RDI

Range Data, Inc.

SCADA

Lift Stations

Water Towers

Your Cellular Alarm Monitoring Experts



TankVitals.com

Lifetime Warranty

Proudly Made in the USA

RDI
Range Data, Inc.

Congratulations on your new S2C device.

Proudly Made in USA by Veterans!

Welcome to the **RDI** *family!*

RDI's *S2C* is a mini SCADA (supervisory control and data acquisition) software that monitors your industrial processes and gathers data in real-time. This S2C reports all data alarms to you in Text/Email Messages and you can also print out the history reports in Excel or PDF reports.

S2C communicates with Wonderware SCADA.

RDI's S2C monitors up to 4 pumps and its selectable for the # of pumps you have!

Dual AT&T and Verizon Cellular access available!

Requires 120Vac
Up to 12 Input Ports *each timer removes 1 Input port
Up to 4 Run Timers Selectable
1 Relay to Control
Bluetooth Communication Connection

Specifications

Power

UL approved AC Line Power Supply is a Regulated Converter
- Wide input range 85-305Vac
- Operating Temperature Range: -40°C to +85°C (-40°F to 185°F)
- Ultra-high efficiency over entire load range
- No external components necessary
- International EMC compliant
- 140% Peak load capability

Dimensions

- Size / Dimension: 4.183” L x 3.551” W x 3.540” H (106.25mm x 90.20mm x 89.92mm)
- Design: Plastic, ABS/PC Blend
- Color: Gray
- Weight :1.11 lb (503.49g)

Temperature Sensor

- Measures Temperatures from -40°C to +85°C (-40°F to 185°F)
- ±0.5°C Accuracy from -10°C to +85°C

Cellular

- USA: Verizon Wireless and/or AT&T,
- Canada: All Wireless systems
- ***Includes VPN*** (virtual private network) Protection
- Contains FCC ID:RI7CE910-DUAL This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interferences, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Inputs

- Alarm Inputs 1-12 and Pump 1-2-3-4 Run Timers are 120Vac or 24Vdc optically isolated inputs.

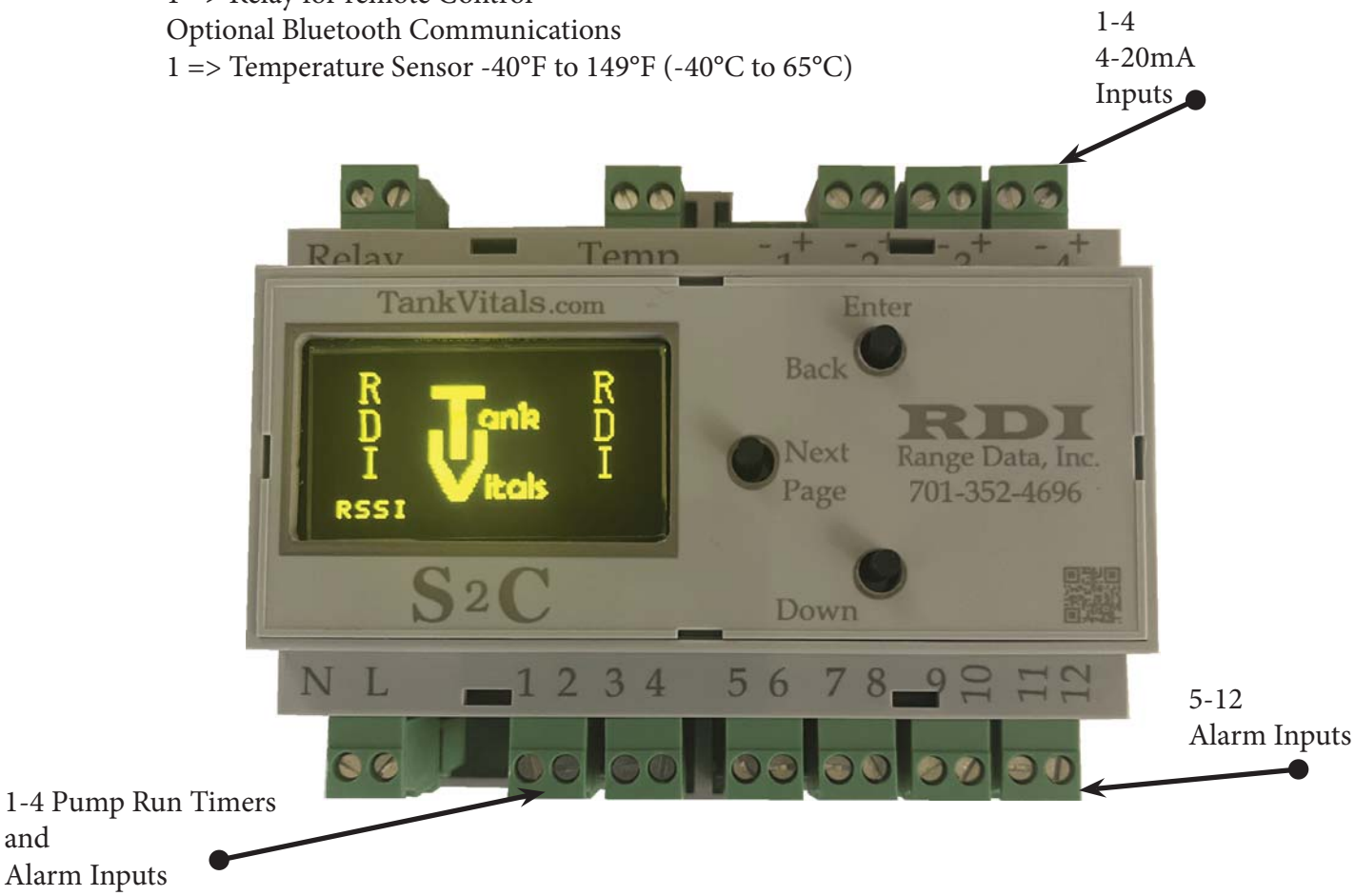
Note: Inputs completes a path to Neutral

- Circuits for safe protective separation against electrical shock according to safety class II (reinforced isolation): - for appl. Class I to IV at mains voltage ≤ 300 V - for appl. Class I to III at mains voltage ≤ 600 V

S2C 12-Inputs Alarm and Four Inputs of 4-20mA

4 Channels, Isolated Two-wire Operation, Power is obtained directly from the 4 to 20 mA loop (input impedance 10 ohms), with no need for separate power input.

Requires 120Vac
12 =>120Vac or 24Vdc Input Ports of which inputs 1-4 can be Run Timers (each Run Timer removes the Input port for alarming)
4 => 4-20mA Isolated current loop monitoring channels
1 => Relay for remote Control
Optional Bluetooth Communications
1 => Temperature Sensor -40°F to 149°F (-40°C to 65°C)



Enter Back Button Operation

1 button push gives the mA value of input 1-4(Will display for 10 minutes)

2 button push gives the Back to time and temperature.

Next Page Button Operation

1: Send Data, Reset, Relay OFF, Pump Run Times

2: mA Input 1, mA Input 2, mA Input 3, mA Input 4

3: SIM Number, IP address, RSSI (signal strength), Software Version

4: Activate SIM, tankvitals, mysitevitals, Set 24Vdc

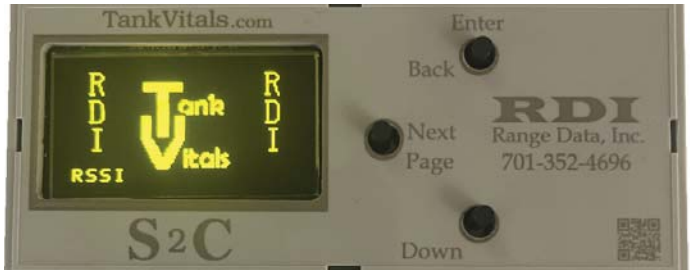
5: Tx Time, Keep Alive, Retry Time, COMM Timer

6: Back to Home page Time and Temperature

Down Button Operation

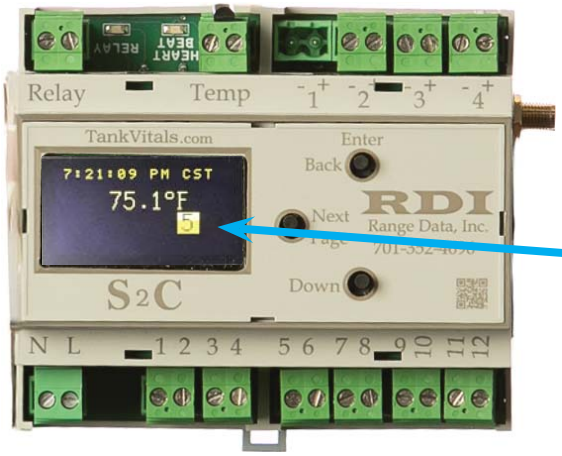
1 button push will move the select arrow > down the Enter button will select what arrow is pointing to.

OLED Display



Power Up sequence

1. Power and progress bar
2. Setup and progress bar
3. RSSI (Cellular Bars or signal strength)
4. RSSI Signal Level (0 to 49) 0-2 will need a directional antenna.
5. Registering SIM
6. Setting IO Data
7. Wait for ACK
8. Server Acked Ok, or CONNECT FAILED.
9. Display Home screen Time and Temperature.



Press any button to turn On the display. It will trun off after ten minutes.

Showing Alarm 5 is active.

Optional Components



Tamper Proof Cellular Antenna
Mounts to Metal Enclosure



Selectable Current Sensors 30,
60 or 100 Amp



Isolated 4-20mA 0-10V 0-5V Current
Voltage Signal Converter Pluggable
DIN Rail

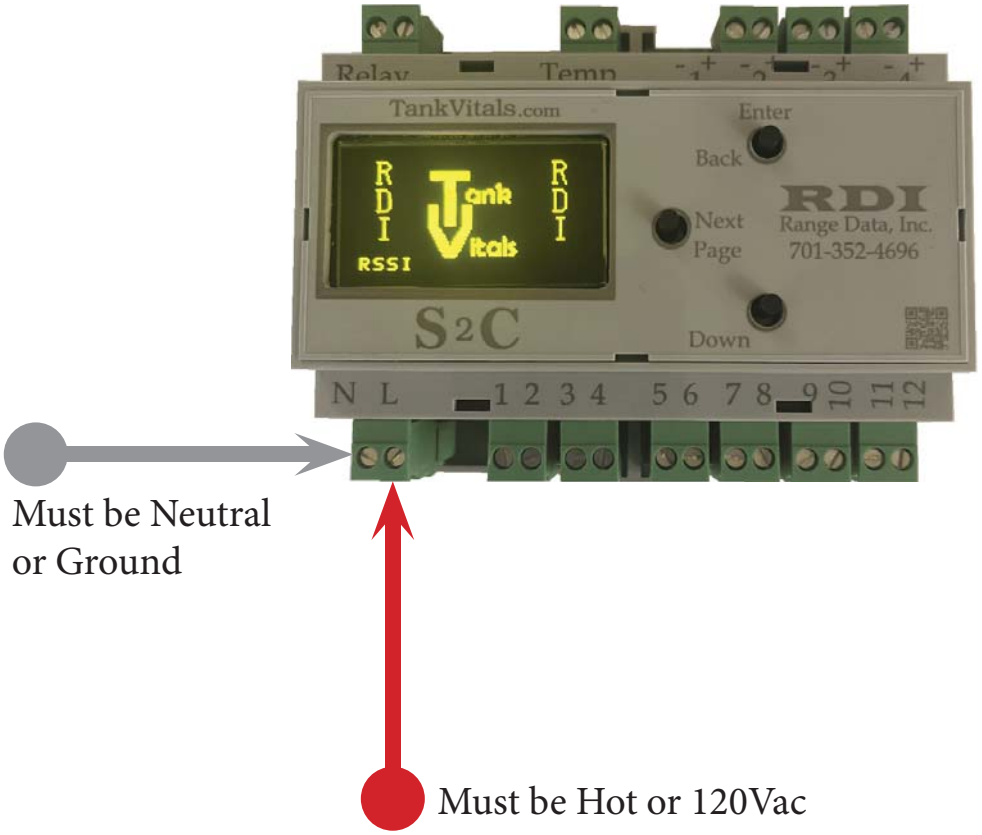


24Vdc Power Supply
AC/DC DIN RAIL
SUPPLY 24V 10W



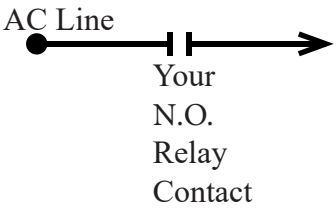
External Dimensions 12.60 x 10.60 x 5.22 in
Polycarbonate
NEMA Rating 1, 2, 3, 3R, 3RX, 3S, 3SX, 3X, 4, 4X, 5, 12, 13
Weight 4.95 lbs
Gasketed enclosure, latch, 4 mounting screws, and 4 cover screw hole plugs
Flame Rating UL94 5VA
UL & cUL File Number E352997

Power Connection

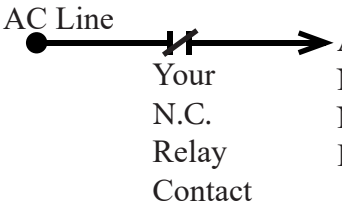


Input Connections

Alarm and Pump Input accept the Hot Line wire from each of your devices.
Note*: If your device is a relay contact then supply the other half with the AC Line (Hot) to complete the circuit.



