

FREEWAVE

Quick Start Guide

Thank you for purchasing the WC25i Wireless I/O Module.

This **Quick Start Guide** provides brief procedures for the hardware installation and configuration of the WC25i-WL-PM.

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

Note: For more detailed installation, connection, and configuration procedures, download the WC25i-WL-PM **User Manual** from the <http://support.freewave.com/> website. Registration is required to use this website.

The basic steps are:

- [Hardware Installation \(on page 1\)](#)
- [WC Toolkit Installation \(on page 1\)](#)
- [WC Toolkit Update \(on page 2\)](#)
- [Configuration - Single WC25i Endpoint \(on page 3\)](#)
- [Configuration - WC25i System \(on page 5\)](#)

Included Equipment - WC25i

The WC25i package contains these items:

Included Equipment - WC25i	
Qty	Description
1	WC25i Wireless I/O Module
1	Antenna with gasket and connecting washers
1	WC25i Quick Start Guide

User-supplied Equipment

- Small, flathead screwdriver
- DC Adapter Power Supply (+6 to +30VDC)
- USB to Serial DB9 programming cable (FreeWave Part #WC-USB-DB9)
- Power supply and Ground wiring

Hardware Installation

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

- All wiring should be neat and orderly.
- Connect the Power supply and Ground wiring to the Power Input terminal block.
- Connect the Serial end of the WC-USB-DB9 cable to the **RS232 Config / Debug** connector port and the USB connection to the computer.
- If this is the first time the WC25i is installed, wait for the drivers to install.

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

- Complete these procedures:
 - [WC Toolkit Installation \(on page 1\)](#)
 - [WC Toolkit Update \(on page 2\)](#)
 - [Configuration - Single WC25i Endpoint \(on page 3\)](#)
or
[Configuration - WC25i System \(on page 5\)](#).

- When the WC25i configuration is completed:
 - Connect the enclosed Antenna with gasket and connecting washers to the WC25i ([Figure 1](#)).
 - Install the WC25i and connected antenna in a secure location.

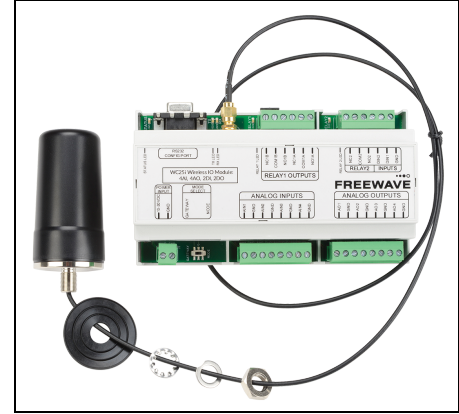


Figure 1: WC25i Connection

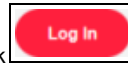
WC Toolkit Installation

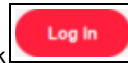
Note: The images in this procedure are for Windows® 7 and/or Firefox®. The dialog boxes and windows may appear differently on each computer.

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

Important! Registration is required to use this website.

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



- Click . A successful Login message briefly appears. The **Help Topics** window opens.

- Click the **Software** link.

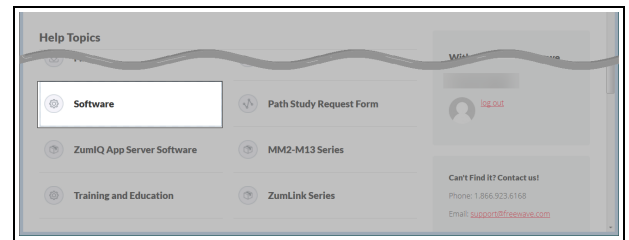


Figure 2: Help Topics window

The **Software** window opens.

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

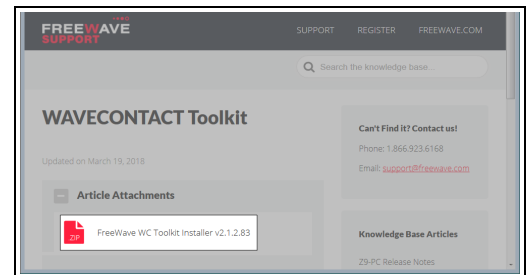


Figure 3: WAVECONTACT Toolkit window

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.

