MS1 User Manual

MarineSync™

Wireless Remote Monitoring

WARRANTY AND DISCLAIMER

Service Warranty

MarineSync Corporations' sole and exclusive warranty regarding the Notification Services is that such services provided directly by MarineSync Corporation shall perform in conformity with standard industry practices. MarineSync Corporation does not warrant the complete accuracy of any coverage maps provided which are intended only to be an approximation of the coverage provided by the Carrier's wireless network, that the Mobile Data Service will be uninterrupted or that its operation will be error-free. MarineSync Corporations' sole obligation under this warranty is to promptly correct the Notification Services so that they reasonably conform to standard industry practices. If MarineSync Corporation is unable to so correct the Notification Services, then Subscriber or MarineSync Corporation may terminate this Agreement, immediately upon written notice to the other, and MarineSync Corporations' sole liability shall be to refund Subscriber the pro-rated amount of the Annual Fee paid for that period after the termination date.

MS1 Device Warranty

MarineSync Corporations' sole and exclusive warranty regarding the MS1 Devices is that such Devices shall be free of defects in materials and workmanship at the time of shipment from MarineSync Corporation dock and for the initial Subscription Term of two years. MarineSync Corporations' sole obligation under this warranty is to repair or replace the MS1 Device if such MS1 Device does not function properly due to any component which proves to be defective due to defective materials or workmanship of MarineSync Corporation; provided, however, that said malfunction was not caused by: (i) lightning or other natural forces; (ii) units not installed, operated, or maintained in accordance with instructions provided, applicable local codes, ordinances, or accepted trade practices; (iii) failures resulting from abuse, misuse, accident, or negligence; (iv) units repaired and/or modified without prior authorization from MarineSync Corporation; or (v)any other acts or omissions of Subscriber.

To obtain warranty service: the consumer shall assume all responsibility and expense for removal, reinstallation, and freight. Any item to be repaired or replaced under this warranty must be returned to MarineSync Corporation, or such place as designated by MarineSync Corporation. Contact customer service at 888.988.SYNC (7962) for a Return Material Authorization number (RMA) on any product being returned for a warranty claim.

P/N:	GE864-PY
IMEI:	35702200xxxxxxx
TYPE:	GE864
FCC ID:	RI7GE864
IC:	5131A-GE864

FCC Rule

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 interference, and (2) this device must accept any interference received, including interference that my cause undesired operation.

Table of Contents

Product Overview

Description

The MS1 Pump Monitoring System is a remote monitoring system designed specifically for use in monitoring Pumpout stations and other pumping applications. The system consists of the MS1 hardware interface and customized data access through a MarineSync data portal. The data portal provides access to status of the monitored equipment, administrative services, report generation, and alarm notifications. The MS1 uses an integral cellular based communications gateway to forward alarms and status data to the data portal.
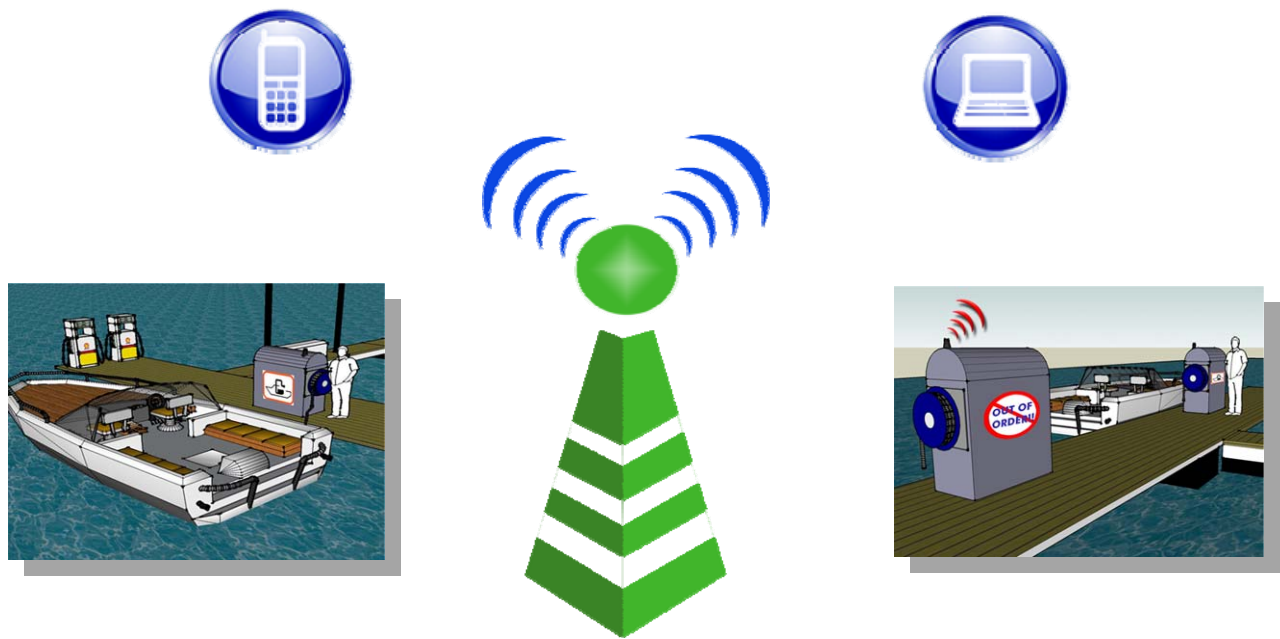
Communications

