Crystal Ball Kit
Lift Station Monitoring

Quick Start Guide to Empower Facilities Monitoring & Analyzing

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Virtual Manual

OmniSite

Crystal Ball Kit
Quick Start User Guide

Welcome To OmniSite!

The Future of SCADA

OmniSite cares about the environment. There are tens of thousands of OmniSite monitors across the USA monitoring critical pump stations, giving you early warning, so you can prevent environmental spills.

OmniSite is fast and easy to use. **OmniSite is "the new way to do SCADA"**. Do our products report sensor data by the millisecond? NO. However, we offer instant alarm notifications, and analog values can be reported at 5 or 15 minute intervals based on the report package you selected. This solution is definitely "quick enough" to keep you "in the clean" and saves you a lot of time and money.

Don't be fooled by old school SCADA providers who sell tremendously expensive, slow, complex solutions. Look at the below picture, and honestly ask yourself "Do we have anyone on staff who can work on that?" If your answer is "no" then OmniSite is for you!

Using cellular airwaves and the Internet, OmniSite delivers services using a refined solution. This saves you money and time in the long run. The solution is also straightforward, allowing your multi-tasking personnel to seamlessly alternate between mundane tasks and utilizing OmniSite's services. OmniSite can be used without prior expertise in telemetry, programming, and controls, allowing you to focus on what matters most to you: operating your facility.

OmniSite is a cloud-based solution, so there is no software to buy or install. Our software platform, called GuardDog, includes iPhone and Android apps at no additional cost. Any phone, tablet, or PC that can browse the web can use GaurdDog. Receive flexible notifications via email, text, or voice call using our easy configuration system. Have extensive history on your pumps and equipment without creating laborious SCADA graphic screens. OmniSite does all this out-of-the-box.

Attention Installer!!

It is mandatory that you connect ALL THE WIRES, PUMP AMP PROBES, AND WELL LEVEL TRANSMITTER as described on the following pages!!

This Crystal Ball cellular and cloud based monitor/analyzer/controller is ALMOST LIKE MAGIC, but it's definitely not 100% magic

This device cannot deliver ANY of the following advanced reports, if YOU don't connect the needed wires as shown on the following pages

Why Proper Installation Matters
Cutting corners during installation—especially by skipping steps outlined in this manual—can result in your customer not receiving the full functionality they were promised, including important reports highlighted in both the product literature and sales process. When expectations aren't met, customers lose trust and often choose not to work with you again.

Why Do Omnisite Monitors Sometimes Get Improperly Wired?
Improper wiring is often the result of underestimating the time needed for correct installation, configuration, testing, and customer training. Taking shortcuts may seem time-efficient in the moment, but it can lead to major issues down the line—ones that impact both the installer's credibility and customer satisfaction.

To ensure a successful experience for everyone, **it's essential to connect, at minimum, the wires and devices specified in this manual.** Additional inputs are available to support even more features, should your customer require them. Taking the time to do it right the first time will pay off in long-term reliability and customer loyalty.

INCLUDED REPORTS
Pump 1 amp history
Pump 1 cycles history
Pump 1 runtime history
Pump 1 GPM history
Pump 1 on/off status history
Pump 1 failure history
Pump 2 amp history
Pump 2 cycles history
Pump 2 runtime history
Pump 2 GPM history
Pump 2 on/off status history
Pump 2 failure history
Pump 3 amp history
Pump 3 cycles history
Pump 3 runtime history
Pump 3 GPM history
Pump 3 on/off status history
Pump 3 failure history
Total station daily flow history
Well inflow rate history & level
Rainfall history
Daily Radar Rainflow
User Audit Trail history
Notification History
Alarm History
Email,Text,Voice Notifications

ADVANCED REPORTS
Database Backups
Cybersecurity Protection
24/7 Tech Support
Warranty
Time/Day call plan scheduler
Volumetric Flow Calculations
Counters
Pump Control
Local Display Interface
Smart Access Key

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NOTICE

INSPECT CONTENTS IMMEDIATLEY
AND FILE CLAIM WITH DELIVERING
CARRIER FOR ANY DAMAGE

SAVE THE BOX
AND
PACKING MATERIAL

YOU ARE RESPONSIBLE FOR DAMAGE TO YOUR
UNIT IF RETURNED IMPROPERLY PACKED

WARNING: The individual user should take care to determine prior to use whether this device is suitable, adequate or safe for the use intended. Since individual applications are subject to great variation, the manufacturer makes no representation or warranty as to suitability or fitness of these devices for any specific application.

General Safety Instructions
Safety Signal Words

Danger: means if the safety information is not followed, someone will be seriously injured or killed.

Warning: means if the safety information is not followed, someone could be seriously injured or killed.

Caution: means if the safety information is not followed, someone may be seriously injured or killed.

1. To reduce the risk of fire or shock hazard, connect OmniSite RTU directly to a 120 VAC electrical circuit. Do not use extension cords for permanent installation.

2. Cover of OmniSite RTU must be securely closed to prevent water damage and electrical shock.

3. Never operate your OmniSite RTU while any part is missing or damaged in any manner.

4. To reduce the risk of electrical hazard or damage, do not tilt, jolt or tip RTU while unit is powered-on.

5. To reduce the risk of accidental electrical shock, do not touch the electrical terminals or controls with wet hands.

6. Note the warning label shown below.

WARNING: To reduce risk of fire, electric shock, or injuries always disconnect all sources of electrical power before servicing or cleaning.

INTRODUCTION

Congratulations - you just bought the best. The OmniSite system provides two-way communications using our patented WINGS™ (Wireless IOT Network Gateway Server) over a cellular network. The low cost of the OmniSite method makes remote monitoring very affordable and allows our devices to operate on cellular networks across the USA. We have the most complete coverage and best reputation in the industry.

OmniSite wireless monitoring devices provide a low-cost wireless system for remote monitoring, measurement, and data collection anywhere wherever there is cellular service.

Overview

The OmniSite Crystal Ball is a multi-channel monitoring and control device that has been optimized for use by the water and wastewater utilities. It is designed for indoor or outdoor environments, and operates from 120VAC or +15-20 VDC solar panels and power supplies. The module's internal cellular modem module provides two-way communications through the fully automated OmniSite operations center to the www.OmniSite.com web site.

The standard operating program of the RTU monitors all (14) digital inputs and the alarm limits on (4) analog inputs and reports any changes. This information is immediately displayed on the web site, and user selectable alarm notifications for critical events can be sent via text, e-mail, telephone call or any combination thereof. Equipment status reports can be scheduled in advance or requested at any time. In addition, the Crystal Ball is a sophisticated pump controller.

Installation and Operation is Very Simple:

Please note that your OmniSite product is a cellular device. No matter how good the installation looks, without cellular reception, your device will not work!
Therefore, your first step is to determine whether suitable cellular service is available at the installation location BEFORE you start your actual installation. Connect your OmniSite unit to a temporary extension cord, and plug it in at the installation location.
Look at the cellular signal strength LED on the Crystal Ball. If it is GREEN, you have a good signal and can proceed with installation. If NOT GREEN, call OmniSite at 317-885-6330 to determine that your cellular signal strength is suitable. Once this is verified you can move-on to installing your equipment with confidence.

Observe good wiring practices - DO NOT MIX high and low voltage wiring inside your pump control panel. This creates a situation where high voltage cables can "induce" false signals onto your low voltage OmniSite inputs.
OmniSite low voltage cables should be routed inside low voltage wiring duct in your existing control panels. If you are not sure if high & low voltages are mixed inside your panel, you can always "tie-wrap" your OmniSite sensor wires to the outside of the wiring duct. This technique still provides an attractive installation while providing suitable separation from high voltages.

CAUTION - If you mount your OmniSite RTU inside of your existing electrical cabinet, then take extra care to **ensure that the antenna coaxial cable is NOT routed with high voltage cables or alarm horn power wires**. This can lead to unpredictable cellular reception or damage to the radio circuitry.

OmniSite RTU's can be mounted indoors or outdoors
OmniSite's cellular devices can be mounted directly outdoors (if you purchased the NEMA 4X polycarbonate enclosure option), or inside of your existing electrical control panel if room allows. A common installation technique is to mount the RTU inside the existing electric control panel you are monitoring; mount our "Phantom" antenna on top of your existing panel; then connect the antenna to the RTU using an OmniSite supplied coax jumper cable. Note that your antenna must be mounted outside of any metal electrical enclosure.

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TECHNICAL SUPPORT

Have questions or comments about your Crystal Ball Kit? Please contact:

203 W. Morris Street
Indianapolis, IN 46225
support@OmniSite.com
317-885-6330 x3

FREE WORLD-CLASS SUPPORT!
www.OmniSite.com

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TECHNICAL SPECIFICATIONS

OmniSite Crystal Ball

I/0:	Accepts (14) Universal Digital Inputs- any voltage in the range of+ 12VDC or VAC to+ 120VDC or VAC. Opto-isolated 4000 VAC isolation | (4) 20A form C relay outputs | (4) 4-20mA analog inputs. Analog input-1 includes 4000V opto-isolation | (3) Pulse Inputs: 0-30hz from dry contact or open collector device (1 pulse input reserved for 0.01” pulsing rain gauge)
Input Power:	80-260 VAC @ 0.5A max or optional 15 VDC @2A max
Terminal Blocks:	Gray color, removable style, spring-clamp accepts #14-22 AWG solid or stranded wire
External Power Source:	12 VDC@ 100mA battery backed internal power source available for powering external un-powered alarm contacts, and non-battery-backed for powering 4-20mA loop powered devices.
SD Memory Card Slot:	On-board SD memory card slot for data logging and software updates
Battery Backup:	Internal 12 VDC, rechargeable 800mA/hr sealed lead acid battery rated for 4 hours backup during AC power loss
Operating Temperature:	-20 - 150 °F
Operating Humidity:	0-90% RH, non-condensing
Cellular Radio:	4G/LTE CAT-1
Antenna:	Multiband LTE Antenna, optional remote mount high gain antennas and cables available
Display:	4 line X 20 Char white background LCD w/ backlight. Includes “easy-use” navigation buttons
Personal ID Key Reader:	Smart key reader to identify maintenance personnel. (1) smart key included
Enclosure:	Standard unit is hinged painted steel design w/ remote mount keypad suitable for direct panel mount. Optional NEMA 4X polycarbonate enclosure w/ stainless locking hasps and solid or clear cover available. Larger Enclosure will also be available.
Dimensions:	panel mount - 8.5”W x 8.2”H x 3.5”D - with optional NEMA 4X enclosure - 12”H x 10”W x 4” D
Weight:	Weight: Standard panel mount - 7.0 lbs , with NEMA 4X enclosure - 7.5 lbs.
Protection:	Protection: US Patent #7,228,129

TECHNICAL SPECIFICATIONS CONTINUED

Submersible Level Transducer

Measurement Range:	0-20 ft.
Accuracy:	0.5%/0.2% F.S (including linearity, repeatability, and hysteresis)
Long Term Stability:	± 0.2 % F.S. per year
Output Signal:	4mA to 20 mA (two-wire type)
Power Supply:	12 VDC - 24 VDC ± 10%
Response Time:	10ms
Allowed Overpressure	2.5 times full scale
Compensated Temperature:	from -10°C to +60°C
Load Impedance:	50K Ω min. for < 0.1% FSO attenuation
Input Current:	8mA nominal
Insulation Resistance:	10M Ω @ 50 VDC and +70 degrees F
Connection:	60 ft of 3-conductor #20g Hytrel jacketed Cable with breather tube utilizing Teflon hydrophobic filter. Optional 100ft can be purchased.
Weight:	5 lbs.
Materials:	All 316 stainless steel exterior body and diaphragm
Operating Temperature:	32 Degrees F - 150 Degrees F
Thermal Drift:	+/- 2.0% FS 50/100 Degrees F

Amp Probes

Model :	MI-420MAP
Amperage Rating:	0-100, 0-150, 0-200 Amps, user selectable jumper
Sensor Output:	4 to 20 mA Accuracy +/-0.5% FS
Supply Voltage:	12-40 VDC Loop Powered
Isolation:	1270 VAC

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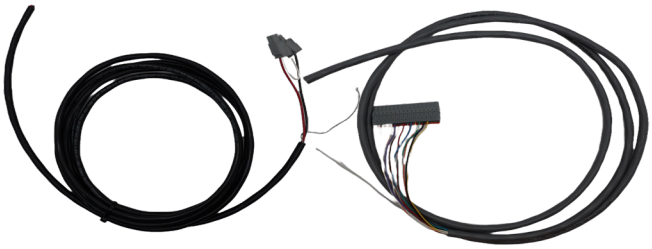
Included Components:

- **(1) Crystal Ball in NEMA 4X Enclosure with (4) 3/4"• sealtite connectors**
- **(1) 10' Digital Input Cable 600VAC**
- **(3) 10' Analog Input Cable 600VAC**
- **(1) 10' 14/3 Power Cable 600VAC**
- **(2) 4-20mA Amp Probe Additional Optional Additional Amp Probe**
- **(1) 0-20' Submersible Level Transducer or radar sensor**
- **(2) Pre-landed terminal block sets for digital and analog input**
- **(1) Pre-landed terminal for power**
- **8 ft of 3/4" sealtite plastic conduit**
- **(1) Accessory bag**



1. Digital and Analog input cables

2. Amp Probe

3. Radar Sensor

5.sealtite connectors

6. Pre-landed terminal for power

7. Accessory bag

8. sealtite plastic conduit

9. Submersible Level Transducer

ACTIVATION STEP #1

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STEP #1

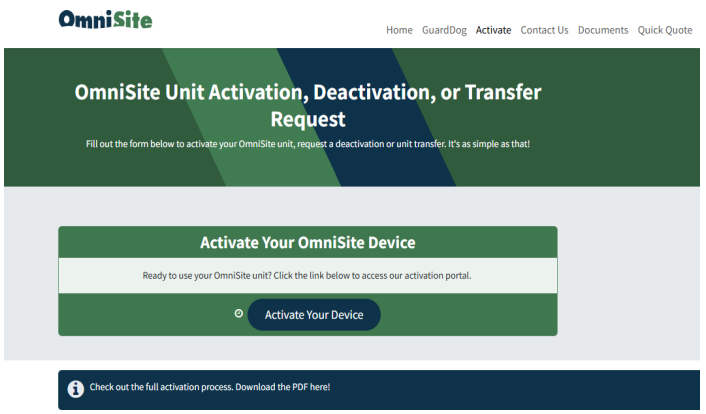
1.0 ACTIVATION

The Crystal Ball is a cellular device just like your cell phone. As such, all OmniSite devices require activation before will transmit alarms.

Note: Activation should be done before installation, login also requires Primary User GuardDog credentials

Please follow the instructions below to activate your device.