Alarm Inputs 1-12 are Optical Coupled Contacts which finishes the circuit to AC Neutral.



Alarm Inputs 1-12 are Optical Coupled Contacts which finishes the circuit to AC Neutral.
Note* On the Web Site Select Edit Parameter tab and then in Input Module select Input N.O. / N.C. Tab and adjust which input it to be treated as N.C.





Typical Input connection to Input 12
If your test lamp lights up then our input 12 LED will also light up.

Input 1 connect to Pump 1 Motor Contactor or L1 of motor phase wire
Input 2 connect to Pump 2 Motor Contactor or L1 of motor phase wire
Input 3 connect to Pump 3 Motor Contactor or L1 of motor phase wire
Input 4 connect to Pump 4 Motor Contactor or L1 of motor phase wire

Input 5 to 12 Can be connected to other alarm monitoring points.
i.e. High Water Float, Low Water Float, Red Light/Horn, Pump Seal fails, Pump Overload Fail.

Input Connections

Input 1-4 can be setup for Pump Run Timers or Alarm Inputs.

Input 5-12 are Alarm Inputs, ***below is just a suggestion*** you can describe the description name in the Modem Module setup screen.



12-Pump2 Contactor OverLoad Fail

11-Pump1 Contactor OverLoad Fail

9-Red Light or Horn circuit (must be connectd be for the flasher device)

8-Pump2 Seal Fail

7-Pump1 Seal Fail

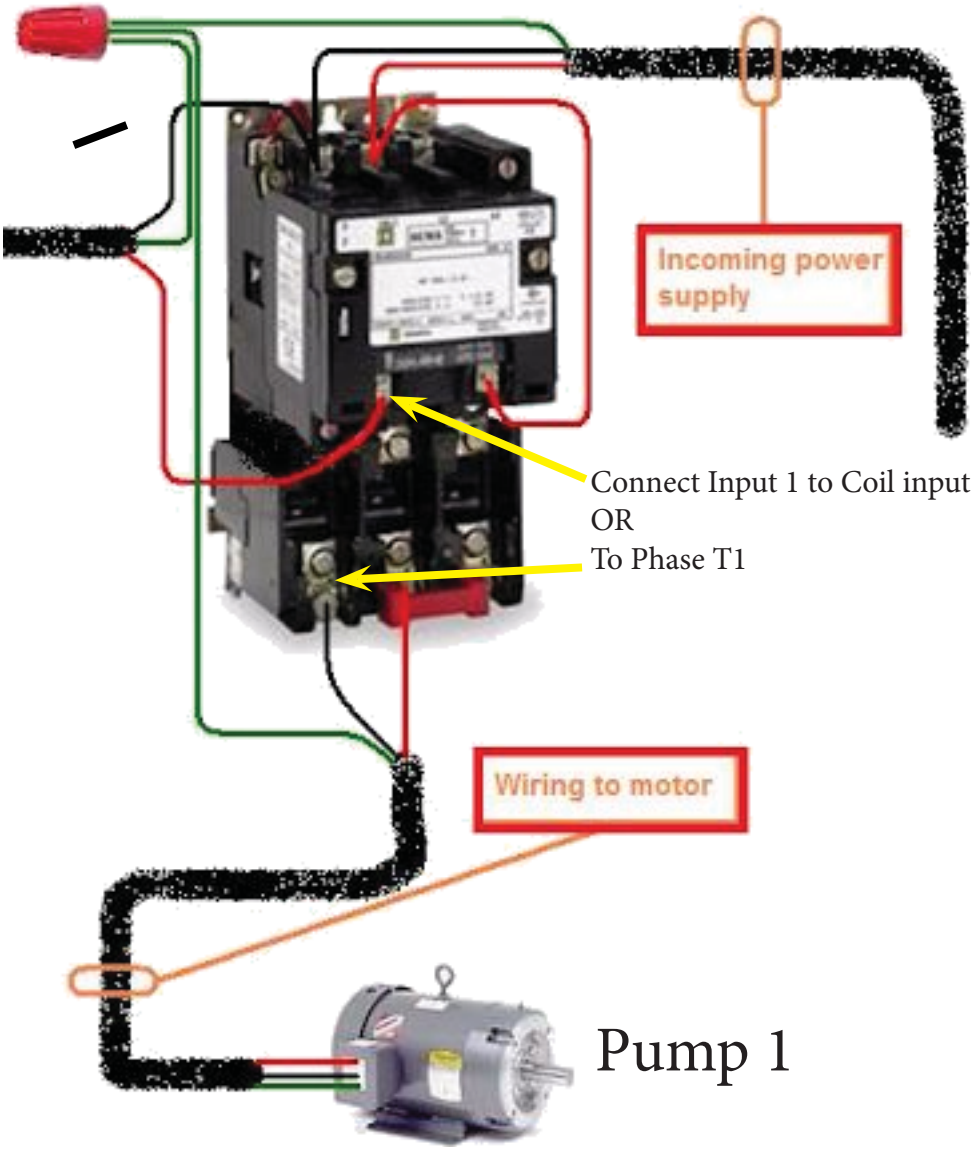
6-LowWater Float

5-High Water Float

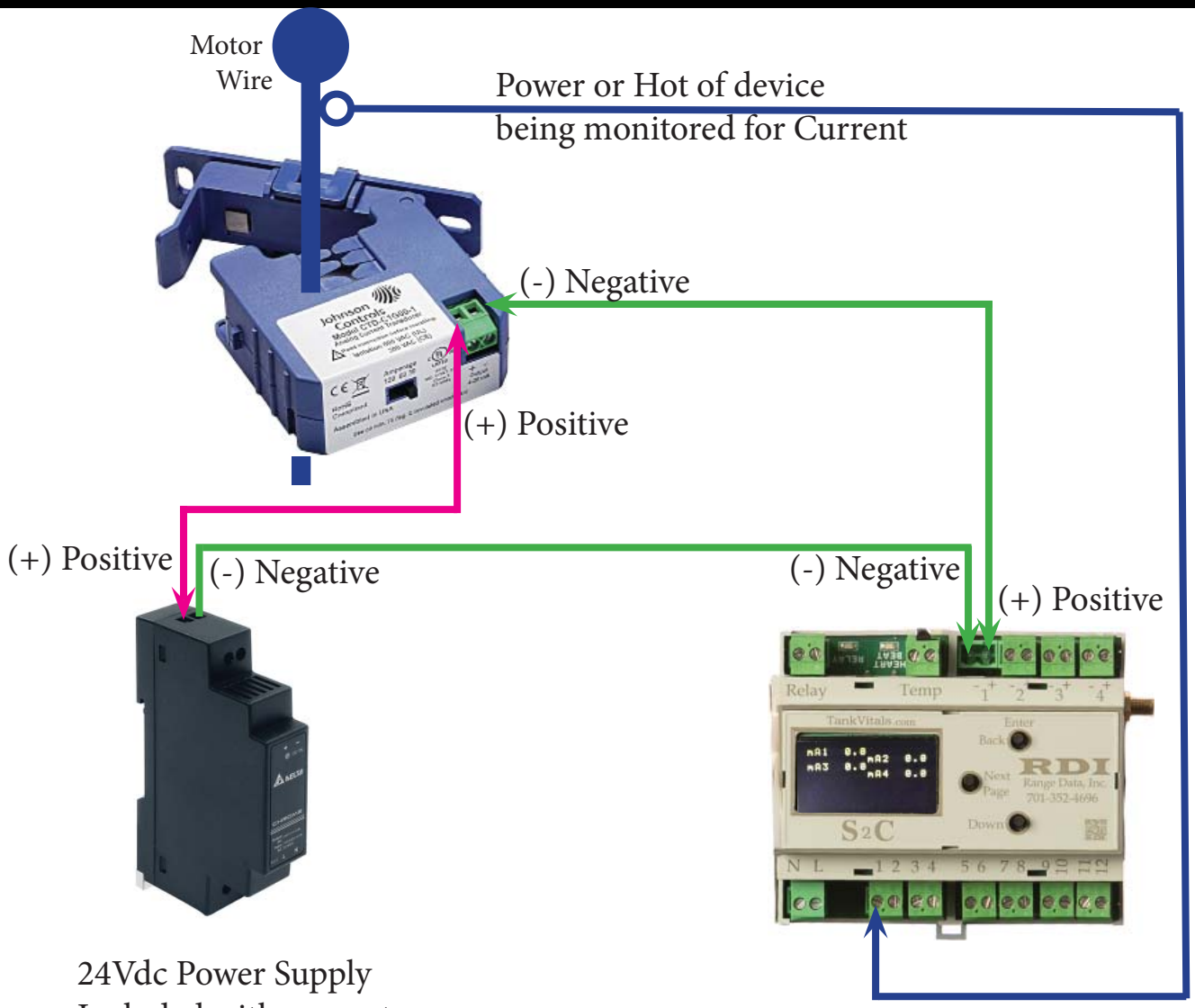
2-Pump 2 Contactor Phase T1 or Contactor 2 Coil
See Page 2

1-Pump 1 Contactor Phase T1 or Contactor 1 Coil
See Page 2

Pump Run Timer Input Connections



4-20mA Connections for Current Sensor Install



24Vdc Power Supply
Included with current
only

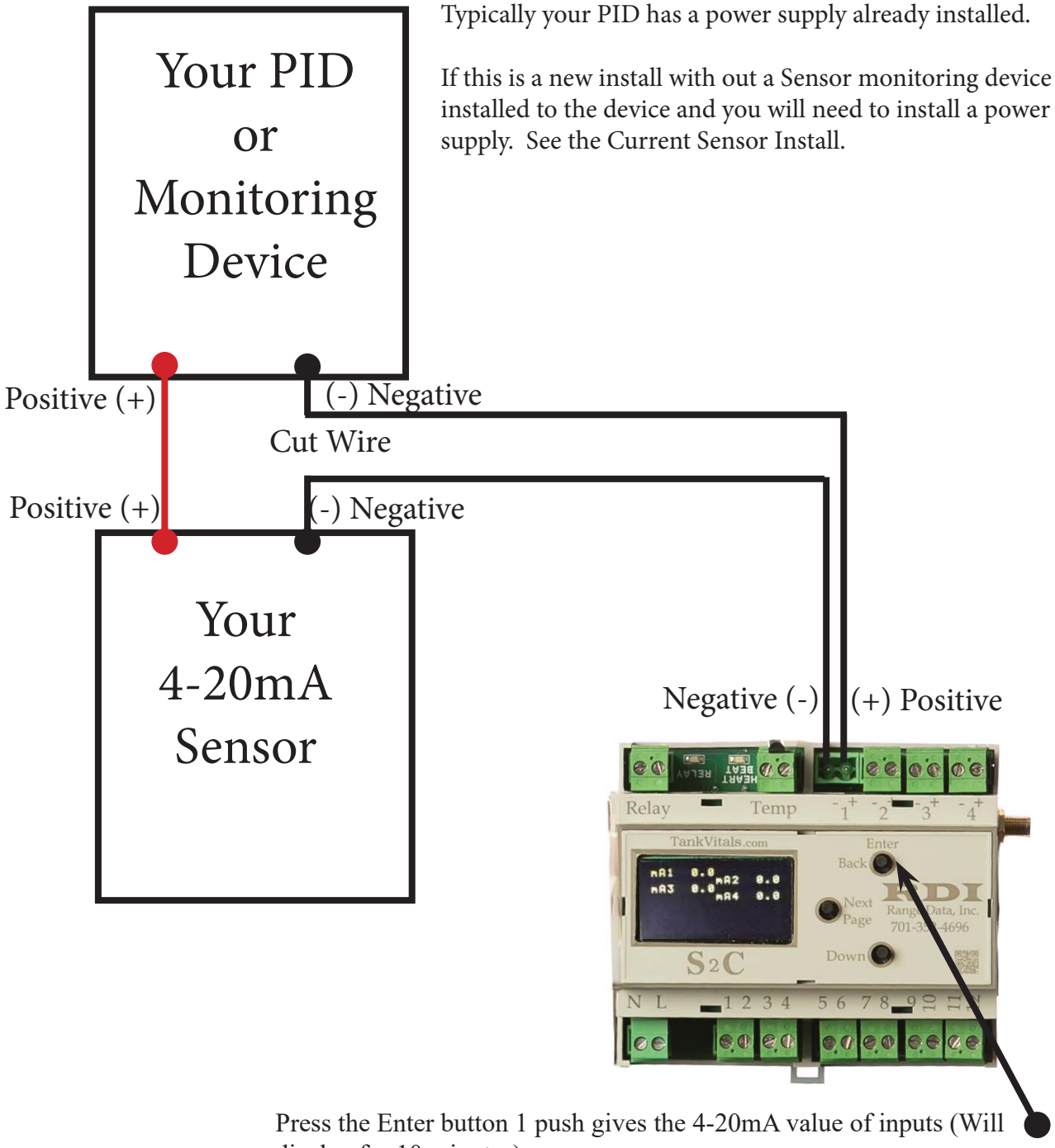
Connect Input 1 to AC Power or Hot of device being monitored if this is a pump motor than use the wire that runs the pump timer or motor contactor.