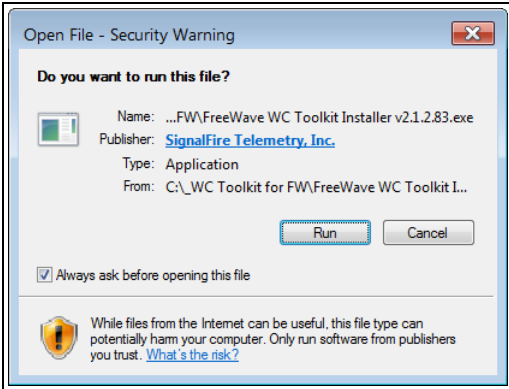


Figure 4: Open File - Security Warning dialog box

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

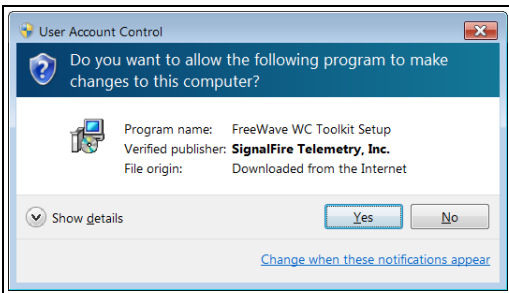


Figure 5: User Account Control dialog box

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

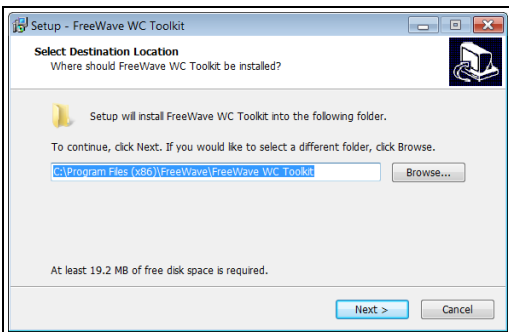


Figure 6: WC Toolkit Setup Wizard - Select Destination Location window

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

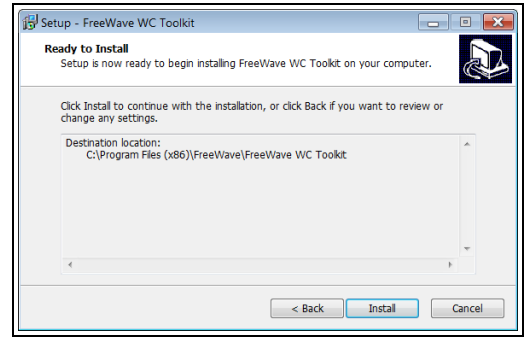


Figure 7: WC Toolkit Setup Wizard - Ready to Install window

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

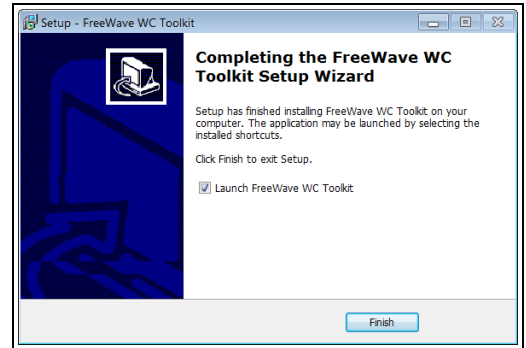


Figure 8: WC Toolkit Setup Wizard - Installation Complete window

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

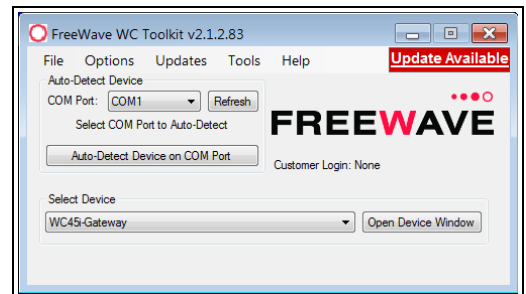


Figure 9: WC Toolkit - Update Available message

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](#))