1.1. Navigate to www.OmniSite.com/activate to launch the Activation Wizard.

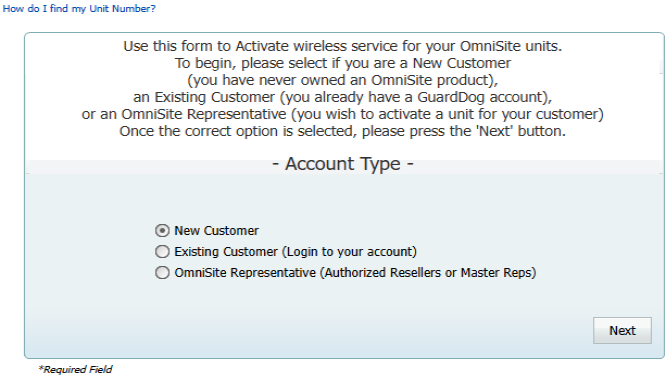


1.2. Select an appropriate account type

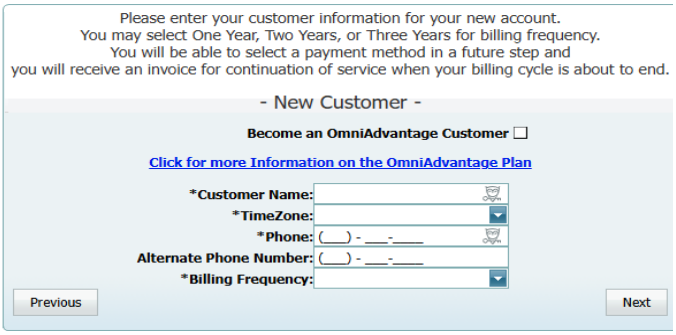
- If you are a new customer, select "New Customer" to create a new account

- If you are an existing customer, select "Existing Customer" to log into your account. Select activiation and skip to 1.6.

- If you are an OmniSite representative, select "OmniSite Representative" to log into your account



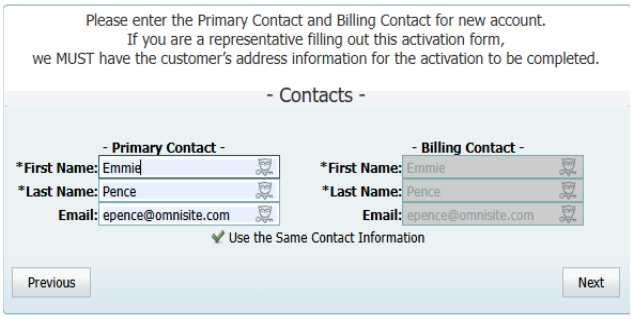
1.3. All wireless billing is billed annually. You can choose the billing frequency for pre-paying for one, two, or three years. (The longer terms cost less per year)



1.4. Billing Contact: This area is for ***customer contact*** information only. If representative is filling out activation for customer, do not enter representative name.

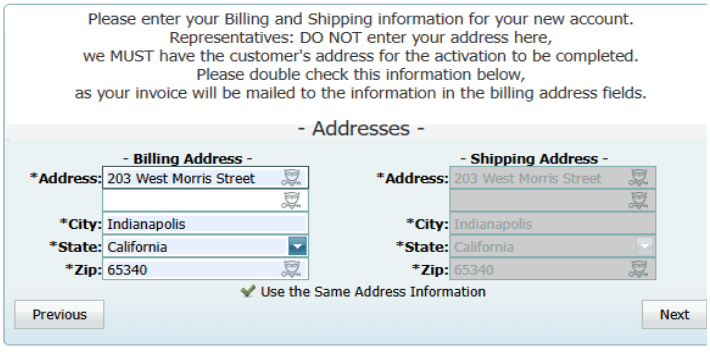
Check Box: Check here if Primary Contact and Billing Contact are the same

Note: If customer information is not provided, this can put their account at risk when the billing period ends.

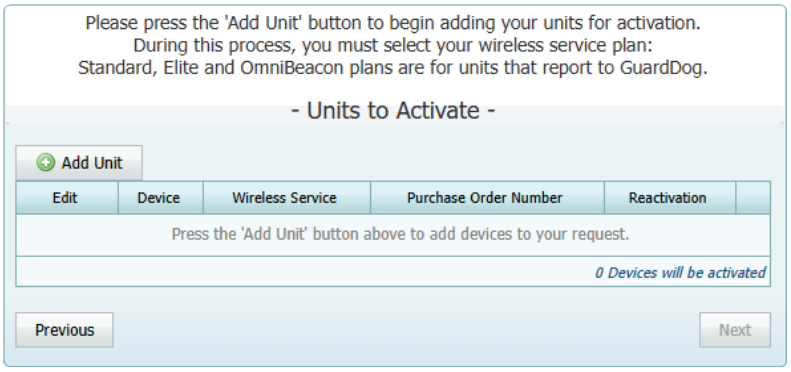


1.5. Address: Addresses should be customer Main & Shipping addresses. Do not enter rep contact info, even if rep is paying for first year of service.

Check Box: Check here if Main Address & Shipping Address are the same.

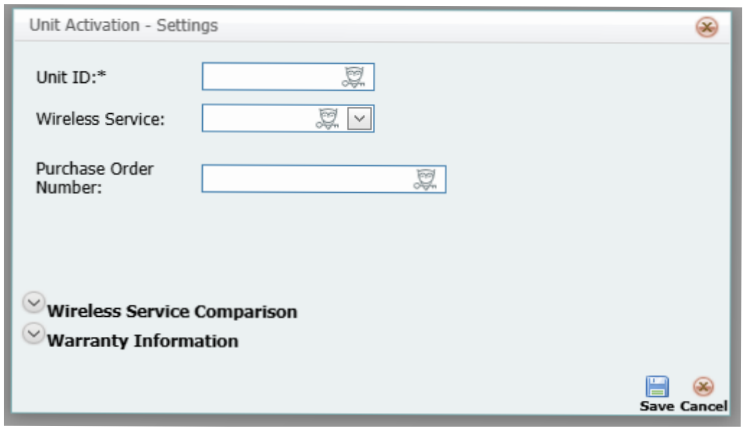


1.6. Multiple Units: Multiple units can be activated at the same time.



1.7. UNIT ID: Locate your unit's ID number and insert here. (The sticker is located on top of the Crystal Ball's painted black metalwork.)

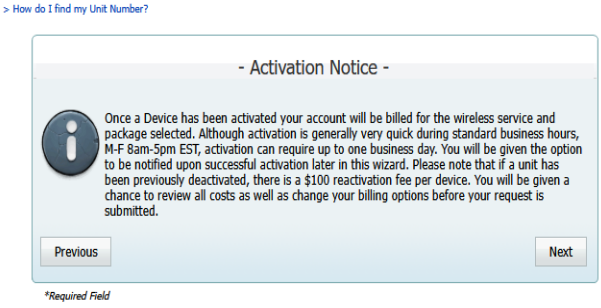
CELL SERVICE:
Basic Service: Device reports a summary once every 24 hours and alarms immediately.
Elite Service: Device submits a selected report every 15 minutes, plus a daily report summary and immediate alarm notifications.
Real time: Real Time Alarms, Real Time Pump Data, Peer to Peer Pump Control Capability, and Realtime Reporting



PO: Place your purchase order number for service here. If you pre purchased wireless service this box will autopopulate

Note: If a cellular PO/Key was not purchased along with your unit you may enter "Verbal, <Customer name>".

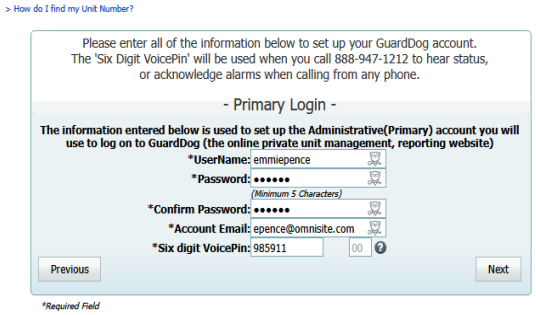
1.8. Activation: Activations can take up to one full business day after submission. We suggest activating units 1-2 days before installation.



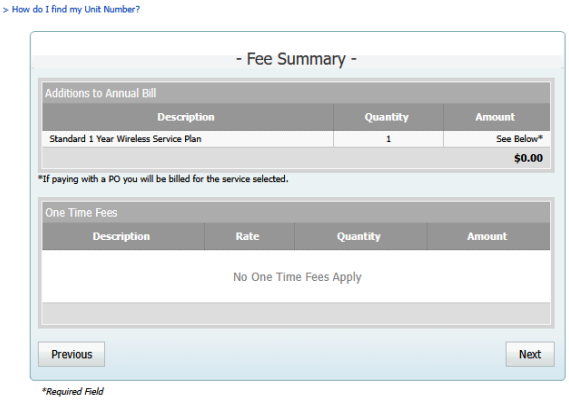
1.9. UserName: Can be any length and be numeric or alphabetic.

Password: Must be a minimum of 5 characters, 1 special character and 1 number

Voice Pin: Must be 6 digits. Many customers use the first 6 digits of their phone number

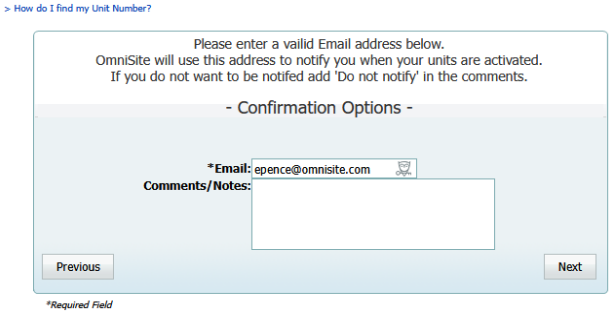


1.10. Fees: All recurring subscription fees associated with the activation are noted here. You will be invoiced for the correct amount once submitted. IF you are reactivating a unit you will see it under the one time fee box.



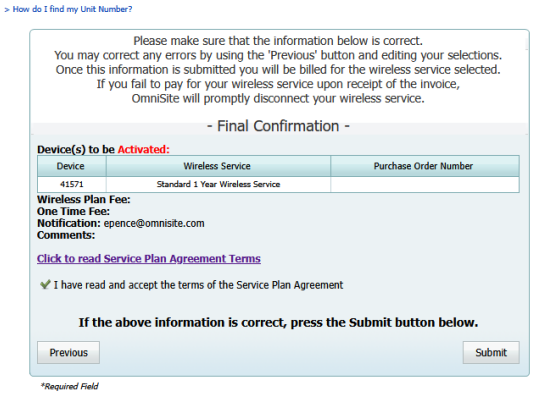
1.11. Email: This is how we will notify you once the activation is complete.

Comments/Notes: Note any special circumstances regarding this activation here. (e.g. Unit is replacing another unit that is being deactivated.)



1.12. Check box: Check this after reading and agreeing to the Service Plan Agreement Terms.

Submit Button: Once you have verified that all information is correct and checked the box, click the submit button.



Success!

Your unit(s) should be activated within one business day. Any changes to information noted in this activation wizard should be communicated to the OmniSite technical support team immediately to ensure accurate service and billing.

MANDATORY MOUNTING STEP #2

Attention Installer!!

It is mandatory that you connect ALL THE WIRES, PUMP AMP PROBES, AND WELL LEVEL TRANSMITTER as described on the following pages!!

This Crystal Ball cellular and cloud based monitor/analyzer/controller is ALMOST LIKE MAGIC, but it's definitely not 100% magic

This device cannot deliver ANY of the following advanced reports, if YOU don't connect the needed wires as shown on the following pages

WHAT HAPPENS WHEN YOU TRY TO SAVE MONEY ON YOUR INSTALLATION TIME AND NOT WIRE AS SHOWN IN THIS MANUAL? - Your customer will not get the reports they were promised in the product literature, plus promised by the salesman who sold this device. When your customer does not get what they paid for, they become unhappy, and in the future, they are no longer your customer! Cutting corners simply creates your next ex-customer!

WHY OMNISITE MONITORS DON'T GET WIRED PROPERLY?
It's because the salesperson or the service installer
Estimates far too little time to correctly install, setup, and test their product. You also need to give your customer training. Don't make this mistake, plus don't cut corners and try to save installation time. This will haunt YOU LATER! **Do the right thing AND CONNECT AT AN ABSOLUTE MINIMUM THE WIRES AND DEVICES SHOWN IN THIS MANUAL. There are many spare inputs to connect more.**

INCLUDED REPORTS

- Pump 1 amp history
- Pump 1 cycles history
- Pump 1 runtime history
- Pump 1 GPM history
- Pump 1 on/off status history
- Pump 1 failure history
- Pump 2 amp history
- Pump 2 cycles history
- Pump 2 runtime history
- Pump 2 GPM history
- Pump 2 on/off status history
- Pump 2 failure history
- Pump 3 amp history
- Pump 3 cycles history
- Pump 3 runtime history
- Pump 3 GPM history
- Pump 3 on/off status history
- Pump 3 failure history
- Total station daily flow history
- Well inflow rate history & level
- Rainfall history
- Daily Radar Rainflow
- User Audit Trail history
- Notification History
- Alarm History
- Email,Text,Voice Notifications

ADVANCED REPORTS

- Database Backups
- Cybersecurity Protection
- 24/7 Tech Support
- Warranty
- Time/Day call plan scheduler
- Volumetric Flow Calculations
- Counters
- Pump Control
- Local Display Interface
- Smart Access Key

STEP #2

2.0 MOUNTING & WIRING YOUR CRYSTAL BALL KIT- STEP 2

OmniSite's cellular devices can be mounted directly outdoors (if you purchased the NEMA 4X polycarbonate enclosure option), or inside of your existing electrical control panel if room allows. A common installation technique is to mount the RTU inside the existing electric control panel you are monitoring; mount our "Phantom" antenna on top of your existing panel; then connect the antenna to the RTU using an OmniSite supplied coax jumper cable. Note that your antenna must be mounted outside of any metal electrical enclosure.

CAUTION - If you mount your OmniSite RTU inside of your existing electrical cabinet, then take extra care to ensure that the antenna coaxial cable is NOT routed with high voltage cables or alarm horn power wires. This can lead to unpredictable cellular reception or damage to the radio circuitry.

MANDATORY WIRING STEP #3

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STEP# 3

3.0 WIRING

All the wires are already connected to the Crytsal Ball field terminal blocks. Please see the wiring legend below for the bottom terminal. The top has been pre-wired with the white jumper and one white wire that connects to the neutral.

