BLUE SIREN®

SCADASiren®

Open Channel Flow

Quick Start Guide

IMPORTANT

Contact **Blue Siren®** for technical support at +1 (321) 242-0300.

Warranty covers Blue Siren® products and software for the duration of the warranty period per the warranty's terms and conditions.

Blue Siren® is **NOT LIABLE** for damage or injury due to any handling, installation, or maintenance of supplied products.

BlueLive® Cloud based hosting with FieldSIREN™ that supports 2G, 3G, and 4G wireless networks.

Always **service** your Blue Siren® products according to the manufacturing instructions.

Always **verify and calibrate** sensors when installing hardware.

Periodically verify sensors and monitor operation.

Contents

Introduction:

The SCADASiren™ will provide you with data and insight into your environmental data collection program without breaking the budget. Designed by field technicians with over 20 years experience, it's rugged, tough, and user-friendly.

With multiple sensor options to meet the demand of today's environmental monitoring challenges, the SCADASiren™ is the go-to device for short term, fast turn-around data acquisition.

Supporting multiple standard SCADA protocols, including 4-20mA output, RS485 and serial communication the SCADA siren is ideal to connect to different field devices.

With simplified user definable sampling, alarm, and data transmission rates, know the condition of your site in near real-time.

The SCADASiren™ will provide accurate insight into your data collection program. It is extremely versatile and can monitor multiple applications using different sensor configurations.

The SCADASiren® data logger and wireless module operate using a very low power, allowing the unit to be powered by AC, Solar or DC battery packs. LCD Toggle allows you to turn the screen off to conserver power.

Easy to install, and program! Utilize the power of wireless communications and have your unit delivered with a WiFi or Cellular modem option.

Multi-Sensor Wall Mount Wireless Flow Monitoring System

The SCADASiren® is a multi-application wall mount monitoring system with LCD and flow totalizer. Multiple SCADA output options are available including 4-20 mA, RS485, serial and analog output modules.

Optional USB allows for onsite data collection not requiring external connection to a field computer to collect data.

Automatically upload data for analysis to BlueLive® Cloud, DropBox®, GoogleDrive® or FTP location of your choice. Future proof worldwide LTE wireless module supports multiple countries and cellular frequencies, WiFi option also supported.

Built-in multi-media platform allows direct connection of our vision camera taking simultaneous pictures that correlate directly with sensor readings. Receive alarm emails with not only critical data but also images supporting the condition.

Automatically upload data for analysis to BlueLive® Cloud, DropBox®, GoogleDrive® or FTP location of your choice. Future proof worldwide LTE wireless module supports multiple countries and cellular frequencies, WiFi option also supported.

FEATURES

| FEATURES	Value
USB	USB Support and weatherproof enlosure, store thousands of images and data
LCD	Eight Line Internal LCD module option
RS485	Optional RS485 output communication can connect to external RTU and transmit sensor information
Power Packs	External Power Pack Case for easy D Size Battery Change Out, or Water Proof Encapsulated 12V for extreme moisture and possible submergence
Pulse Output	Supports Dual Sampler Outputs, including Flow Pace Pulse and single Alarm Triggered Pulse
STI-12	Optional STI-12 configuration module, may require firmware upgrade to support
Multi Sensor	Multi Sensor Expansion port optional, connect up to 10 additional sensors
Camera Port	5V Power Output with Secondary Flash Switch used for Power Conservation and Efficiency
Data Storage: Based on 23 Active Data Channels	88,000 time stamped samples of 23 Data Streams for a total of approximately 2 million readings, data storage approximately 2.5 Years@15 min Sampler Rate

Flow and Overflow Alarming

Non-Contact Level

Critical Alarm Level

- Normal
- Warning
- Critical
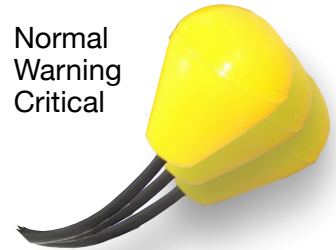
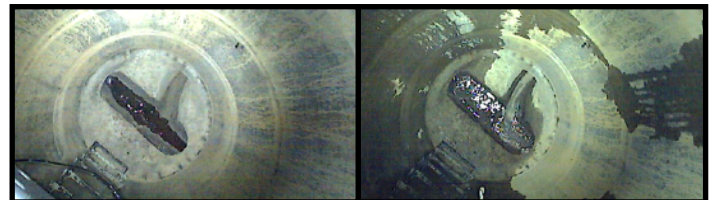## Vision Cam Sensor

Dual AV Capability

SPECIFICATION

Specifiation	Description
Enclosure:	10 x 8 x 4in (HxWxD), wall mount, fiberglass reinforced polyester, gray, single-door, (2) twist-lock latches, SAR acrylic window.
Nema Rating	NEMA 1/3R/4X/6P/12
Output	Serial, Digital, Analog (Optional)
Weight	10lb.
Operating Temp.	-40 to 60 C -40 to 140 F
Connectors	Spring loaded
Sensors	Support Dual AV, Water Quality, Level, Vision Camera, Non Contact Velocity, Sampler Trigger, RainGauge. and CSO Gate Sensors
Sample Rate	User Defined, 0 to 60 minutes
Field Software	Field-Siren Windows GUI
Server Protocol	Compressed Binary
Wireless	2G-3G-4G or WiFi Optional
Microprocessor	TMSP430™ ultra-low-power sensing & measurement MCUs

Specification	Description
Alarm Float	Material: Durable PolyPropylene Trigger: 1" Above/Below Horizontal
AV Sensor	Depth Range: 15 PSI (0-30ft) (0-10m) Velocity Range: 0-30 ft/s (0-10m/s) note * * 5 PSI Sensor also Available
Ultrasonic Level	Long Range Sensor: Dead Band: 12 in (300mm) Range: 0-6m (0-20ft) Short Range In-Pipe: Dead Band: 1 in (25mm) Range: 0-5ft (0-1.5m)
Camera:	CCD: jpeg compression Image Resolution: 2592×1944 (Default), 2048×1536, 1920×1080, 1600×1200, 1280×960, 1024×768, 800×600, VGA, QVGA, 160×120 Baud Rate: 115200
Wireless	Protocol: 4G LTE CATM1/NB1 4G Bands: B1 (2100), B2 (1900), B3 (1800), B4 (AWS1700), B5 (850), B8 (900), B12 (700), B13 (700), B18 (800), B19 (800), B20 (800), B26 (850), B28 (700) 2G Bands: B2 (1900) B3 (1800) B5 (850) B8 (900)

Note * * Battery life is dependent on the number of sensors attached to the PROSiren, the frequency that a sensor is turned on and how long it is turned on for, as well as the frequency of wireless uploads, wireless signal, and number of alarms. Typical battery life is around one year when using a single AV sensor at 15 minute sample rates and 12 hr wireless upload rate.

Dry Weather   Wet Weather - I&I

MADE IN THE USA

Monitor with Vision®

SCADASiren LED Indicator:

The SCADASiren is equipped with a Central high intensity RGB LED status indicator.

note * * GREEN LED not functional without Wireless Option

BLUE - Sensor Power is On and Taking Reading

note * * do not unplug sensors when the Blue LED is on

**RED** - Sensor Power is ON and Sensor Battery is Low

GREEN - Monitor is Wirelessly Connected to the Cloud Server

LED Operation:

WIRELESS CONNECTION SUCCESSFUL AND SENDING DATA TO SERVER	TAKING SENSOR READINGS POWER IS ON	TALKING SENSOR READINGS AND MAIN POWER IS LOW (Less than 8.5V)

Connect Sensors

After receiving the monitor, the sensor and antenna will need to be connected. Follow the instructions below to do this.

OUTPUT   **POWER**   **SENSORS**
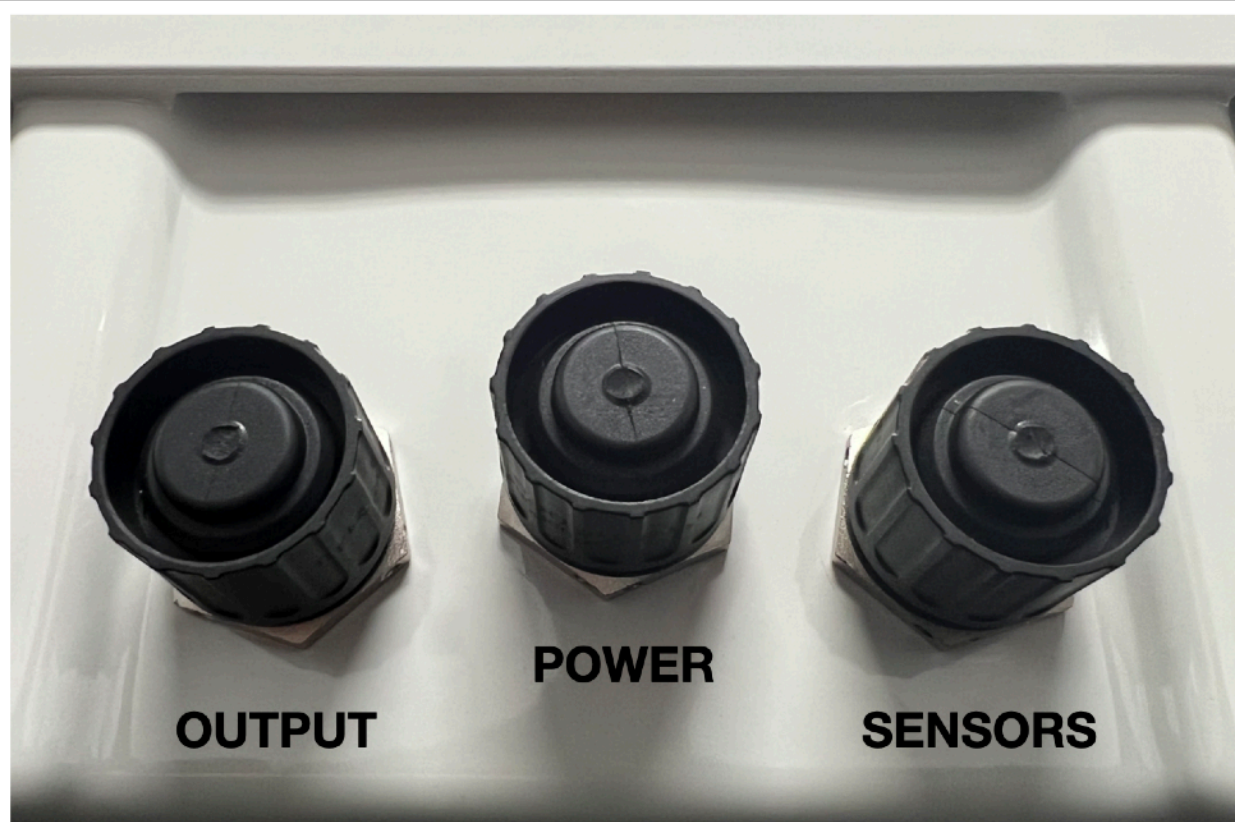
1.CONNECT POWER
2.CONNECT SENSORS
3.CONNECT OPTIONAL 4-20 OUTPUT

Optional, Multi Sensor Spliiters are available for custom applications

Power Port Supports AC/DC and Solar Connections

Wireless SetUp

If the monitor is equipped with a cellular or WiFi Modem you will need to connect the antenna.

note * * If you are using your own antenna make sure it is rated for the cellular modem frequency that came with your monitor.

