GrayWolf Sensing Solutions

WolfRadio XM PC3500/PC3016

QuickStart Guide

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Overview

WolfRadio XM is a Wi-Fi and Bluetooth extension module for GrayWolf Particle Meters (PC-3016/PC-3500). It enables direct wireless connection via BLE to GrayWolf's free WolfSense Mobile app for iOS and Android devices, as well as connection to GrayWolfLive via Wi-Fi. (GrayWolfLive license required to log directly to the cloud and view readings online).

Attaching the Device

The WolfRadio XM can be attached to the PC-3016/PC-3500 using a 4mm (5/32") Allen key. WolfRadio XM screws into the Particle Meters' rear mount fitting and includes an additional brass ¼" -20tpi socket for belt clip and tripod attachment.

To connect the WolfRadio XM to a PC-3016, plug the WolfRadio XM RJ45 connector into the PC-3016. To connect the WolfRadio XM to a PC-3500, plug the 5-pin DIN plug into the PC-3500 and ensure it is securely fastened.

PC-3016 with WolfRadio-XM-3016   PC-3500 with WolfRadio-XM-3500

Powering On and Off

To turn on the WolfRadio XM, use the power button on the end of the device. The device will show a solid **Green** light on start-up, and will then begin flashing periodically.
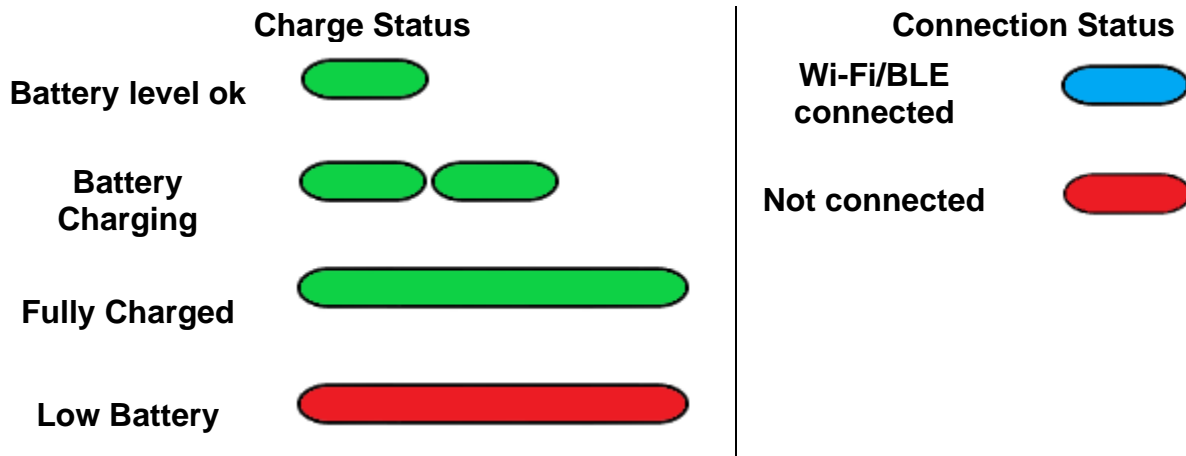
To turn off the device, hold the button for 5 seconds until the LED shows solid **Red.** The device will then turn off.

Battery Life and Charging

The WolfRadio XM can operate on its internal rechargeable Li-ion rechargeable for 16 hours. It can be charged/powered over USB-C or via the DC power barrel jack via the included y-power adapter cable (ADY-WRXM). Use this adapter cable and the particle meter's AC adapter to power the meter and the WolfRadio XM simultaneously.

WolfRadio XM LED Status

The WolfRadio XM communicates information regarding charge status and connection status via the LED. The LED cycle consist of two phases. The first phase communicates charge status, and the second phase communicates connection status.

Charge Status		Connection Status
Battery level ok 🟢		**Wi-Fi/BLE connected** 🔵
Battery Charging 🟢 🟢		**Not connected** 🔴
Fully Charged 🟢━━━		
Low Battery 🔴━━━		

The full LED cycle can be any combination from the Charge phase and Connection phase. For example, if the battery level is ok and the device is connected to WolfSense Mobile via BLE, it will flash once **Green** and then once **Blue**. If the device is charging and not connected, it will flash twice **Green** and then once **Red**.

🟢   🔵 **Battery ok and connected to Wi-Fi/BLE**

🟢 🟢   🔴 **Charging and not connected**

Deep Sleep Mode

The WolfRadio XM will enter deep sleep mode after 10 minutes if it has been disconnected from the Particle Meter to conserve battery life. The WolfRadio XM can be woken up from deep sleep mode by briefly pressing the power button located on the end of the device.