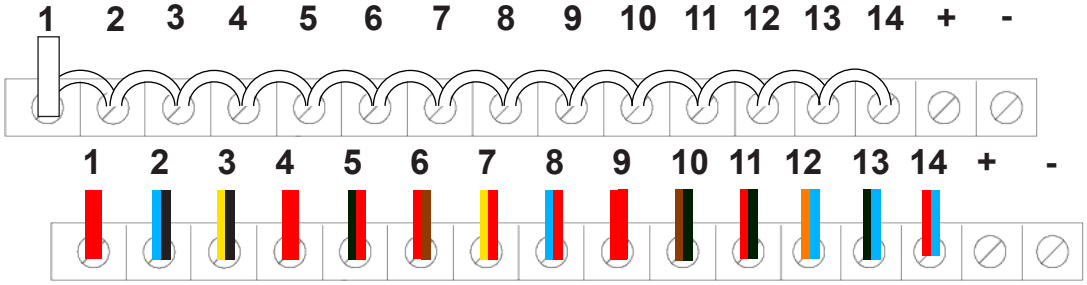
Digital Inputs

INPUT NUMBER	DESCRIPTION	WIRE COLOR
Input 1	High Wet Well Level	Red Wire (Mandatory connection)
Input 2	Pump 1 Overload	Blue/Black Wire (Optional connection)
Input 3	Pump 2 Overload	Yellow/Black Wire (Optional connection)
Input 4	Phase Failure	Orange Wire (optional, may not be in all panels)
Input 5	Low Wet Well Level	Black/Red Wire (Optional connection)
Input 6	Low Bioxide Level	Brown/Red Wire (optional, may not be in all panels)
Input 7	Spare Input	Yellow/Red Wire
Input 8	Pump 1 Seal Failure	Blue/Red Wire (optional, may not be in all panels)
Input 9	Pump 2 Seal Failure	Orange/Red Wire (optional, may not be in all panels)
Input 10	Tamper Switch	Brown/Black Wire (optional, may not be in all panels)
Input 11	Spare	Red/Black Wire

NOTE: Do not mix AC and DC return wiring, this will cause erroneous operation or damaged inputs, potentially voiding the warranty. Keep specific voltage returns separated!

Any signal 12 VAC/VDC to 120 VAC/VDC. No polarity required. Typical for all digital inputs.

NOTE: Different voltages can be applied to different input channels as needed (i.e. don't all have to be the same)



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Runtime Inputs

INPUT NUMBER	DESCRIPTION	WIRE COLOR	
Input 12	Pump 1 Runtime	Orange/Blue Wire	(Mandatory Connection)
Input 13	Pump 2 Runtime	Black/Blue Wire	(Mandatory Connection)
Input 14	Pump 3 Runtime	Red/Blue Wire	(Mandatory Connection)

Analog Inputs

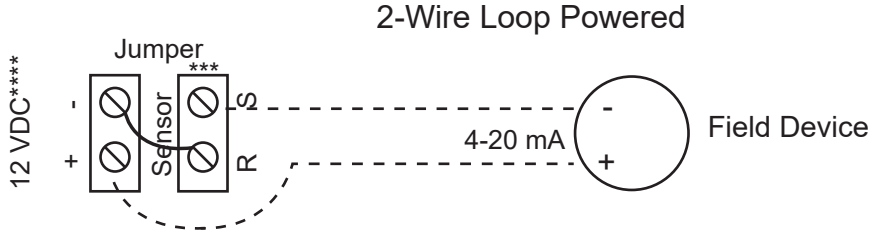
INPUT NUMBER	DESCRIPTION	WIRE NUMBER*	
Input 1*	I-Level (Well Level)	Analog Wire 1**	(Mandatory Connection)
Input 2	Pump 1 Amps	Analog Wire 2	(Mandatory Connection)
Input 3	Pump 2 Amps	Analog Wire 3	(Mandatory Connection)
Input 4	Spare	Analog Wire 4	(Optional Connection)

*NOTE: We've pre-connected an Analog black/white wire pair to all three analog inputs as shown below. The white wire on the analog pairs are numbered in accordance to the diagram above.

** Analog Input 1 is not pre-wired since it receives the rigid cable from the I-Level Probe. This will be shown later in this manual.

*** Crystal Ball Analog Input Impedance = 250 ohms

****12VDC @ 80 mA max, each input



Wiring Diagram

Use the following images to wire up the

- High Wet Well Level,
- Pump 1 & 2 Overload,
- Pump 1-3 Runtimes,
- The I-Level (Submersible Well Level Transducer),
- Pump 1 & 2 Amps Probes in your panel.

Fig. 1: Complete Wiring Diagram

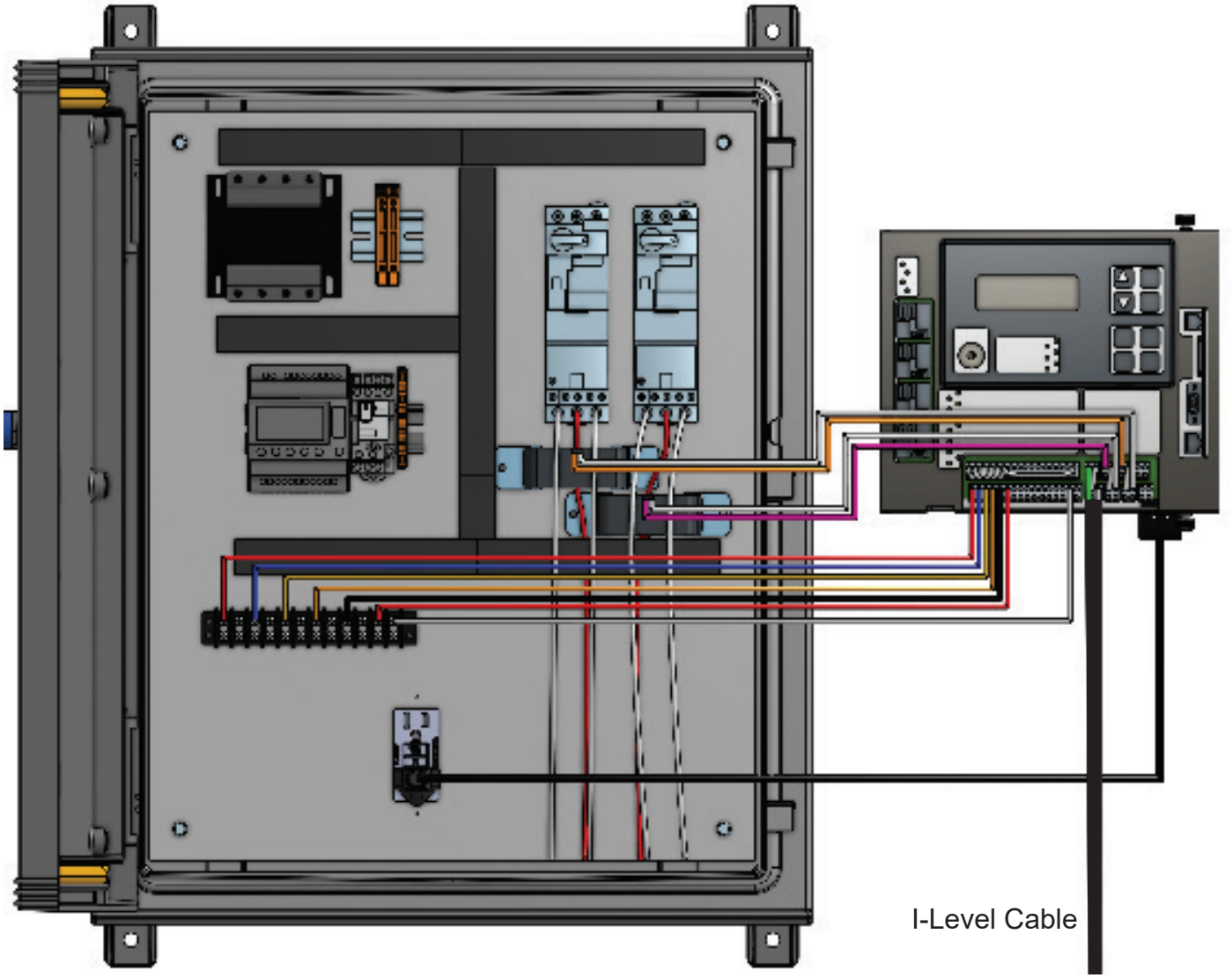
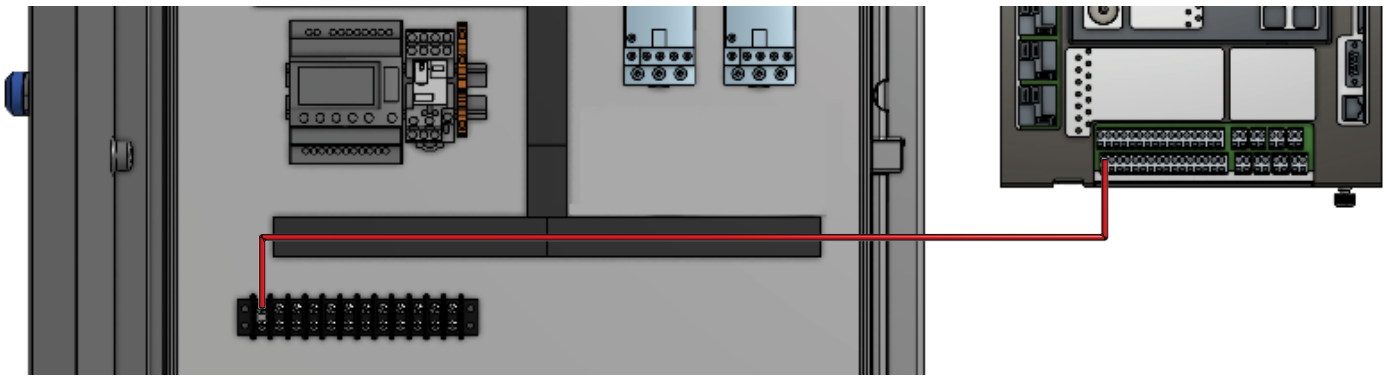
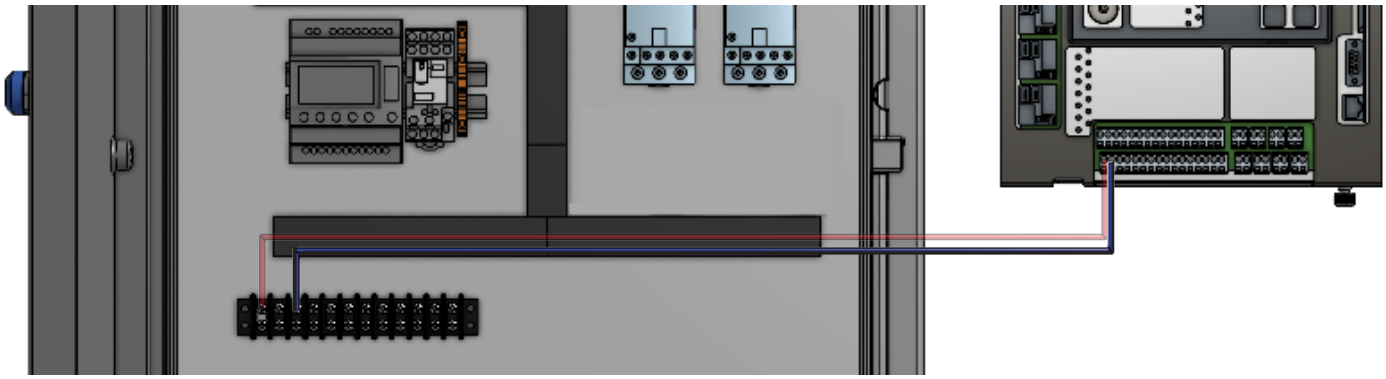


Fig. 2: Wiring High Wet Well Level



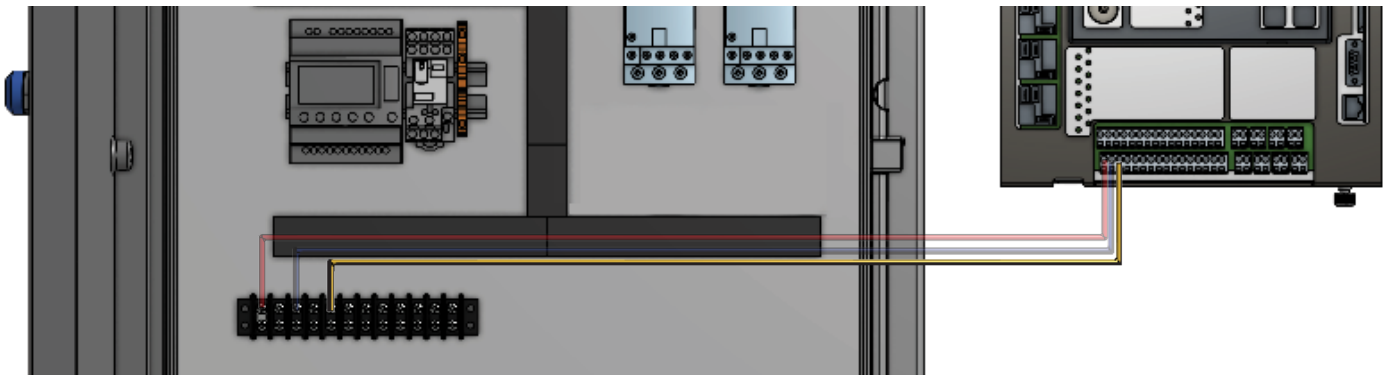
Wire Input 1 on the Crystal Ball to the terminal strip in the electrical box using the red wire. This wire should land on the “switched side” of the high-level float such that 120 V power is supplied to the Crystal Ball when the high float tilts up, indicating high level alarm.

Fig. 3: Wiring Pump 1 Overload



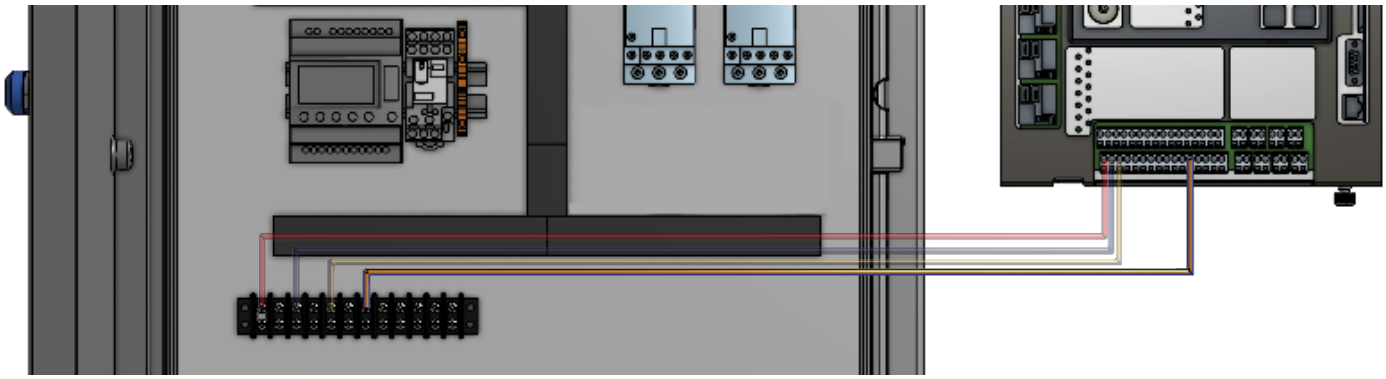
Wire Input 2 on the Crystal Ball to the terminal strip in the electrical box using the blue/black wire. This wire should land on the “hot side” of the overload contacts such that when the overload trips, voltage is applied to the Crystal Ball. When overload is not tripped, voltage is NOT supplied to Crystal Ball.