Press the Enter button 1 push this gives the mA value of Inputs (Will display for 10 minutes)

4-20mA Connections to Monitor a Device

Typically your PID has a power supply already installed.

If this is a new install with out a Sensor monitoring device installed to the device and you will need to install a power supply. See the Current Sensor Install.



Press the Enter button 1 push gives the 4-20mA value of inputs (Will display for 10 minutes)

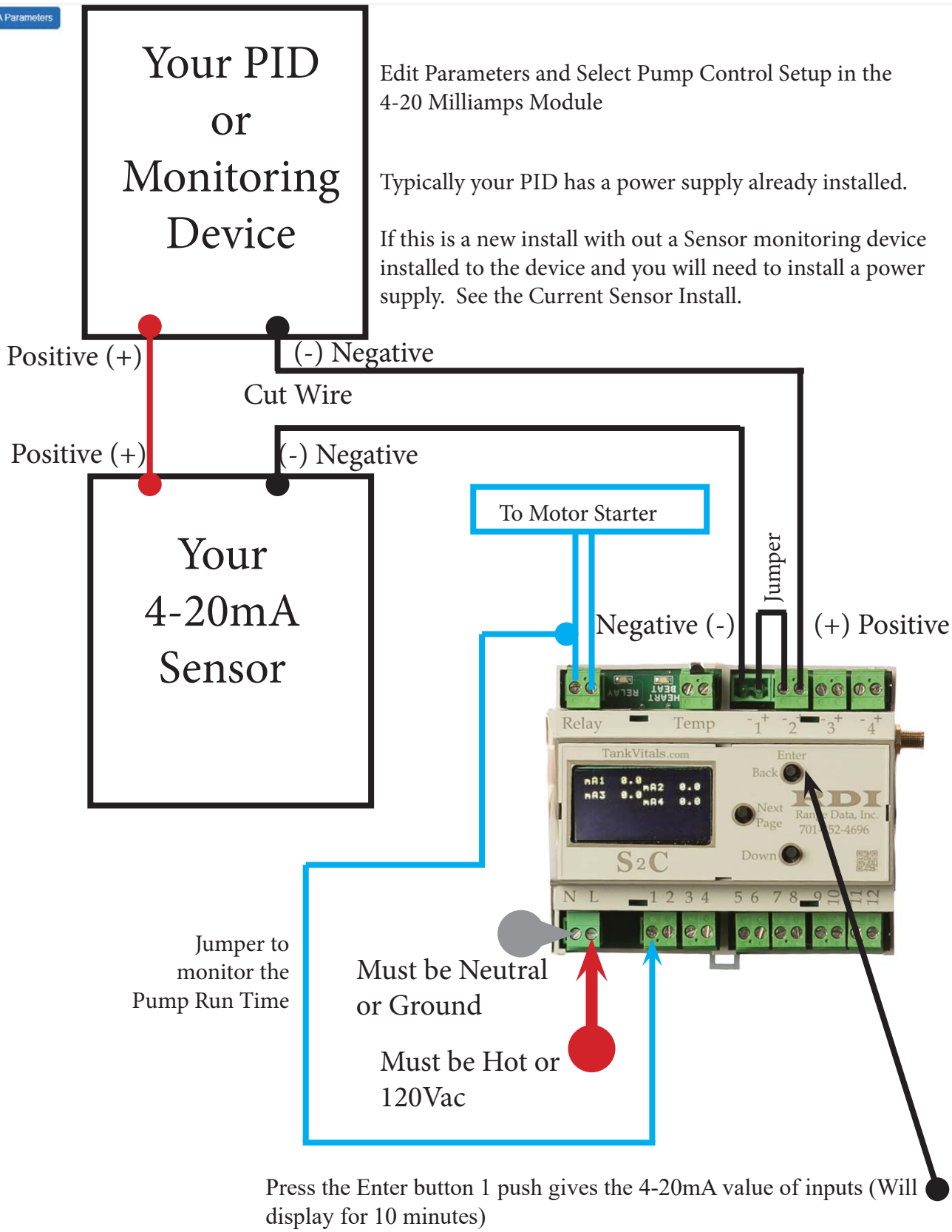
4-20mA Connections to Control & Monitor a Tank



Edit Parameters and Select Pump Control Setup in the 4-20 Milliamps Module

Typically your PID has a power supply already installed.

If this is a new install with out a Sensor monitoring device installed to the device and you will need to install a power supply. See the Current Sensor Install.



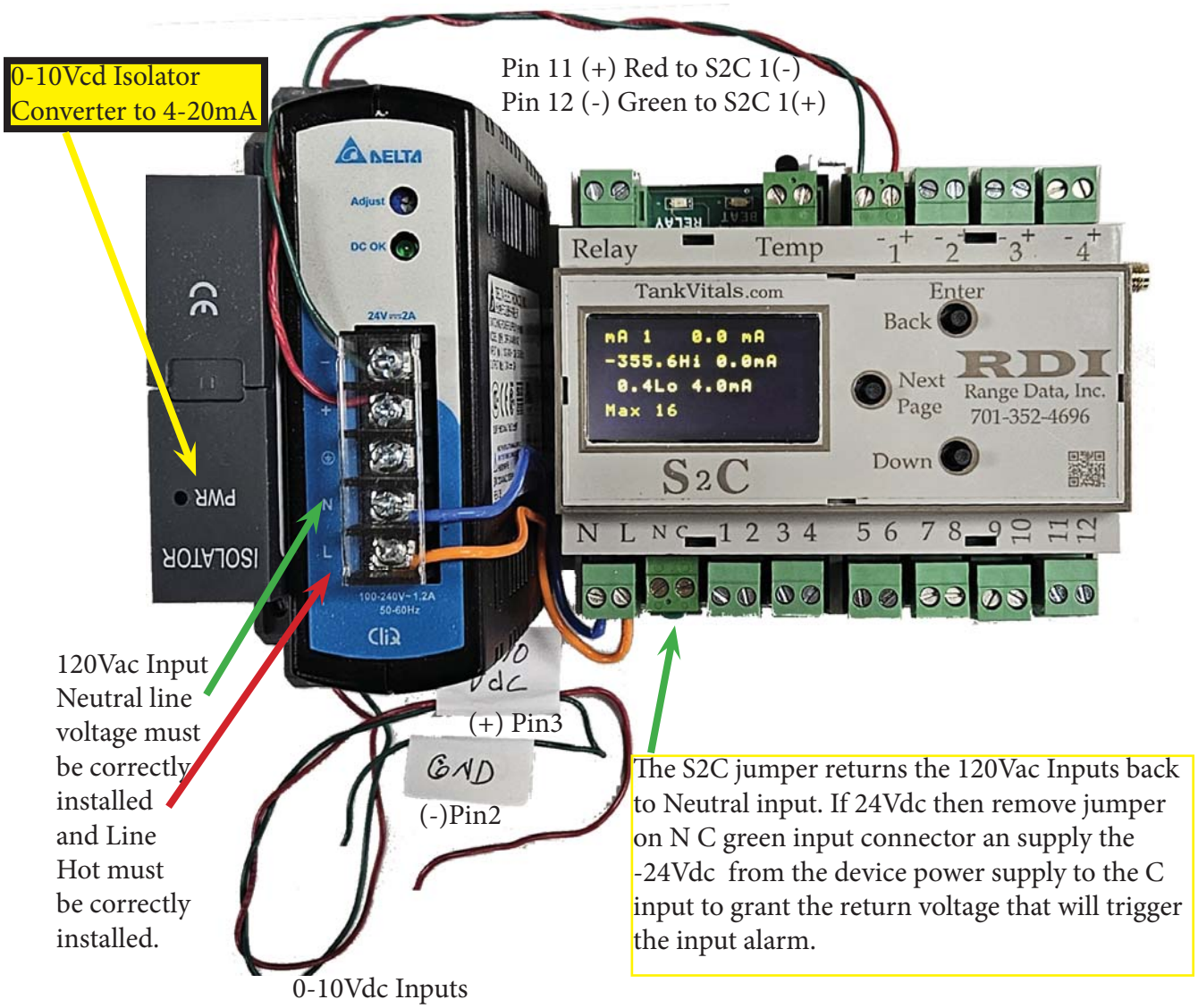
4-20mA Module for # (Pounds)

(Where # is the input channel number)
Input#: Set to True or Checked marked. This will display the device on the web site.
Input#: Description: Give it the name you like to identify our scale or device name.
Unit of Measurement#: Select #'s.
#.High Alarm: Set this to the alarm when the current excess the maximum value.
#.Low Alarm: Set this to the alarm when the current is blow the minimum value.
#.Hysteresis: Level at 5. This is a good starting point.
#.Max Value: Set this to the maximum value of your scale.
#.Zero Offset Value: Level this at zero (0).
#. Alarm Delay: Set this from 2 seconds to 999 seconds for how ever long it takes to get a good alarm. Do not use 0 seconds (*this will disable the alarm*)

4-20mA Module for # (On/Off)

(Where # is the input channel number)
Input#: Set to True or Checked marked. This will display the device on the web site.
Input#: Description: Telemetry Fail Alarm or Give it the name you like to identify the device name.
Unit of Measurement#: Select On/Off.
#.High Alarm: Set this value to 1.
#.Low Alarm: Set this value to 0.
#.Hysteresis: Level at 0.
#.Max Value: Set this value to 1.
#.Zero Offset value: set this to zero (0).
#. Alarm Delay: Set this from 90 seconds or however long it takes to get a good alarm. Do not use 0 seconds (*this will disable the alarm*)