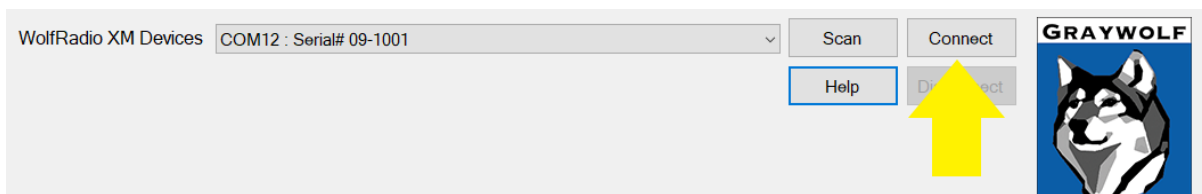GRAYWOLF
SENSING SOLUTIONS

Configuring Wi-Fi to use with GrayWolfLive (Cloud)

Configure the Wi-Fi on your WolfRadio XM using a USB-C Cable and the WolfRadio XM Configuration Tool on a Windows PC/Laptop from: https://graywolfsensing.com/downloads/wrxm/WolfRadioXM.exe

Click the **Scan** button to search for any connected WolfRadio XM devices.
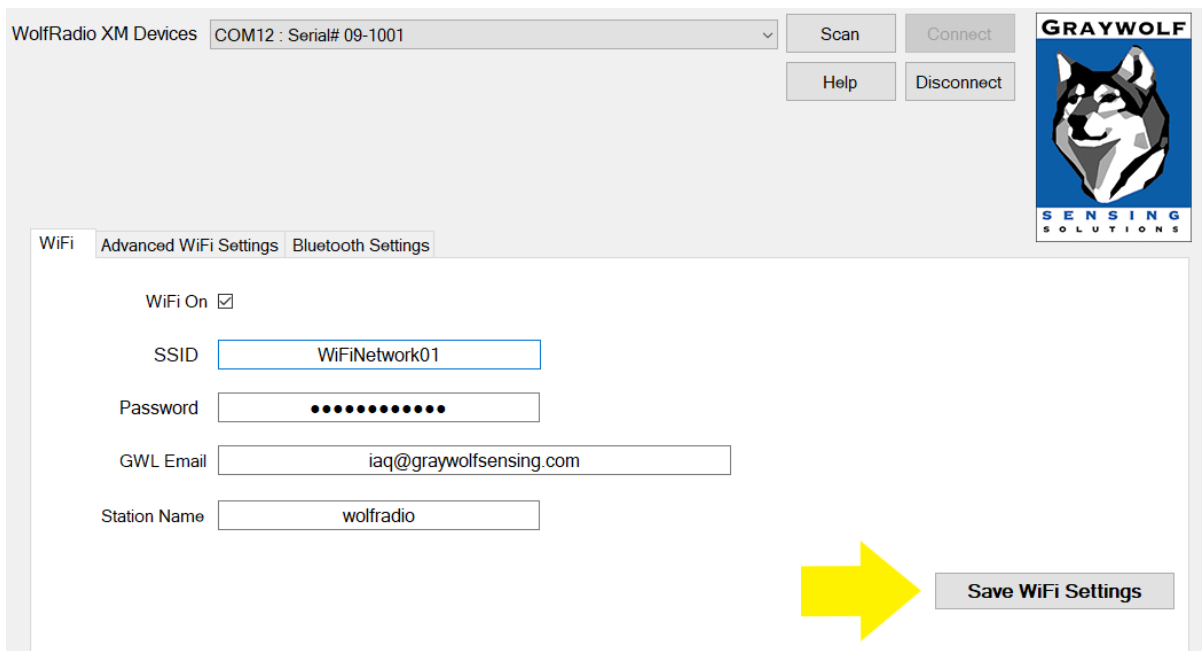

Select the device you would like to configure from the drop-down menu and click the **Connect** button. If there is only 1 device, the connect is automatically initiated.

The Configuration Tool will connect to the WolfRadio XM and load the Wi-Fi settings.

Settings can be modified and saved to the device by clicking the **Save Wi-Fi Settings** button. The WolfRadio XM will need to be re-booted for the changes to take effect.

Wi-Fi On must be checked for the device to connect to a network.