Fig. 4: Wiring Pump 2 Overload



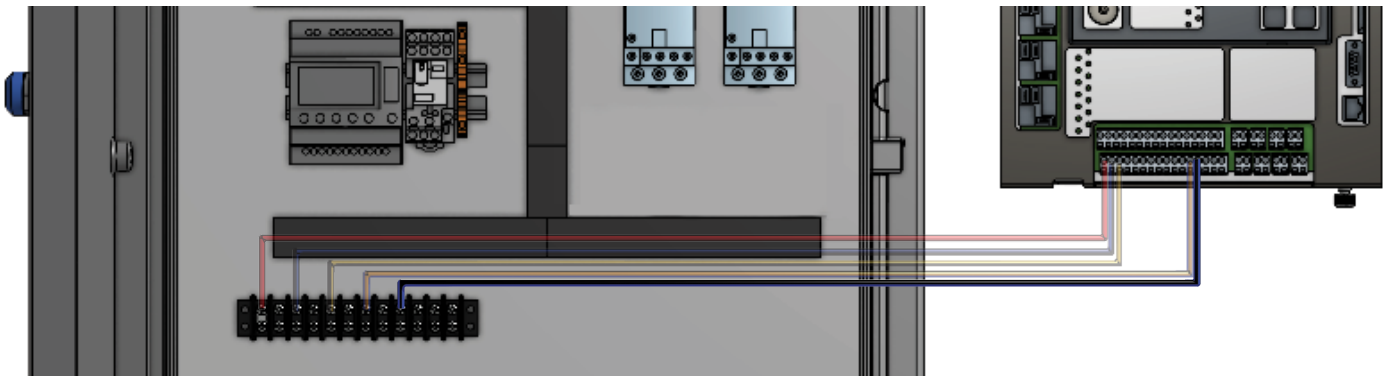
Wire Input 3 on the Crystal Ball to the terminal strip in the electrical box using the yellow/black wire. Wire pump #2 overload identically to pump #1 overload (as shown in Fig. 3.)

Fig. 5: Pump 1 Runtime



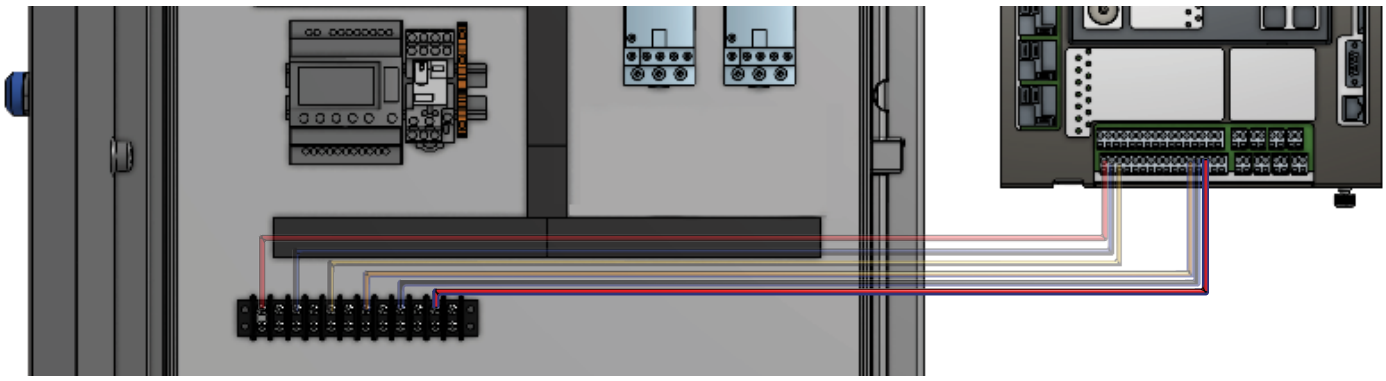
Wire Input 12 on the Crystal Ball to the terminal strip in the electrical box using the orange/blue wire. This wire should land on hot side of the motor starter coil, or run light, such that voltage is applied to Crystal Ball when motor starter is energized.

Fig. 6: Pump 2 Runtime



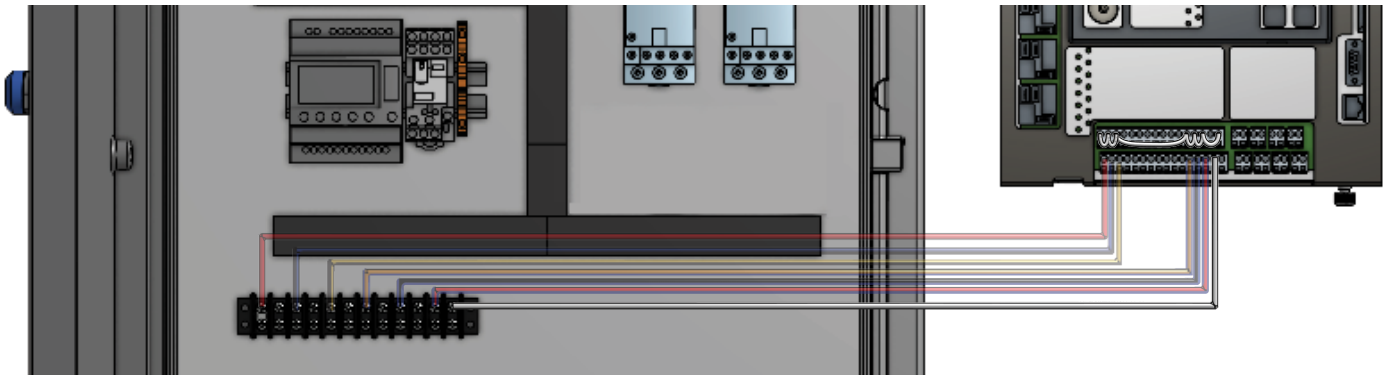
Wire Input 13 on the Crystal Ball to the terminal strip in the electrical box using the black/blue wire. Wire identically to Pump 1 runtime (as shown in Fig. 5)

Fig. 7: Pump 3 Runtime



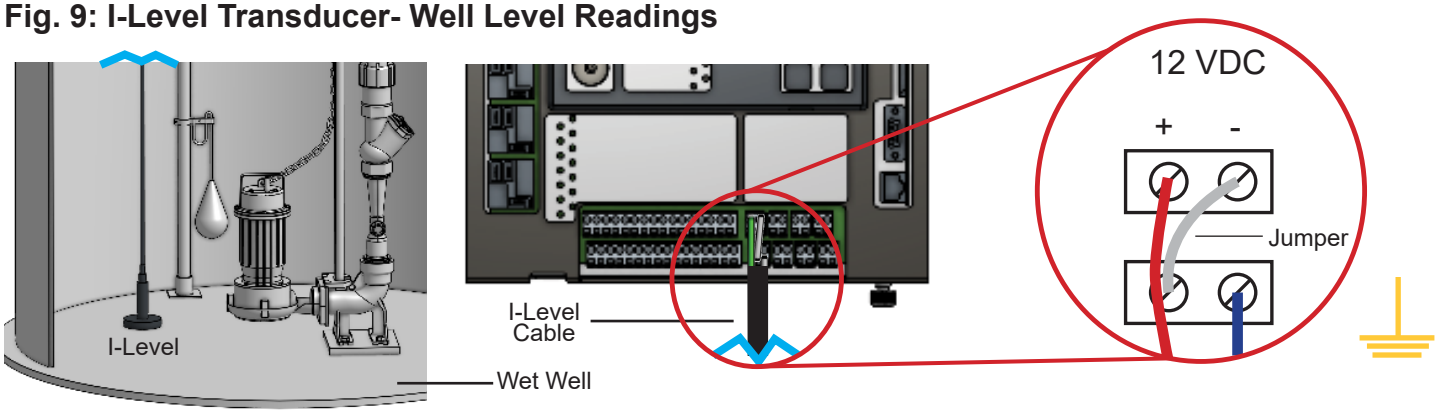
Wire Input 14 on the Crystal Ball to the terminal strip in the electrical box using the red/blue wire. Wire identically to Pump 1 runtime if Pump 3 exists (as shown in Fig. 5)

Fig. 8: Terminal Strip for Digital Inputs Neutral Wire



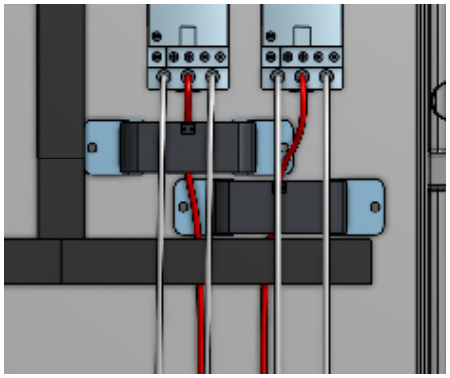
Wire the neutral wire to the terminal strip in the electrical box using the white wire. This wire should connect to the 120 VAC neutral in the pump control panel and is jumpered at the Crystal Ball to all digital inputs for your neutral voltage reference.

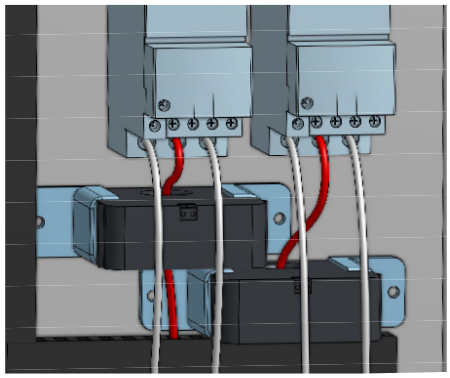
Fig. 9: I-Level Transducer- Well Level Readings



Place I-Level on floor of wet well. Wire Analog 1 to the I-Level as indicated by the red and blue wires.

Fig. 10: Install Amp Probes

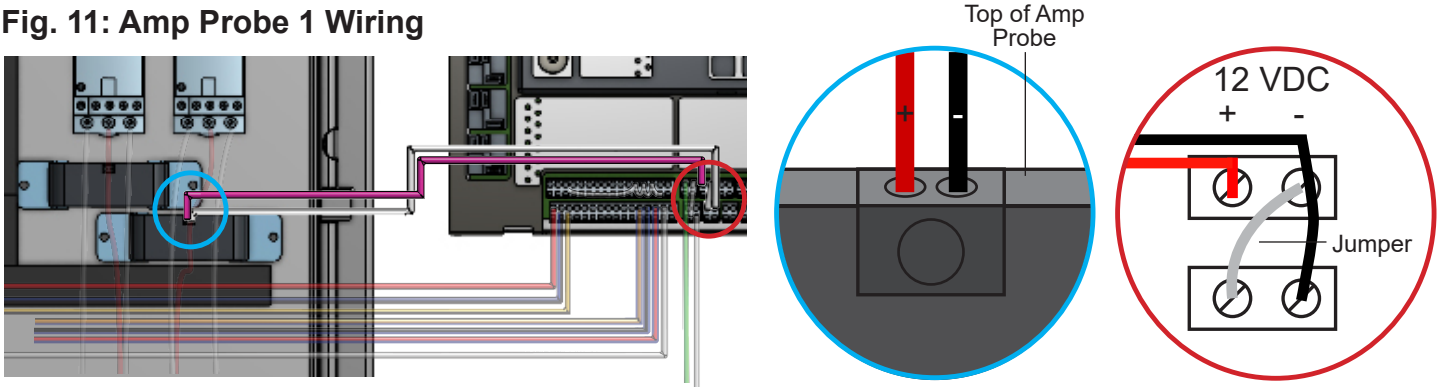




NOTE: When installing the signal wires from the Crystal Ball to the amp probe, avoid routing the signal wires too close to the pump power wires, as this may create false signals or alarms.

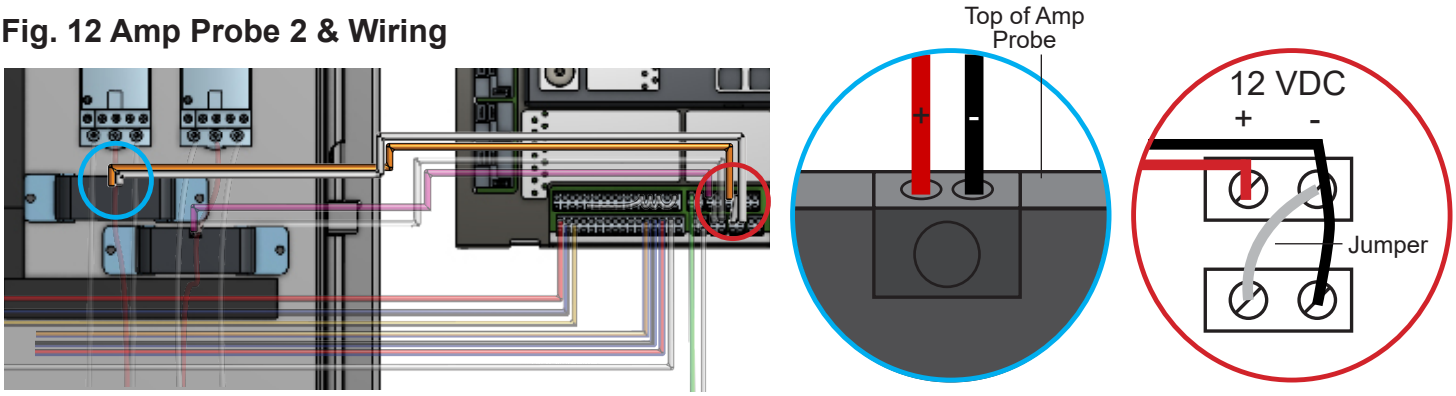
Install both amp probes by mounting them in the control panel beneath the motor starters. Pass one of the hot leads from one of the starters through the center of one of the amp probes, passing the other two wires around the outside of the probe. Repeat this process with the second starter and amp probe. Make sure the selector switch on the amp probe is set to the appropriate setting (50 or 100 amps) for your application.