INSTALL SMA ANTENNA

INSTALL STANDARD SIZE SIM

Install BackUp Battery

In the event the 3.7V RTU battery is not installed, you will need to install it.

note * * make sure you get the polarity correct, inside the battery holder you will see a (+) and (-) sign, match this with the battery polarity.
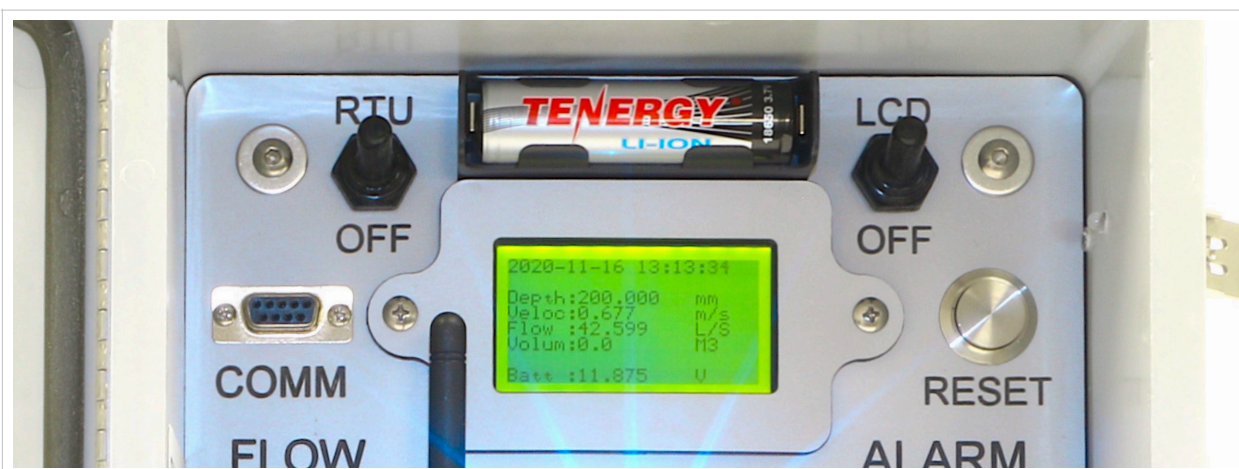
MAKE SURE THE RTU POWER BUTTON IS OFF WHEN INSTALLING THE LION BATTERY

POSITIVE (+)   **NEGATIVE (-)**

Turn Power On

To activate the monitor you will need to turn the power switches on.

Note * * If you have the wireless option make sure antenna is connected before you do this.

You will See Two Power Toggle Switches, RTU and LCD

Turn the RTU Power ON by flipping the switch to the UP position

Turn the LCD Power ON by flipping the switch to the UP position

Install the AV Flow Sensors

Area Velocity flow sensors are typically attached to a screw jack band and installed at the bottom of the pipe, while ultrasonic level are installed at the Crown of the pipe or above the flow in the manhole.

AV flow sensors are installed at the bottom of the pipe, and ultrasonic level sensor above the flow line

Dual AV Sensors, one installed at invert and second installed offset to invert

IN-PIPE Ultrasonic Level Sensor looking down on Flow Stream
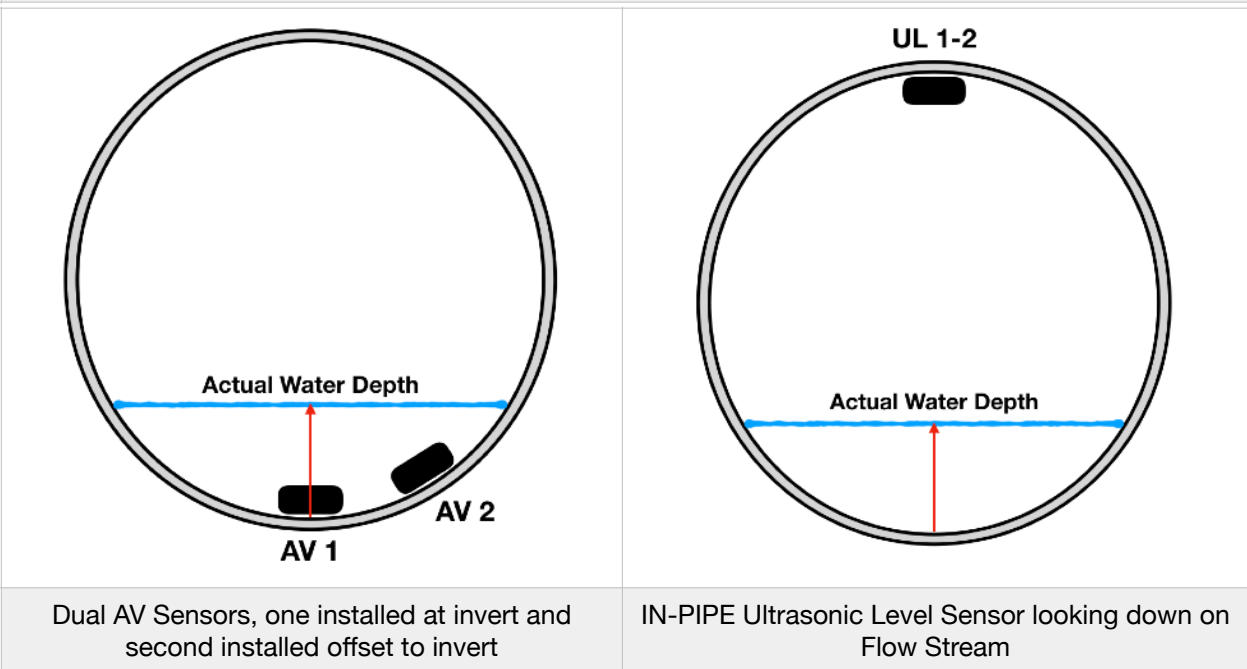
Program Monitor

You can now program and calibrate your sensors. Sensor calibrations will occur in the Field, however during this step you can put the AV sensor into a bucket of water and try to get some relative readings to verify basic operation.
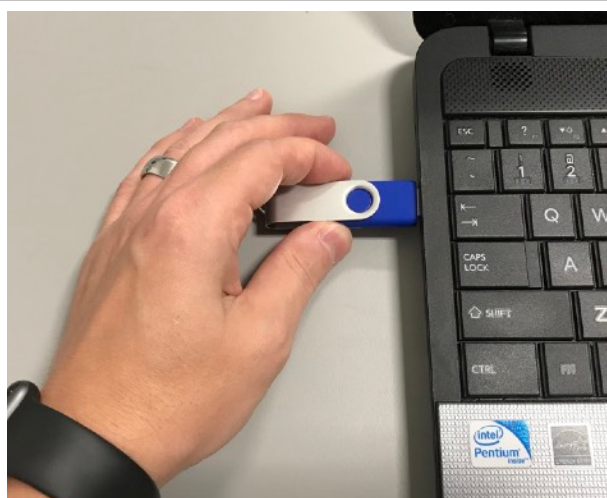
STEP 1. Install FIELDSiren Program on your laptop

STEP 2. Connect COMM Cable to your monitor, and make sure the power is on
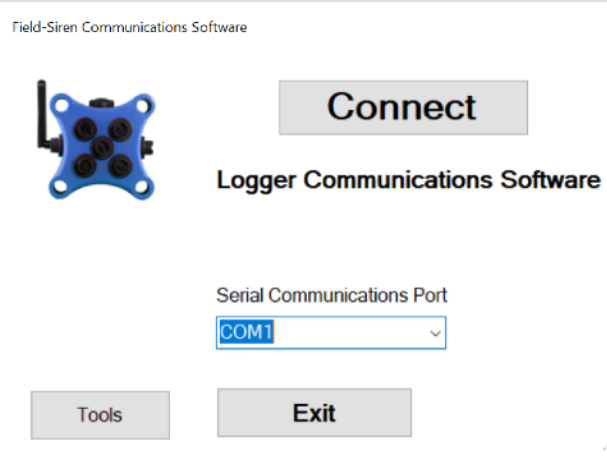
STEP 3. Start FIELDSiren Software and Press Connect Button
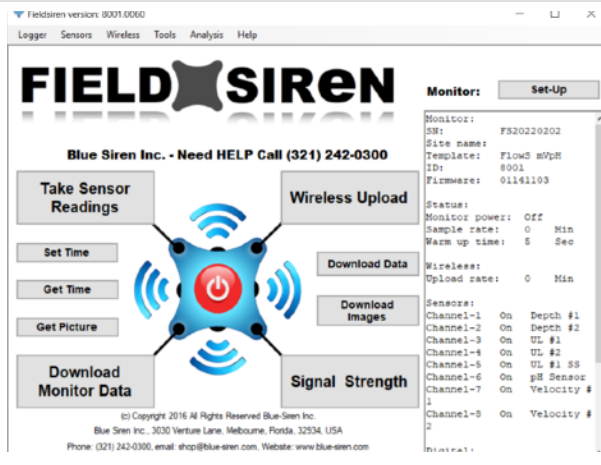
STEP 4. Calibrate Sensors

Sensor Calibration:

CLICK on Sensors Menu on top of screen, there are three calibration options, Lab Calibrate, Sensor or Field Calibrate and Velocity Calibrate. The Lab Calibrate option allows you to do a two point linear calibration on any sensor, whereas the Sensor Calibrate is a one point field calibration.

Calibrate Depth Sensor

One Point Field Depth Calibration

CLICK on Sensor Calibration, Select Depth Sensor, Enter Units, Enter ACTUAL Depth, Enter Depth Coefficient (99.88 in)

Once your information is entered, CLICK the FIELD CALIBRATE button, the monitor will automatically calibrate the sensor, and verify the sensor reading in a result box.