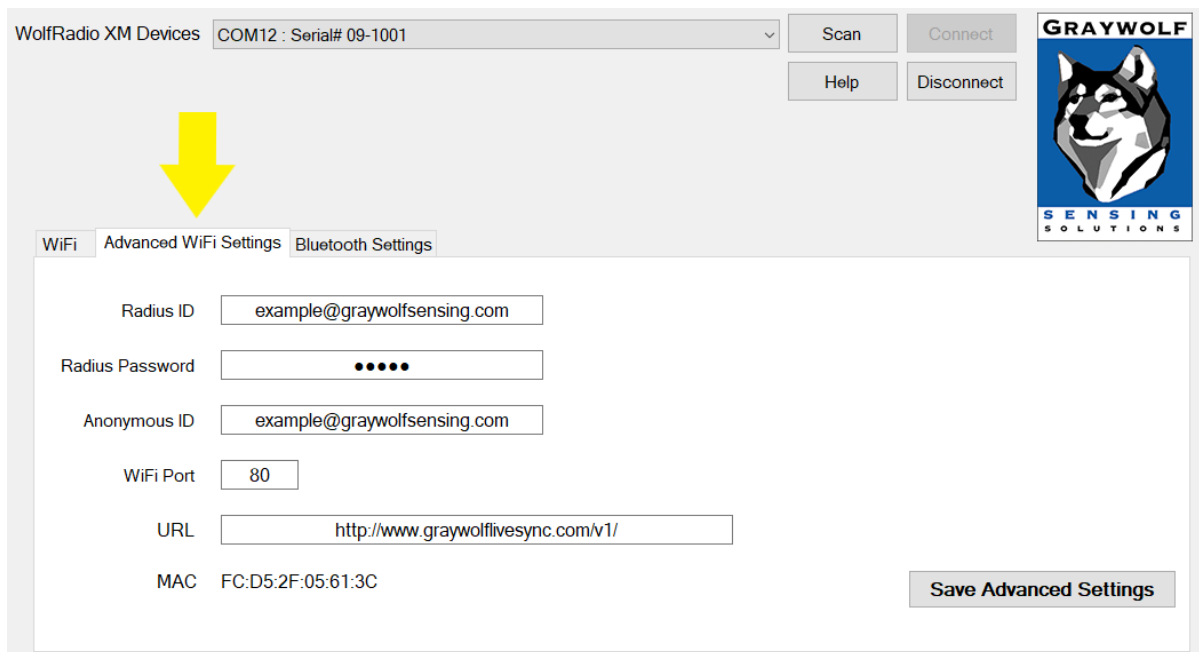**SSID** –The Wi-Fi network name is also known as the SSID or Service Set Identification.

Password – Enter the password for the Wi-Fi network.

GWL Email – Enter the full email address used to establish your GrayWolfLive account. This email address must match exactly, or the system will not be able to route data to the proper account. This field is not case-sensitive.

Station Name – The Station Name field can be used to label the WolfRadio XM or the location of the WolfRadio XM. When the device first connects to GrayWolfLive, this name will be used to identify the device, but the name can be changed at any time in GrayWolfLive.

Advanced Wi-Fi Settings

To change advanced Wi-Fi settings such as WPA/WPA2 enterprise credentials, navigate to the Advanced Wi-Fi Settings tab.

Radius Credentials – These credentials can be used if connecting to WPA2-Enterprise networks.

URL – The default server address can be changed to a custom URL to receive data. To return to sending data to GrayWolfLive, the Server address is www.graywolflivesync.com/v1/ and the Port is 80.

MAC ADDRESS – Once the WolfRadio XM has connected to your network, the MAC Address will be displayed here. This information may be needed by your IT Department if MAC address security or filtering is being utilized.

Network Compatibility

The WolfRadio XM can connect to 802.11 b/g/n/ac (802.11n up to 150 Mbps) wireless networks.

The WolfRadio XM is compatible with the following Wi-Fi network types:

> WPA/WPA2-Personal with a Pre-Shared Key (PSK) a password that is distributed to all users of the network, or Open networks not requiring a password.

> WPA/WPA2-Enterprise (PEAP-MSCHAPv2, TTLS-MSCHAPv2) also commonly known as RADIUS server authentication.

Secondary Log-ins or Captive Portals – For open-networks that require a Secondary Log-In or Captive Portal to log onto the network, the WolfRadio XM does not have a web-browser or user-interface, so it is not possible to

respond to prompts or enter additional log-on information. The simplest solution is to "white-list" the WolfRadio XM's MAC address by entering in your router's safe-device or white-list table. Devices that are white-listed will generally bypass the secondary prompt. The MAC address can be obtained in the Advanced Wi-Fi Settings tab of the WolfRadio XM Configuration Tool. You may need to consult with your IT department to see if white-listing the device's MAC address will bypass the captive portal. Alternatively, a secondary network or hotspot could be utilized. GrayWolf Sales can assist with hotspot selection.