Fig. 11: Amp Probe 1 Wiring



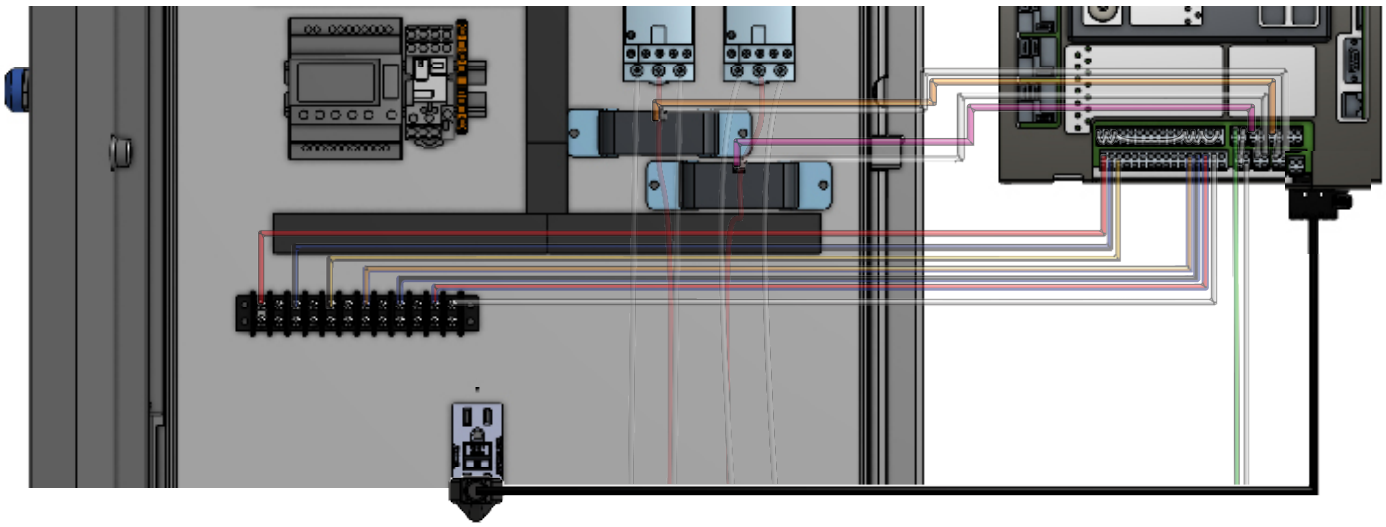
Wire Analog 2 to Amp Probe 1 for Pump 1 as indicated by red and black wire.

Fig. 12 Amp Probe 2 & Wiring



Wire Analog 3 to Amp Probe 2 for Pump 2 as indicated by red and black wire.

Fig. 13 Power



Connect the power supply to the bottom of the Crystal Ball to the outlet in the electrical panel. You can also “hard wire” your H,N,G conductors as desired.

NOTE: This diagram shows how to wire up the basic functions. If you want to add the other eight options, use the wiring diagram shown on previous pages.

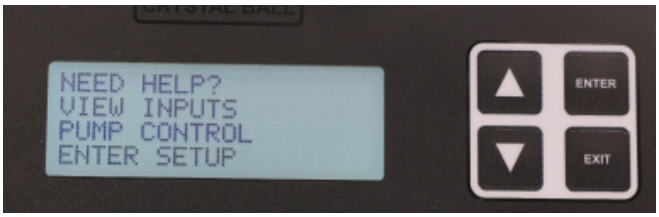
CONFIGURE INTERNAL SETTINGS MANDATORY STEP #4

4.0 PROGRAMMING THE CRYSTAL BALL MENU TREE- MANDATORY

Programming Alarm Delays

4.1 Main Menu - hit ENTER

4.2 Enter Setup - Scroll down using the arrow keys until ENTER SETUP is blinking. Press ENTER.

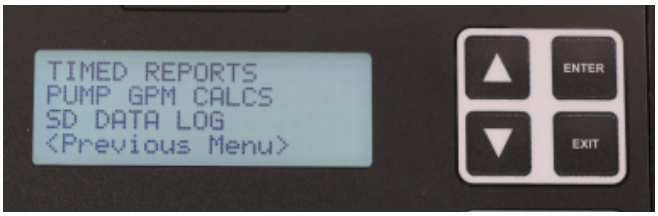


4.3 IMPORTANT STEP- Scroll down using the arrow keys until SETUP DIGITAL INPUTS is blinking. Press ENTER.

At this step you can set the alarm time delay desired for each of your digital inputs. Factory default is 5 seconds on all digital inputs, and 60 seconds for system power failure. Be sure to set delays that don't cause false momentary alarms. To change a time delay, scroll to the input desired using arrow keys. It will start blinking. Press ENTER to change delay. Delay number will start blinking. The number shown is in seconds. Use UP/ DOWN arrow keys to adjust any time delays. When set, press ENTER to save. Repeat for any other digital inputs.

Programming Pump GPM Calculations- Mandatory Step

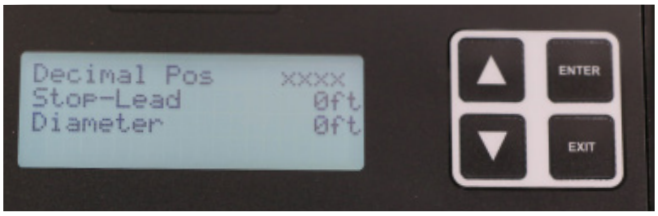
4.4 Scroll down using the arrow keys until PUMP GPM CALCS is blinking. Press ENTER.



4.4.1 Set Max GPM for each pump monitored. Press ENTER and adjust with arrow keys.
NOTE: This value should be greater than what the pump is rated for, usually between 1.5 and 2 times the rating.

4.4.2 Select the shape of your wet well
OPTIONS: Cylinder, Rectangle

4.4.3 Select a decimal position that makes sense for your application.
OPTIONS: XXXX, XXX.X, XX.XX, X.XXX



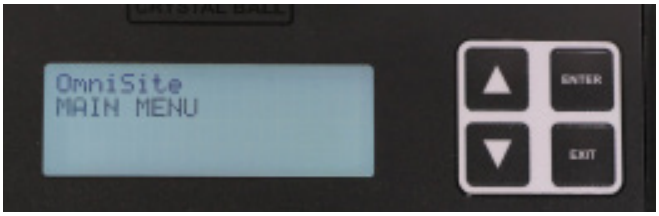
4.4.4 Set Stop-Lead to the distance between start and stop points for your pumps.

4.4.5 Set the diameter (if Cylinder) or width and length (if Rectangle) of your wet well.

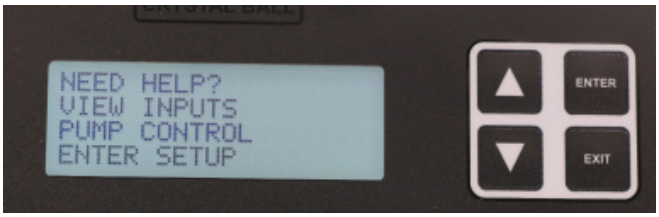
NOTE: Both values are in feet for Cylindrical and Rectangular wet wells.

Programming Analog Inputs- Mandatory Step

4.5 Main Menu - Press ENTER



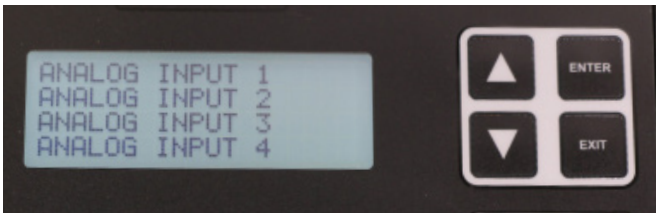
4.6 Enter Setup - Scroll down using the arrow keys until ENTER SETUP is blinking. Press ENTER.



4.7 Scroll down using the arrow keys until SETUP ANALOG INPUTS is blinking. Press ENTER.

4.8 Setup Analog Input 1 -

ANALOG INPUT 1 should be blinking. Press ENTER.



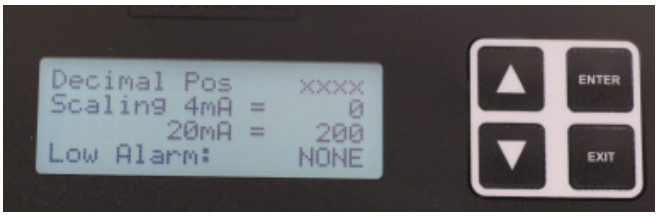
4.9 Using the arrow keys and ENTER button, make the following changes:

Decimal Position: XX.XX

4mA Setting: 0.00*

20mA Setting: 20.00*

Low Alarm: NONE



**These values should be configured based on the scaling of your device. Since the I-Level transducer we are using is designed for a range of 0-20 feet, we set the scaling accordingly*

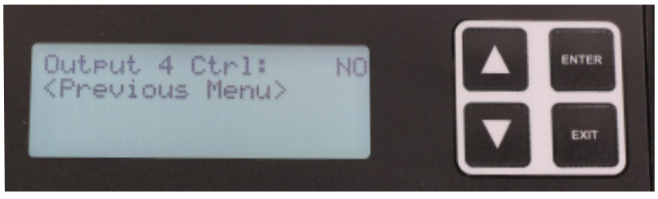
High Alarm: Set in feet (0-20ft) where high alarm should trip.

Deadband: This is how much water level must lower to return to normal (in feet).

Alarm Delay: Set where you won't get false alarms. *Default is 5 seconds, meaning high level must be exceeded for 5 seconds before the Crystal Ball will send a notification.*

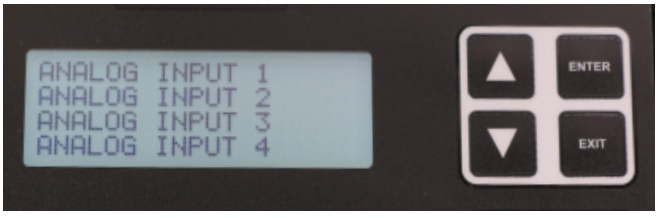
Output 4 Ctrl: NO

Press EXIT when finished.

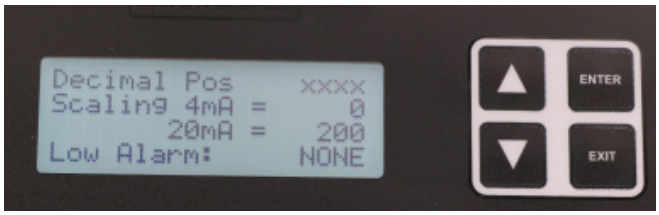


4.10 Setup Analog Inputs 2 -

ANALOG INPUT 2 should be blinking. Press ENTER.



4.11 Using the arrow keys and ENTER button, make the following changes for Input 2:



Decimal Position: XX.XX

4mA Setting: 0.00*

20mA Setting: 50 or 100 amps*

Low Alarm: NONE

**Since the amp probe we are using is adjustable, you should set the scaling to match the setting on the amp probe.*

High Alarm: NONE

Deadband: 0.0

Alarm Delay: 5 s

4.12 After Alarm Delay has been set, use the arrow keys to scroll down to REPORT VALUE. Verify it is set to LAST.

4.13 Repeat for Analog 3 and 4 (if present)

4.14 Verify the steps in the checklist below have been completed.

IMPORTANT!

FINAL CHECKLIST: ☐ Unit enabled? ☐ Entered GPM info? ☐ Entered time delays? ☐ Signal strength good/green? ☐ Test inputs? ☐ Verify unit transmitted? ☐ Battery plugged in?

MANDATORY WEBSITE SET-UP STEP #5

STEP#5

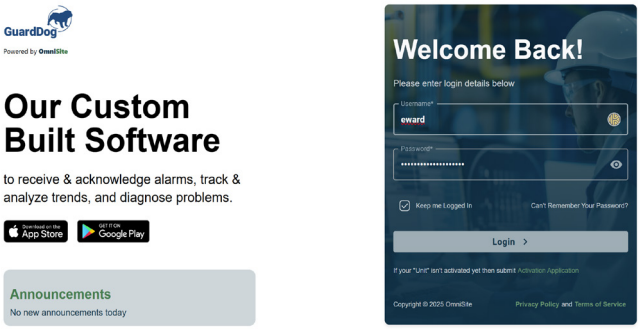
5.0 GUARDDOG WEBSITE SETUP

GuardDog is used to view device status, see current alarms, configure devices, and setup notifications. GuardDog must be configured to send notifications and alarms regarding your OmniSite devices. There are three main steps required to configure GuardDog:

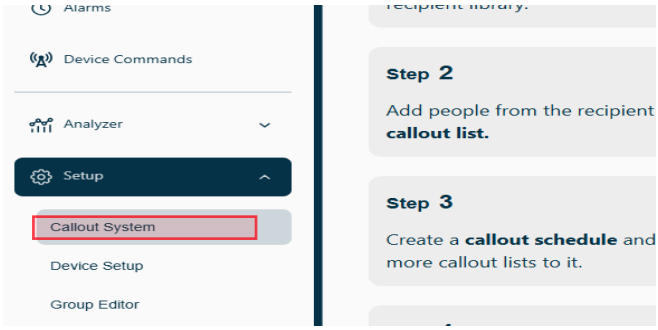
(1) Create Callout List
(2) Create Callout Plan
(3) Configure Alarms

5.1 Create Callout List

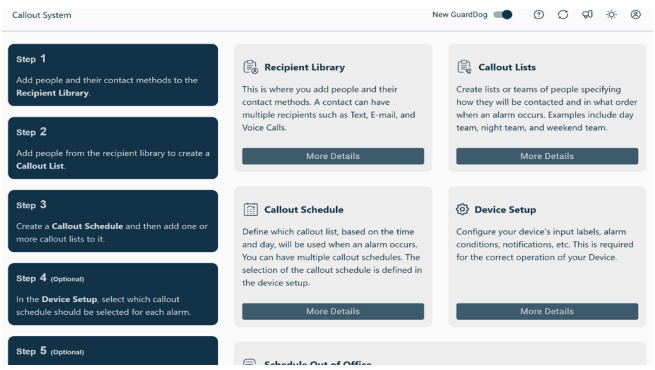
5.1.1. Navigate to *https://guarddog.OmniSite.com/login* and enter your username and password to log in. If you are a new customer, your username and password will be provided when activation of your device is complete.
If you are unsure how to proceed on this step, contact Tech Support at (317) 885-6330 X 3.