Coefficients: 25ft Cable - 5 PSI AV Sensor = 33.46 (in) or 850 (mm)
                       25ft Cable - 15 PSI AV Sensor = 99.88 (in) or 2536 (mm)

note* for longer cable lengths always verify the calibration at two water levels.
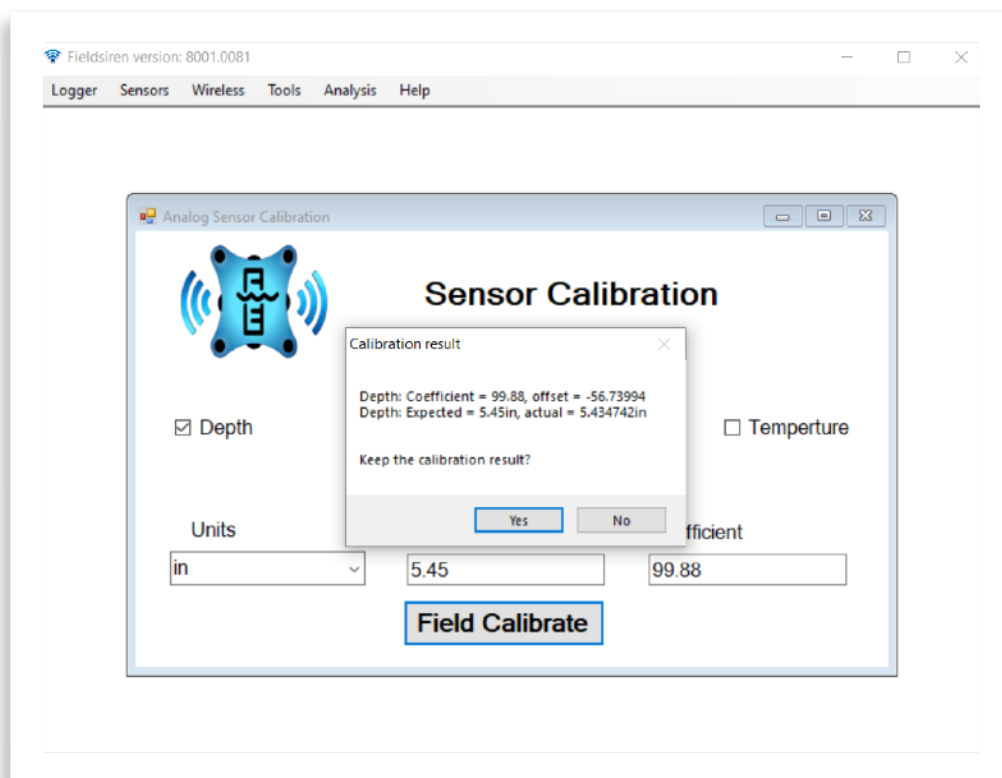
Verify or Calibrate Velocity Sensor

Blue Siren recommends using our factory calibration, however if you at a location that requires further calibration, use the following tool.

CLICK on Velocity Calibration, Select the Velocity Sensor 1 or 2, enter your UNITS, Enter the Actual Field Velocity, or conduct a T-section profile to determine the Average Velocity, Click Field Calibrate, or Click Reset Calibration if you are unsure.
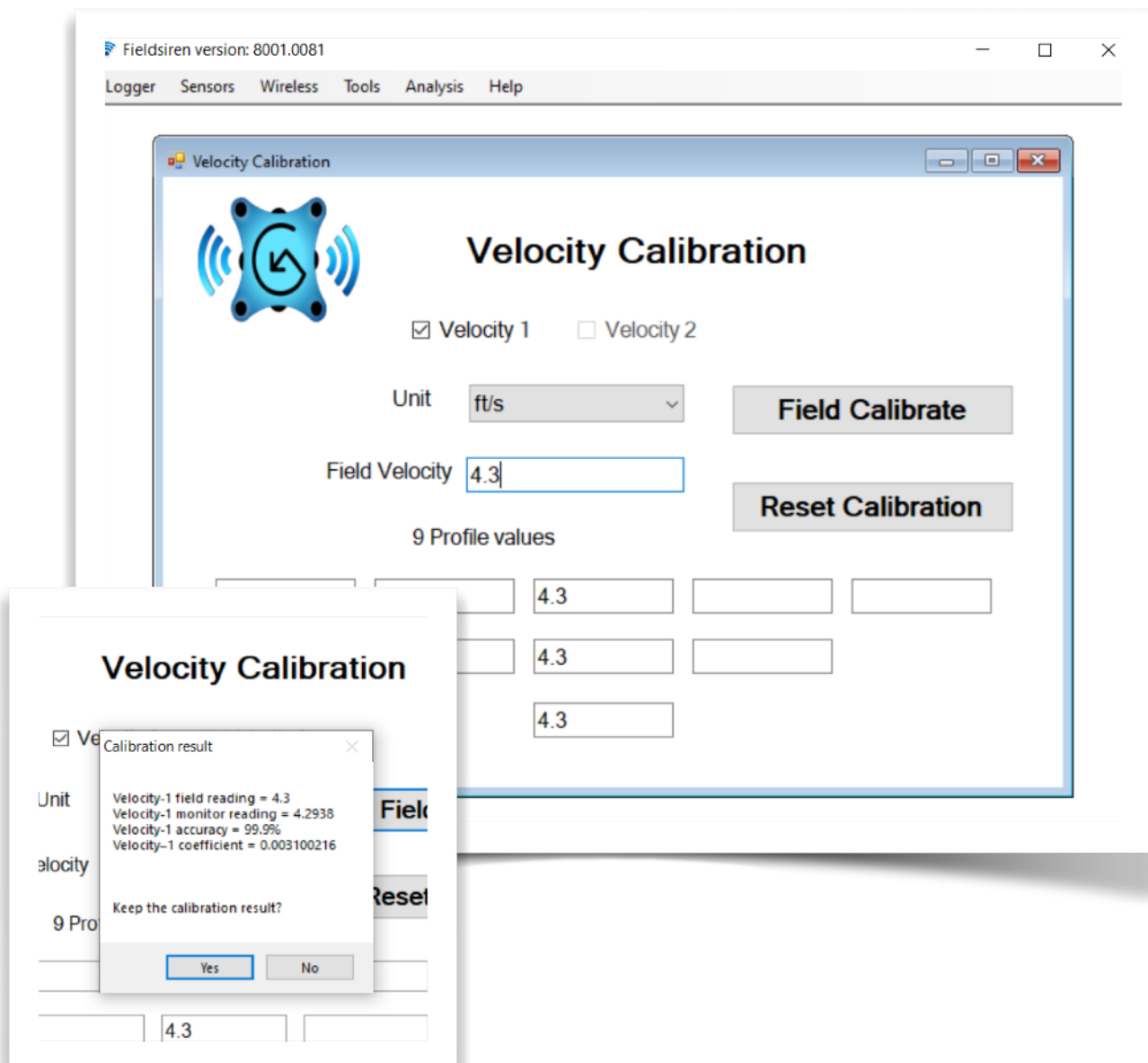
Set Up Flow Calculation:

Enter Diameter, and calculate flow coefficient:

CLICK on Set-Up and CLICK the Flow and Sampler Tab, Enter the Flow Calculation and Diameter in inches.

note * * You will require a Flow Coefficient to be entered into the flow channel, based on your units you can calculate that on this page. The flow coefficient in US Gallons per Minute is 3116.882499, and coefficient for US Gallons per second is 51.94807.
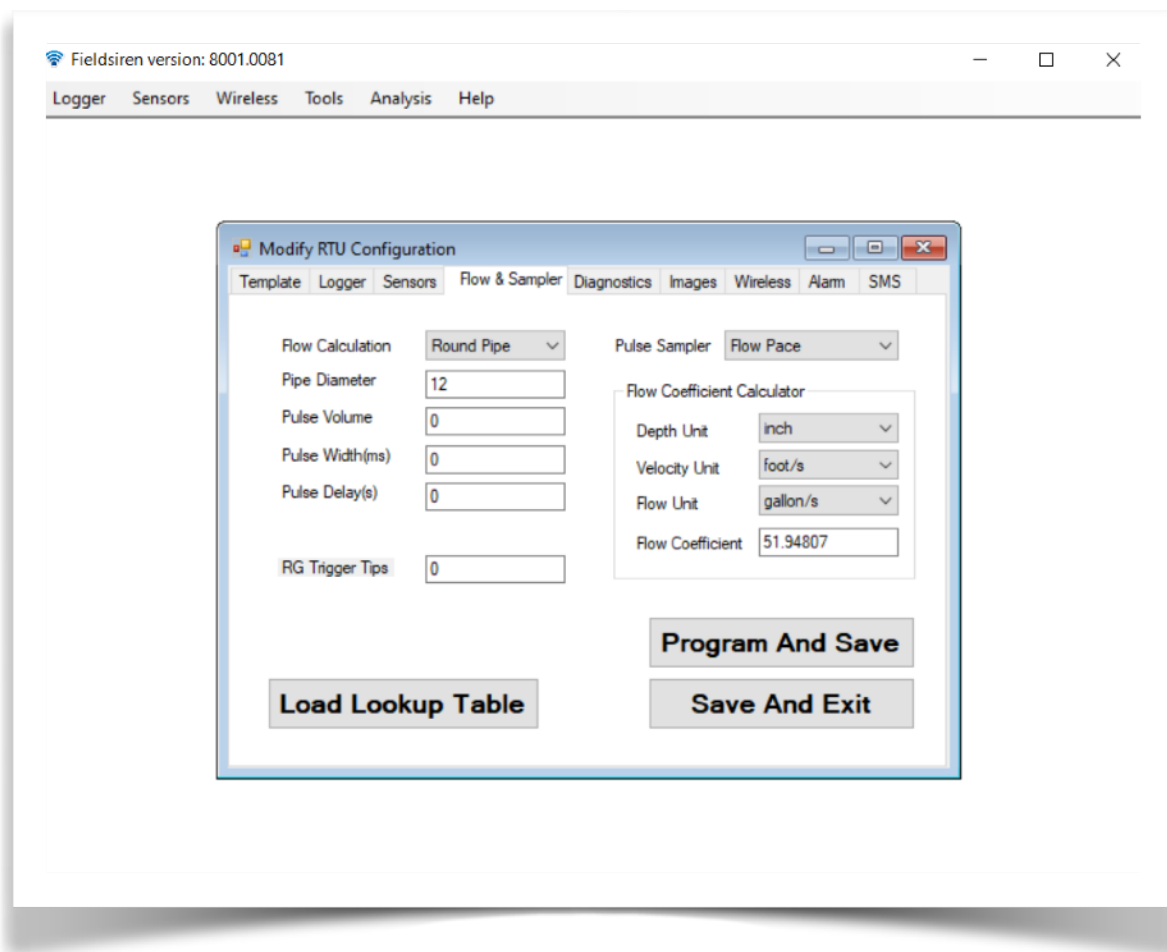
Enter Flow Coefficient and Units

CLICK on Set-Up and CLICK the SENSORS Tab, now select CHANNEL 3, Enter the units you want to measure flow, and Enter the COEFF. calculated in the window above.