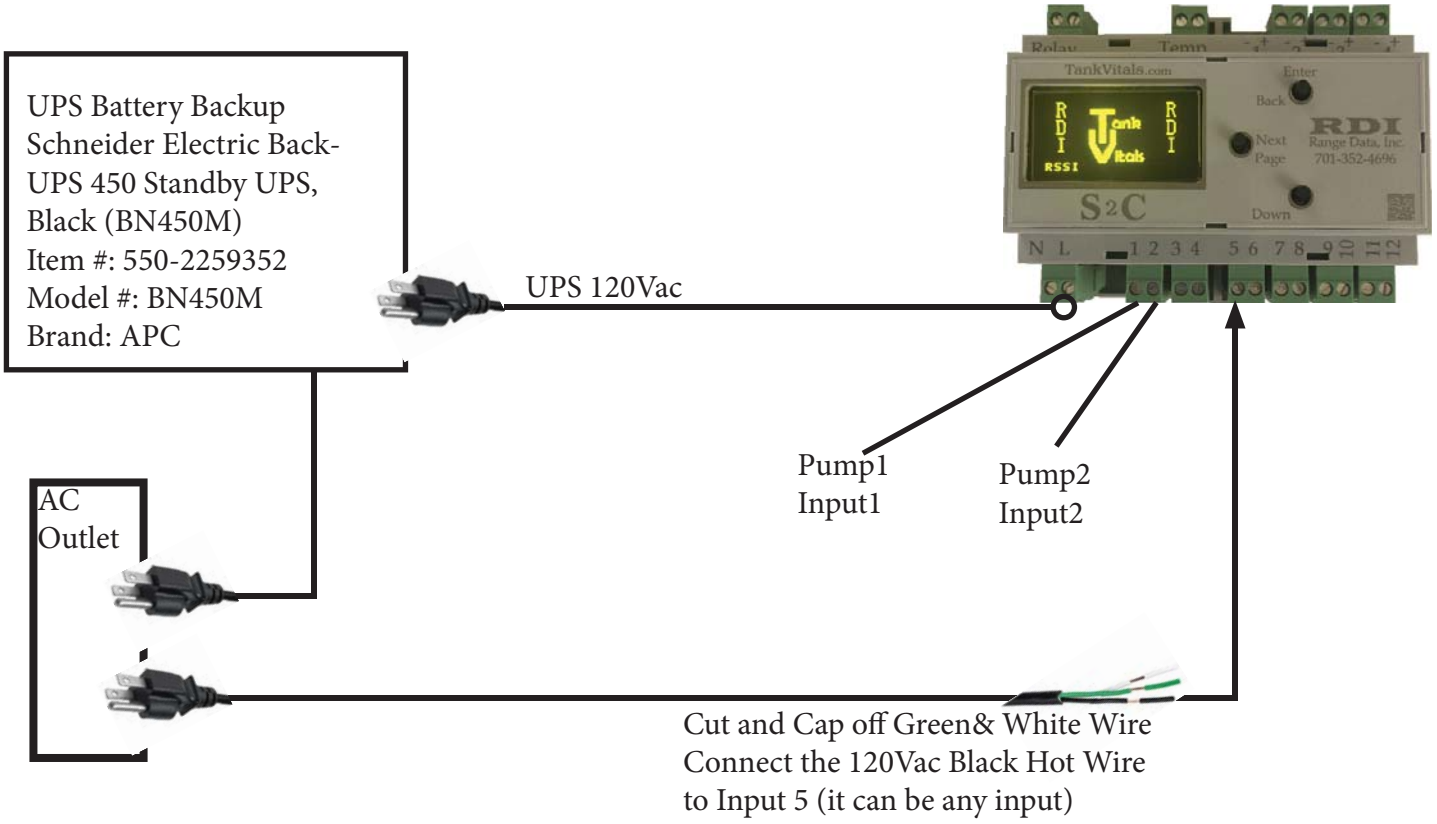
0-10Vdc Interface to 4-20mA



This requires part number: V2C
That includes a 24Vdc power supply and Isolator

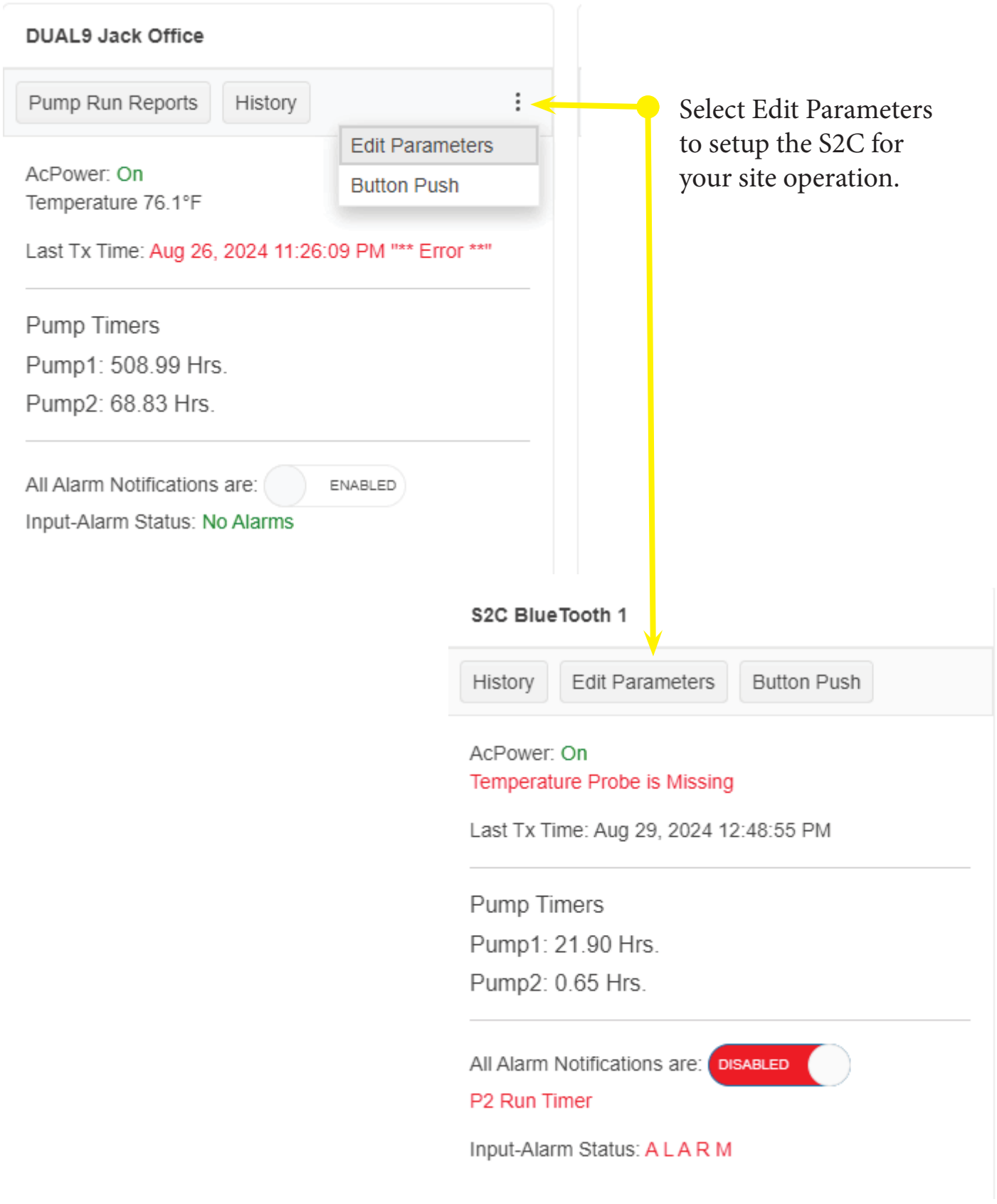
UPS Backup Connections

There are no batteries to replace. The unit uses a capacitor to send one alert when the power goes out. If your system has a UPS, connect the unit to the UPS's AC power so it can still send a power-off alarm.

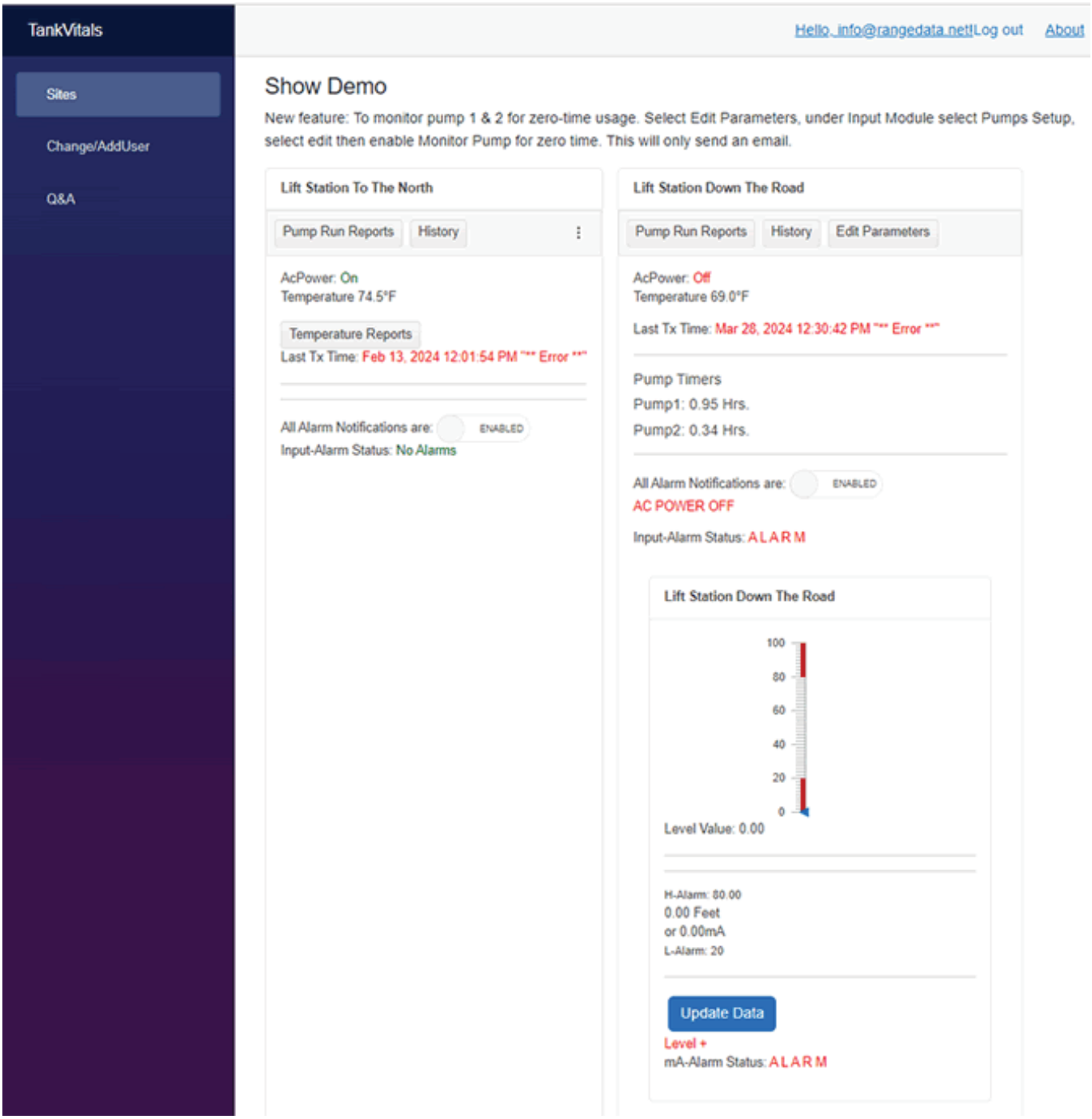


Select Input 5 to N.C. to invert the Power Fail alarm in the Software Input Module setup.
When Power fails an alarm is sent via Your selection (Phone, Text, Email)

Edit Parameters Tab

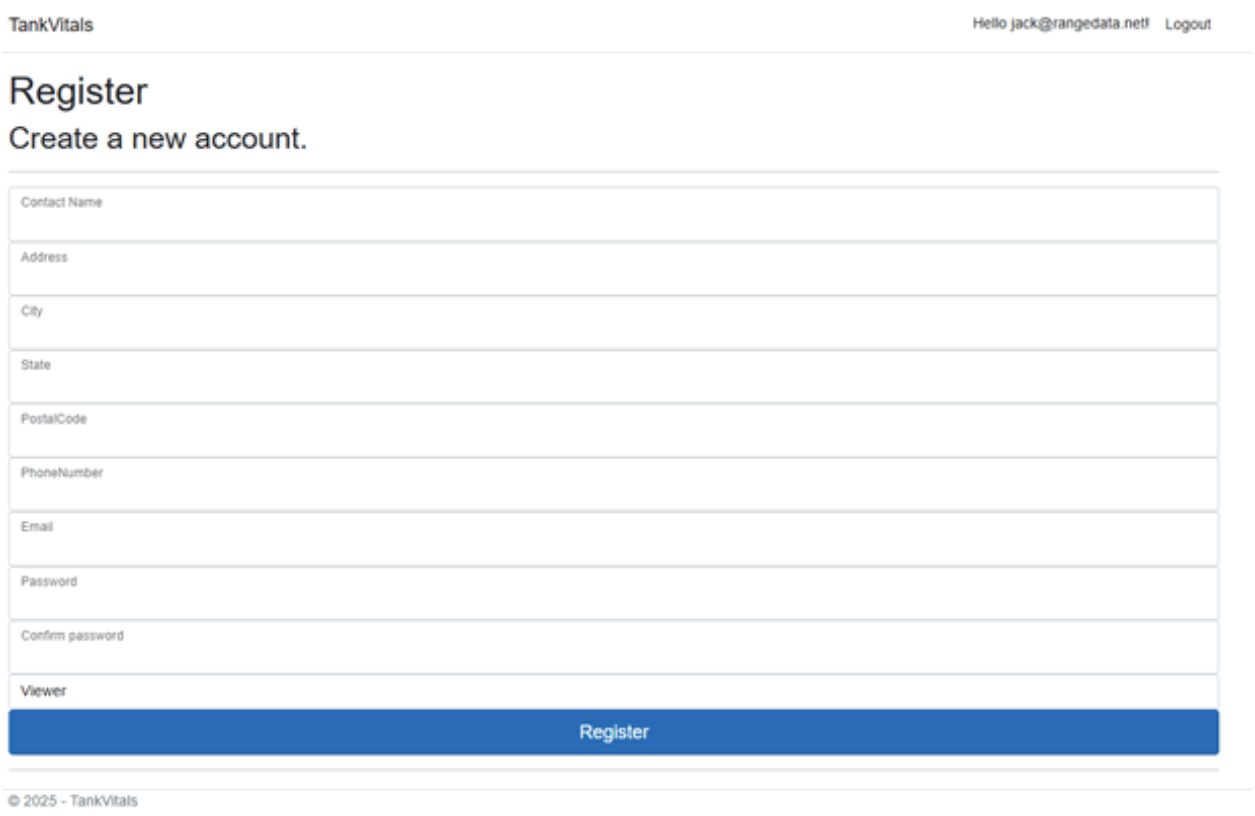


Sites Main Page



Change/Add Users





When entering the Phone number do not use dashes (-) just the number, for the zip code use the 5 digits .

