

Interface Manual

Field Monitor Display

SignalFire Number: Field Monitor-XX-XXXX



Overview

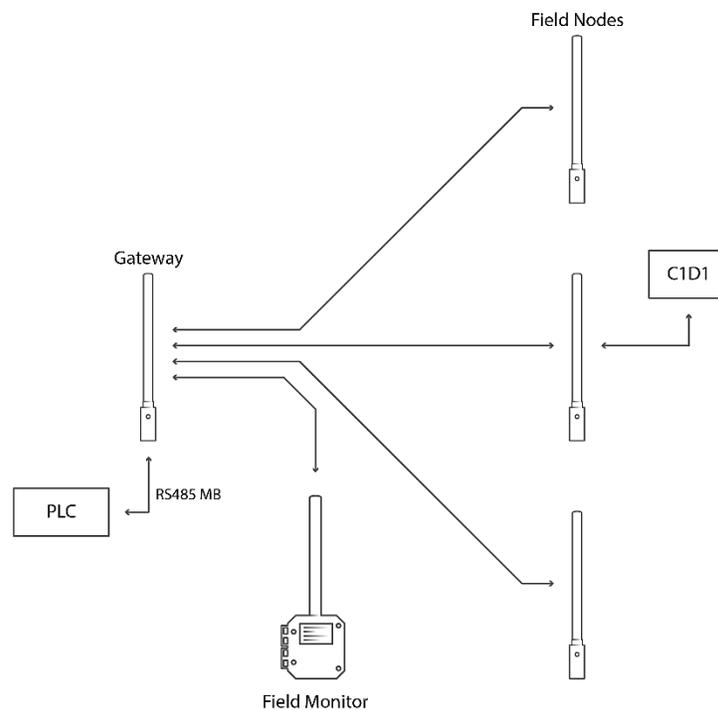
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The Field Monitor is a field display unit that can be configured to display any data generated by a SignalFire sensor network. The system has two main operational modes that are set in the configuration screen of the SignalFire Toolkit:

- Standard Node Mode
- Stand Alone Gateway Mode

Standard Node Mode

This is the standard topology for the Field Monitor. It works in conjunction with a SignalFire Gateway, and when the button (on the right side of the unit) is pressed, it will retrieve the data from the gateway to populate its screens. This topology is shown in the following figure:



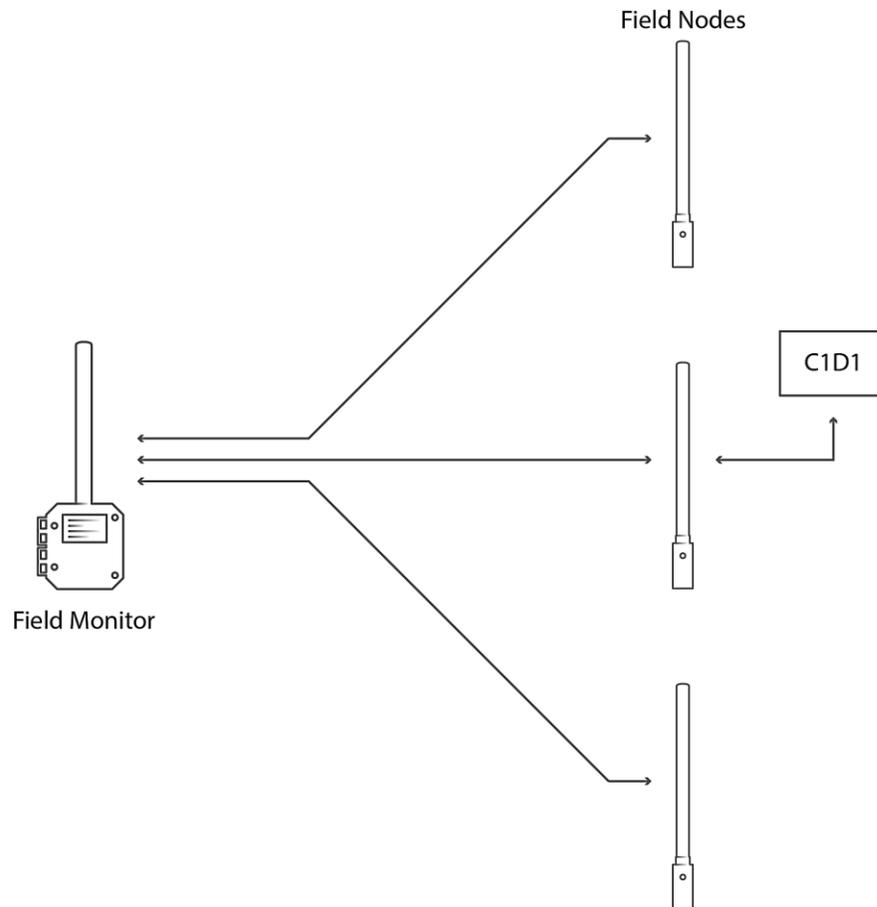
The field Nodes are sending their data to the Gateway where it is being read by a local PLC. The Field Monitor is positioned so that it can communicate with the Gateway, and when the button is pressed, it contacts the gateway and downloads the relevant data that it needs to display the configured register data.