Coefficients: gps = 51.94807
                       mgd = 4.4883
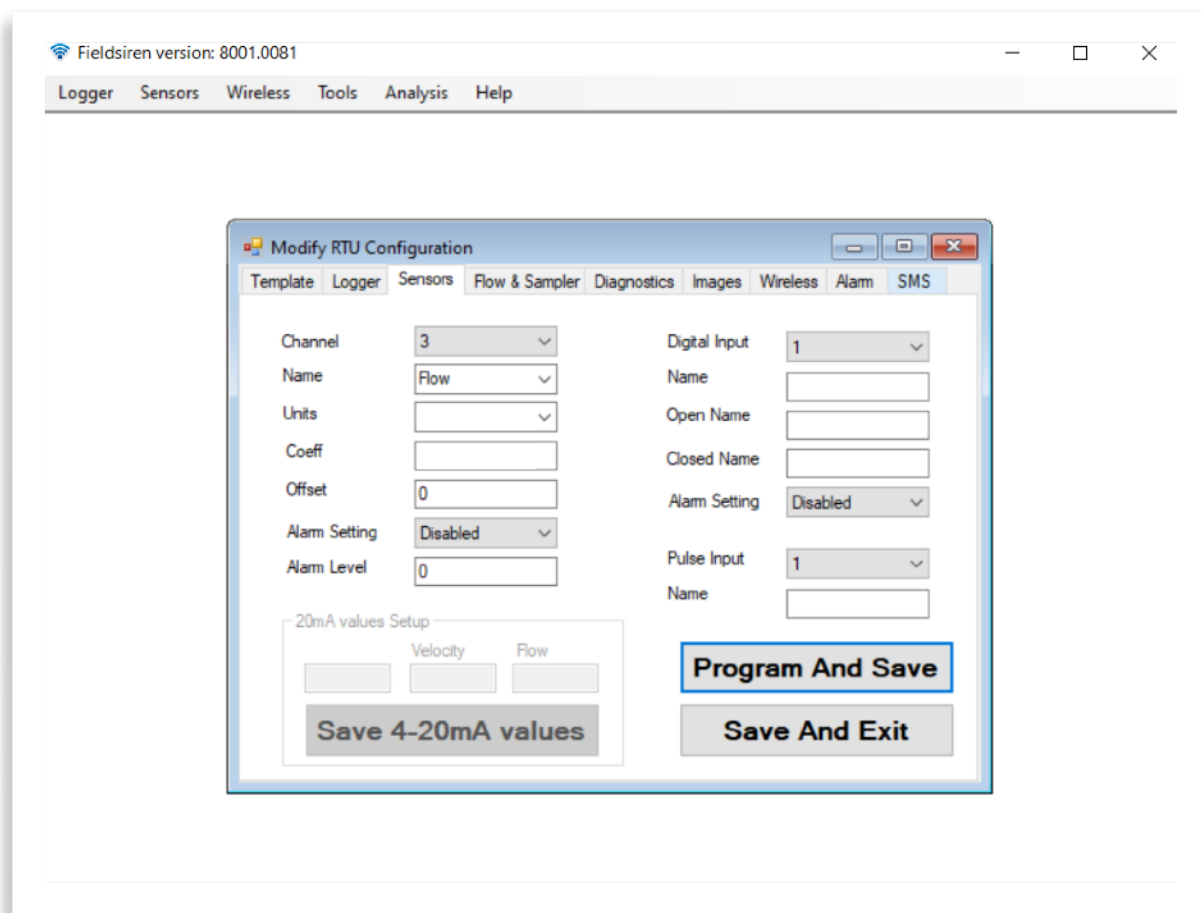
Sample Rate and Warmup Times

CLICK Set-Up, and then LOGGER TAB to access the Sample Rate and WarmUp parameters.

The screen shot below shows the correct setup parameters located under the Logger Tab.

note * * You will need to set the sensor sample rate.
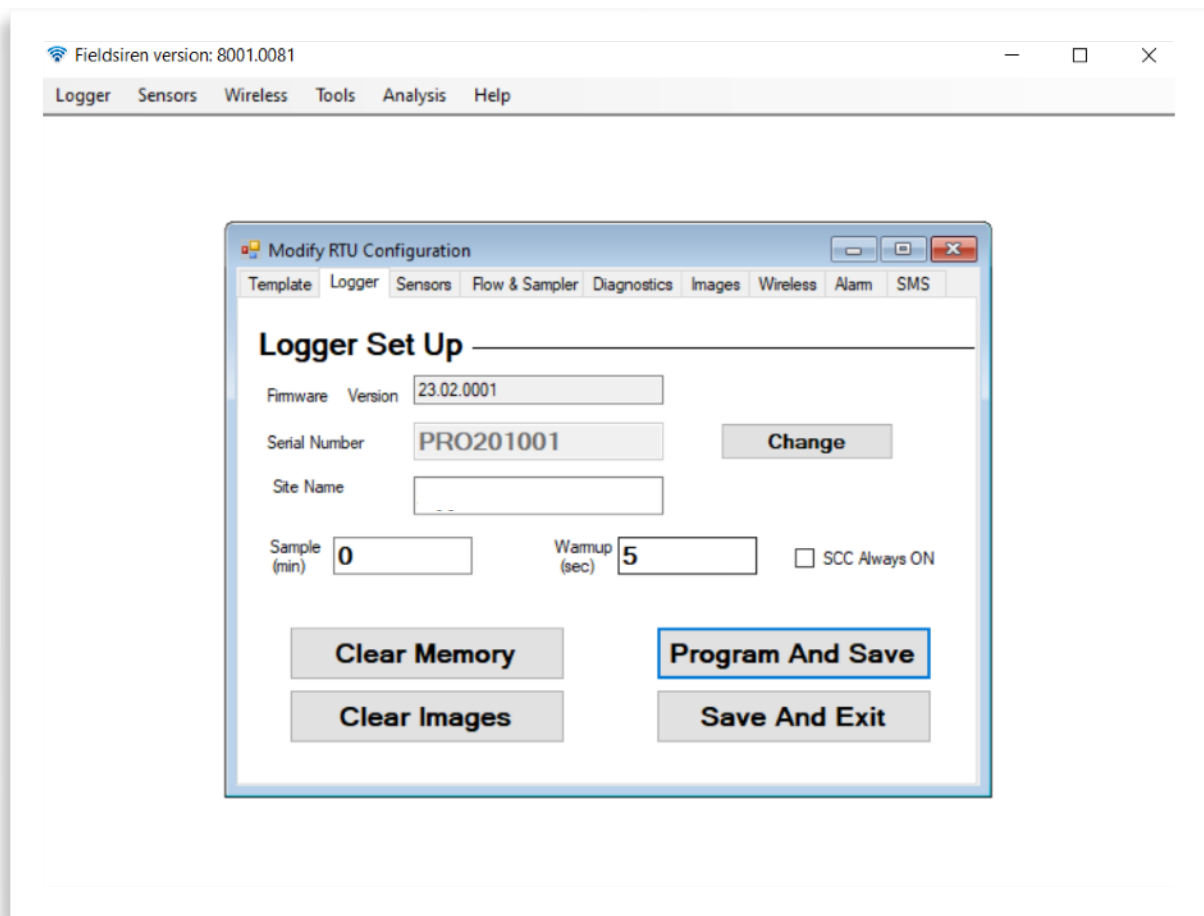
Activate and Check Sensor Readings:

CLICK > **TAKE SENSOR READINGS** on the front screen of the FieldSIREN Menu, this will take you into a sensor activation mode.
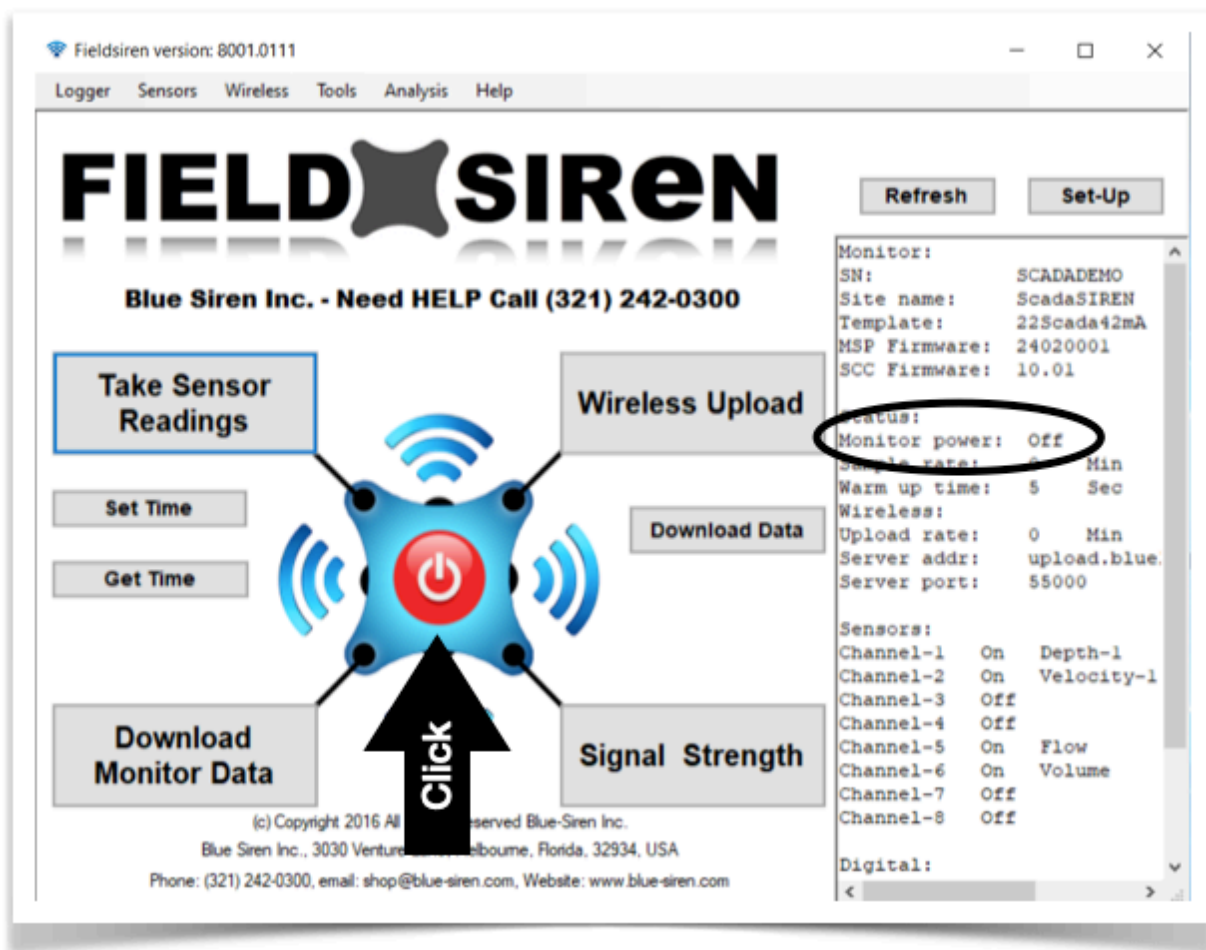
You will have two choices, either **ACTIVATE SENSOR** to take a single reading or **TAKE CONTINUOUS READINGS** to view more than one reading at a time.
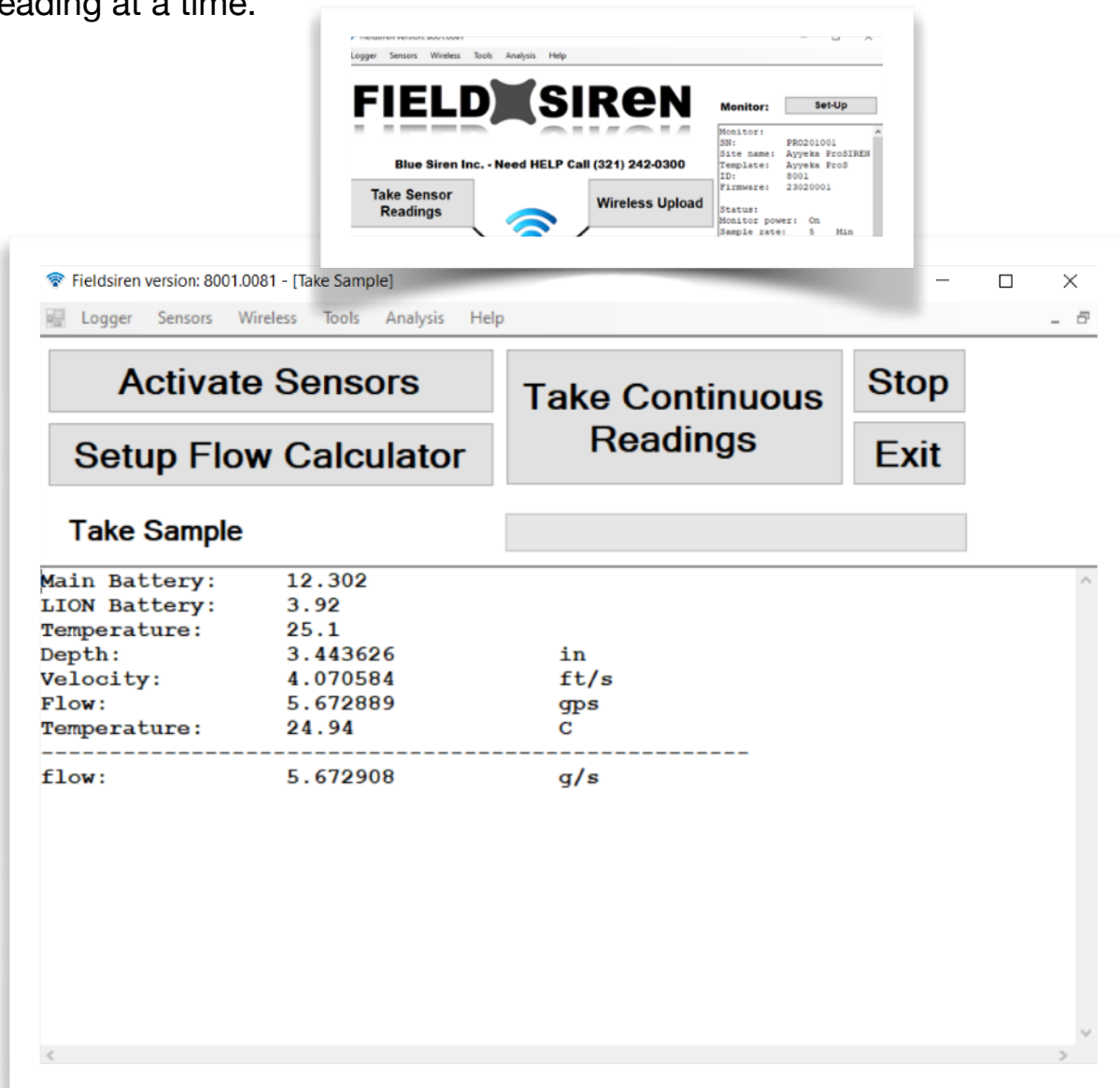
SET UP 4-20 OUTPUT MODULE

