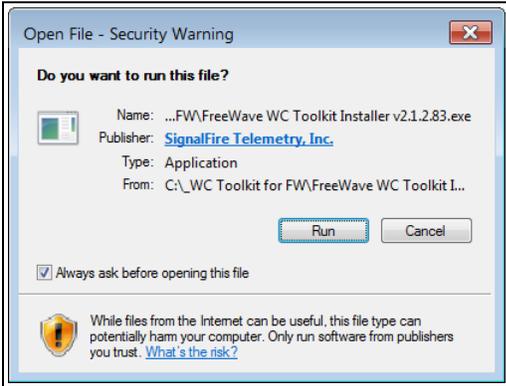


Figure 4: Open File - Security Warning dialog box

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

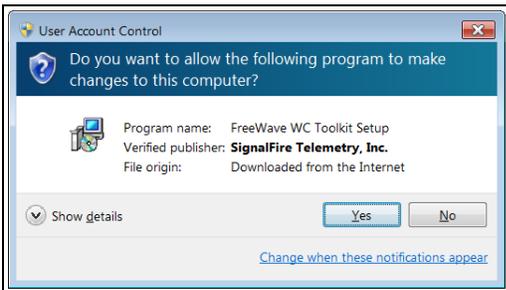


Figure 5: User Account Control dialog box

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

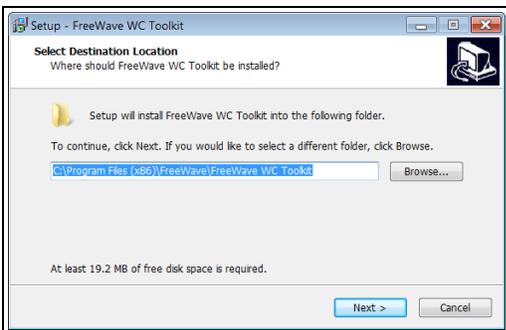


Figure 6: WC Toolkit Setup Wizard - Select Destination Location window

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

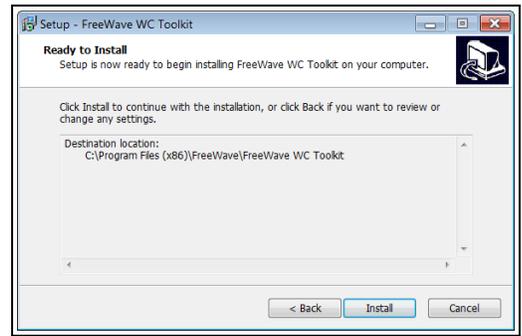


Figure 7: WC Toolkit Setup Wizard - Ready to Install window

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

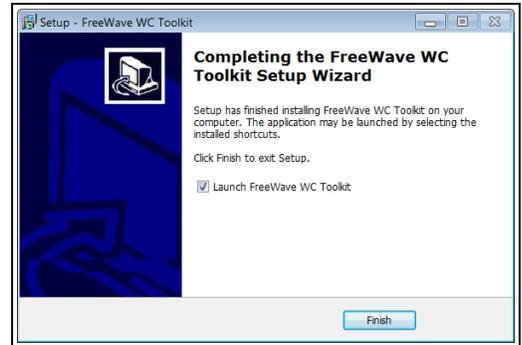


Figure 8: WC Toolkit Setup Wizard - Installation Complete window

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

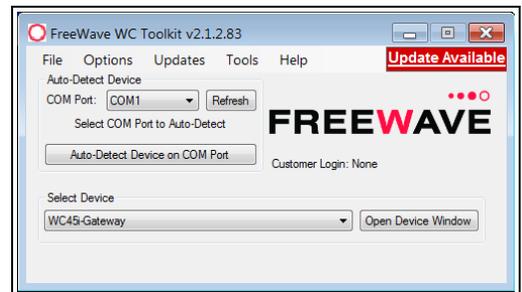


Figure 9: WC Toolkit - Update Available message

18. Continue with the [WC Toolkit Update \(on page 2\)](#) procedure.

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](#) 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 10](#))