This mode may be used with a 3xD battery pack and a sleeping radio for years of operation.

Stand Alone Gateway Mode

In Gateway mode, the Field Monitor is the ultimate destination for all data in the network. No other SignalFire Gateway is present in the system. Consequently, the data is generated only for display purposes and there is no way to offload the data to a local PLC.

This mode is useful for a standalone monitoring solution. The radio must be loaded with non-sleeping firmware in order to use the Gateway mode. The topology is shown in the following diagram:

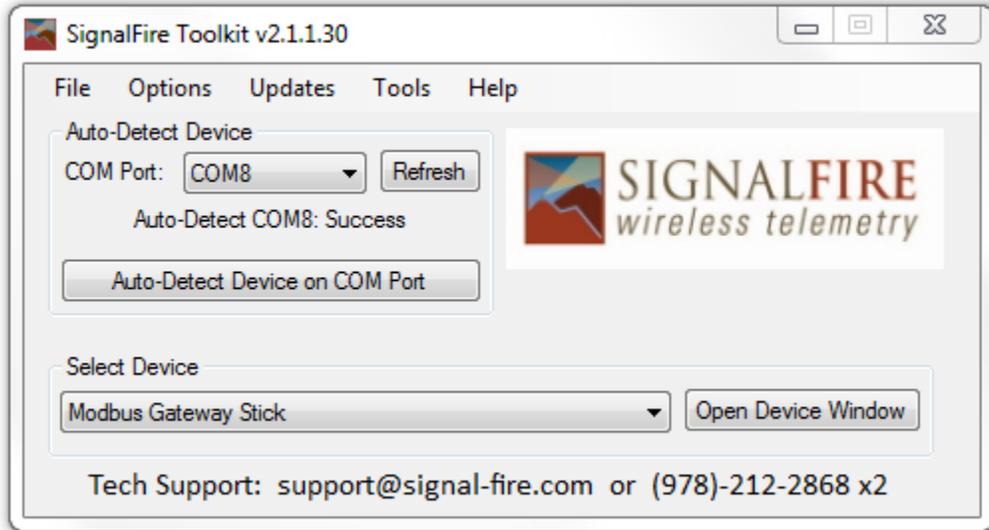


This operational mode requires an always-on radio, so a Solar IQ Power system or other line power must be used to provide enough power for gateway operation. Contact SignalFire for information on the Solar IQ Power module.

Setup and Configuration

Using the SignalFire Toolkit

The SignalFire Toolkit application can be downloaded at www.signal-fire.com/customer. After installation, launch the software and the main toolkit window will open:



Select the COM port associated with the Field Monitor and click "Auto-Detect Device on COM Port." This will open the device configuration window, where all device settings can be configured.

Network Setting

The network is set using the SignalFire Toolkit. The network, network group, and corporate ID settings must match those of all other nodes in the network in order for them to communicate (the corporate ID is pre-programmed at factory).

Radio Network	1	▼	Set
Radio Network Group	0	▼	Set

Modbus Slave ID and Network Configuration

The SignalFire Field Monitor must be configured to have a unique Modbus ID within a configured network. Configuration is done using the SignalFire Toolkit.

Slave ID

System Check-In Period

This setting controls how often the battery voltage and diagnostic information will be forwarded to the gateway, and is configured using the SignalFire Toolkit.

Checkin Interval

Manager Mode

In **Node** mode the field monitor operates as a low powered node on the SignalFire network.

In **Gateway** mode the Field Monitor is the ultimate destination for all data in the network when no other SignalFire Gateway is used. This mode is useful for a standalone monitoring solution. The radio must be loaded with a non-sleeping firmware in order to use the Gateway mode.

NodeChecker Password

When operating in Node mode the Field Monitor must be configured to have the same NodeChecker password that is programmed into the gateway (if a password is used).