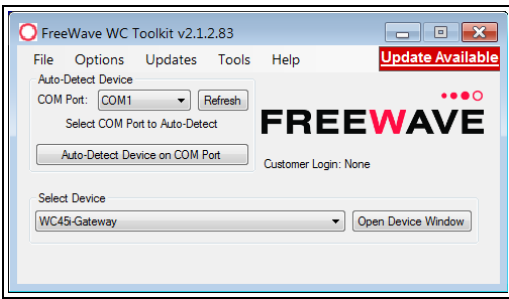


Figure 10: WC Toolkit - Update Available message

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



Figure 11: Click the Update Available message link

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

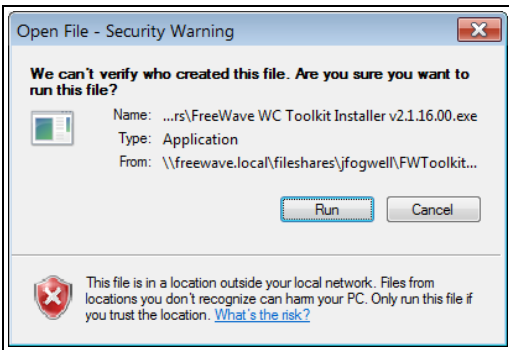


Figure 12: Open File - Security Warning dialog box

3. Click **Run**.

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

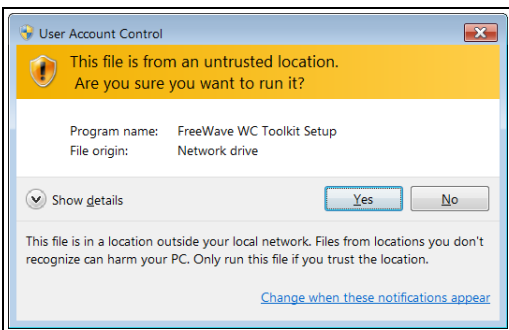


Figure 13: User Account Control dialog box

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)

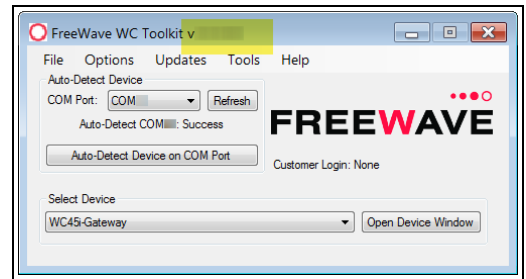


Figure 14: Select Device window

5. Continue with Configuration of the WC25i-WL-PM.

Configuration - Single WC25i Endpoint

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.

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 WC25i.
2. On the WC25i, slide the **Gateway - Node** switch to the **Node** side. (**Connections -** , #10)
3. Connect the Power supply and Ground wiring to the Power Input terminal block.
4. Power cycle the Endpoint (slave) WC25i for the change to take effect.
5. Connect the Serial end of the WC-USB-DB9 cable to the **RS232 Config / Debug** connector port and the USB connection to the computer.
6. Open the **WC Toolkit** software. The **Select Device** window opens. (Figure 15)

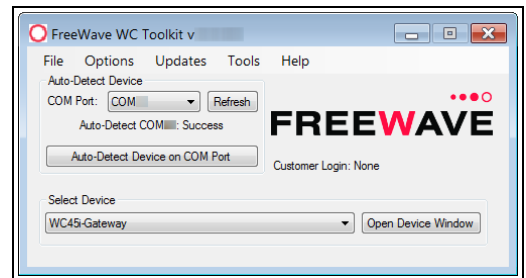


Figure 15: Select Device window

7. 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.
8. Click the **COM Port** list box arrow and select the COM port on the computer associated with the connected WC25i-WL-PM.
9. 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.

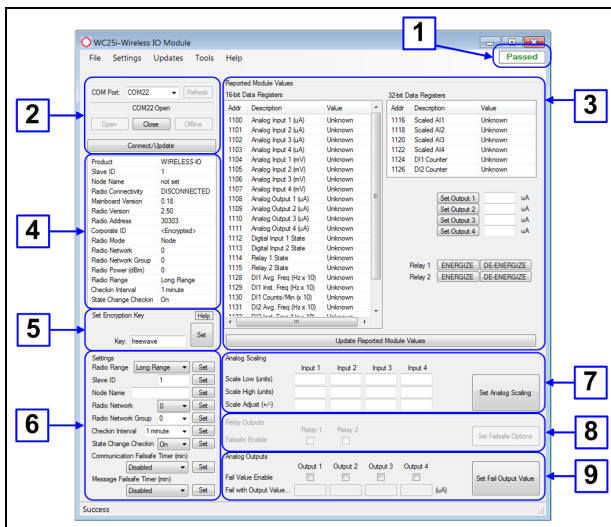


Figure 16: Device Configuration window: WC25i

Important!: Verify there are no duplicate Slave IDs in a given network. The Gateway only caches one set of data for each Slave ID. A duplicate is overwritten.