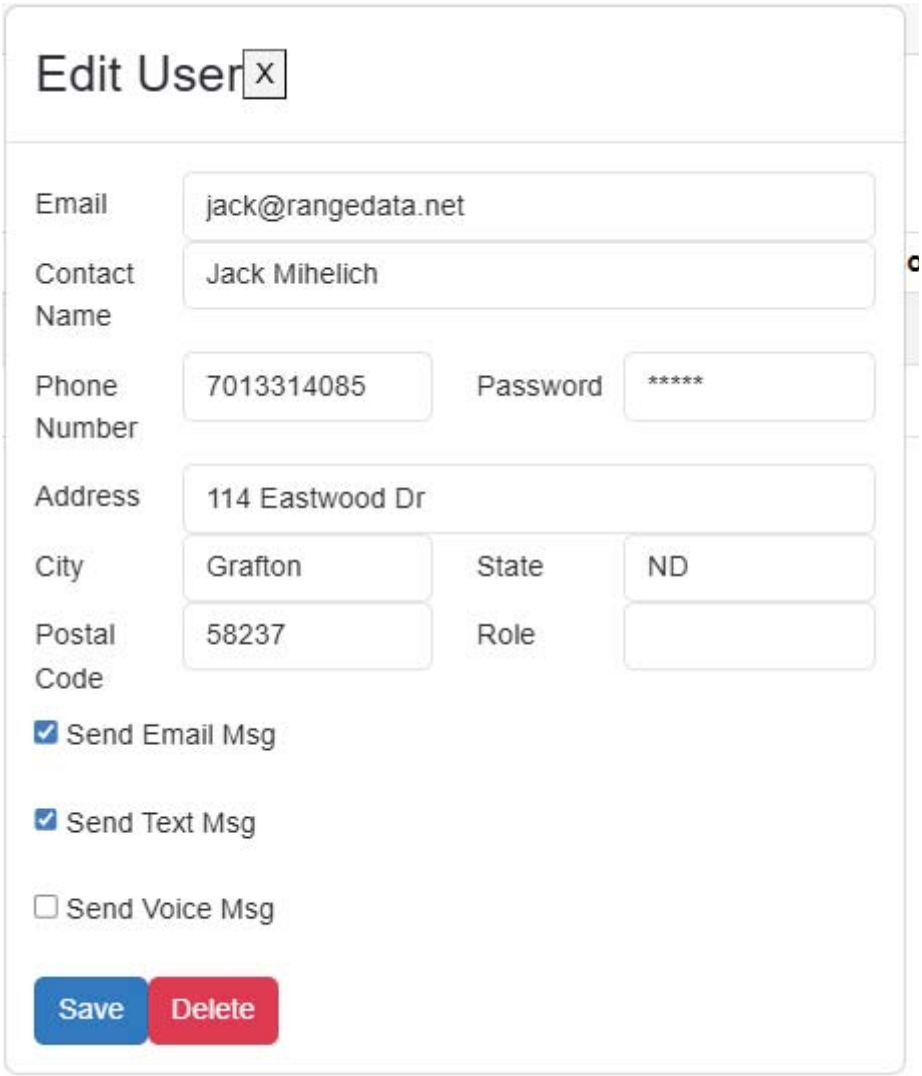
Use View for users to view the information and Manager for those that need to make changes to the site.

FYI: This information is never shared or released to anyone.

Change/Add Users

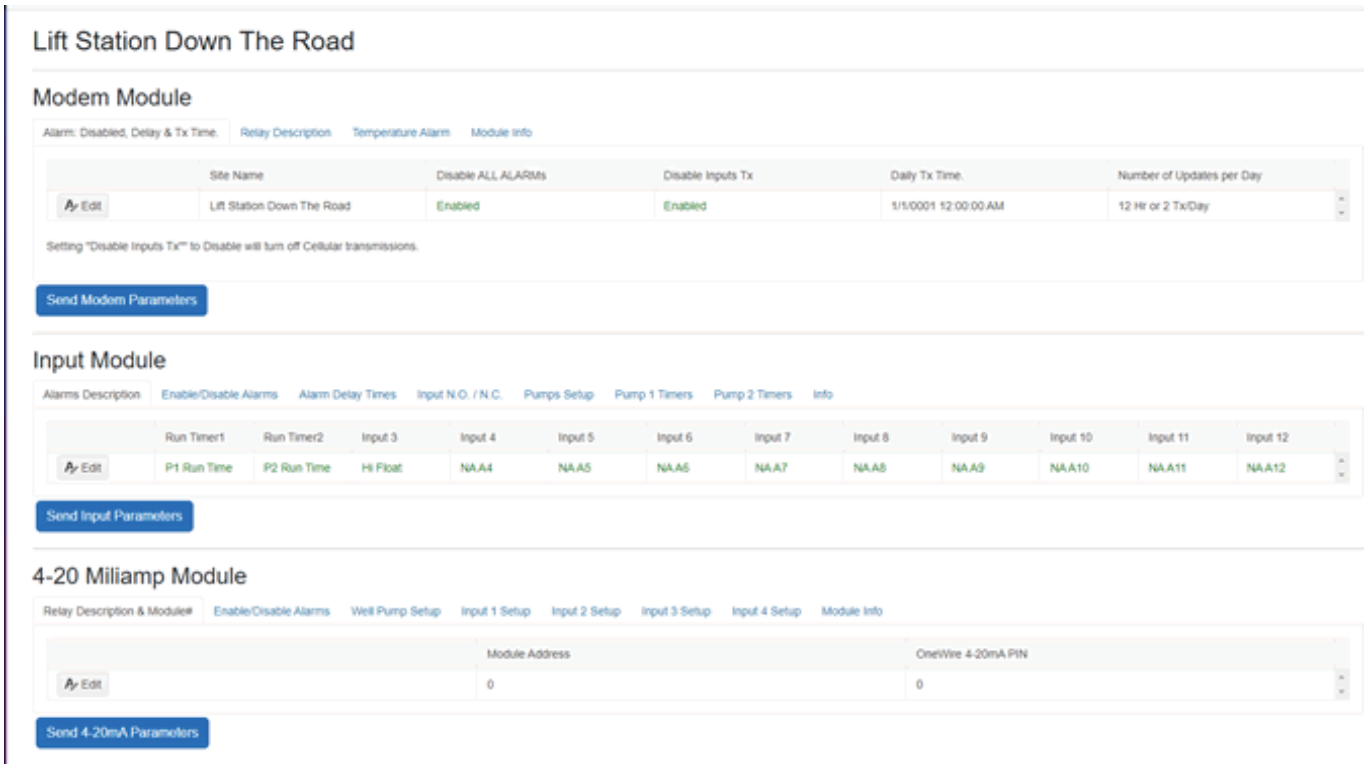
Edit User windows is used to modify the user information.

Here you can turn on or off the messages to be sent.



Module Operation Main Screen

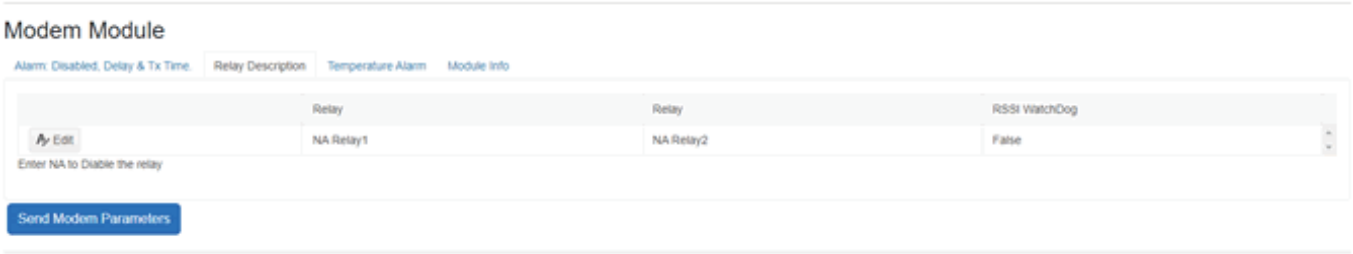
The Main Parameter Screen where you can adjust the behaviour of the S2C device.
The three main parts are
Modem, **Input**, and the **4-20mA** modules.



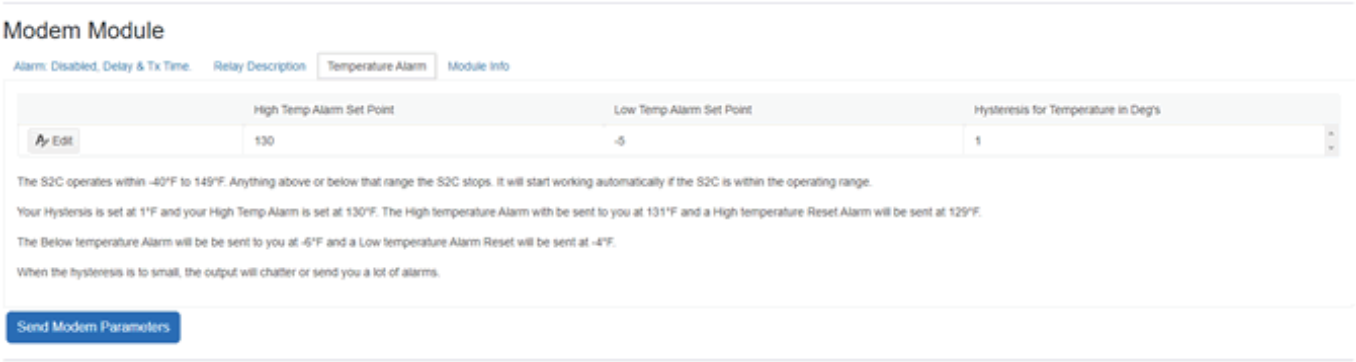
Modem Module Operation



Disable all alarms will stop all alarms to be sent out. Use this when unit is being serviced. Disable Inputs will prevent Alarm Inputs 1-12 to stop sending out alarms.

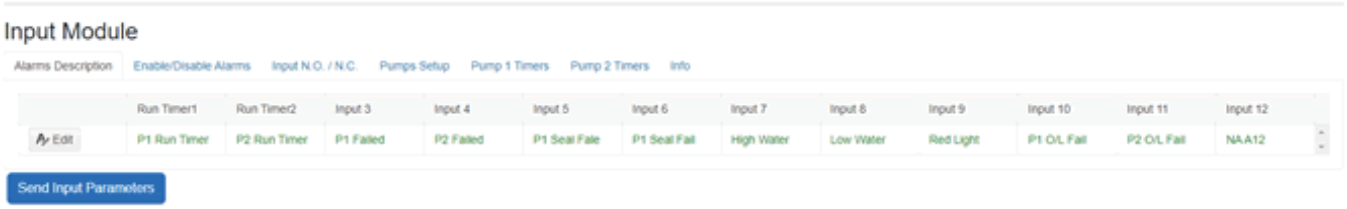


RSSI Watchdog will close the relay if cellular signal is lost

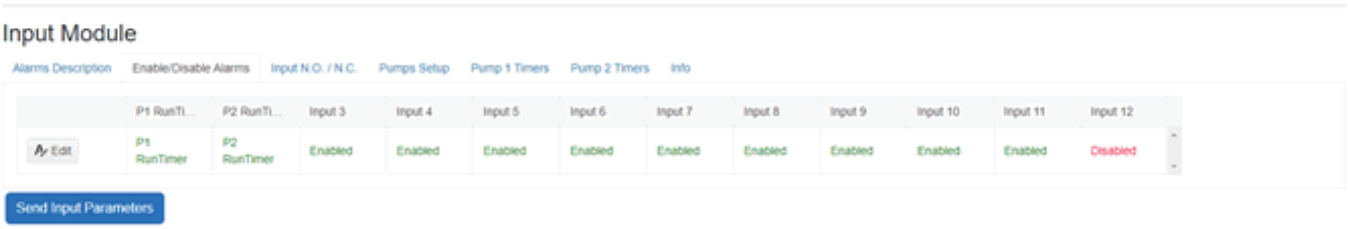




Input Module Operation



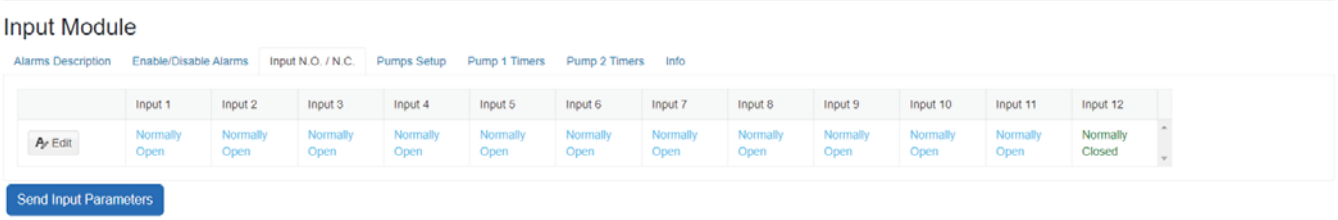
Set up your naming of the Inputs assigned to the S2C



If the input is over active or problem with the assigned alarm device you can prevent the alarm being sent out unit you have time to resolve the issues.

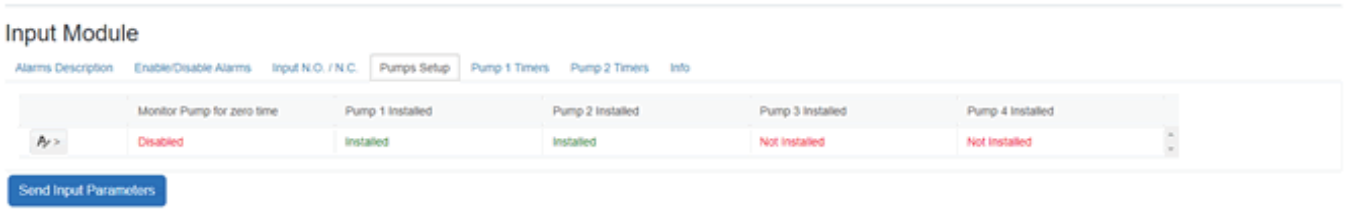


Zero (0) is used for pump run timers. One (1) or greater is used for delay time in seconds before sending out an alarm. 2 seconds is the default. If you have a chatty float set the time until the float has a true alarm.

