



## QUICK-START GUIDE

Configuring the SignalFire (SF) Sentinel Node to Work with  
TempSens™ or a Model 2100 Digital Level Sensor (DLS)



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# Configuring the SignalFire (SF) Sentinel Node to Work with TempSens™ or a Model 2100 Digital Level Sensor (DLS) – Quick Start Guide

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## Installation Instructions

The SignalFire Sentinel Node should ship as a complete unit that includes the radio core, the housing, mounting hardware with integrated pig-tail, and the integrated battery. The PT-SF pig-tail is pre-wired into the terminal strip on the radio with the proper connections on the MODBUS Terminal for PWR, GND, and 2-wire RS-485 (MB\_A and MB\_B).

**Note:** If the SF Node does not have the mounting hardware attached, it will need to be wired and assembled in the field. To install the mounting kit, perform the following steps.

1. Remove the 4 Phillips head screws from the SF Sentinel housing.



2. Pull up on the metal bracket that holds the battery and PCB, using both hands, leaving the base plate.



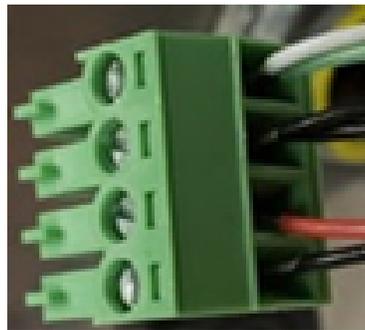
3. Apply thread sealant to the mounting kit's ½" SS pipe threads.



4. Screw the assembly together and tighten.



5. Insert the PT-SF wires into the mounting assembly starting from the 1" union.
6. Connect the PT-SF wires to the MODBUS Phoenix connector (Red and Black pair go to PWR and GND respectively, Black pair goes to MB\_B and White & Green pair go to MB\_A). **Note:** The connector may need to be removed for wiring.



7. Route the wires to the left side of the PCB closest to the Phoenix connector for MODBUS. Connect to the Phoenix connector on the PCB and verify the wiring connections are in the proper locations



8. Press the metal bracket back onto the support studs on the mounting plate.  
**Caution:** The coiled antenna in the center of the board is easily damaged. Only press from the bracket, not the board.



9. If ready to be installed or configured, connect the battery connector to the connector labeled “LITHIUM BATTERY”.



## Configuring the SF Sentinel Node to communicate with TempSens™ or a Digital Level Sensor

Follow the steps below to successfully configure the SF Sentinel Node to communicate with a TempSens™ or a Model 2100 Digital Level Sensor.

1. Install and use the SignalFire Toolkit (v2.2.30.00) software to configure both the gateway and Sentinel. The SignalFire Toolkit is available from the Resources section of the SignalFire website <https://www.signal-fire.com/resources/>



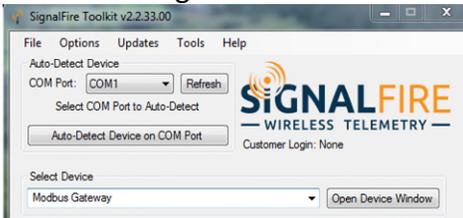
2. Connect a computer to the Sentinel via the TTL cable provided by SignalFire (USB Serial-4Pin).