10. In the **Reported Module Values** area (#3):
 - a. In the **Set Output 1 to 4** text boxes, enter the number of milliamps to assign to the Analog Outputs.

Example: For 8 milliamps, enter 8000 in the **Set Output 1 to 4** text boxes.
 - b. Click the **Relay 1** or **Relay 2 Energize** button to manually test (energize) the relays.
 - c. Click the **Relay 1** or **Relay 2 De-Energize** button to manually test (de-energize) the relays.
11. In the **Set Encryption Key** area (#5), change these settings:
 - a. In the **Key** text box, enter the encryption key for the device using 6 to 16 characters.
 - b. 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 WC25i 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.

12. Optional: Click the **Settings** menu and select **Set Encryption Key Unrecoverable** to permanently hide the key.
13. In the **Settings** area (#6), 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** between each pair of WC25is for the WC25is to communicate.

 - a. Click the **Radio Range** list box arrow and select either **Long Range** or **Short Range**.
 - b. Click the **Set** button to save the information.
 - c. In the **Slave ID** column / text box, enter the remote source Endpoint Modbus Slave ID.

Important!: The **Radio Network** and **Radio Network Group** settings are selected by the user but **MUST MATCH** between each pair of WC25is for the WC25is to communicate.

- d. Click the **Set** button to save the information.
 - e. Optional: In the **Node Name** text box, enter a name for the Endpoint using a maximum of 10 characters.
 - f. Click the **Set** button to save the information.
 - g. Click the **Radio Network** list box arrow and select 0 (zero) to 7 for the assigned number.
 - h. Click the **Set** button to save the information.
 - i. Click the **Radio Network Group** list box arrow and select 0 (zero) to 29 for the network group assigned number.
- j. Click the **Set** button to save the information.
 - k. Click the **Checkin Interval** list box arrow and select how often the Endpoint wakes up, reads the sensor values, and transmits the data to the Gateway.
 - l. Click the **Set** button to save the information.
 - m. 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.
 - n. Click the **Set** button to save the information.
 - o. Click the **Communication Failsafe Timer (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.
 - p. Click the **Set** button to save the information.
 - q. Click the **Message Failsafe Timer (min)** list box arrow and select the time since a valid Modbus coil write message or Analog Output write has been sent from the Modbus master through the Gateway.

Caution: If a time is selected in the **Message Failsafe Timer (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.
 - r. Click the **Set** button to save the information.
14. Optional: In the **Analog Scaling** area (#7), customize the reported Analog Input to engineering units.
 - a. In the **Scale Low (units)** text boxes, manually enter the **Input 1 to 4** lower range value.
 - b. In the **Scale High (units)** text boxes, manually enter the **Input 1 to 4** upper range value.
 - c. In the **Scale Adjust (+/-)** text box, enter an offset to add to or subtract from the reported scaled value.
 - d. Click the **Set Analog Scaling** button to save the information.
 15. Optional: In the **Relay Outputs** area (#8), click either the **Failsafe Enabled Relay 1** or **Relay 2** check boxes to set the relay to the un-energized state if there is a communication error (loss of communications).
 16. Click the **Set Failsafe Options** button to save the information.
 17. Optional: In the **Analog Outputs** area (#9):
 - a. Click the **Fail Value Enable** check box for **Output 1 to 4** to enable the milliamp value entered in the associated **Fail with Output Value** text box.
 - b. In the **Fail with Output Value** column / text box, enter the milliamp value the WC25i must reach to stop receiving the control signal.
 - c. Click the **Set Fail Output Value** button to save the information.
 18. 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.

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

19. Close the WC Toolkit software.
20. Remove the WC-USB-DB9 USB to Serial DB9 programming cable from the computer and the RS232 Config / Debug connector port.
21. Install the WC25i and connected antenna in a secure location.

Configuration - WC25i System

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.

- For each pair of WC25is:
 - One WC25i must be designated as the Gateway (master).
 - One must be designated as the Endpoint (slave).