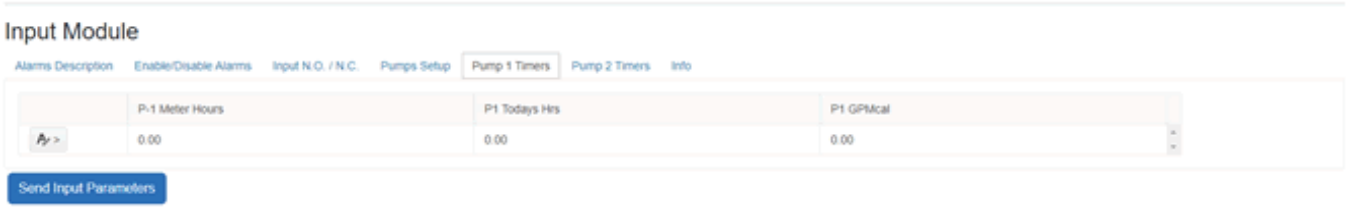


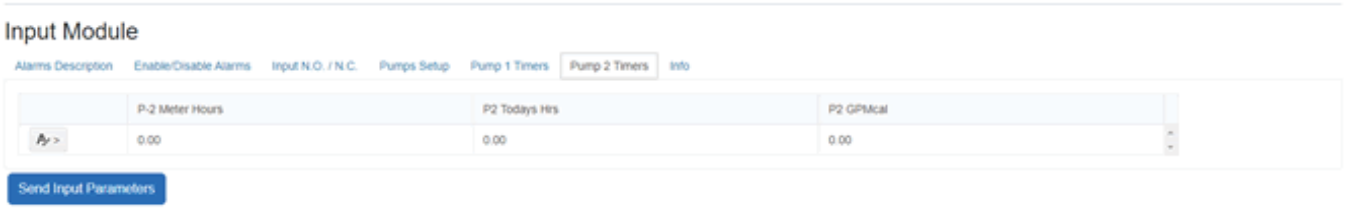
Match your device operation if the relay is Normally Open (N.O.) or Normally Closed (N.C.)

Input Module Operation



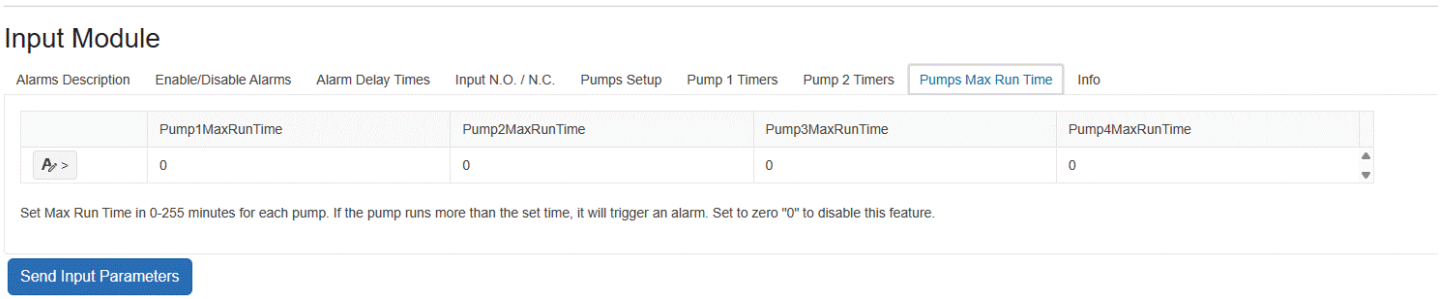
Monitor Pump for zero time is used to watch for sequencing error If pump 1 or pump 2 has no run time for the day an email is sent out. “Pump # reported zero hours usage”





Adjust the meter hours to match what on the sites hour meters.
If know the pipe output calibration.

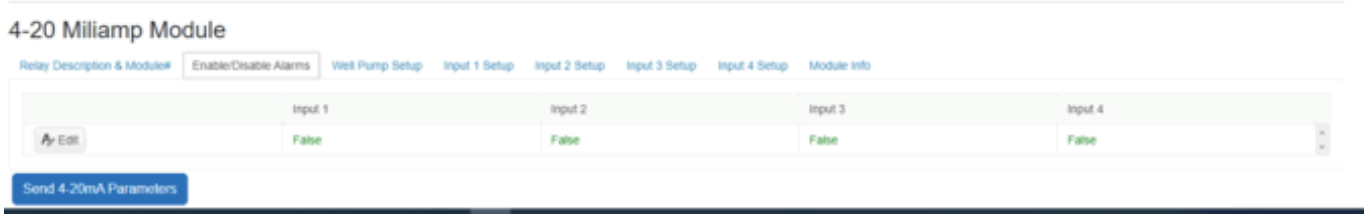
You can also enter the GPMcal for monthly reports if you enter the P# GPMcal value



Pump Max Run Time

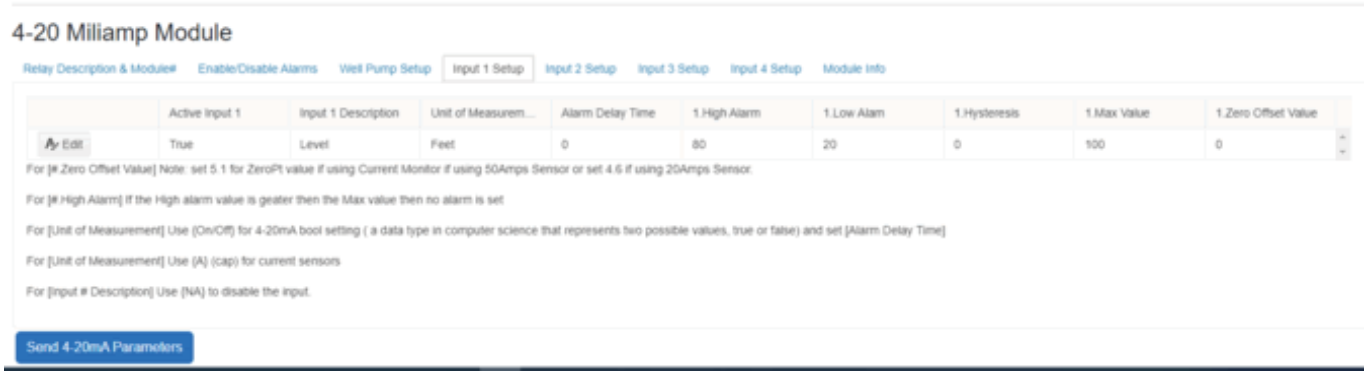
Adjust the maximum amount of time the pump will run per each cycle. This will prevent the pump continuously running. An alarm is sent out when this happens

4-20mA Module Operation



Enable or disable inputs alarms when trouble shouting problems.





If the optional current sensor is used an offset value is needed for liner correction.
Enter 5.2 for 50Amp or 4.6 for 20Amp sensors.
If the High alarm values is greater the Max value then no alarm is set.
For Unit of Measurement enter On/Off for bool setting and set alarm delay time to 1or greater.
For current sensors use letter A (cap) in the description.
Use NA to disable the input.

4-20mA Module Operation Modes



Click on the drop down errow

The Drop Down Choices

Description
Amps
Pressure
#'s
Feet
PPM
Float Level
On/Off
Flow1

4-20mA Module For Pressure

Setting Up ***Pressure***:

Typical Water Tower setup

Max value is the current level reading in mA.

So if you have a level reading of 24.25 and a mA value at 11.9 then we can use this to set the Max Value

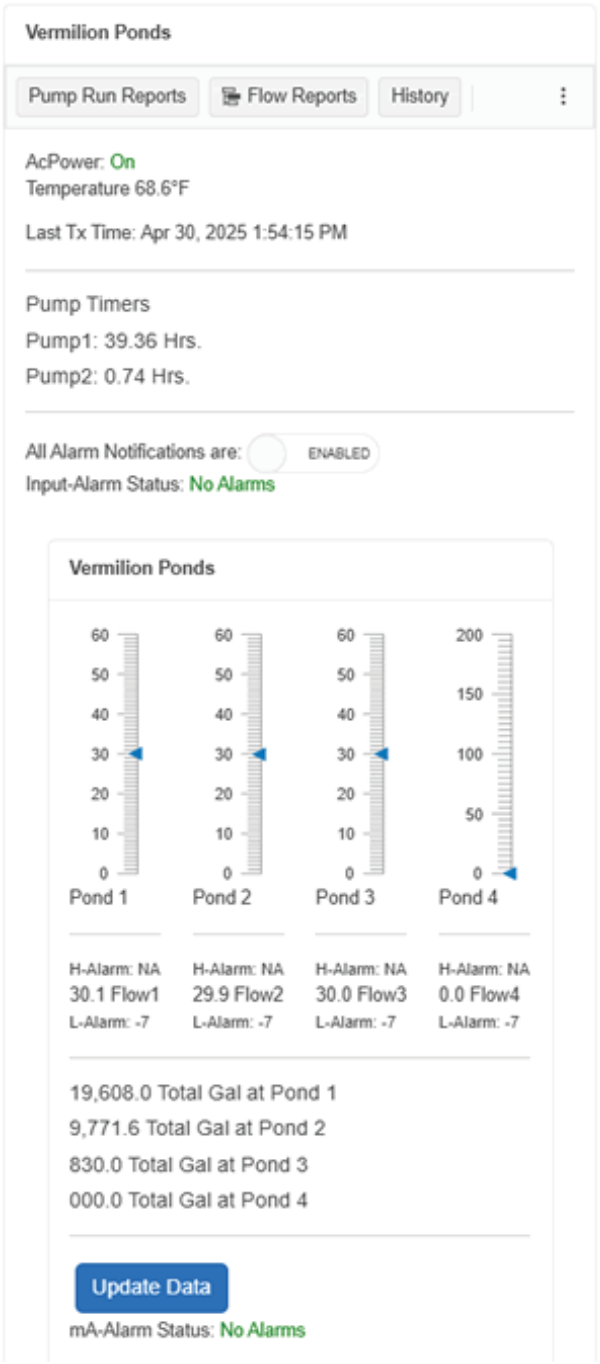
Given:
24.25 X 16= 388
11.9 -4 = 7.9 mA
388/7.9 = 49.11

49.11 is the Max. Value to enter into our system [1.Max Value].

4-20mA Module for Amps

(Where # is the input channel number)
Input#: Set to True or Checked marked. This will display the device on the web site.
Input#: Description: Give it the name you like to identify our pump or device name.
Unit of Measurement#: Select Amp.
#.High Alarm: Set this to the alarm when the current excess the maximum value.
#.Low Alarm: Set this to the alarm when the current is blow the minimum value.
#.Hysteresis: Level at zero.
#.Max Value: Set this to the switch value on the current sensor 30, 60 or 100.
#.Zero Offset Value: Level this at zero (0).
#. Alarm Delay: Set this from 2 seconds to 60 seconds for how ever long it takes to get a good alarm. Do not use 0 seconds (*this will disable the alarm*)

4-20mA Module Flow Rate



Total Gal is the current value since the Last Tx Time: located below the AcPower: and Temperature.

By default we automatically send up the data twice a day.

The last reading of the day is programmed in the Modem setup Daily Tx Time field.

4-20mA Module Flow Rate Setup



Input 1 Setup

Set the [1.Max Value] to match your meter.

Active Input 1: Needs to be check marked to show up on web page.

Input 1 Description: Pond 1 (this can be set to your flow site name).

Unit of Measurement: Set to Flow.

When MAX value is set then set High Alarm with a value of MAX value + 10

Low Alarm is automatically set to -7. *Note: Alarms are not used for flow monitoring.

1.Zero Offset is automatically set to 0.

1.Alarm Delay is not used

Total Gallons can be changed to match the meter on site.

1. Need to have someone press the select button 10 times to calibrate the timers for accurate flow rate. This will take 3 hours then lift station will operate again.