3. Connect the Sentinel’s battery, if it isn’t connected.

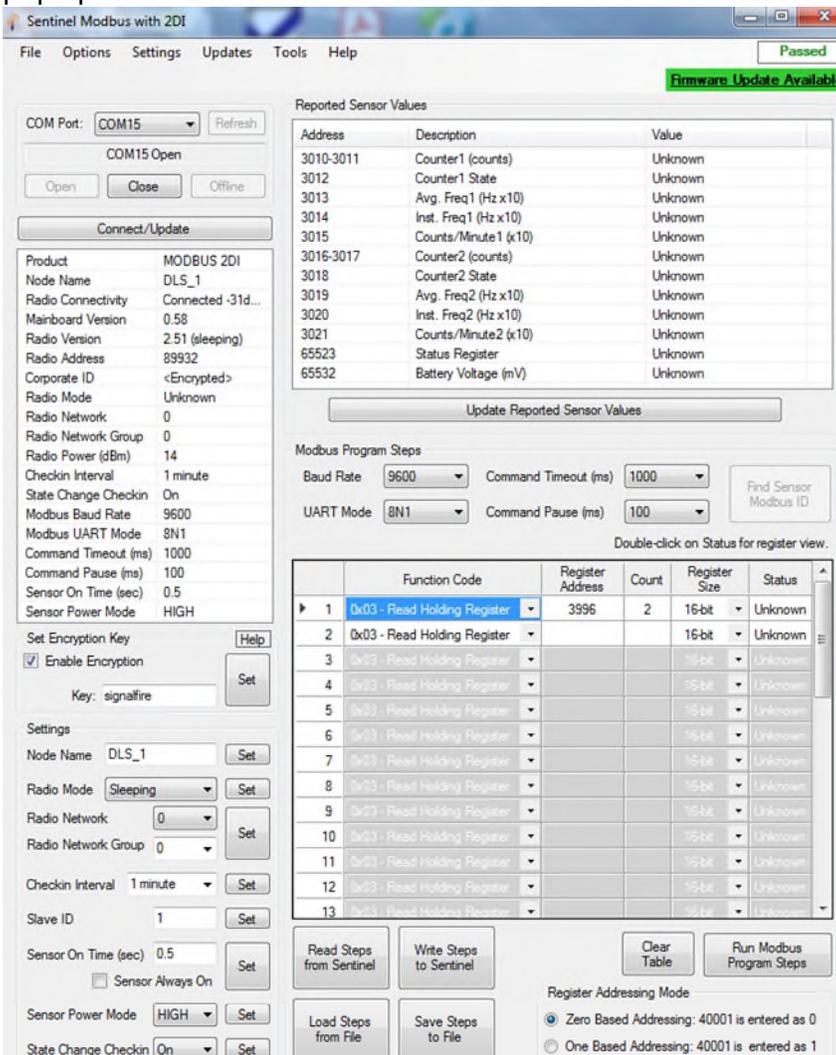


4. Launch the SignalFire Toolkit Software.

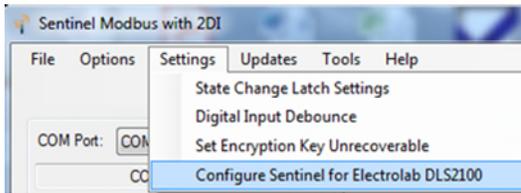


5. Select “Refresh” and then select the COM Port from the drop-down menu.

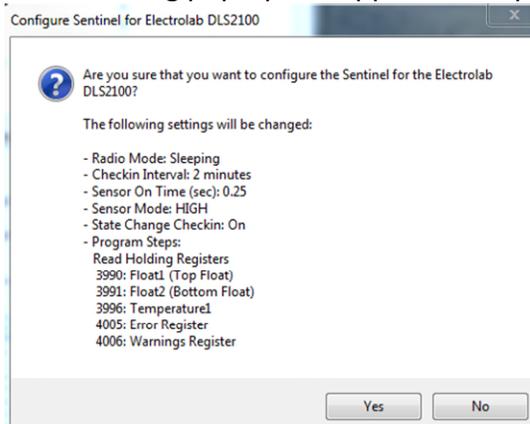
6. Select “Auto-Detect Device on COM Port.” If successful, a configuration window will pop up with “Sentinel Modbus with 2DI” as the window name.



7. From the Settings Tab, Configure Sentinel for the DLS by selecting “Configure Sentinel for Electrolab DLS2100” and accept changes.