STEP 1. - TURN OFF

TURN MONITOR OFF . . If the button on the first screen is green click it to red, and make note that the monitor status is Off.

STEP 2. - SENSOR CHANNELS

SET UP 4-20 SENSORS . . note * * Please calibrate all sensors, especially the depth sensor before you attempt this section, refer to page 14 Sensor Calibration.

SET UP 4-20 DEPTH VALUES
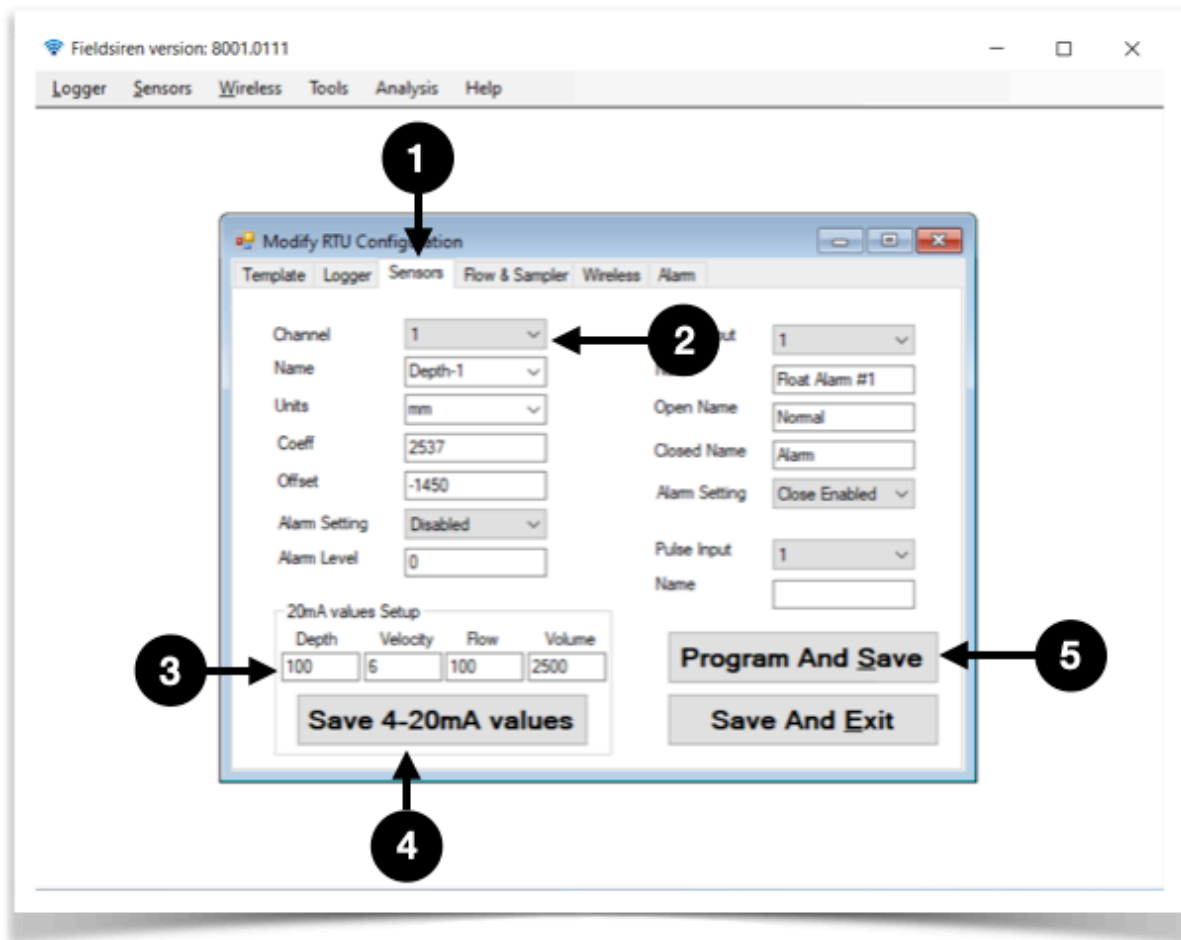
1. *CLICK* Sensor Tab
2. *SELECT* Channel 1
3. *ENTER* Maximum Expected Depth
4. *CLICK* Save BUTTON
5. *CLICK* Program and Save BUTTON

SET UP 4-20 VELOCITY VALUES
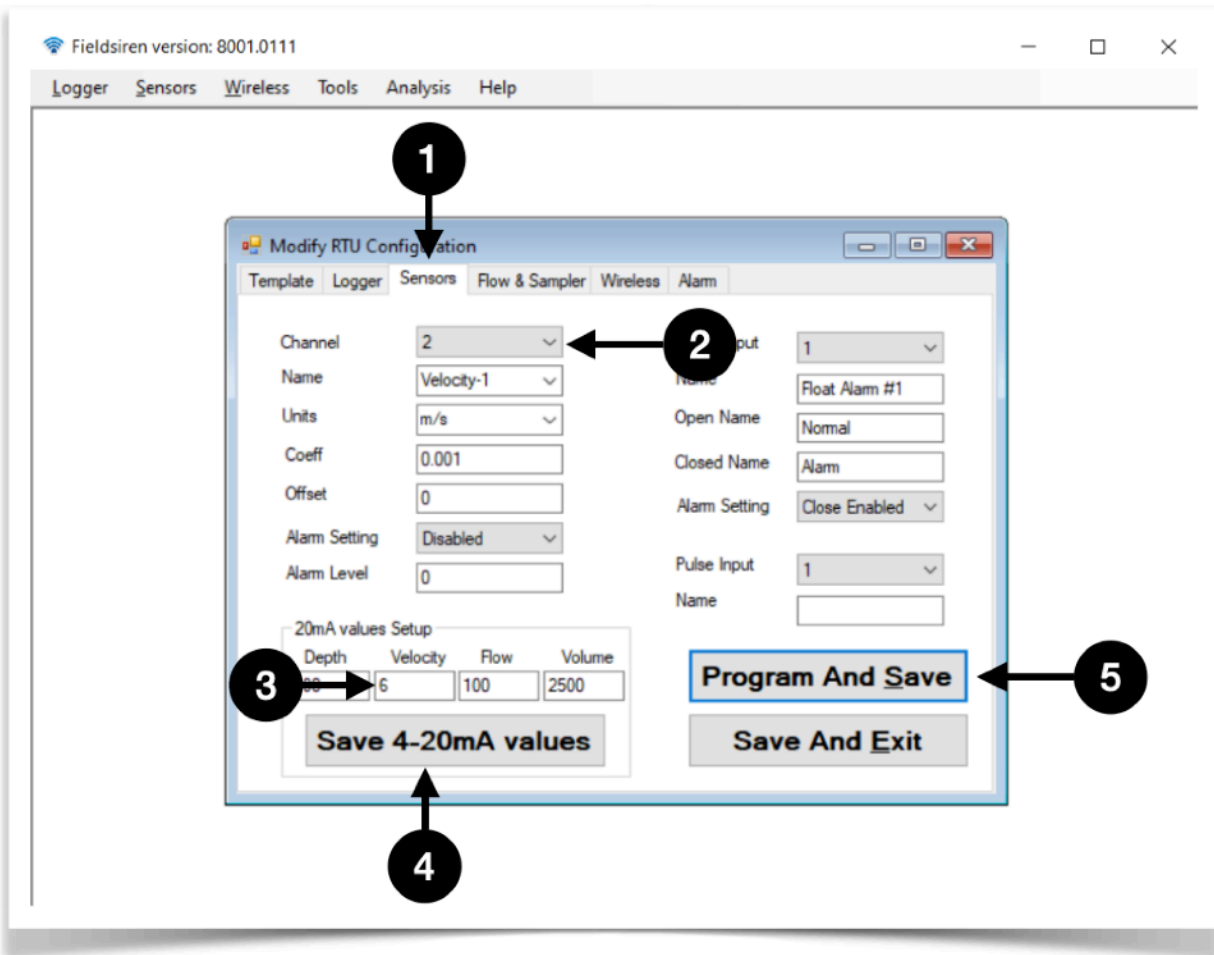
1. **CLICK** Sensor Tab
2. **SELECT** Channel 2
3. **ENTER** Maximum Expected Velocity
4. **CLICK** Save BUTTON
5. **CLICK** Program and Save BUTTON