All MS1 remote devices use the GSM cellular networking technology to provide two-way communications from the data portal and the remote equipment. The MS1device contains a built-in cellular gateway module and a user-mounted antenna. The gateway also contains a removable SIM card that contains the configuration and network personality information needed to connect to the local cell network. The pre-configured SIM card must be inserted and activated prior to installation and start-up. The SIM card is associated with ongoing data services and is a necessary component to guarantee connectivity to the local cell service provider. Failure to activate and maintain an active account for the SIM card will result in loss of communications and re-activation charges may apply.

The MS1 Pump Monitoring System

The MS1 is a remote interface which provides easy, low-cost notification of alarm events using standards-based notification services such as Email and SMS (Text) Messaging and includes access to web-based monitoring data through the MarineSync Portal. The MS1 is capable of monitoring power outages, high and low level float conditions, continuous level transducer, and service events. It can also monitor the function of up to three pumps including cycle count, run time, and current (Note: Monitoring configurations may vary. Please contact MarineSync for additional monitoring options.) The unit is pre-configured and ready-to-go as soon as it is wired and powered-up. Each MS1 is assigned a user-access webpage and dashboard on which the user may view/manage the remote device and alarm events. The MS1 does not require battery backup as the unit contains an onboard capacitor backup circuit to allow transmission even after power failure (Note: Upon power outage detection, a notification is sent and the unit goes into sleep mode until power is restored.)

Tips and Warnings

Please read the following Tips & Warnings carefully.

Monitoring Only

The MS1 is intended to be a monitoring device only and is not meant to perform control functions for a pumping application. The auxiliary output should never be used to remotely start a mechanical device (such as a pump) either directly or indirectly by over-riding local site control. Serious injury may result. The remote relay is meant to be used for remote alarm silencing or other actions that do not result in mechanical motion or shock hazards to persons present at the remote site. Please contact MarineSync for information regarding the activation of the auxiliary output feature.

Network Reliability

The MS1 system uses GSM cell networks for communications. While reliable, these networks do NOT guarantee timely message delivery. DO NOT use the system in such a way as to require timely message delivery to prevent conditions that may result in harm or property damage.

Field Installation

The MS1 must be installed and serviced by a licensed electrician in accordance with the National Electric Code NFPA-70, state and local electrical codes. Always observe proper safety practices when installing the MS1 into a working control panel. Disable power when working in an open control enclosure. When drilling mounting holes, take great care to prevent metal shavings from falling into the enclosure where they may cause harm to persons or damage to components.

Antenna

Use the MS1 only with the supplied approved antenna and cable. When used with other, non-approved antennas, the unit may not perform to specifications and may violate the terms of FCC regulations.