5.1.2. Using the navigation icons on the left side of the screen, hover over the gear icon and select "Callout System".

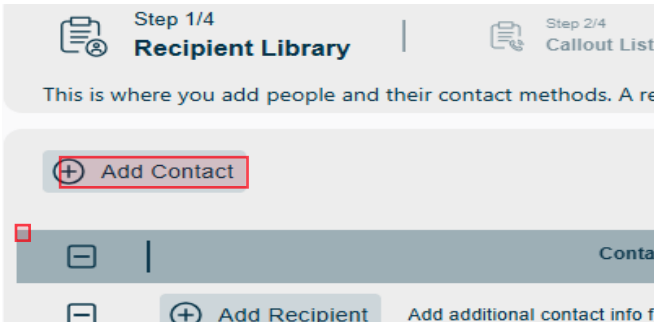


5.1.3. This is the main page for your callout system. Follow these steps to create your cohesive callout system. Click on the recipient library "more details" button to begin the steps.

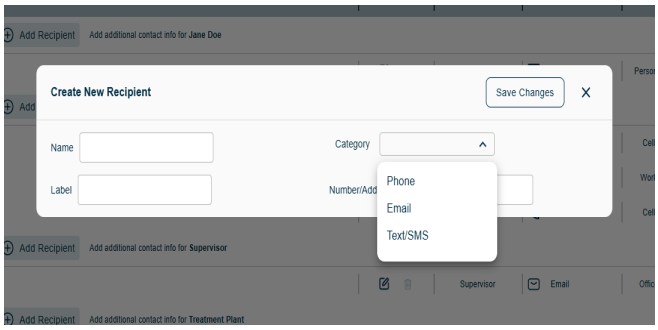


5.1.4. Add new recipients with the ADD CONTACT button at the top. Your list must have at least two of the three required methods of notification; Phone call, Text, or Email. You may have multiple entries for a single individual.

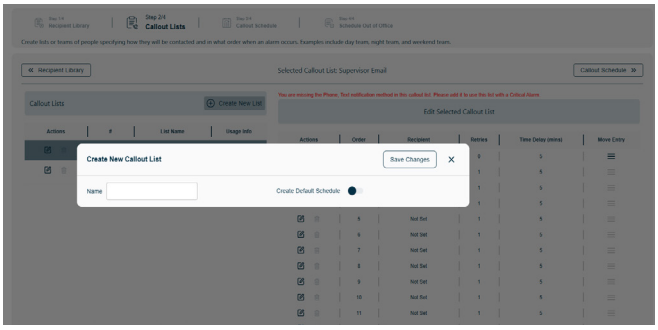
Or add new details to existing recipients by clicking the Add recipient to the left of their existing info.



5.1.5. Set a phone number, email address, text/SMS for each contact. If the person is going to receive multiple methods of contact such as email and text, you will need to set up each method.

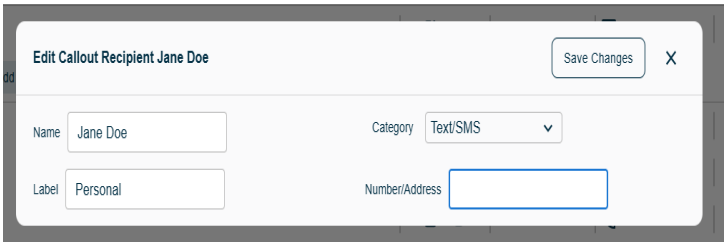


5.1.6. Next, use the arrows to navigate to the callout list. select a Callout List or create a new one by clicking the “create new list” at the top of the left column. When the dialogue box opens, type in the name of the call out list that you wish to create. At this point you choose a “default” schedule to shorten the time that it takes to complete a callout schedule. If you want a customized schedule, just click “save changes”.



5.1.8. Once the List is added three methods of contact will be automatically added. Once created you can add and change recipients by clicking the pencil icon on each entry and adding recipients from the Recipient Library. Users may also specify the number of retries and the time delay (in minutes) after each entry. **NOTE:** The entire list will be called once before the retry sequence begins. Recipients are contacted in the order shown with #1 contacted first.

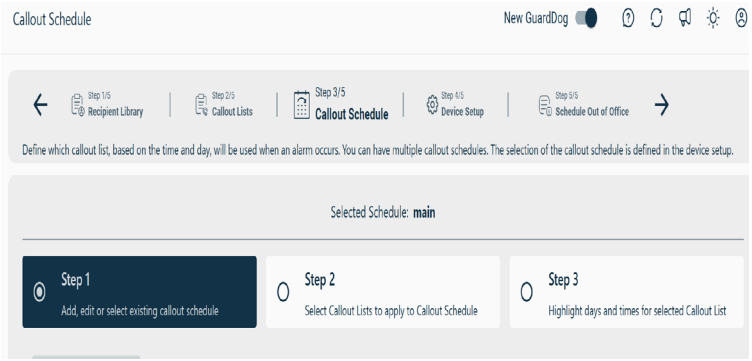
5.1.9 Once users have finished editing an entry, make sure to click "save changes".



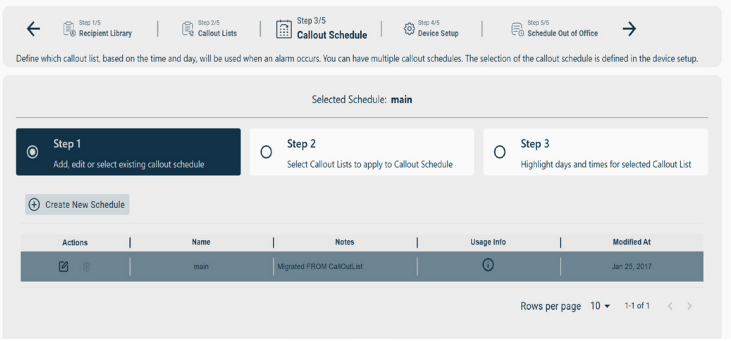
Tip: You can use the same recipients in a variety of lists. Try creating a list with the same recipients in a different order. This can make changing between callout orders very easy when adjusting your on-call schedule.

5.2 Create Callout Schedule

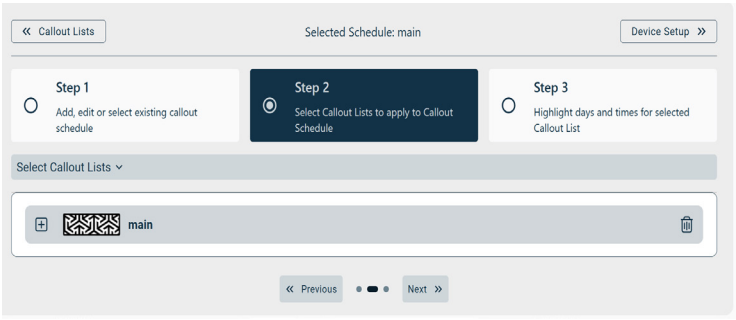
5.2.1. Using the navigation arrow go to "Callout Schedule"



5.2.3. Before moving on, click on the call out schedule that you wish to add call out lists to.



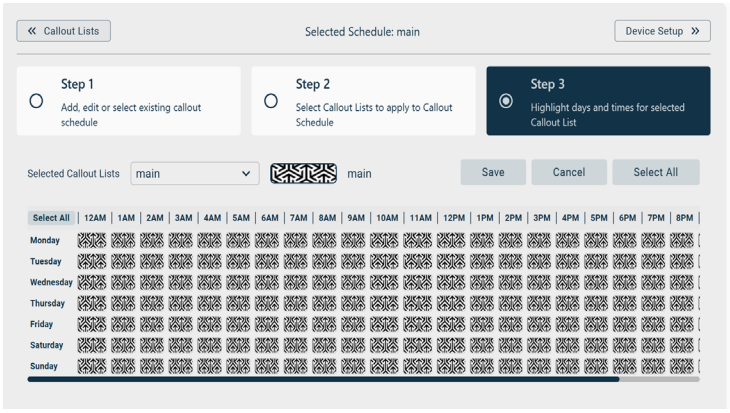
Then, click on the "Step 2" box to apply a "callout list" to "call out schedule". Click on long horizontal bar that "select callout lists" to add a call out list from the drop-down. You can then check the check boxes of the lists that you want to add to the call out schedule. When you are done click the "close button in bottom right of dialogue box.



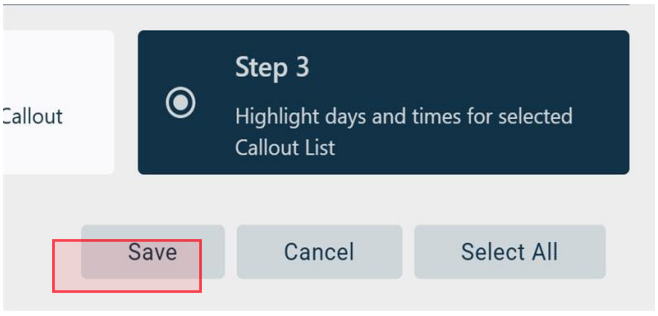
5.2.4. Now click the "Step 3" box and you should see a screen with 168 boxes in which you select when you want call out list to call out during times of the day, and days of the week.

Each call out list will have its own color and scheme. Select which callout list to start populating in the hours and days boxes next to where it says "Selected Call Out Lists".

Then you can select boxes one at a time, click and drag, or select the "select all" button to the far right of the page.

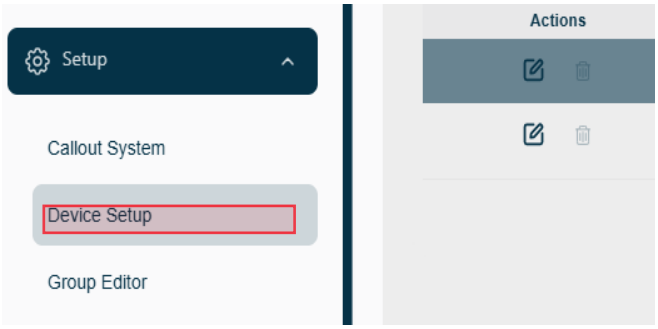


5.2.5. After selecting a color for all 168 boxes, a "save" button will appear. Click on the button to save your work.

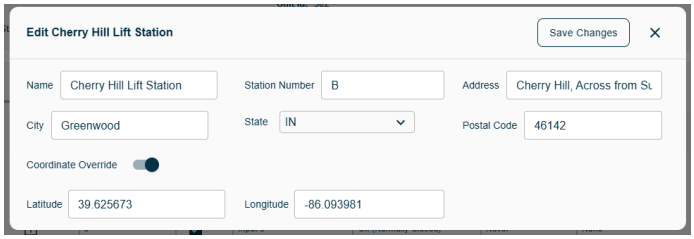


5.3 Device Setup- Mandatory Step

5.3.1. Using the navigation buttons at the top of the screen, click "Setup" and then mouse-over "Device Setup."



5.3.2. Locate the Station Information box. Click the pencil button to edit the information in the box.

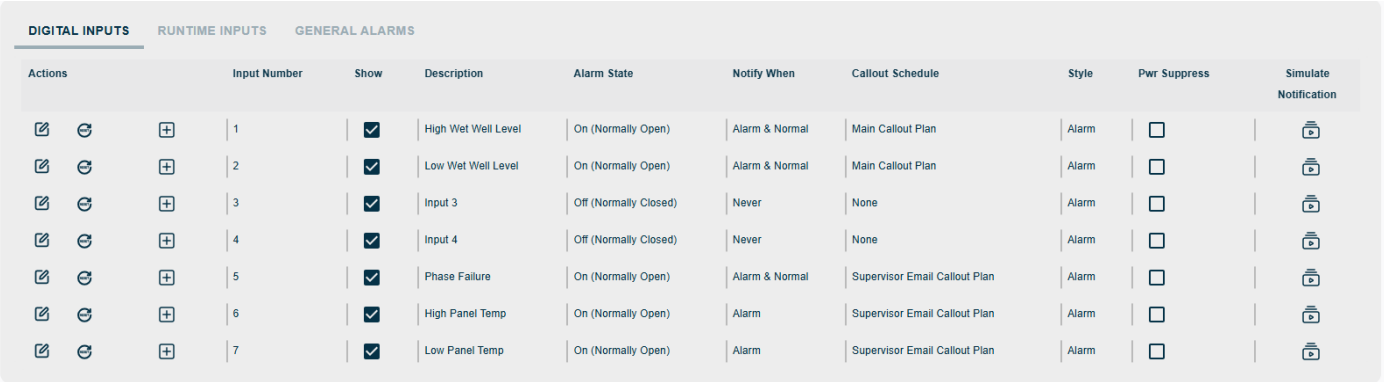


Example:
NAME: Station Name
Station Number: Customer Discretion
Address: You can enter the complete address or if you have the GPS Coordinates you can check the Coordinate Override box and enter the Latitude and Longitude.

5.3.1. DIGITAL INPUTS

Use the provided example to configure your digital inputs.

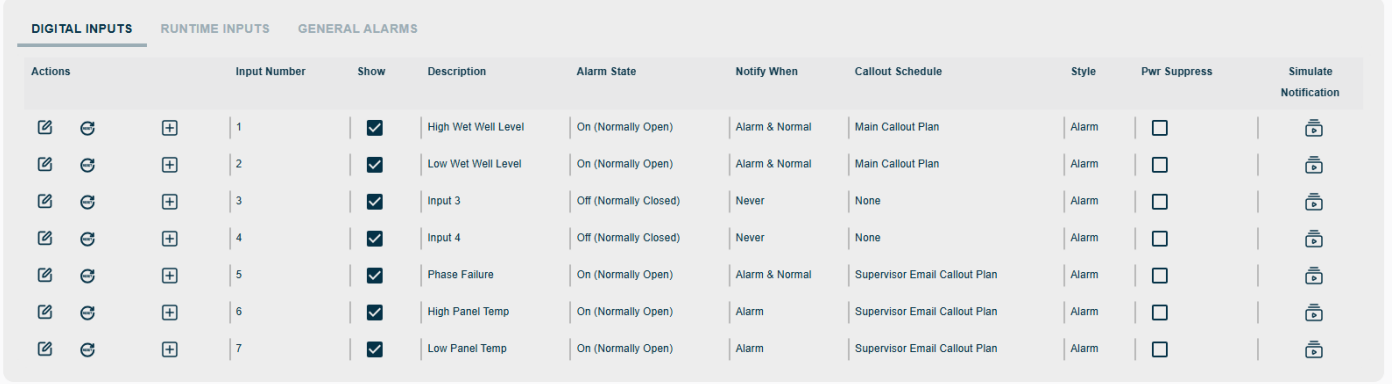
Example: Input 1 should always be a High Wet Well Level Alarm and Input 2 will always be Pump 1 Overload and so on. This is the way the inputs are wired on your terminal blocks in your Crystal Ball unit.