8. The following pop-up will appear. Accept the changes.



9. Edit "Checkin Interval" to 1 minute



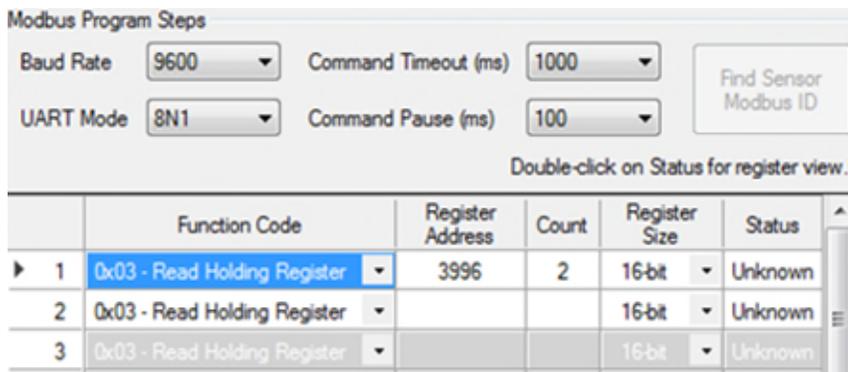
10. Edit "Sensor On Time (sec)" to .5 Seconds



11. Edit "Slave ID" to the DLS Unit Number (1 - 31) Note: **The DLS Unit Number must match the Slave ID in Sentinel.**



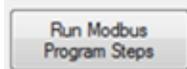
12. Holding Registers



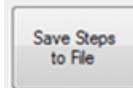
- a. Edit the Holding registers (There is no level on the TempSens™.)
- b. Delete or re-assign Registers 3990, 3991, 4005 and 4006.
  - i. Register 4005 can be kept to see TempSens™ errors.
- a. Edit or Add Registers 3996 count of 1 register and 3997 count of 1 register or simply 3996 count of 2 registers for reading Temperature sensor 1 (3996) and Temperature sensor 2 (3997).
- b. Select “Write Steps to Sentinel”



- c. Select “Run Modbus Program Steps”.



- d. If all achieve a “Pass” status, select “Save Steps to File” for later use, if necessary.



- e. Disconnect the programming cable from the Node.

## Configuring the SF Gateway (GW) to communicate with the SF Sentinel Node

Follow the steps below to successfully configure the SF Gateway on a Stick to communicate with the SF Sentinel Node.

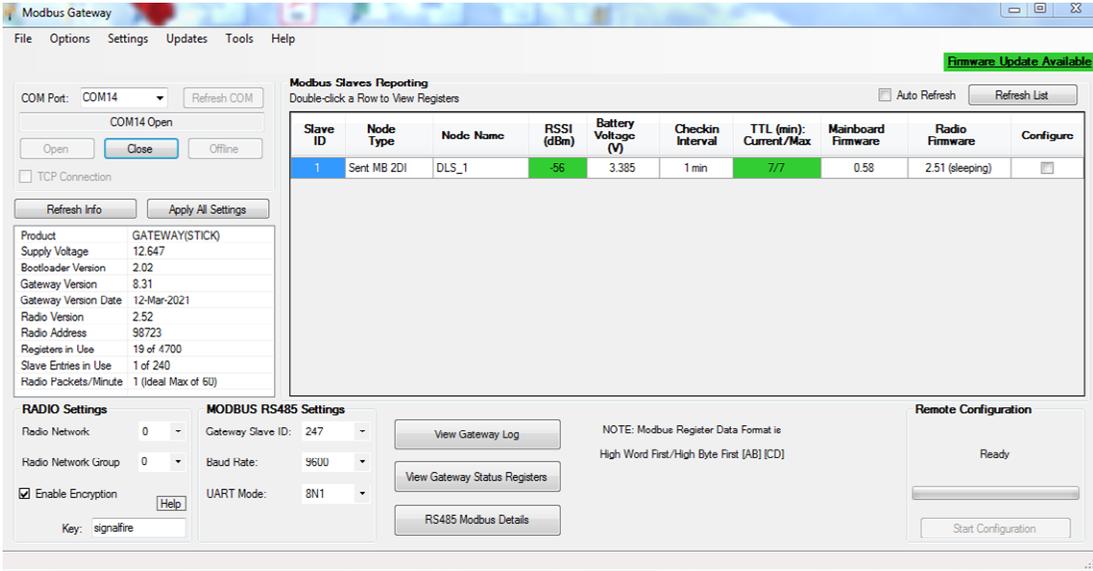
1. Use SignalFire Toolkit Software. The Toolkit will need to be downloaded from the SignalFire website at <https://www.signal-fire.com/resources/>
2. Connect to the Break-out box provided in the Gateway on a Stick package (CBBL-DIN) via RS232 (USB-Serial-DB9).