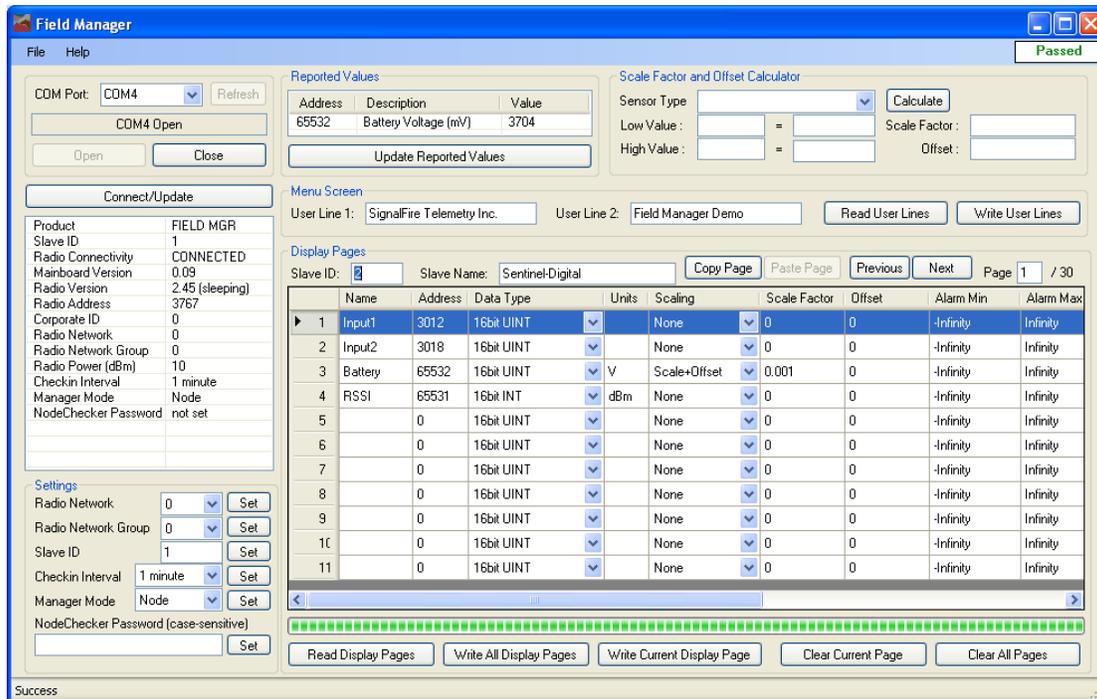
Menu Screen

The user lines allow you to enter two lines of up to 26 characters each to be displayed on the Field Monitor home screen.

Basic Display Page Setup

The Field Monitor allows for up to 30 display pages. Each page can display up to 11 lines of data from a single slave ID on the network.

For this example, a Sentinel-Digital Node connected to the Gateway as Slave ID 2 is used.



In the example above, the Field Monitor is configured to show the digital input state for both channels of the Sentinel Node along with the battery voltage and RSSI of that node. Each line of the display must be given a name of up to 8 characters. Each line may also optionally be given a tag of up to 4 characters.

Note that since the battery voltage register is in mV we have applied a scale factor of 0.001 so that it will be display as voltage on the screen. Also, since the RSSI register is a signed value, we have selected the 16bit INT data type.

The example data screen for this node is shown on the next page.

Screen 1 of 1
Sentinel-Digital SID: 2
Input1 0
Input2 0
Battery 3.744 V
RSSI -77 dBm

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Advanced Display Page Setup

In addition to the basic display page setup, additional advanced data display features may be configured. To access some of the advanced features, the configuration window must be scrolled to the right or dragged open.

Scale Menu

Scale factor and offset – This allows the returned data value to be scaled by a scale factor (multiplier) and an offset (adder).

Feet-inches – Selecting this scaling option will take a register value that is in inches and display it as feet and inches. For example, 100 inches would be displayed as 8'4".

Both – This setting first applies the scale factor and offset, and then displays the result as feet and inches. This is useful if the register data must first be converted to inches so it can be displayed in feet and inches.

Alarm

The **Alarm Min** and **Alarm Max** fields allow the user to configure an alarm indication on the screen if the register value is outside of the alarm range configured. To indicate an alarm the data value will have an asterisk (*) placed next to it.

Floor/Ceiling

The **Floor** and **Ceiling** settings limit the displayed value to that range. For example, if the Ceiling is set to 100, any value above this will be capped and displayed as 100.

Precision

The precision controls how many digits to the right of the decimal point are displayed on the screen. The default is 3.

Math Operations

The Field Monitor allows the user to setup a display line that is the result of a math operation of any other two lines already displayed on the screen. For example, to display the line 1 data plus the line 2 data on line 3 the user would select **Line 1** as the **Operand1**, **+** as the **Operator** and **Line 2** as the **Operand2**.

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The screenshot displays the SignalFire Field Manager software interface. The window title is "Field Manager" and it includes a "Passed" status indicator in the top right corner. The interface is divided into several sections:

- COM Port:** Set to "COM4" with a "Refresh" button and "COM4 Open" status. "Open" and "Close" buttons are available.
- Reported Values:** A table with columns for Address, Description, and Value. The current value for address 65532 is "Battery Voltage (mV)" and "Unknown". An "Update Reported Values" button is present.
- Scale Factor and Offset Calculator:** Fields for Sensor Type, Low Value, High Value, Scale Factor, and Offset, with a "Calculate" button.
- Menu Screen:** Fields for "User Line 1:" and "User Line 2:" with "Read User Lines" and "Write User Lines" buttons.
- Display Pages:** A table listing 11 display lines. The current page is 1 of 30. The table columns include Name, Address, Data Type, Units, Scaling, Scale Factor, Offset, Alarm Min, Alarm Max, Floor, Ceiling, Precision, Operand1, Operator, and Operand2.
- Settings:** A list of configuration options such as "Radio Network", "Radio Network Group", "Slave ID", "Checkin Interval", "Manager Mode", and "NodeChecker Password", each with a "Set" button.

At the bottom of the interface, there are buttons for "Read Display Pages", "Write All Display Pages", "Write Current Display Page", "Clear Current Page", and "Clear All Pages". A "Success" message is visible in the bottom left corner.

SignalFire Toolkit with window expanded to show advanced configuration options.