Hardware Specifications

See Appendix A for complete list of hardware requirements.

Product Registration & Activation

The MS1 relies on communications services from cell phone network suppliers. As such, the network must be configured to be aware of the MS1 and track its network usage. This is accomplished by the "SIM" card shipped with each MS1. The SIM card stores information about the device which allows it to become a member of the given network. The information on the SIM card must match information on the network and the account associated with the SIM must be active and in good standing. As soon as the SIM card is activated on the network, service fees start to accumulate. It is therefore essential that the SIM card information is configured and tracked carefully.

When you receive the MS1, the associated SIM card is shipped with the unit. If the SIM card is still attached to the carrying card, see instructions on the card for removal instructions. Please refer to the SIM card attached to the carrying card with serial number instructions on the next page when installing your SIM into the MS1.

On the SIM card there is a serial number that will be needed to fill out the Service Activation Form. **The SIM card is tracked by serial number and must remain with the MS1 with which it was shipped.** Failure to do so may result in an MS1 that cannot communicate or a mismatch of data with the remote device. (i.e. alarm notifications may go the wrong recipient.)

The Gateway serial number which is located on the mounting bracket of the device or on the inside panel of the enclosure is also required to be referenced on the Service Activation Form.

Sometime prior to activating the remote device, the Service Activation Form must be filled out and sent in to establish the account and configure the SIM. Once the form is received and accepted, the SIM will be configured on the network and the configuration will be downloaded onto the device when it is next powered-up. Service fees begin as of the date the SIM is activated on the network. This may or may not be the date on which the unit is powered on. It is therefore important to carefully consider the installation date entered on the form.

Note: If the installation date needs to be changed after the form is submitted, it may be changed up until 5 days before the unit is registered on the network. If the MS1 is unregistered from the network (for an installation delay or failure to pay account fees), there will be a fee and delay to reregister the unit on the network.

The Service Activation Form can be mailed or faxed to MS1 product support for activation. The SIM card will be activated on the date specified on the form or within 48 hours if immediate registration is desired. See Appendix F for Product Support details.

When the form is received, an account will be established and the SIM card will be registered. An email message will be sent to party listed on the activation form. This email will contain instructions on how to access the data webpage. It will also contain a username and password to access the secured website.
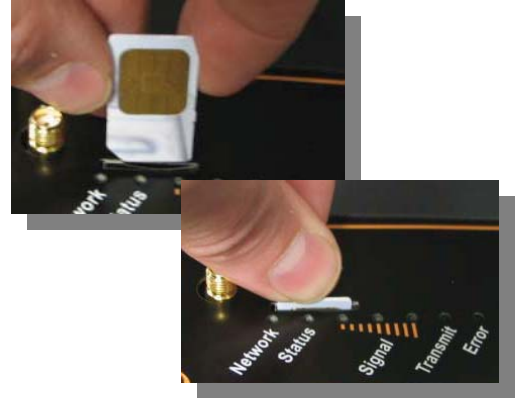
If the SIM card is not installed in the MS1 when you receive it, or if it needs to be reinstalled for any reason, please follow the instructions below:

Installing the SIM Card

Insert notched end first with notch toward antenna connector.

Slide in gently and apply pressure until click.

Properly inserted card will sit at or below the front panel surface.
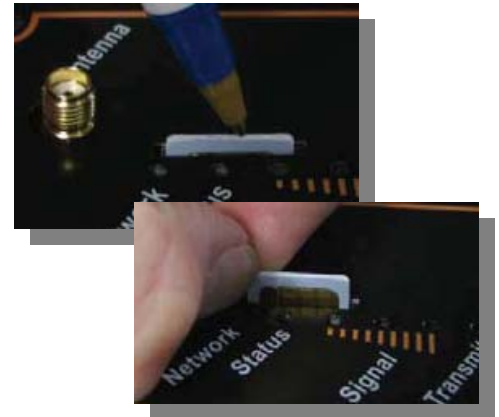
Removing the SIM Card

Use a pointed object to gently push the SIM card in until it clicks.