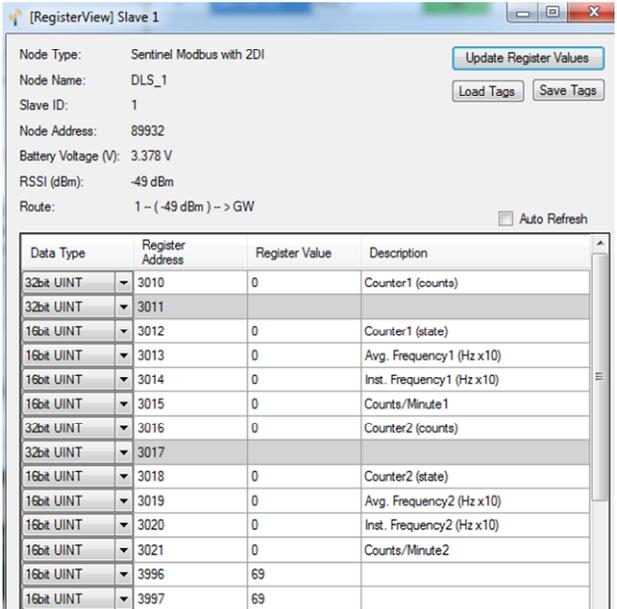
3. Launch the SignalFire Toolkit Software.



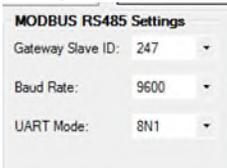
4. Select “Refresh” and select the COM port from the drop-down menu. Then select “Auto Detect Device on COM Port.”
5. If the Sentinel is detected, data will populate the table “Modbus Slaves Reporting” and other fields will automatically populate.



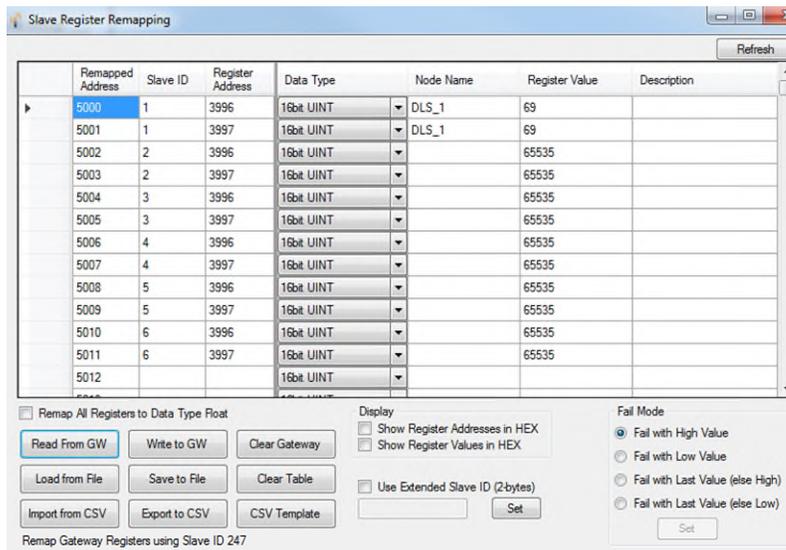
6. Double-clicking on a Modbus Slave “Node Type,” will pop up a window with Register Data. The values of the contents of each Register can be viewed here.