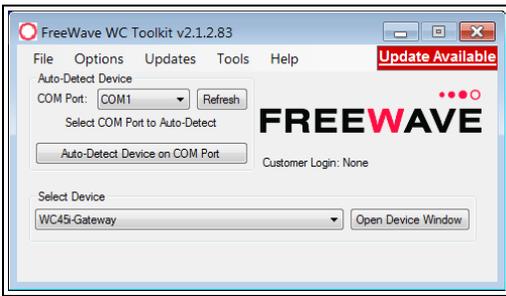


Figure 10: WC Toolkit - Update Available message

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



Figure 11: Click the Update Available message link

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

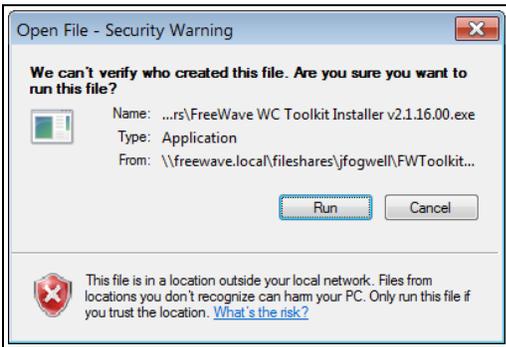


Figure 12: Open File - Security Warning dialog box

3. Click **Run**.

The **User Account Control** dialog box opens.

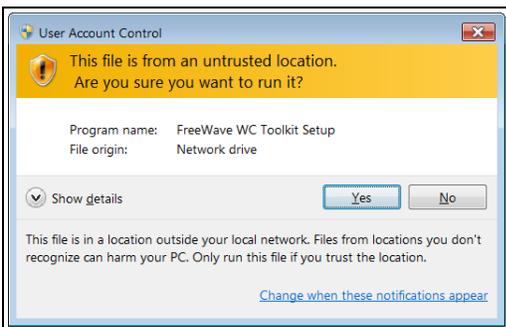


Figure 13: User Account Control dialog box

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 14)

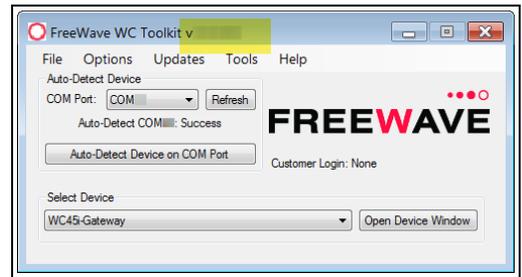


Figure 14: Select Device window

5. Continue with Configuration of the WC45i-GW-485.

Configuration

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

FREEWAVE Recommends: Install and configure the **WC45i Gateway** before any Endpoints to ensure the Endpoints have connectivity after installation.

Important!: The **RS232 Config / Debug** connector on the WC45i-GW **MUST** be used for WC Toolkit access. The Config / Debug port is accessed by a direct connection to the WC45i-GW-485 **RS232 Config / Debug** connector port.

Note: The screenshots are examples only. The dialog boxes and windows appear differently on each computer.

1. Verify the WC Toolkit software is installed on the computer connected to the WC45i-GW-485.
2. Open the **WC Toolkit** software. The **Select Device** window opens. (Figure 15)



Figure 15: 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-GW-485.
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. The **Device Configuration** window opens for the selected device.

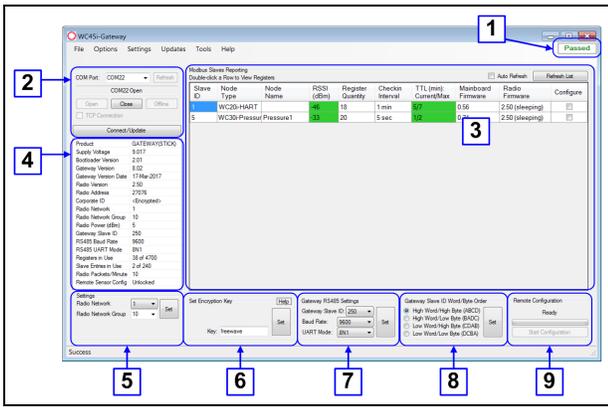


Figure 16: Device Configuration window: WC45i-Gateway

6. In the **Settings** area (#5), change these settings:

Note: The **Network** settings are used to create separate networks using multiple Gateways (that are in close proximity to one another).