Release and it will partially eject. Grasp card edge and remove.

Note: The MS1 will not communicate if the SIM card is not installed.

If the Service Activation Form has been sent in, the account notification email has been received, and the SIM card is inserted into the MS1, you are now ready to install the unit. Follow the installation guide and start-up procedure to begin using the MS1.

Installation

Mounting the Antenna

The first step in installing the MS1 is to choose a good mounting location. For panel mounting, the main consideration is the placement of the antenna. The antenna must be located through the top of the panel away from any other devices or components such as lights or other antennae. Optimally, the antenna should be located such that there is an unimpeded line of sight to the nearest cell communications tower. Thus the antenna should be located outside panels with no metallic cover plates.

The antenna supplied with the MS1 is designed for outdoor use and has a rubber gasket to provide a water tight seal when properly mounted to the outside of an enclosure. Take care to orient the antenna upright and away from metallic objects such as transformers and electrical noise-generating items such as variable frequency drives and contactors.

The antenna requires a hole of 0.625″ - 0.675″ diameter. Note: Be sure to protect against metal shavings from entering to the panels when drilling the antenna hole. Feed the antenna cable through the hole from the outside and affix using the supplied lock washer and nut from the underside. For best performance, be sure the lock washer and nut make contact with a metal plane such as the surface of the steel enclosure. The antenna has a 12″ cable as standard. If the cable is too short to reach the MS1 in the panel a 32″ antenna is available. Contact your MS1 representative for details on how to purchase a 32″ antenna.

Note: The antenna may arrive installed as part of a retrofit enclosure.

Verifying Antenna Location

Antenna placement can be verified in the following installation steps using the signal strength display on the MS1. The signal strength will be dependant on the final panel location. In most cases, the performance of the cell gateway and antenna is greater than that of a standard cell phone. The final site can be surveyed by checking standard GSM cell phone signal strength at the installation site. If coverage is adequate for the cell phone, it will likely be strong enough for the MS1. If the cell phone coverage at the installation site is marginal, contact your MS1 supplier for more information.

Mounting the MS1

The MS1 is designed for easy panel mounting using four panel mount screws. The unit may be oriented vertically or horizontally, whichever is more convenient for the application.

Predrilled holes in the mounting plate to the dimensions specified in Appendix B. Appendix B contain a drilling template for proper mounting of the MS1. The unit should be attached to the panel using #8 machine screws. The mounting plate includes slotted holes so that the unit may be hung on pre-inserted screws prior to tightening.

Be sure to locate the MS1 in the panel such that the antenna wire will reach the connector on the front of the panel. Be sure the available depth in the mounting location allows for a natural bend of the antenna lead installed on the front of the unit. The MS1 typically requires approximately 6 inches or more depth for mounting.

**Note:** The MS1 may arrive installed as part of a retrofit enclosure.

Wiring

The MS1 system is a low voltage system. It is important to isolate wires supplying power or signals to and from the unit from higher voltage lines (higher voltage lines being >40 volts). Wires should be isolated by at least 1″ and contained in a dedicated raceway if applicable. The MS1 has removable screw terminal connectors for field wiring. The terminals will accept 16-24 awg wires. High quality insulated, stranded wire is recommended for use with the MS1.

Note: Be sure to protect against metal shavings from entering the panel when drilling holes.