- a. Edit the Descriptions if desired.
  - b. The Modbus Slave should have the Holding Registers previously set up in the Sentinel, 3996 and 3997 with values in the "Register Value" column.
7. Edit the Gateway Slave ID using the drop-down menu from the "MODBUS RS485 Settings." (This will be used to read MODBUS data from the Gateway. The default ID is 247.)



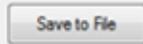
- a. Any changes will cause the "Apply All Settings" button to display. Select "Apply All Settings" to apply changes.
8. From the Settings tab, remap the Slave Modbus Registers to the GW Modbus Registers by selecting "Slave Register Remapping."



- Edit Registers 5000 and up to the desired Slave ID Registers (Address 5000, ID 1, 3996 & 5001, ID 1, 3997).
- Edit the Description to easily identify the Sensor Data.
- Select “Write to GW.”



- Select “Save to File” for later use, if necessary.



## Connecting TankChek LCD210 to the SF Gateway

Follow the steps below to successfully connect and configure the TankChek LCD210 to the Gateway via RS485 Modbus RTU as a Snooper. Configuration will require the TankChek Wizard 1.2 software, USB Serial Adapter ribbon cable or 2-wire RS485 USB adapter and 12-24vdc power supply. Prior to connecting the LCD210 to the Gateway, the LCD210 will need to be connected to a computer running the TankChek Wizard Configuration Software in order to set up the Modbus Registers configuration and the display.

- Connect the LCD210’s RS485 wiring connector to the computer’s USB/RS485 cable connector (LCD210 connector D+ to USB/RS485 D+ and LCD210 D- to USB/RS485 D-) or if the USB Serial Adapter ribbon cable programming cable is used for programming, connect the ribbon cable to the back of the LCD210 and launch the TankChek Wizard.
- If using the USB Serial Adapter ribbon cable, skip the next step.
- Apply 12-24vdc power to the LCD210 terminal strip P+ and COM.

4. Launch the TankChek Wizard Software. **Note:** The software will automatically begin to read the LCD210 configuration from the unit. Not using the USB Serial Adapter will require configuring com ports and knowing the LCD210's Modbus ID, default is 240, before the configuration can be read from the unit.
5. Set up the TankChek LCD210 to read or Snoop on the Registers entered in the GW (5000 and 5001). Note: TankChek will require +1 to each Register (5001 and 5002).
6. Configure the Process Variables in TankChek for the appropriate Slave ID (default 247 from the SF Gateway) and Registers (Maximum of 16 PV's).
7. Setup the LCD210 as a Snooper to read/echo the values for the Modbus Registers that are being requested by the PLC. **Note:** The Modbus Registers must be requested one at a time by the PLC in order for the LCD210 to see and display all the requested Registers. Requesting a range of Registers will result in only the first Register being displayed.
8. Disconnect the Computer wiring from the LCD210.
9. Connect the LCD210's RS485 wiring connector to the Gateway's RS485 connector (LCD210 connector D+ to Gateway A and LCD210 D- to Gateway B).

## Mounting and Sealing the Node to the DLS

Follow the steps below to successfully mount the SF Sentinel Node to TempSens™ or a Model 2100 Digital Level Sensor.

1. Loosen the nut on the top part of the 1-inch union until the nut is almost removed.
2. Apply thread sealant to the sensor's 1-inch NPT connector.
3. Hold the SF Sentinel Node above the sensor flange connector. Insert the PT-SF connector into the sensor and tighten.
4. Unscrew the bottom part of the union from the node.
5. Screw the bottom part of the union (1-inch FNPT) onto the sensor's 1-inch MNPT flange.
6. Route the PT-SF wires into the union. **Caution:** Ensure the connector wires are not caught in the threads or in the union joint.
7. Screw and tighten the parts of the union together and onto the sensor.



## Technical Support

For more information contact Electrolab:



Electrolab, Inc.  
159 Enterprise Parkway  
Boerne, Texas  
888-301-2400  
[www.electrolabcontrols.com](http://www.electrolabcontrols.com)