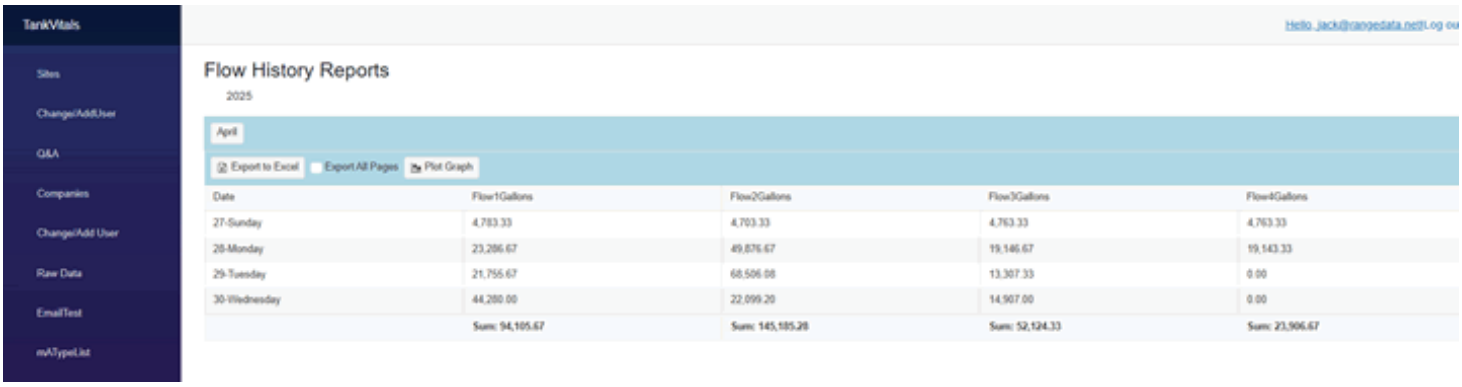
2. Need to know at any flow rate the milliamp value at that rate, then we can set our MAX value

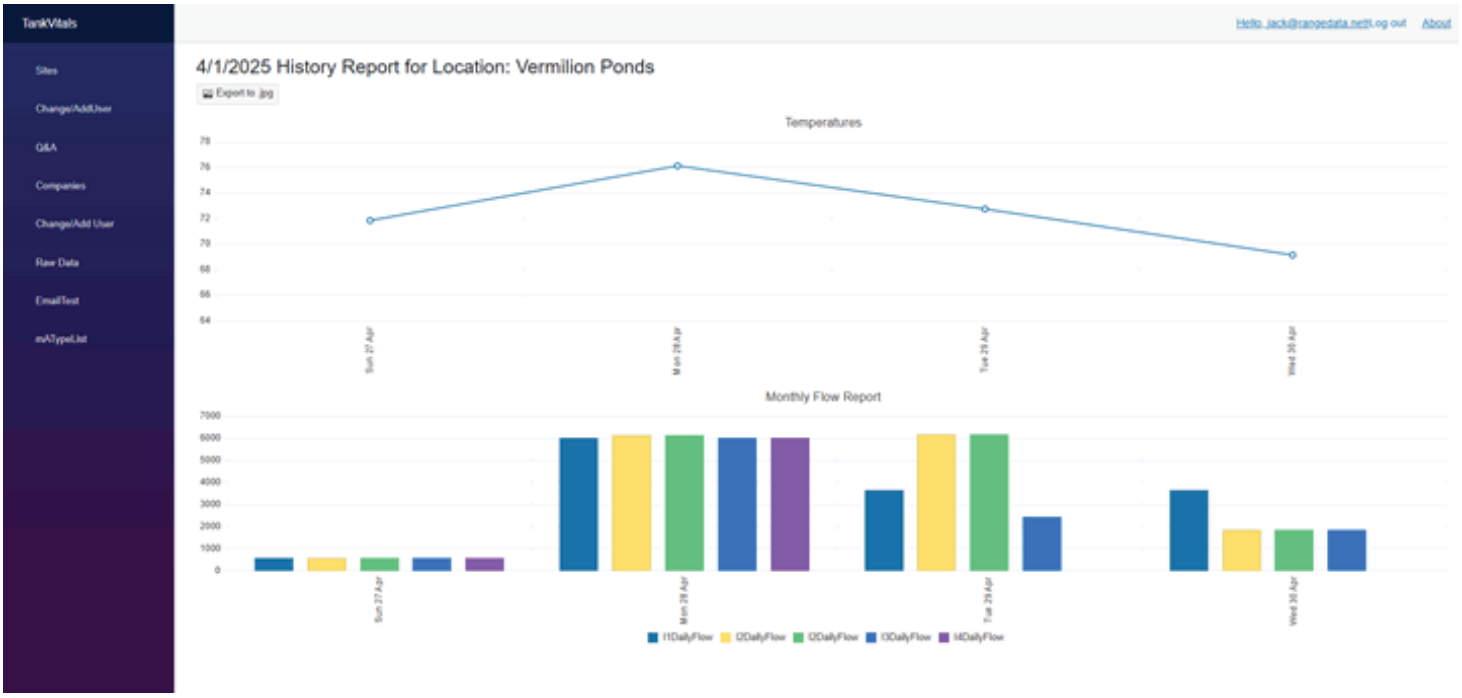
3. (flow rate * 16) / (milliamp value - 4) = MAX value

4-20mA Module Flow Rate Data

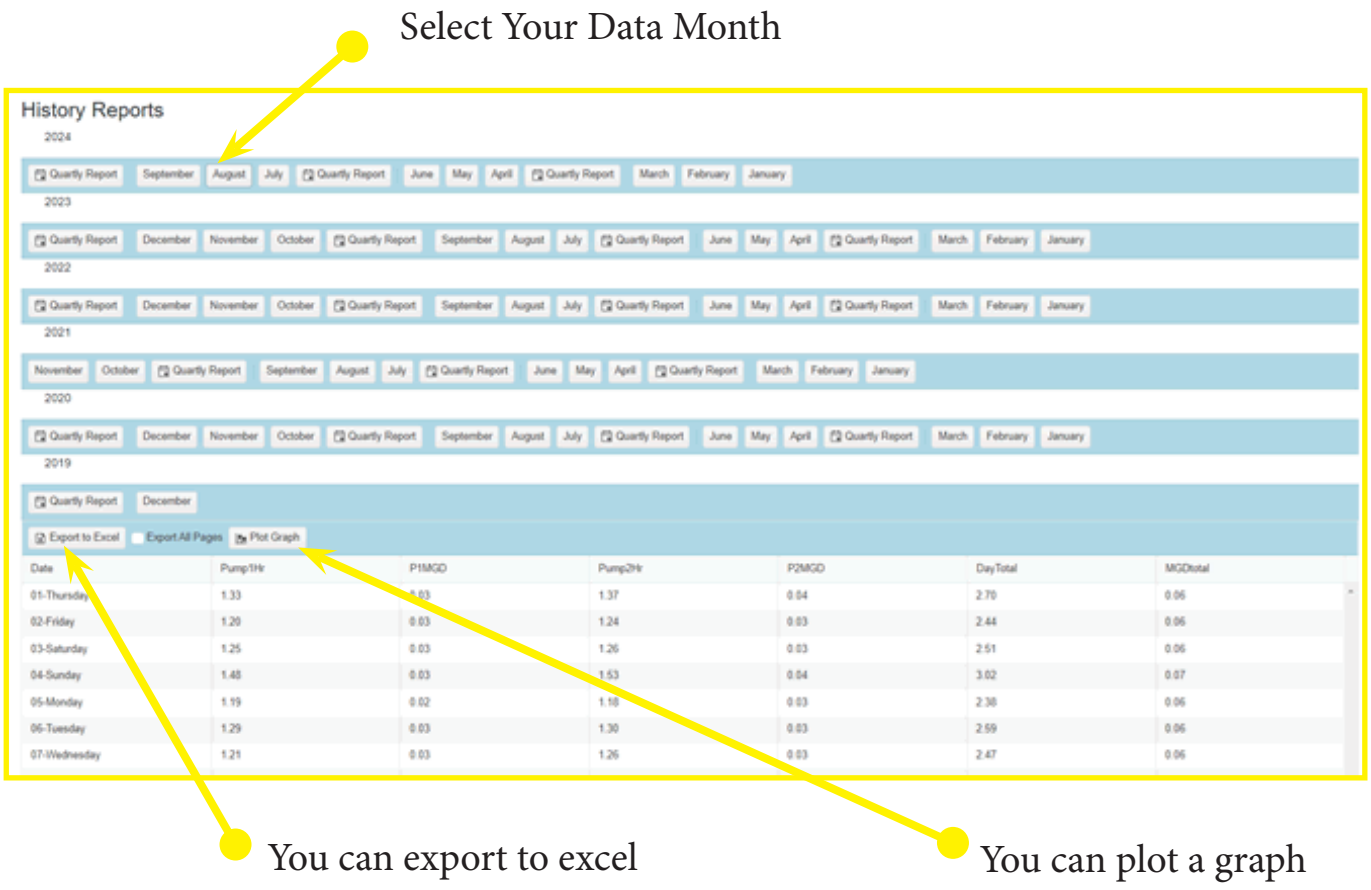
Click on Flow Reports Button

Select the month this will display the data.
Then select Plot Graph.