## Basic Wiring - Digital Inputs
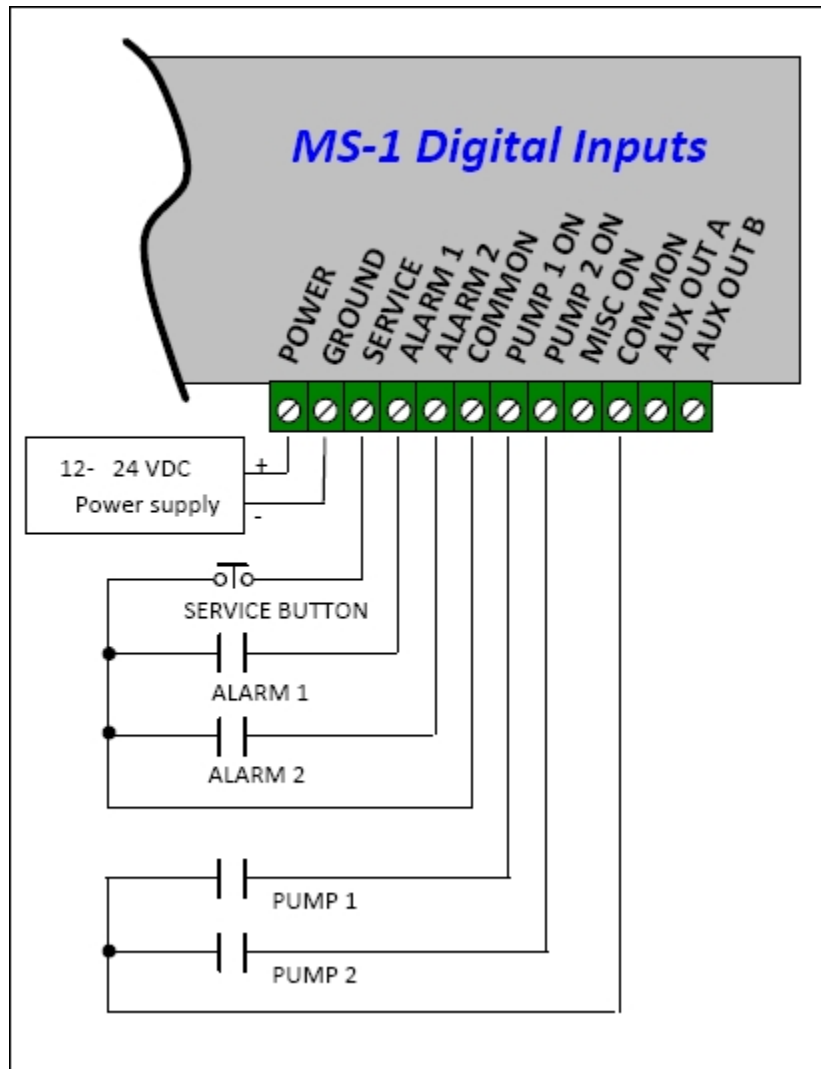
Advanced Wiring - Analog Inputs
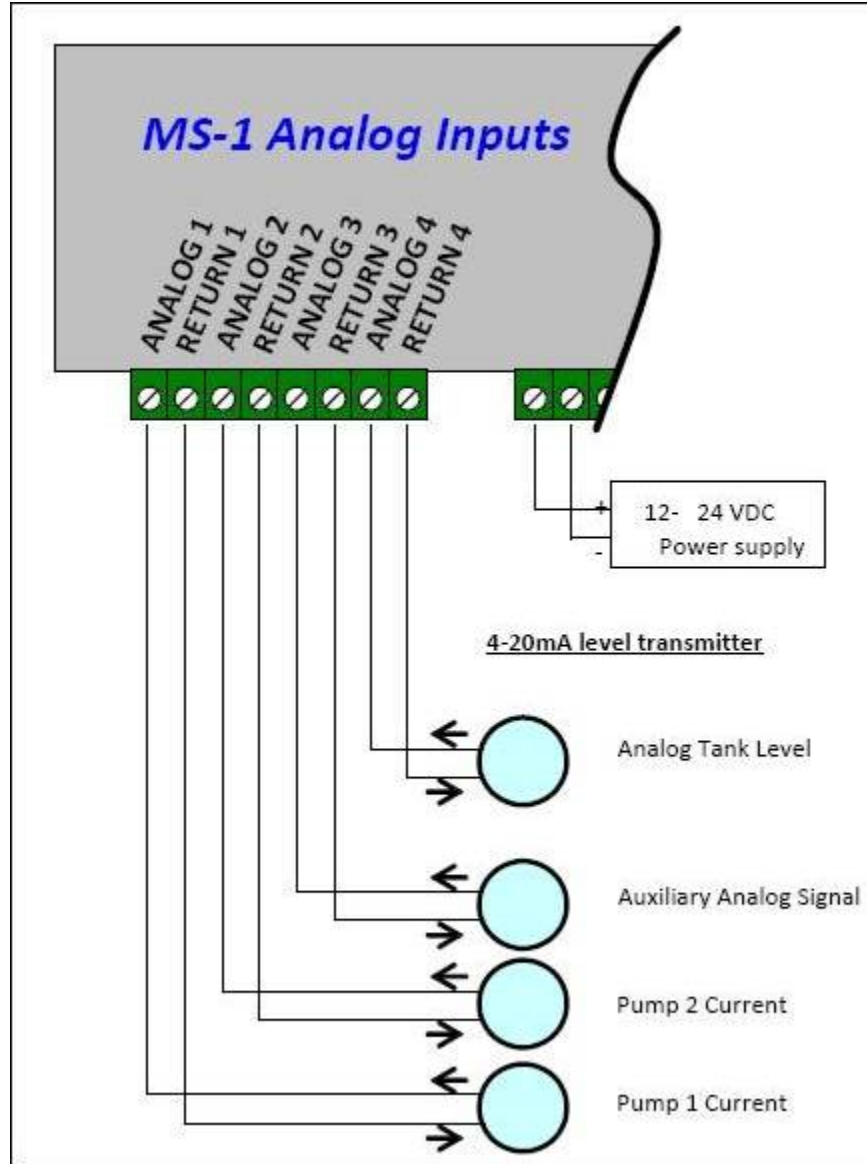
Wiring Current Transmitters