Actions	Input Number	Show	Description	Alarm State	Notify When	Callout Schedule	Style	Pwr Suppress	Simulate Notification
	1	☑	High Wet Well Level	On (Normally Open)	Alarm & Normal	Main Callout Plan	Alarm	☐	
	2	☑	Low Wet Well Level	On (Normally Open)	Alarm & Normal	Main Callout Plan	Alarm	☐	
	3	☑	Input 3	Off (Normally Closed)	Never	None	Alarm	☐	
	4	☑	Input 4	Off (Normally Closed)	Never	None	Alarm	☐	
	5	☑	Phase Failure	On (Normally Open)	Alarm & Normal	Supervisor Email Callout Plan	Alarm	☐	
	6	☑	High Panel Temp	On (Normally Open)	Alarm	Supervisor Email Callout Plan	Alarm	☐	
	7	☑	Low Panel Temp	On (Normally Open)	Alarm	Supervisor Email Callout Plan	Alarm	☐	

If the panel you are wiring into doesn't have the capability to wire one or more of these alarms such as a Pump 1 Seal Failure Alarm or a Low Wet Well Level Alarm, etc., leave that input blank.

NOTE: If your panel does have all the capabilities listed under the wiring section inputs, then make sure you use the correct label for each input.



Actions	Input Number	Show	Description	Alarm State	Notify When	Callout Schedule	Style	Pwr Suppress	Simulate Notification
	1	☑	High Wet Well Level	On (Normally Open)	Alarm & Normal	Main Callout Plan	Alarm	☐	
	2	☑	Low Wet Well Level	On (Normally Open)	Alarm & Normal	Main Callout Plan	Alarm	☐	
	3	☑	Input 3	Off (Normally Closed)	Never	None	Alarm	☐	
	4	☑	Input 4	Off (Normally Closed)	Never	None	Alarm	☐	
	5	☑	Phase Failure	On (Normally Open)	Alarm & Normal	Supervisor Email Callout Plan	Alarm	☐	
	6	☑	High Panel Temp	On (Normally Open)	Alarm	Supervisor Email Callout Plan	Alarm	☐	
	7	☑	Low Panel Temp	On (Normally Open)	Alarm	Supervisor Email Callout Plan	Alarm	☐	

Notify When - Set all to Alarm and Normal condition.

Alarm State	Notify When	Callout Schedule
On (Normally Open)	Alarm & Normal	Main Callout Plan
On (Normally Open)	Alarm & Normal	Main Callout Plan
Off (Normally Closed)	Never	None
Off (Normally Closed)	Never	None
On (Normally Open)	Alarm & Normal	Supervisor Email Callout Plan
On (Normally Open)	Alarm	Supervisor Email Callout Plan
On (Normally Open)	Alarm	Supervisor Email Callout Plan

Power Suppress - The "Pwr Suppress" can be checked for the following alarms:
Pump 1 Overload,
Pump 2 Overload,
Phase Failure,
Pump 1 Seal Failure
Pump 2 Seal Failure.

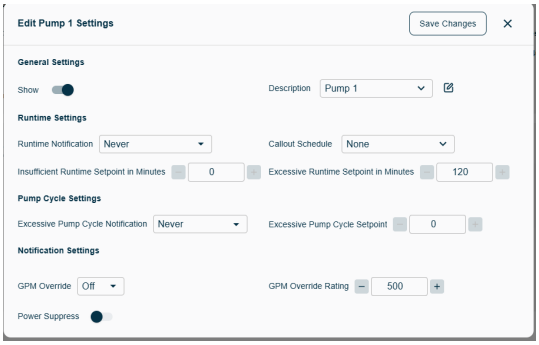
This will stop you from getting multiple notifications when power is lost.

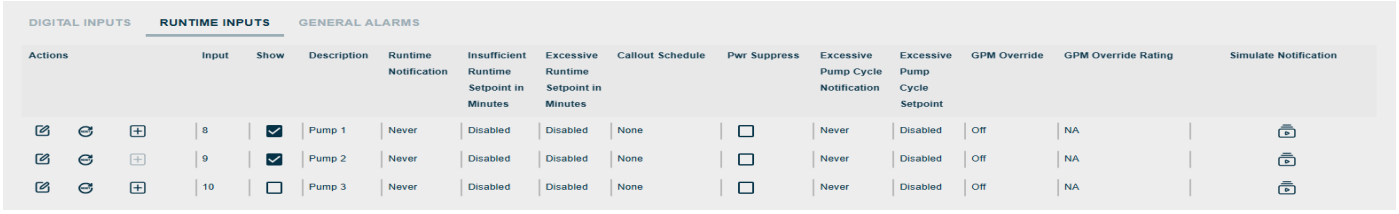
Style	Pwr Suppress	Simulate Notification
Alarm	☐	
Alarm	☐	
Alarm	☐	
Alarm	☐	
Alarm	☐	
Alarm	☐	
Alarm	☐	

TIP: The Power Suppress feature disables notifications from that input during a power failure. While the input still goes into alarm, it will not send out notifications. For this feature to work as designed, the input's time delay must be longer than the power failure alarm delay (both configured in the device).

5.3.4. RUNTIME INPUTS

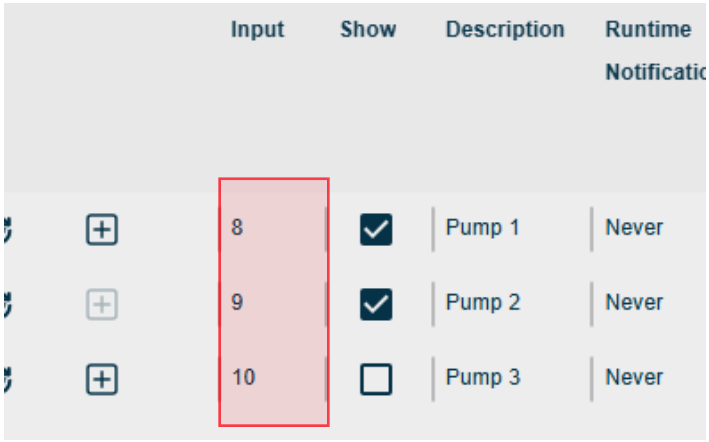
Runtime Inputs provide you with data on Pump Calculations page. They can also provide you with an excess runtime notification (or pump failure notifications when using a device with pump control enabled).





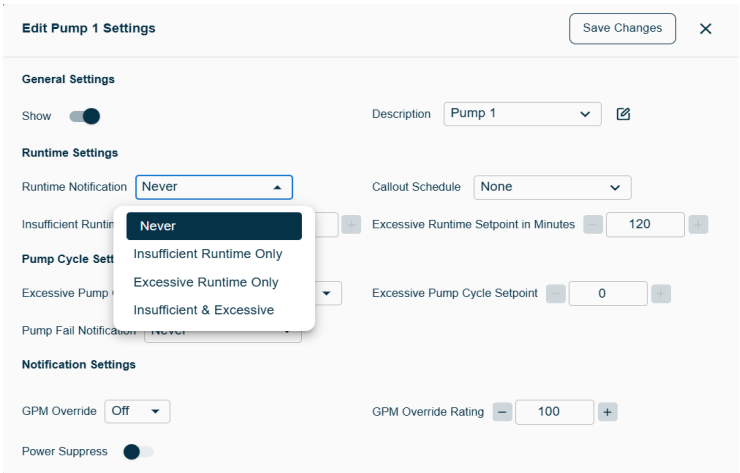
Input -

This is a read only field that indicates the physical number of the input on the device and is provided for your reference.

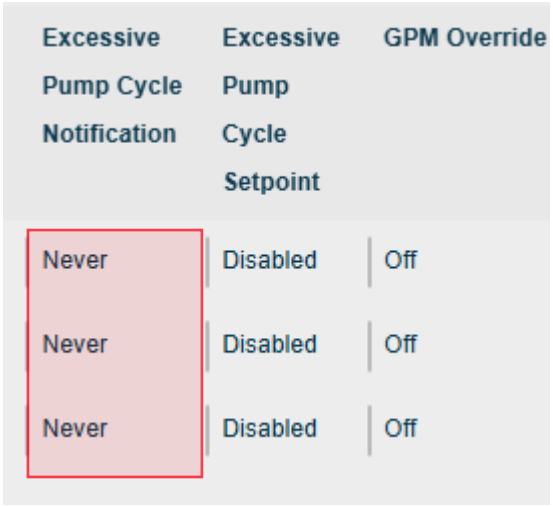


Insufficient & Excessive Runtime -

Excess Runtime allows you to set up a Maximum amount of runtime for a given input for a 24-hour period. This field is entered in minutes and will cause any runtime reading over this amount to be flagged in red on the Pump Calculations page. You can also receive notifications when this maximum is exceeded by using the Excess Notification column.

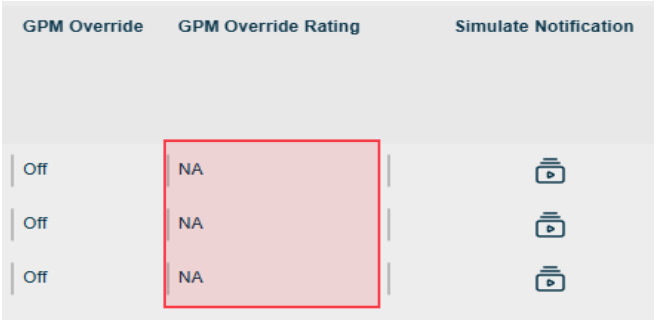


GPM Override -
This column allows you to turn GPM Override on or off. GPM override allows you to replace any value from the device with the value provided in the GPM Rating column. This is very helpful for stations with non-standard wet well dimensions that couldn't be or weren't entered in the device, or for pumps whose GPM rating is above our maximum reading (see your user manual for more information).



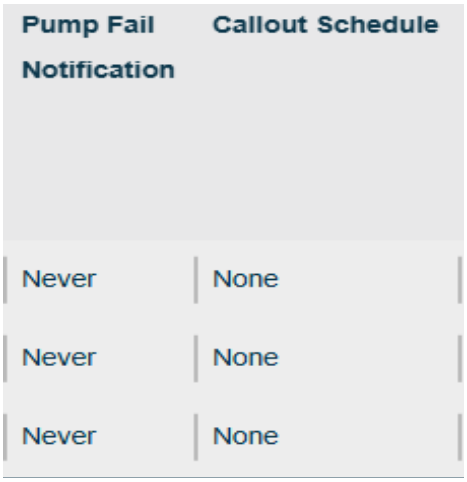
Excessive Pump Cycle Notification	Excessive Pump Cycle Setpoint	GPM Override
Never	Disabled	Off
Never	Disabled	Off
Never	Disabled	Off

GPM Rating -
This is the value that is used for all pump calculations when the GPM Override feature is turned On.



GPM Override	GPM Override Rating	Simulate Notification
Off	NA	
Off	NA	
Off	NA	

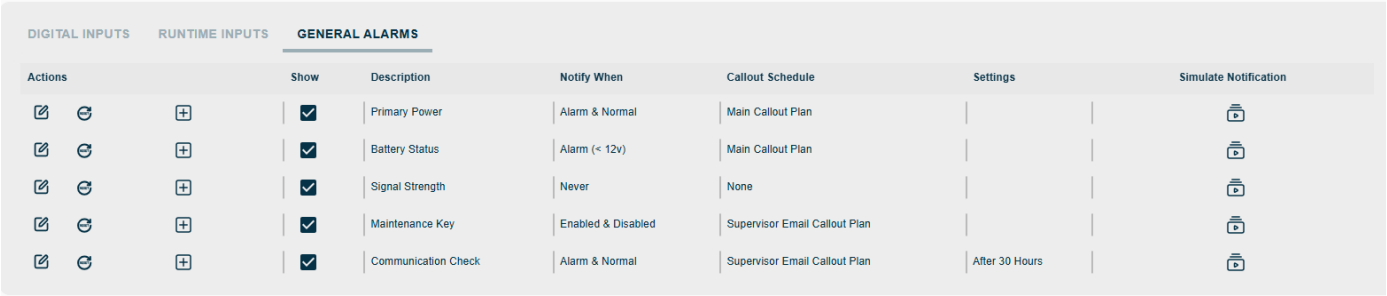
Notify When -
This column is only visible for devices with Pump Control and will be used to notify you of Pump Start Failures when Pump Control is turned on.



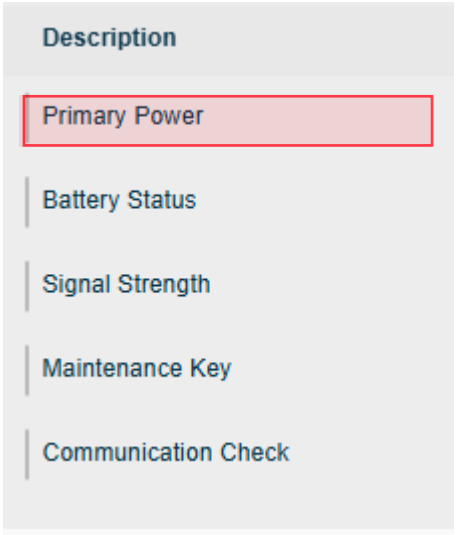
Pump Fail Notification	Callout Schedule
Never	None
Never	None
Never	None

5.3.5. GENERAL ALARMS

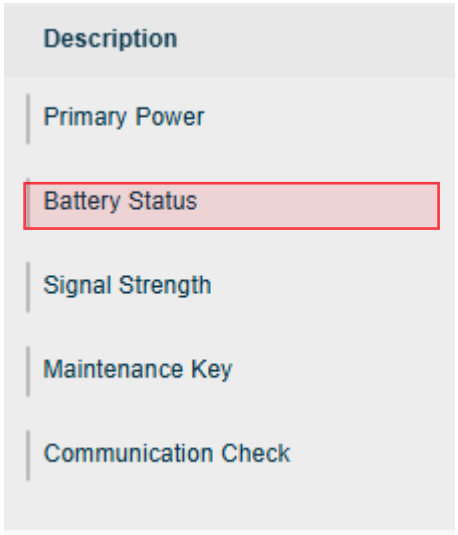
General Alarms are alarms for the following situations:



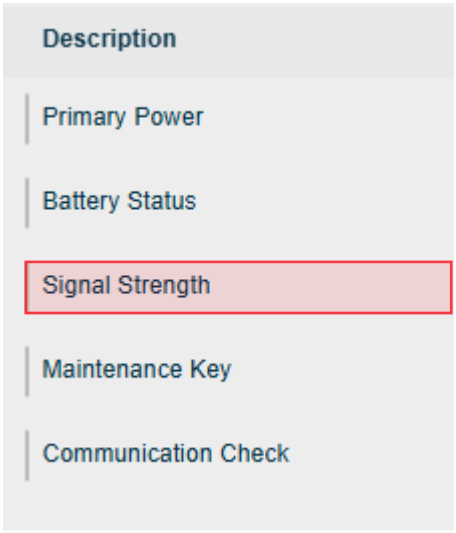
Power Failure -
This will notify you if the main power for the device has been lost. This should always be set as alarm and normal condition and should be set to notify your Critical Call Plan.