SET UP 4-20 FLOW VALUES
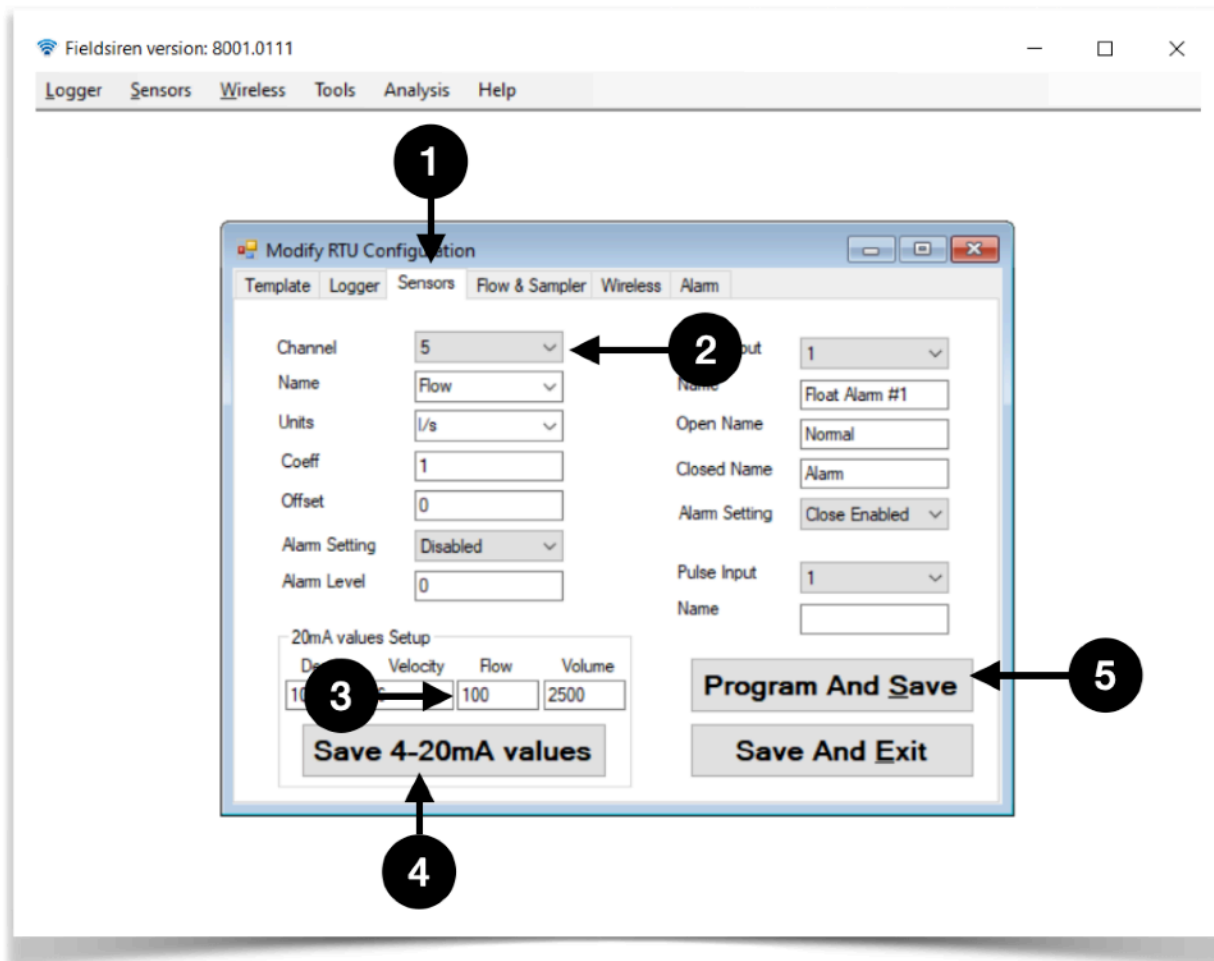
1. **CLICK** Sensor Tab
2. **SELECT** Channel 5
3. **ENTER** Maximum Expected Velocity
4. **CLICK** Save BUTTON
5. **CLICK** Program and Save BUTTON

SET UP 4-20 VOLUME VALUES
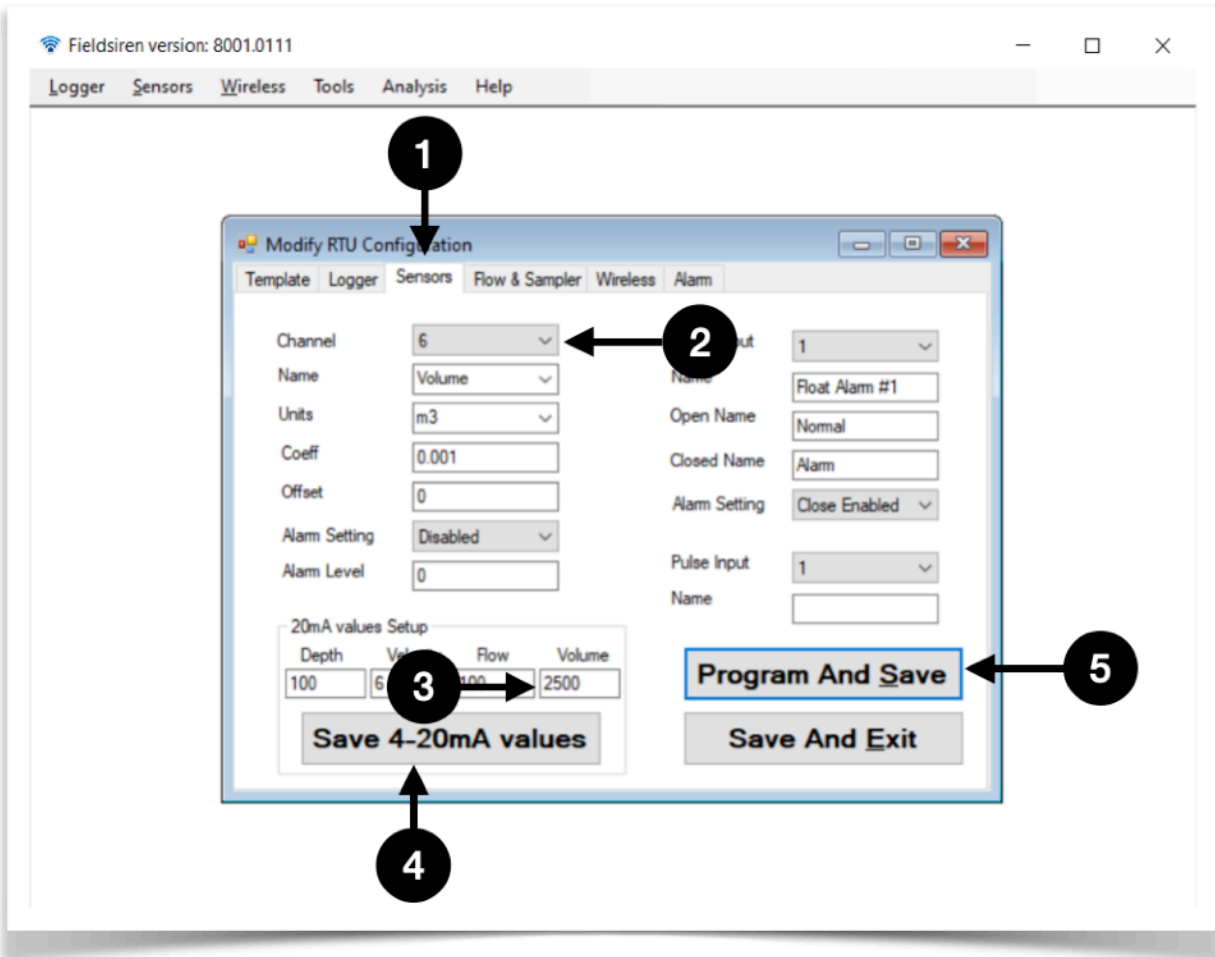
1. *CLICK* Sensor Tab
2. *SELECT* Channel 6
3. *ENTER* Maximum Expected Volume
4. *CLICK* Save BUTTON
5. *CLICK* Program and Save BUTTON

STEP 3. - ALARMS

SET UP ALARM Mode . . note * * This section covers setting up the digital input alarm mode, please refer to sensor channel set up if you want to alarm based on depth, velocity of other serial or analog sensors.

SET UP DIGITAL ALARM
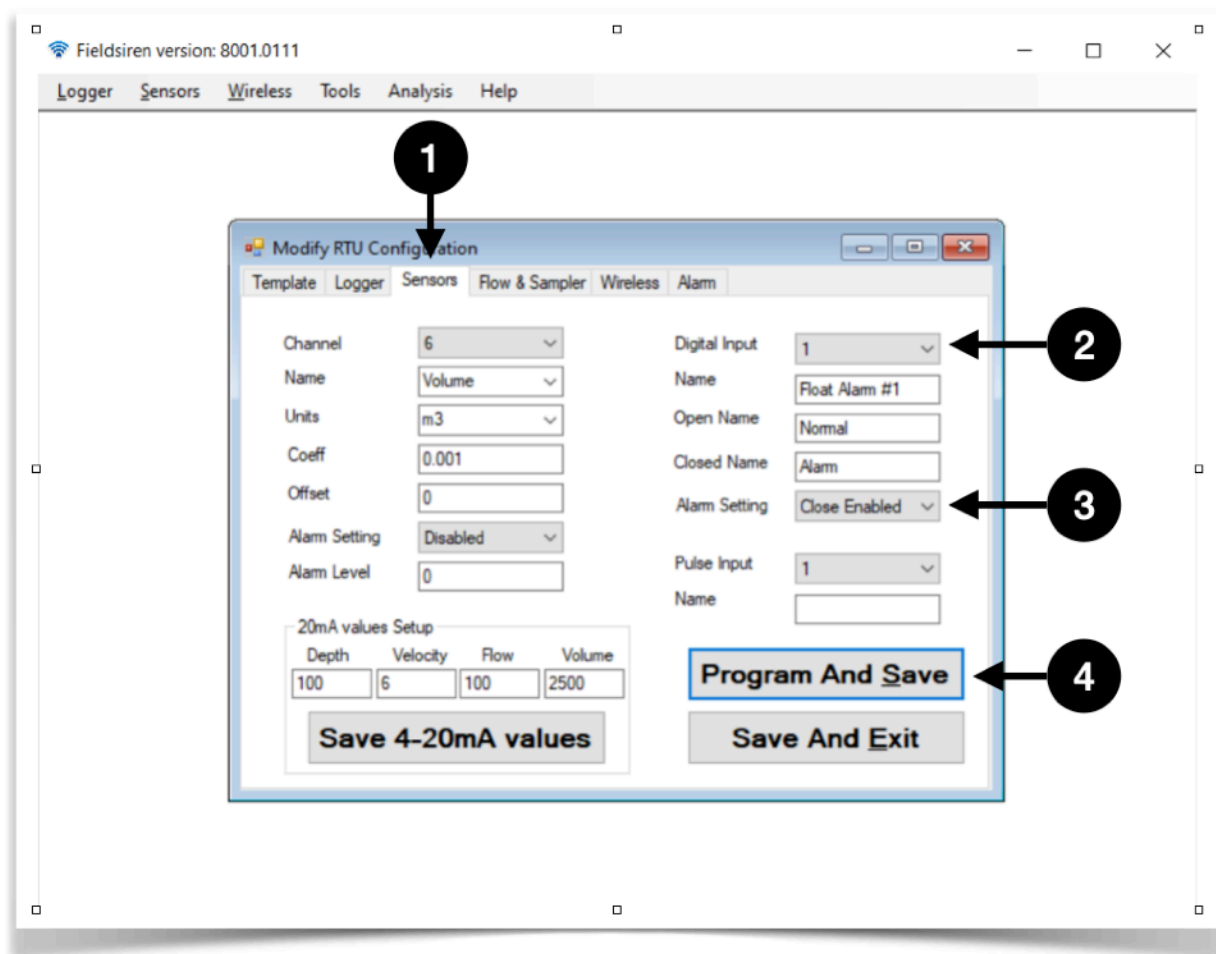
1. *CLICK* Sensor Tab
2. *SELECT* Digital Channel 1
3. *ENTER* Closed Enabled Alarm Mode
4. *CLICK* Program and Save BUTTON

SET UP ALARM MODE . . When the Digital (float) switch is tripped the monitor will wake up Start the ALARMN MODE, to set the alarm mode.