The MS1 has three current sensor inputs that require 4-20mA signals representing the pump current. The inputs present a 100 Ohm load to the 4-20mA source. Be sure your current sensor is rated for a 100 Ohm load. Commercially available 4-wire & 2-wire current sensors are suitable; however, the MarineSync Current Transmitter (Part # **ES1001.000**) has been tested and is highly recommended. See the diagrams on the next page for proper wiring:

2-Wire Current Transmitters:
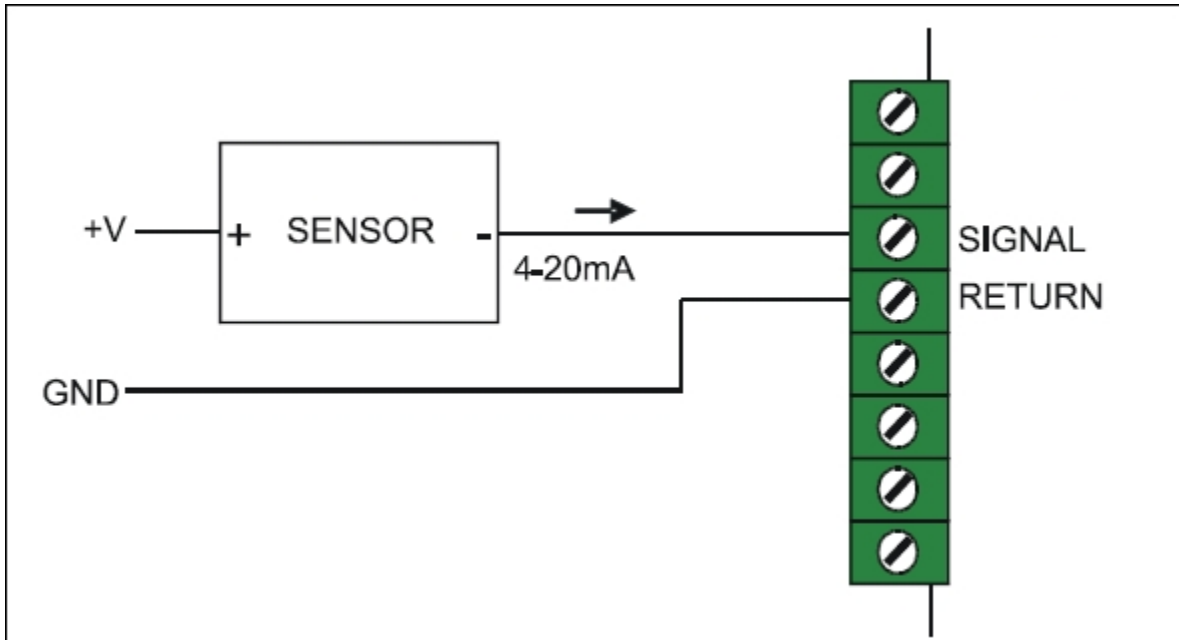
4-Wire Current Transmitters:
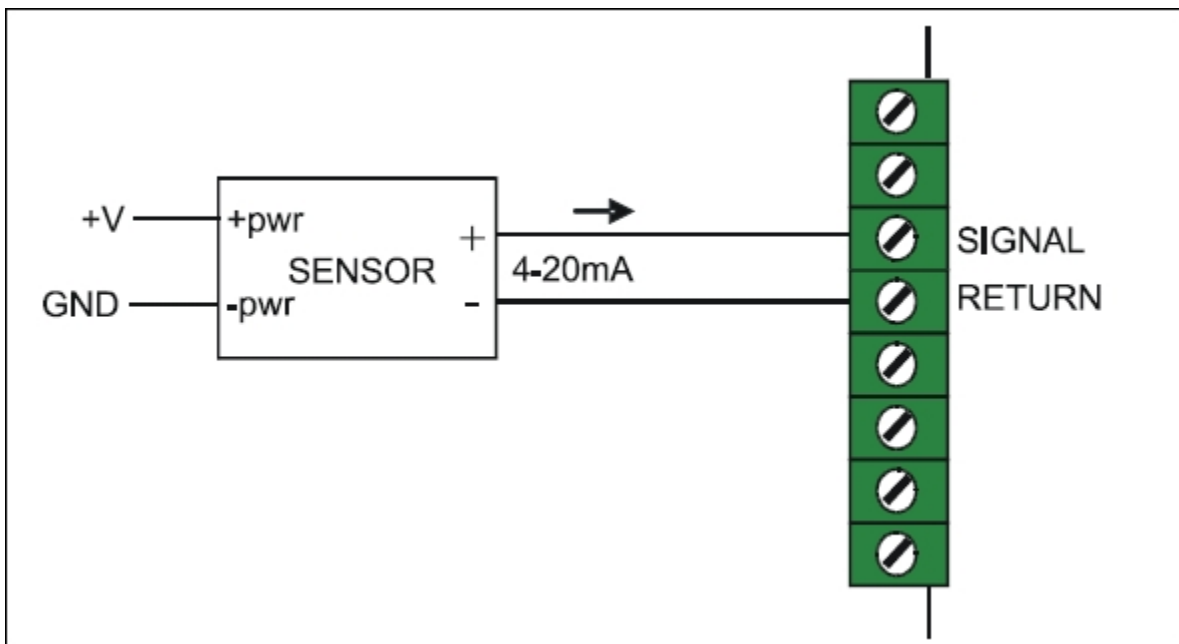
The 4-20mA signal from the current transmitter is converted in the MS1 according to a configuration performed on the MarineSync Portal configuration tab. Through the configuration, a low level current and high level current is entered by the user to scale the readings. Usually, a 4mA signal is configured to represent 0 Amps and 20mA is configured to read the current transmitter full scale (for example, a 50 Amp for a 50-A CT). The current transmitter should be chosen such that the expected operating current of the system is between 60% and 80% of the current transmitter's full scale rating. Thus, a 50A CT would be a good choice for pumps expected to run at 30 to 40 amps. If too large a CT is used, the resolution and accuracy of the reading may suffer.

For situations where an available current sensor is too large for the application, the current-carrying wire can be wrapped through the sensor multiple times to boost the current passing through the sensor. For example, a 50A CT with a wire passed through twice will effectively act as though it were a 25A CT. In this situation, take care to count the number of times the wire passes through (not around) the sensor. When using multiple wraps, be sure to set the correct full scale value in configuration.