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 WC25i.
2. Verify the Gateway is installed and configured before continuing with the Endpoint configuration.
3. Select one of the WC25i devices and verify the **Gateway - Node** switch is toward the **Gateway** side.
4. On the other WC25i, slide the **Gateway - Node** switch to the **Node** side.
5. Connect the Power supply and Ground wiring to the Power Input terminal block.
6. Power cycle the Endpoint (slave) WC25i for the change to take effect.
7. Connect the Serial end of the WC-USB-DB9 cable to the **RS232 Config / Debug** connector port and the USB connection to the computer.
8. Open the **WC Toolkit** software. The **Select Device** window opens. (Figure 17)

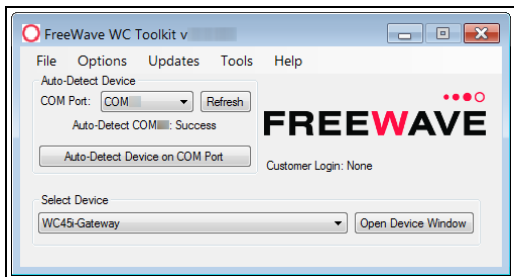


Figure 17: Select Device window

9. 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.
10. Click the **COM Port** list box arrow and select the COM port on the computer associated with the connected WC25i-WL-PM.
11. 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.

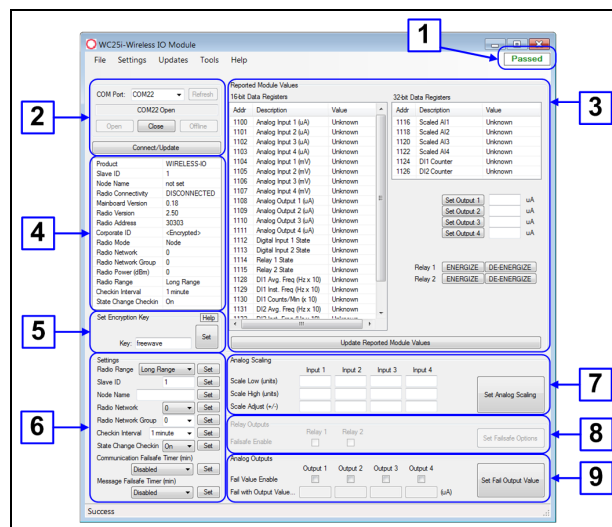


Figure 18: Device Configuration window: WC25i

12. In the **Reported Module Values** area (#3)
 - a. In the **Set Output 1 to 4** text boxes, enter the number of milliamps to assign to the Analog Outputs.
 - b. Click the **Relay 1** or **Relay 2 Energize** button to manually test (energize) the relays.
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- a. Click the **Radio Range** list box arrow and select either **Long Range** or **Short Range**.
- b. Click the **Set** button to save the information.
- c. Optional: In the **Slave ID** column / text box, enter the remote source Endpoint Modbus Slave ID.

Important! Verify there are no duplicate Slave IDs in a given network. The Gateway only caches one set of data for each Slave ID. A duplicate is overwritten.

- d. Click the **Set** button to save the information.

- e. Optional: In the **Node Name** text box, enter a name for the Endpoint using a maximum of 10 characters.
- f. Click the **Set** button to save the information.
- g. Click the **Radio Network** list box arrow and select 0 (zero) to 7 for the assigned number.
- h. Click the **Set** button to save the information.
- i. Click the **Radio Network Group** list box arrow and select 0 (zero) to 29 for the network group assigned number.



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- j. Click the **Set** button to save the information.
- k. Click the **Checkin Interval** list box arrow and select how often the Endpoint wakes up, reads the sensor values, and transmits the data to the Gateway.
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- p. Click the **Set** button to save the information.
- q. Click the **Message Failsafe Timer (min)** list box arrow and select the time since a valid Modbus coil write message or Analog Output write has been sent from the Modbus master through the Gateway.



Caution: If a time is selected in the **Message Failsafe Timer (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.

- r. Click the **Set** button to save the information.
16. Optional: In the **Analog Scaling** area (#7), customize the reported Analog Input to engineering units.
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21. Close the WC Toolkit software.
22. Remove the WC-USB-DB9 USB to Serial DB9 programming cable from the computer and the **RS232 Config / Debug** connector port.
23. Install the WC25i and connected antenna in a secure location.

Learn More

For additional product information about the , 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 WC25i-WL-PM 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 WC25i-WL-PM 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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