SET UP ALARM MODE
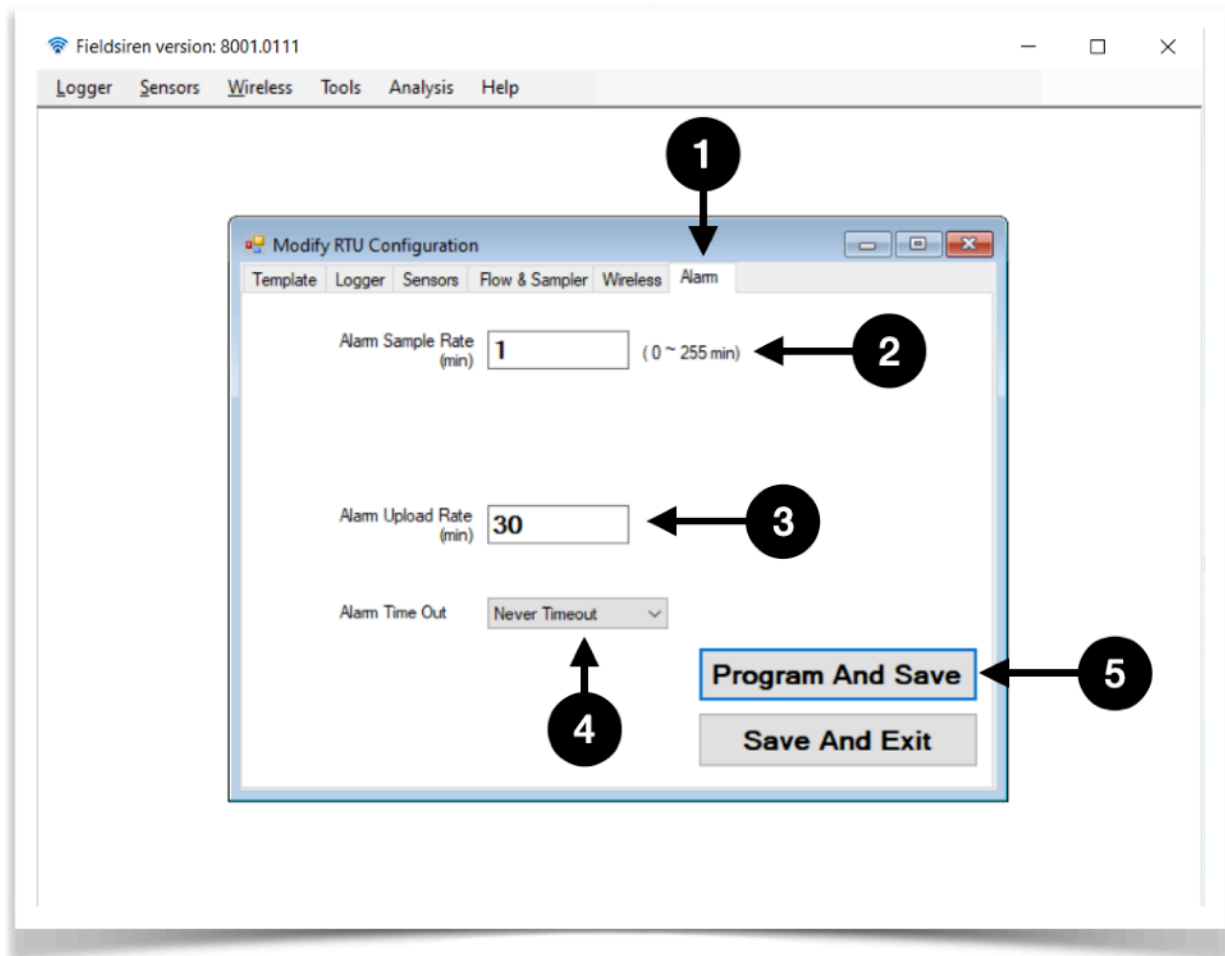
1. **CLICK** Alarm Tab
2. **ENTER** Alarm Sample Rate in Minutes
3. **ENTER** Alarm Wireless Upload rate in Minutes
4. **SELECT** Alarm Timeout
5. **CLICK** Program and Save BUTTON

STEP 4. - FLOW MODE

**SET UP FLOW Mode . .** This is used to enter the pipe diameter, or look-up-table used to calculate flowrate.

SET UP FLOW MODE
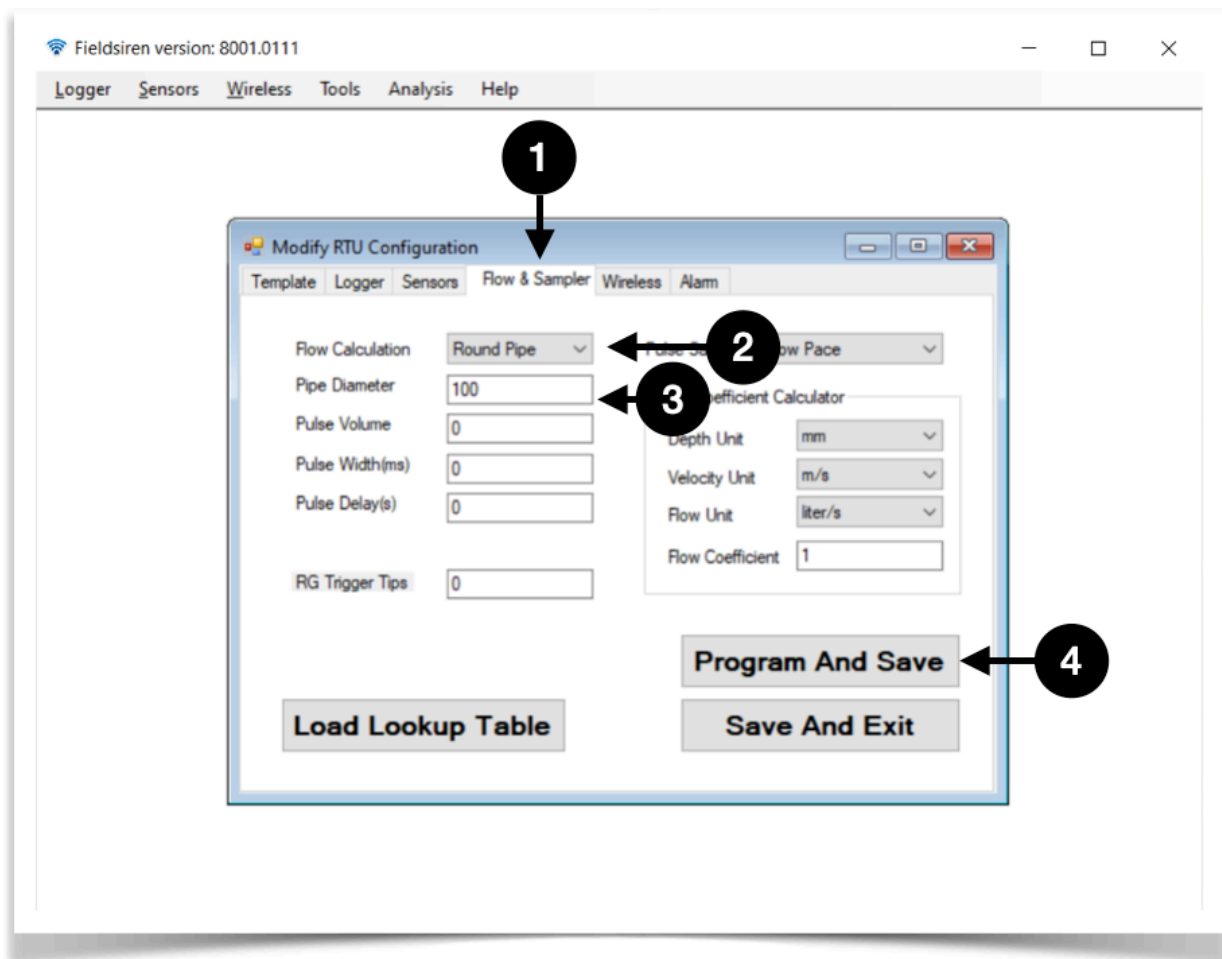
1. **_CLICK_** Flow & Sampler Tab
2. **_SELECT_** Round Pipe
3. **_ENTER_** Enter Pipe Diameter
4. **_CLICK_** Program and Save BUTTON

STEP 5. - LOGGER SAMPLE MODE

SET UP LOGGER . . You can set the logger sample rate to collect data every minute or once a day, however if you are using alarm mode, most people only sample once a day or once every 60 minutes.