Pump Run Reports

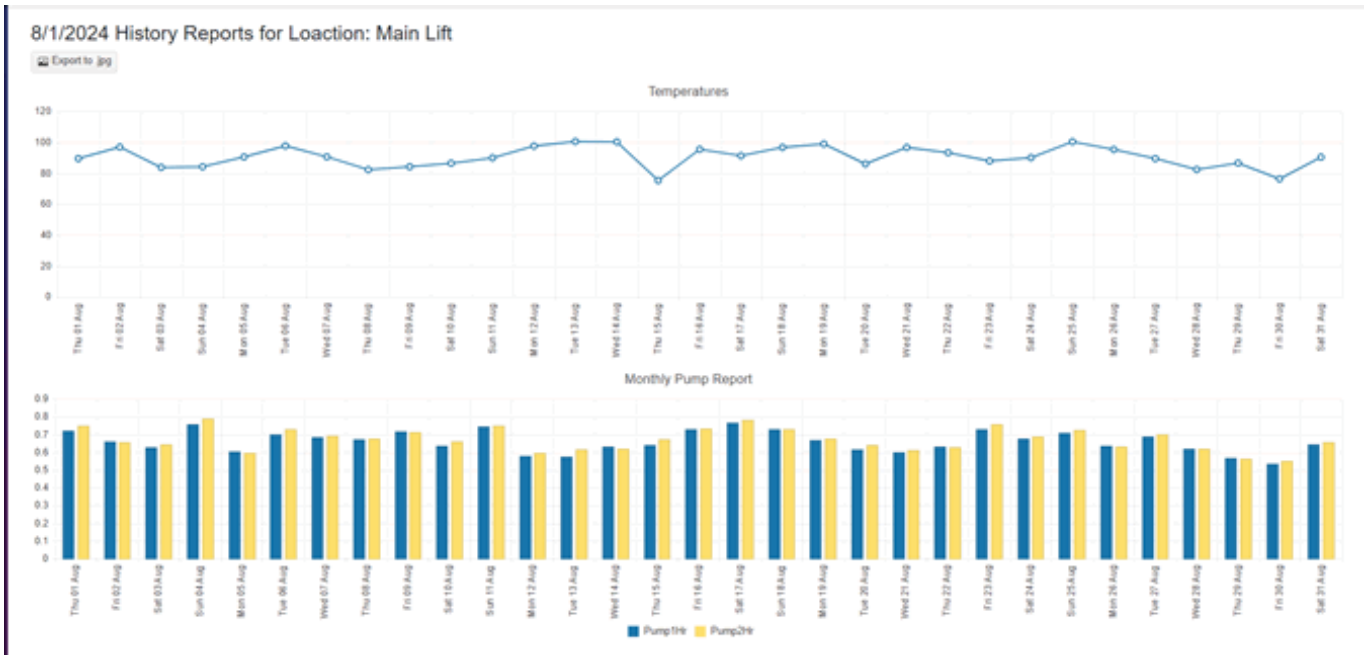


Excel Report

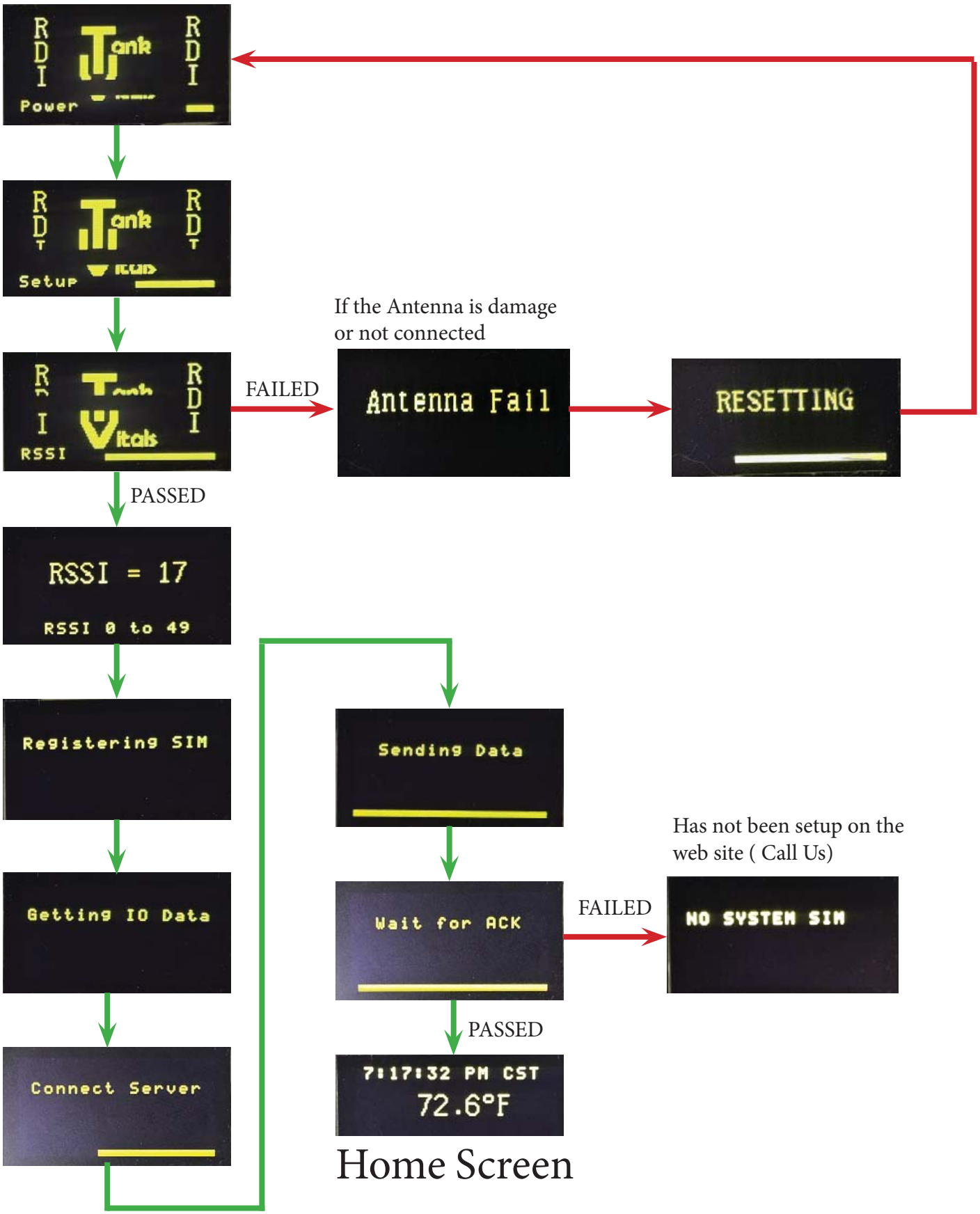
G34

	A	B	C	D	E	F	G
1	Date	Pump1Hr	P1MGD	Pump2Hr	P2MGD	DayTotal	MGDtotal
2	08/01/2024 12:32:25 AM	1.33	0.03	1.37	0.04	2.70	0.06
3	08/02/2024 12:32:15 AM	1.20	0.03	1.24	0.03	2.44	0.06
4	08/03/2024 12:32:02 AM	1.25	0.03	1.26	0.03	2.51	0.06
5	08/04/2024 12:31:42 AM	1.48	0.03	1.53	0.04	3.02	0.07
6	08/05/2024 12:31:28 AM	1.19	0.02	1.18	0.03	2.38	0.06
7	08/06/2024 12:31:09 AM	1.29	0.03	1.30	0.03	2.59	0.06
8	08/07/2024 12:30:51 AM	1.21	0.03	1.26	0.03	2.47	0.06
9	08/08/2024 12:30:31 AM	1.20	0.03	1.20	0.03	2.40	0.06
10	08/09/2024 12:30:11 AM	1.41	0.03	1.43	0.04	2.84	0.07
11	08/10/2024 12:29:53 AM	1.17	0.02	1.19	0.03	2.36	0.06
12	08/11/2024 12:29:31 AM	1.26	0.03	1.27	0.03	2.53	0.06
13	08/12/2024 12:29:15 AM	1.09	0.02	1.11	0.03	2.19	0.05
14	08/13/2024 12:29:05 AM	1.13	0.02	1.18	0.03	2.31	0.05
15	08/14/2024 12:28:54 AM	1.16	0.02	1.13	0.03	2.29	0.05
16	08/15/2024 12:28:43 AM	1.25	0.03	1.27	0.03	2.52	0.06
17	08/16/2024 12:28:31 AM	1.29	0.03	1.34	0.04	2.63	0.06
18	08/17/2024 12:28:30 AM	1.45	0.03	1.46	0.04	2.91	0.07
19	08/18/2024 12:28:26 AM	1.30	0.03	1.30	0.03	2.60	0.06
20	08/19/2024 12:28:16 AM	1.27	0.03	1.29	0.03	2.57	0.06
21	08/20/2024 12:28:03 AM	1.23	0.03	1.28	0.03	2.50	0.06
22	08/21/2024 12:27:40 AM	1.18	0.02	1.20	0.03	2.37	0.06
23	08/22/2024 12:27:29 AM	1.20	0.03	1.19	0.03	2.39	0.06
24	08/23/2024 12:27:14 AM	1.29	0.03	1.33	0.04	2.62	0.06
25	08/24/2024 12:27:03 AM	1.25	0.03	1.29	0.03	2.54	0.06
26	08/25/2024 12:26:58 AM	1.41	0.03	1.43	0.04	2.85	0.07
27	08/26/2024 12:26:55 AM	1.27	0.03	1.25	0.03	2.52	0.06
28	08/27/2024 12:26:51 AM	1.29	0.03	1.32	0.03	2.61	0.06
29	08/28/2024 12:26:45 AM	1.20	0.03	1.20	0.03	2.40	0.06
30	08/29/2024 12:26:28 AM	1.09	0.02	1.08	0.03	2.17	0.05
31	08/30/2024 12:26:14 AM	1.05	0.02	1.07	0.03	2.12	0.05
32	08/31/2024 12:26:00 AM	1.18	0.02	1.19	0.03	2.38	0.06
33		Sum: 38.57	Sum: 0.81	Sum: 39.15	Sum: 1.036	Sum: 77.72	Sum: 1.84
34							

Pumps Run Times and Temperature and Reports



Power Up Sequence



Home Screen

Main Screens

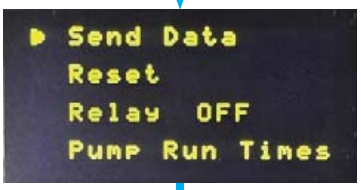
Home Screen

Showing Alarm Input 5 is Active



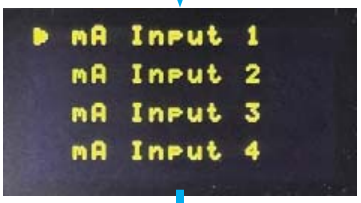
Next Page Button

Data Screens



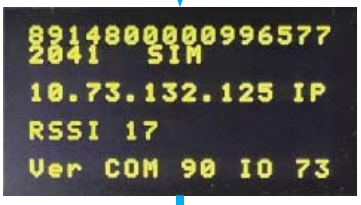
Next Page Button

mAmp Screens



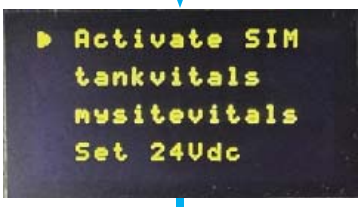
Next Page Button

Info Screen



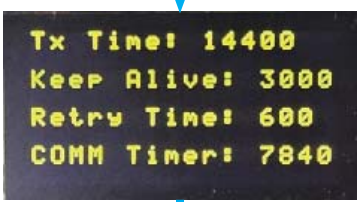
Next Page Button

SIM Screens



Next Page Button

Timers Screen

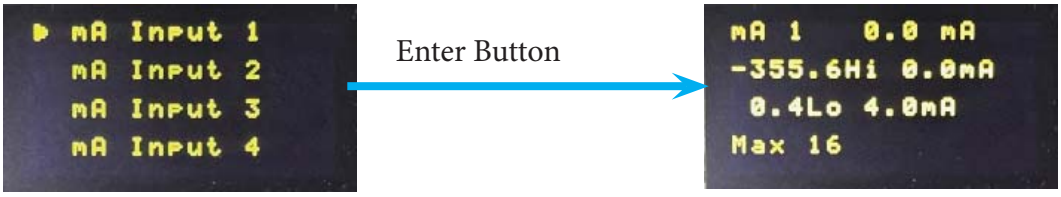


Next Page Button

Data Screens



mAmp Screens

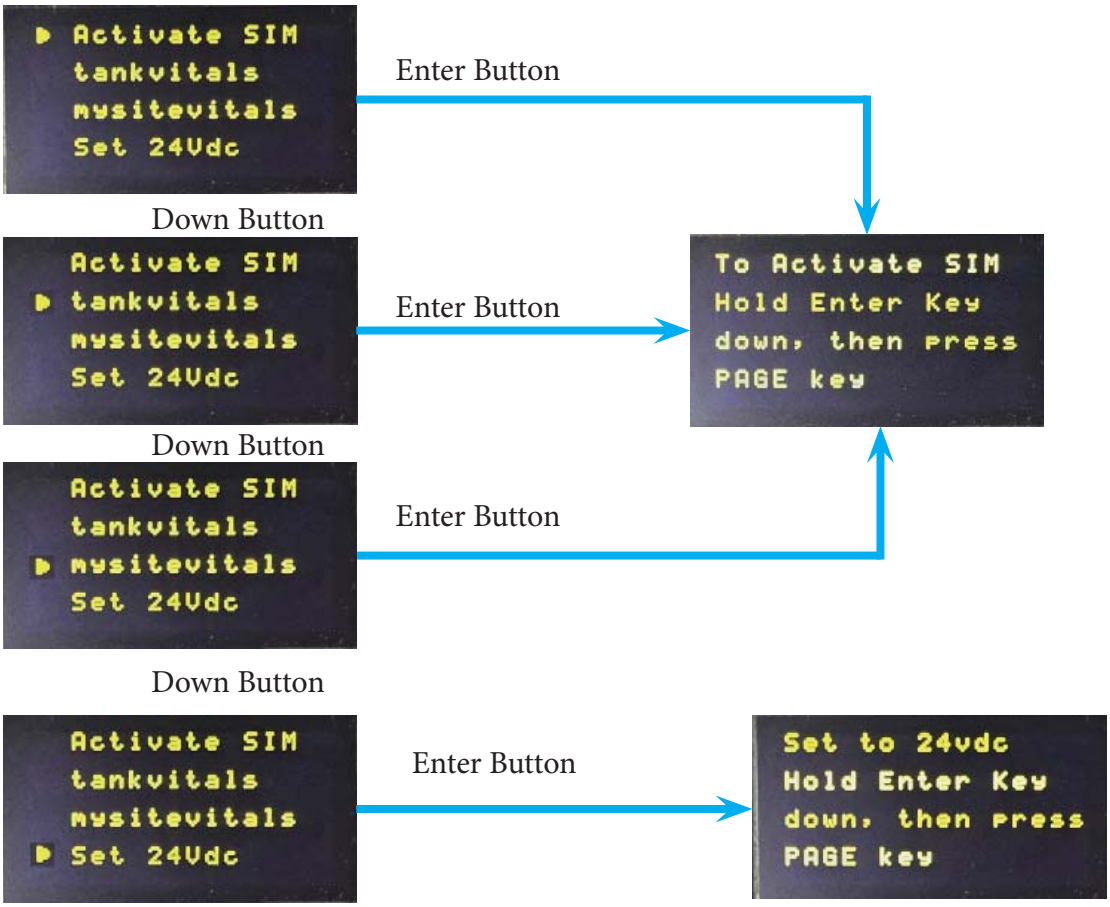


Use the Down button to select the other mAmp Inputs

SIM Screens

These setting are setup at the factory.

If your S2C is not active here is how to set it up.
You must call us to activate the SIM.



Billing Info

We need the Master or Designated person information.
Email and Cellular number is used for alarm notification. Also need a shipping to address in case we need to ship repair equipment and the Yearly Billing Address

Purchase Order number: _____

Company Name: _____
Email Address: _____

Cell Phone #: _____ (i.e.. 701-352-4696)

Billing Address: _____ (Yearly Fee)

Shipping Address: _____

City: _____ State:_____

Zip Code: _____-_____

Data Information for this S2C device SIM:

8914800000_____ IP: 10.73.13___.___

FYI: This information is never shared or released to anyone. Thanks!

Send this information to Billing@RangeData.net

S2C Alarm Input Description

- System Purchase Order Number: _____
- Hardware SIM ID Number: 8914800000_____
- Device Local IP Address: 10.73.13__.___

Assigned Inputs Reference

Terminal	Hardware Device Name / Monitored Parameter	Operational Mode (N.O. / N.C.)
Input 1		
Input 2		
Input 3		
Input 4		
Input 5		
Input 6		
Input 7		
Input 8		
Input 9		
Input 10		
Input 11		
Input 12		
4–20mA 1		
4–20mA 2		
4–20mA 3		
4–20mA 4		

Your Cellular Alarm Monitoring Experts

Output Custom APIs Alarms to Wonderware (push method) SCADA system
Easy Installation
Includes VPN (Virtual Private Network)
Internally DIN mount or Externally NEAM-4x

Simpler, Faster and Smarter Cellular System for your Location



Lifetime Warranty
Proudly Made in the USA