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.

- Click the **Radio Network** list box arrow and select 0 (zero) to 7 for the assigned number.
- Click the **Radio Network Group** list box arrow and select 0 (zero) to 29 for the network group assigned number.
- Click the **Set** button to save the information.

7. In the **Set Encryption Key** area (#6), change these settings:

- In the **Key** text box, enter the encryption key for the device using 6 to 16 characters.
- Click the **Set** button to save the information.

Important!: A Key **CANNOT** contain spaces or angle brackets. The Gateway and Endpoints only communicate if they are configured with the same **Key**. When setting up a new network, use this same encryption Key on all the devices.

Note: When the WC45i-GW-485 drops its network, it attempts to join networks using the same encryption **Key**.

Caution: It is possible to hide the encryption **Key** so it cannot be read. This is the most secure option, but if the **Key** is forgotten, there is **no way to recover it**. The **Key** must be reset on every device on the network.

8. Optional: Click the **Settings** menu and select **Set Encryption Key Unrecoverable**

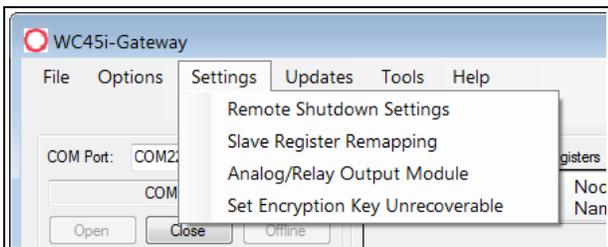


Figure 17: Settings menu > Set Encryption Key Unrecoverable

9. Click **Refresh List** button to update the **Modbus Slaves Reporting** table with all connected remote Endpoints.

Slave ID	Node Type	Node Name	RSSI (dBm)	Register Quantity	Checkin Interval	TTL (min)	Current/Max	Mainboard Firmware	Radio Firmware	Configure
1	WC20i-HART		-46	18	1 min	5/7	0.56	2.50 (sleeping)		<input type="checkbox"/>
5	WC30i-Pressure	Pressure1	-33	20	5 sec	1/2	0.74	2.50 (sleeping)		<input type="checkbox"/>

Figure 18: Modbus Slaves Reporting table

10. Configure the Endpoints attached to the WC45i-GW-485.

Note: Use the Configuration procedure in the User Manual for these WAVECONTACT Endpoints:

WC15i Multi-Input C-1D1 Endpoint, WC20i Endpoint, WC30i Wireless Pressure Sensor, WC40i Modbus Endpoint, WC40i-COUNT Counter Endpoint, or WC40i-MB-RSD Modbus Endpoint.

- Optional: On the WC20i or WC45i-GW-485 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.
- 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.

- Close the WC Toolkit software.
- Remove the WC-USB-DB9 USB to Serial DB9 programming cable from the computer and the WC45i-BB.
- As applicable, replace the Endpoint cover.
- Mount the Gateway device.

Learn More

For additional product information about the WC45i-GW-485 Modbus Gateway, visit www.freewave.com.

For additional product information or assistance, contact a local reseller, or contact FreeWave Technologies, Inc. at 303-381-9200 or 1-866-923-6168, or by email at moreinfo@freewave.com.

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The WC45i-GW-485 complies with FCC Part 15 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 WC45i-GW-485 must be professionally installed and is only approved for use when installed in devices produced by FreeWave or third party OEMs with the express written approval of FreeWave Technologies, Inc. Changes or modifications should not be made to the device.

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