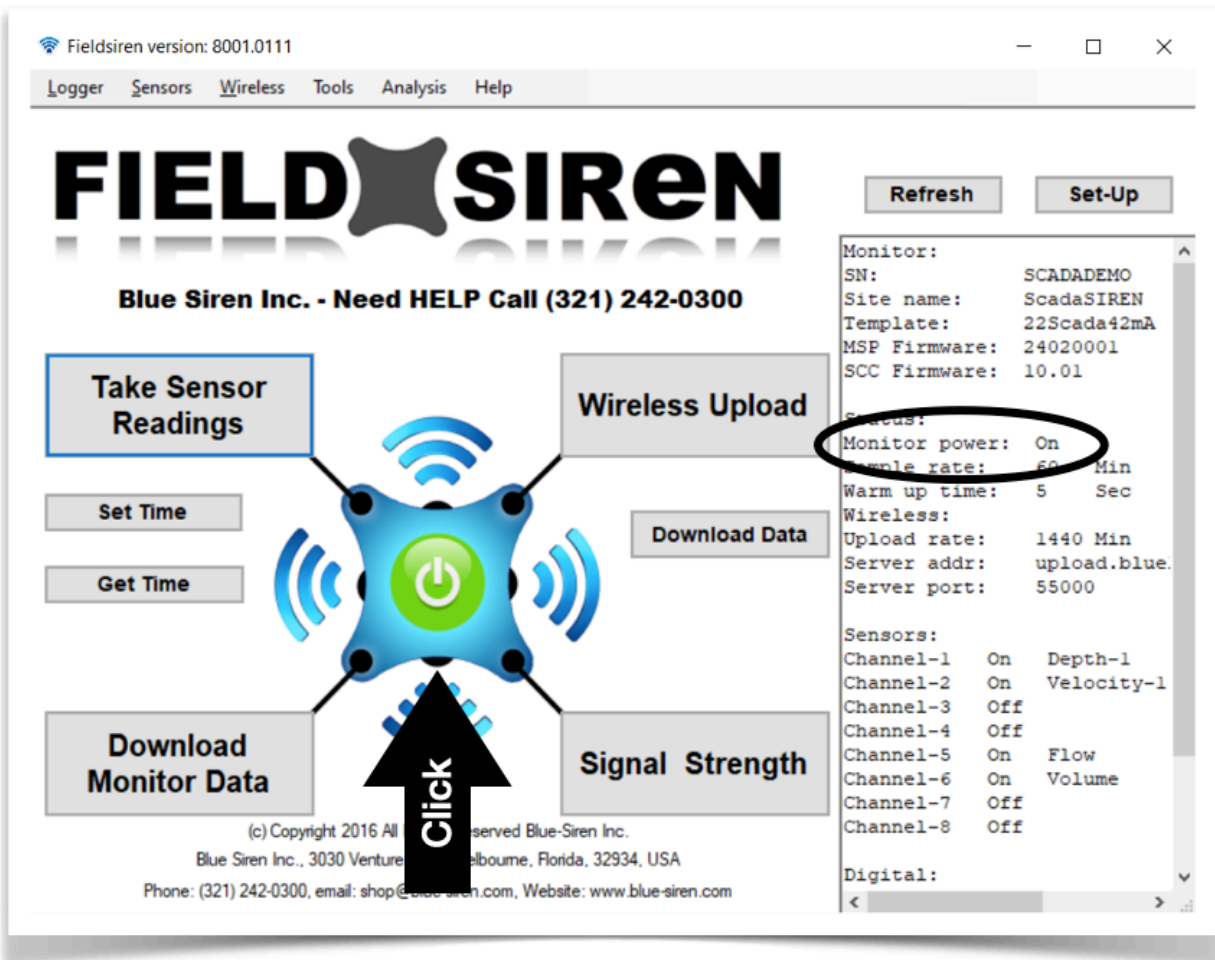## SET UP LOGGER SAMPLE RATE MODE
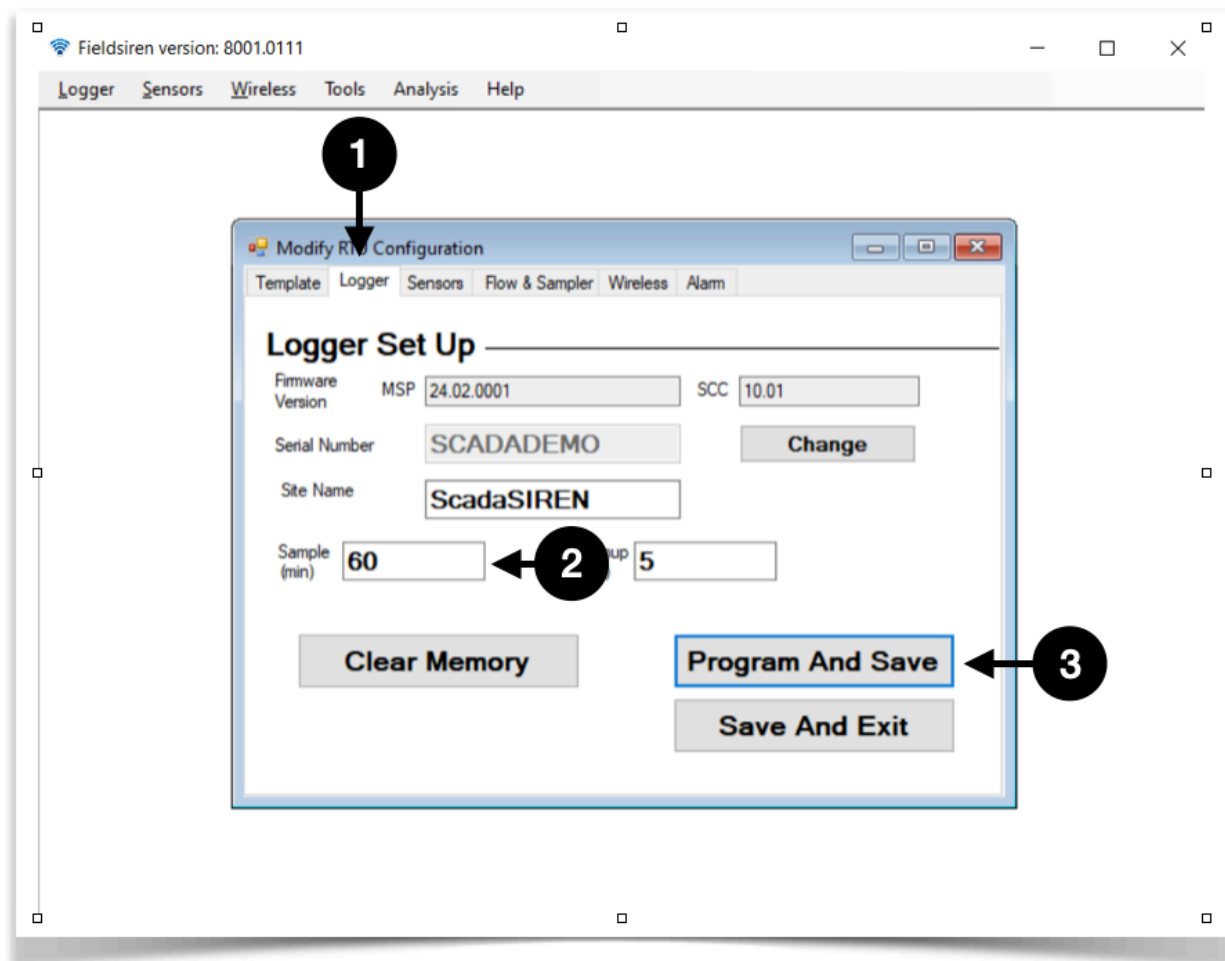
1. *CLICK* Logger Tab
2. *ENTER* Sample Rate
3. *CLICK* Program and Save BUTTON

STEP 6. - WIRELESS MODE

SET UP WIRELESS CONNECTION . . You can set the logger wireless upload rate to send data every minute or once a day, however if you are using alarm mode, most people only send data once a day or once every 60 minutes.
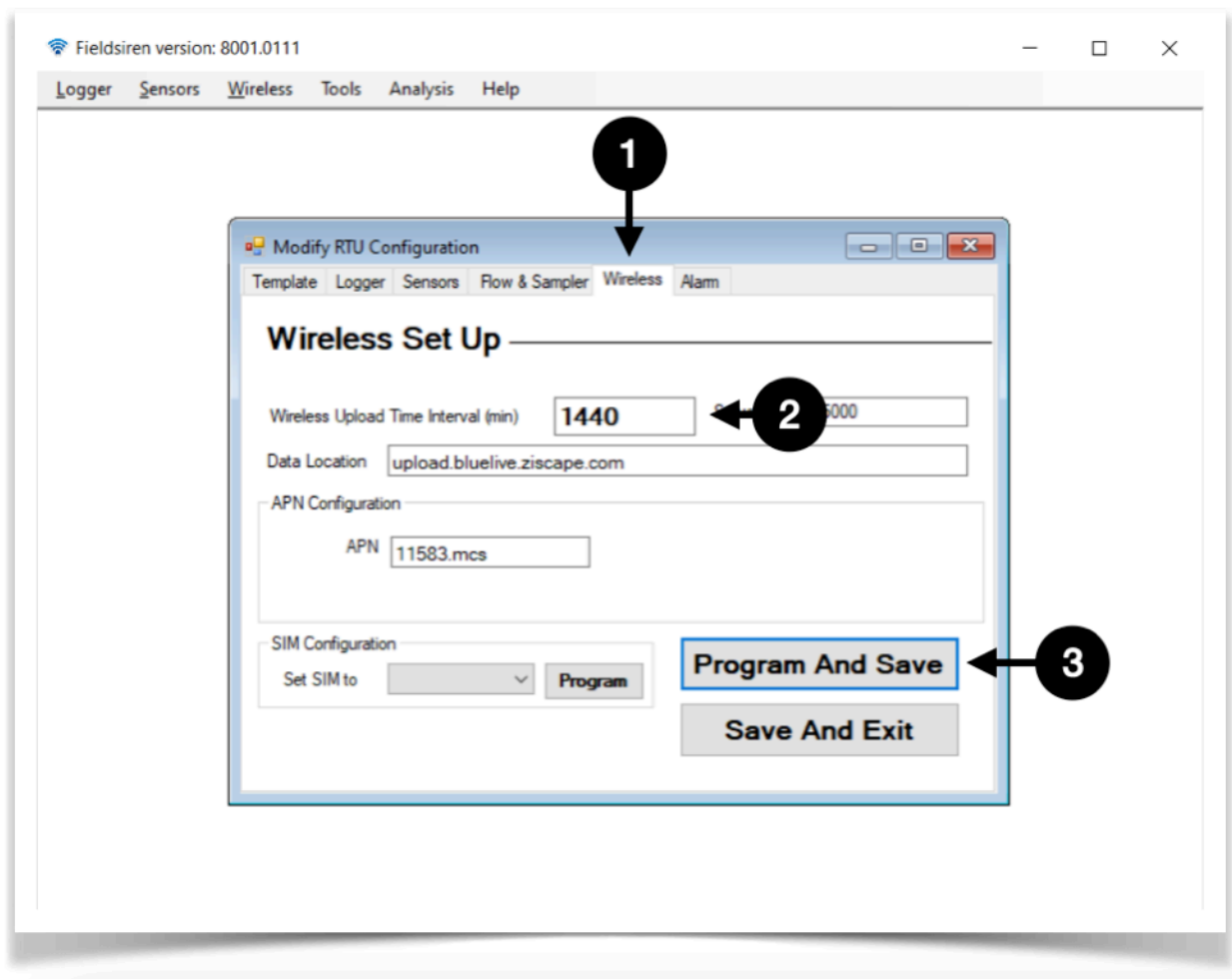
SET UP WIRELESS UPLOAD RATE
1. *CLICK* Wireless Tab
2. *ENTER* Upload Rate Rate
3. *CLICK* Program and Save BUTTON

STEP 7. - TURN MONITOR ON

TURN MONITOR ON . . Click the red button and the monitor will activate itself and program the 4-20 sensor module with the setting you have provided.