Establishing GrayWolfLive Account

Your GrayWolfLive account is initially set up by your GrayWolf sales representative and the accounts team. Once complete, you will receive a GrayWolfLive welcome e-mail that will provide your starter login credentials. If you do not have an account set up yet or have not received your GrayWolfLive Welcome email, contact your sales representative or email SalesTeam@GrayWolfSensing.

When having your sales representative set up your GrayWolf Live account please provide them with the following:

* **Customer Full Name**: John Smith

* **Company/Agency Name**: ABC Environmental

* **Customer First Name**: John

* **Customer Email**: JohnS@ABCenvironmental.com

* **Optional Read-Only Email**: Guest@ABCenvironmental.com

* **Location/Time Zone where the Particle Meter will be used:** California, Pacific Standard time, UTC-8

Using GrayWolfLive

For instructions on using GrayWolfLive, refer to the *DirectSense II Wi-Fi + GrayWolfLive QuickStart Guide*.

WolfSense Mobile App

GrayWolf offers a FREE app for viewing and logging live readings from your WolfRadio XM on your smartphone or tablet. You can also use the app to log into your GrayWolfLive account. The app may be downloaded from the Google Play Store and Apple App Store by searching "**WolfSense Mobile**" or by using the links below. Minimum OS requirements: Android 6/iOS 11 or better.

WolfSense Mobile in Google Play Store (for Android devices):
https://play.google.com/store/apps/details?id=com.graywolfsensing.wolfsensemobile
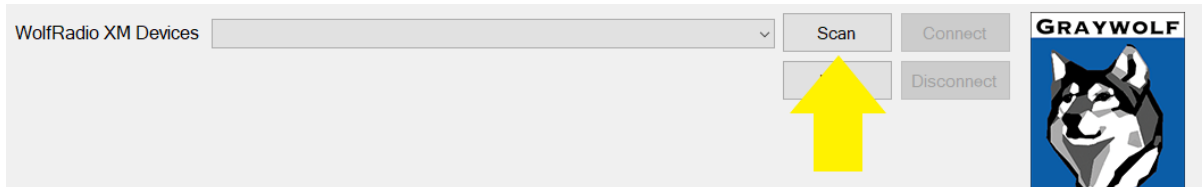
WolfSense Mobile in Apple Store (for iOS devices):
https://apps.apple.com/us/app/wolfsense-mobile/id1522804523

A Quick Start Guide to using the WolfSense Mobile app can be found here:
https://graywolfsensing.com/wolfsense-mobile-app-quick-start/

Configuring BLE (to use with WolfSense Mobile app)

Your WolfRadio XM should be pre-configured for Bluetooth LE (BLE) by default and ready for use with the app. Bluetooth and Wi-Fi settings can be changed by using the WolfRadio XM Configuration Tool. Connect your WolfRadio XM using a USB-C cable and run the Configuration Tool on a Windows PC/Laptop from: https://graywolfsensing.com/downloads/wrxm/WolfRadioXM.exe

Click the scan button to search for any connected WolfRadio XM devices.

Select the device you would like to configure from the drop-down menu and click the connect button.

To enable BLE, navigate to the Bluetooth Settings tab, and check the box next to **BLE** On. You may also enable an optional BLE security pin when pairing the probe to new devices. To enable. Check the **BLE Pin** box, and then enter your desired pin. The next time you attempt to pair the probe to a device via BLE, the probe will request a pin to allow the connection.

Once you have made any changes, click **Save Bluetooth Settings**. The WolfRadio XM will need to be re-booted for the changes to take effect.

Using Your Particle Meter

For instructions on using your Particle Meter, refer to the *PC-3016 or PC-3500 User Manual.*

When configuring the sampling on the unit, you must have a **<u>MINIMUM HOLD TIME</u>** of **15 seconds** – The WolfRadio XM requires this HOLD TIME to process readings.

Delay enables you to set a countdown for when the sample cycles will start. This is generally zero but can be set according to your application.

Sample Time is also application specific and may adhere to Clean Room requirements or other standards. **Note:** Readings are only updated to GrayWolfLive 1x per minute. Some Data points will be skipped if the total cycle time (sample time + hold time) is configured to less than 1 minute.