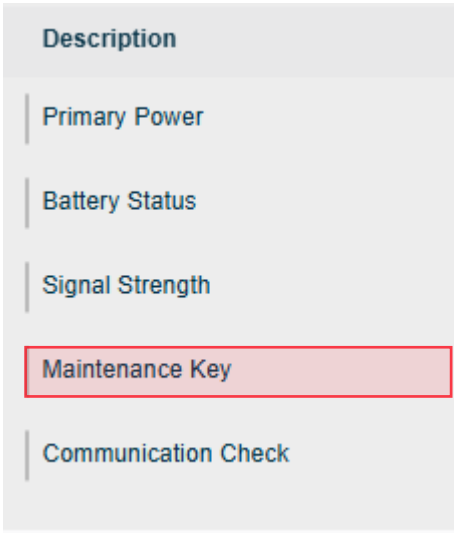
Battery Status -
This alarm allows you to be notified if and when your device's battery voltage falls below an acceptable level. This should be set to Alarm and Normal and set to notify your Non-Critical Call Plan.



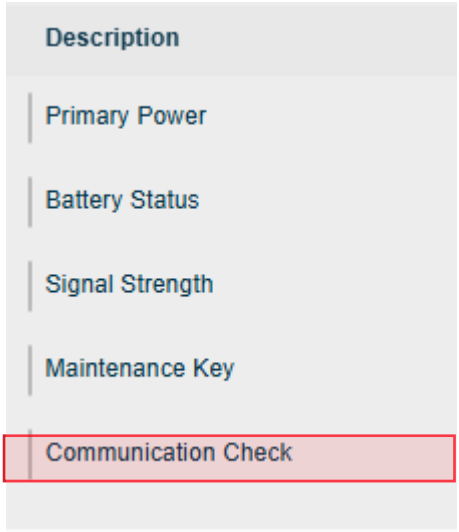
Signal Strength -
This alarm allows you to be notified if and when your device's cellular signal strength falls below an acceptable level. If your device has an unacceptable signal strength, device communications are not guaranteed, and alarm notifications may not be processed. This should always be set as Alarm and Normal, and should be set to notify your Critical Call Plan.



Maintenance Key -
This alarm allows you to be notified when a device is enabled/disabled using a maintenance key at the station. When a device is disabled, no alarm notifications will be processed. This should be set to Disable and set to notify your Non-Critical Call Plan.



Communication Check -
This notification allows you to be notified if a device fails to communicate within a certain time frame. You may choose a setting of either Off, 1 Hour, 30 Hours, or 60 Hours. The hour amount is the amount of time since the device last called in. This means that if you select 30 hours, this alarm will occur after a device has failed to communicate for 30 hours. 1 Hour should only be selected for units that are using the 5- or 15-minute reporting Wireless Plan. This should be set as alarm and should be set to notify your Critical Call Plan.



5.3.6. ANALOG INPUTS

Use the sample below to configure your analog inputs. ALL CRYSTAL BALL UNITS SHOULD BE CONFIGURED THIS WAY.

Example: Input 1 will always be I-Level, Input 2 will always be Pump 1 Amps and Input 3 will be Pump 2 Amps. This is the way the inputs are wired on your terminal blocks on your Crystal Ball unit. See page #12

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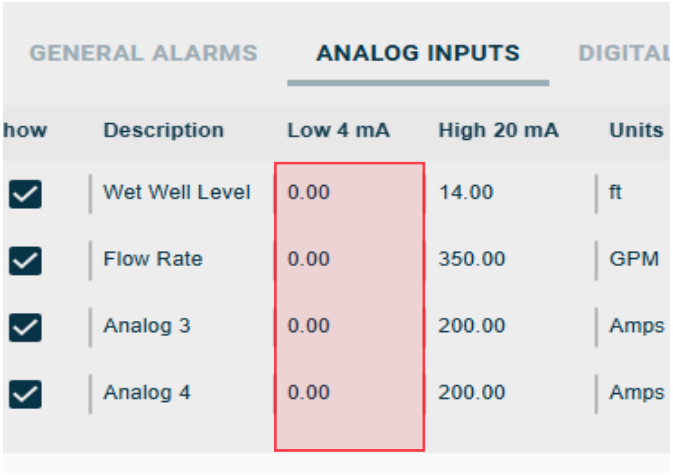
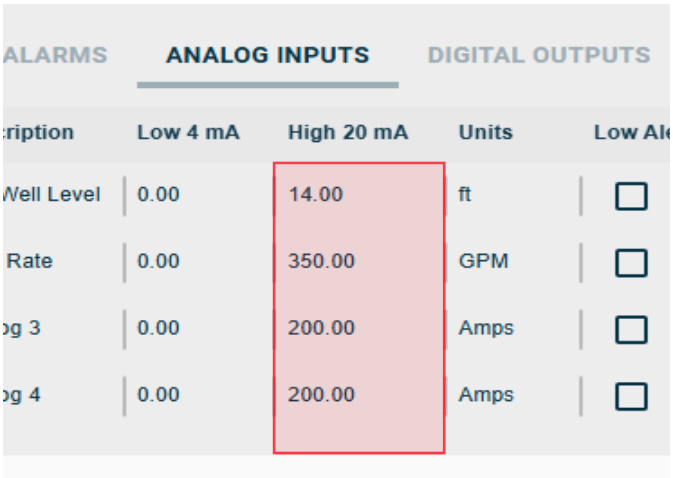
Low 4 mA -

This is the scaling low end equivalent to a reading of 4 milliamps. Our level transducer is 0 to 20', so 4mA should be set to 0.00.



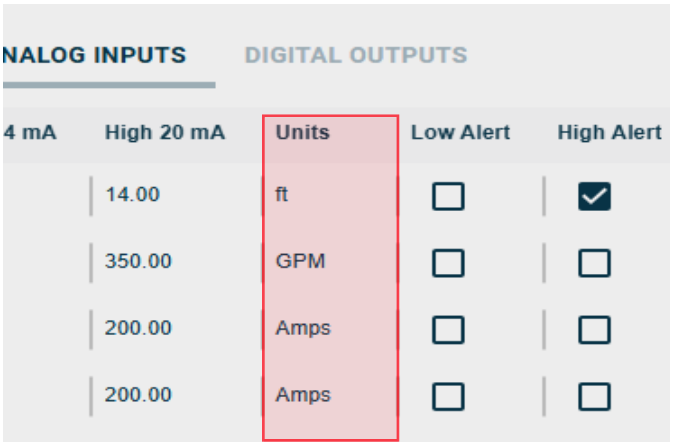
High 20 mA -

This is the scaling high end equivalent to a reading of 20 milliamps. Our level transducer is 0 to 20', so 20mA should be set to 20.00.



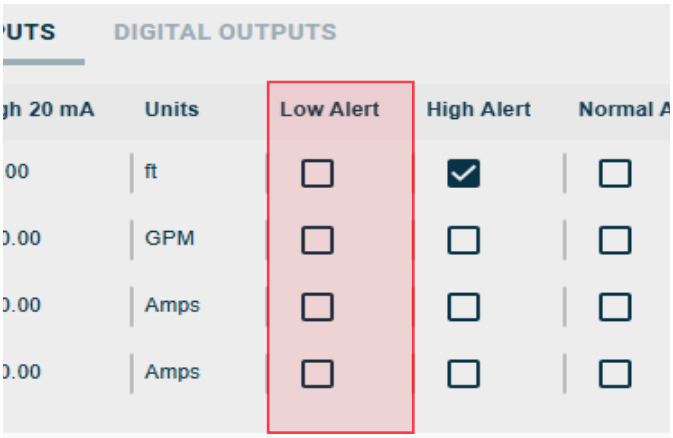
Units -

This is the unit of measurement for your analog input For analog input #1 set this to feet, and analog inputs 2,3,4 set to amps.



Low Alert -

This indicates if you would like to be notified when your input's reading falls below the low alarm set point configured within the device.

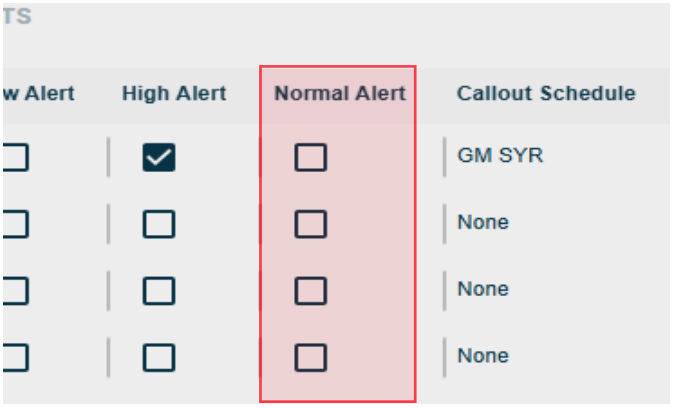


High Alert-

This indicates if you would like to be notified when your input's reading rises above the high alarm set point configured within the device.

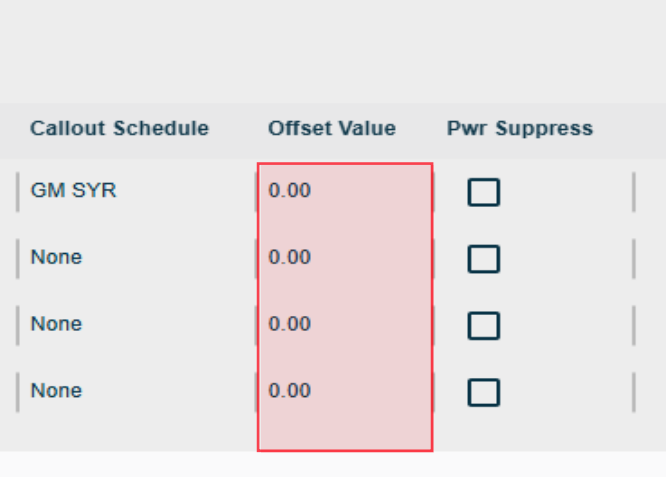
Normal Alert -

This indicates if you would like to be notified when your input's reading returns from either high or low alarm.



Offset Value -
The amount to offset the readings for the input. The analog offset is entered positively but is subtracted from the final value.

NOTE: This is rarely used, but a good example would be for a water tower. You may want to know the level of the water - but only at the top (not the stem). The level probe would return a value between 0 and 200 ft (which would include the stem). If the stem is 80 feet you would enter that as an offset and the reading would always be between 0 and 120 ft (0 would be given for an actual reading of 80).
In this case, you should have entered your scaling as 0 to 200 feet and their offset as 80.



Congratulations! This completes your Crystal Ball basic monitoring setup. If you desire to use the below advanced features, simply scan the QR code for the full online manual, which will also include instructional videos.

Advanced Features

- Pump On/Off level control
- Peer-to-Peer wireless control
- Optional wiring diagrams
- Monitoring pulse
- Troubleshooting table
- OmniSite training
- And more!

Scan here for
Virtual Manual

Crystal Ball Kit
Quick Start User Guide

PRODUCT SAFETY, USE, AND LIMITED WARRANTY

The following safety and use information and Limited Warranty applies to products sold by OmniSite ("OmniSite") to you the end-user ("You") on OmniSite namely an alarm with text notification capability, related accessories such as sensors (collectively "Products"), and cellular service, which is required in order for the alarm to send notification text messages ("Services" collectively with Products "Products and Services").

Product Safety and Use Information
IMPORTANT: Use only supplied battery and with your Products. Routinely check the battery in Products; failure to routinely check the battery may result in the failure of Products to function during a loss of power. Routinely check the strength of the cellular signal to Products and/or perform tests to check the text notification capability of the Products. WARNING: Products use electricity in the presence of water; therefore, your safety and the safety of others depend upon you thoroughly reading and understanding the Installation Guide. If you have questions or do not understand the information presented in the Installation Guide, please call 1-317-885-6330. Be sure that electrical cords used are not frayed or placed in a location where they can pose a danger. To reduce the risk of fire, electric shock, injury or death, always disconnect all sources of electrical power before servicing or cleaning; do not touch the electrical terminals or controls with wet hands; and do not tilt, jolt or tip Products while powered-on. Never disassemble Products. Never allow children to use Products.

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LIMITED WARRANTY: OmniSite ("OmniSite") warrants you for (1) year from the activation date and covers all manufacturing defects.The standard warranty will expire two (2) years after the sold date (purchase date from the manufacturer) regardless of the date of activationA claim under this Limited Warranty must be presented during the Limited Warranty period and within thirty (30) days after any covered condition has occurred. A claim under this Limited Warranty shall be satisfied by either, in OmniSite's sole discretion, repairing or replacing the Products and/or part. Replacement Products may be new or reconditioned.

To make a claim under this Limited Warranty, OmniSite must first issue You a Returned Material Authorization (RMA) number. This number can be obtained by contacting OmniSite and a copy will be provided by email. A copy of the RMA must be included with any materials shipped to OmniSite. The entirety of Products must be sent back to OmniSite (unless specifically listed otherwise on the RMA form) and properly packaged to ensure against damage during shipping. If OmniSite determines that the claim is covered by this Limited Warranty, OmniSite will either, in its sole discretion, repair or replace the Products and/or part.

Any damages not covered under this Limited Warranty will not be repaired until a written purchase order is received. The Limited Warranty period shall not be extended by the replacement or repair of Products or parts under this Limited Warranty but the remaining Limited Warranty period shall continue in effect and be applicable to the replaced or repaired Products or parts under conditions of the Limited Warranty. Payment for cellular service covers only cellular transmission fees and in no way extends any portion of this Limited Warranty. This fee does not include out-of-warranty service or repair. The cellular service provided in conjunction with the purchase and use of Products and Services is not guaranteed, and OmniSite cannot and does not guarantee or represent that cellular service will be available in Your area nor that cellular service will be continuous and uninterrupted in Your area. It is Your responsibility to determine if cellular coverage is available in your area and to monitor the warning light on Products and Services to determine the cellular signal strength to Products and Services. You should contact OmniSite for assistance if needed. If cellular service is not available in your area, then your sole remedy is to return Products and Services as provided for in OmniSite's Return Policy as found at www.OmniSite.com. As such, OmniSite is not liable for any causes of action, losses or damages of any kind whatsoever arising out of mistakes, omissions, interruptions, errors, or defects in the provision of cellular service and failures or defects in the cellular network. Upon expiration of the Limited Warranty period, all liability of OmniSite shall be terminated.

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Crystal Ball Kit
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NOTES

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