Auxiliary Output

Note: Please contact MarineSync to activate the auxiliary output feature.

WARNING: DO NOT use auxiliary output to initiate actions that interrupt the local control panel's operation and cause unexpected mechanical or electrical actions that could harm people at the site and/or damage equipment.

Installation Checklist

✔   Service Activation form filled out and sent in.

✔   Antenna installed clear of other objects, facing straight up and in "open air".

✔   MS1 unit mounted to suitable surface in weather-protected location.

✔   Antenna cable connected to MS1 and has suitable clearance so that the cable is not bent severely when doors and panels are closed.

✔   SIM card is inserted in the front slot of MS1.

✔   Field wiring installed and inspected.

✔   12-24 VDC power supply attached to MS1.

✔   MS1 "Status" LED is flashing after powered (LED Guide – Page 18)

✔   Verify at least 1 MS1 signal strength LEDs are illuminated.

✔   Digital input LEDs come on when inputs are activated.

Start Up

Verify that the antenna is connected and the SIM card is fully inserted before applying power to the MS1.

The MS1 will automatically begin a start up sequence when the 12-24 VDC connections are made to the "power" and "ground" terminals as described in any one of the wiring diagrams in the Wiring section of this manual. A capacitor based backup system will allow the MS1 to remain powered for a couple minutes if the power supply is removed but signals may not be transmitted if the start-up sequence was not completed prior to power loss.

The start-up routine may take up to 5 minutes to be fully powered. In that time, different LED's may come on and off. When the start-up sequence is complete, the "Network" and "Status" LED's will blink and 1 to 3 signal strength LED's will be illuminated. (See Indicators section for more detail.)

LED's, Indicators, and Error Codes
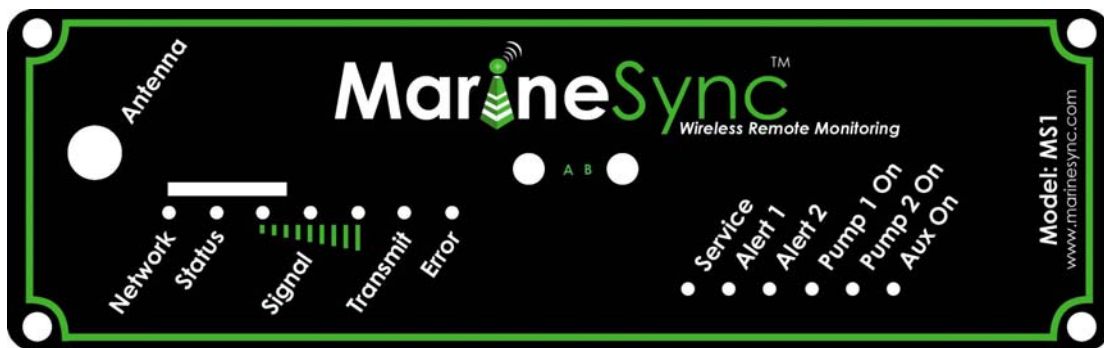
Indicators
The front of the MS1 has several LED indicators that are useful for checking the status of the unit and verify proper operation.

Network LED
The "Network" LED indicator signifies that the unit has detected and attached to the cell network. Under normal operating conditions, this indicator blinks once every four seconds.

Status LED
The "Status" LED indicates one of three operating modes. Under normal operating conditions, the "Status" LED flashes once every three seconds as an indication that the MS1 is scanning the inputs. On start-up and while transmitting, the "Status" LED flashes at a rapid rate to signify that the unit is processing. After the unit has lost power, but is still operating under capacitor backup power, the "Status" LED gives a very short blink at a slow rate.

Signal LEDs
The "Signal" strength LED's give an indication of the cell network signal strength. If no LED's are illuminated there is no signal reaching the MS1. One LED is illuminated means low signal strength is present. Two LED's illuminated means moderate signal strength is present. Three

LED's illuminated means strong signal strength is present. If no signal LED's are illuminated, check the antenna connector and verify the antenna has a clear, unobstructed path to the nearest cell tower.

Transmit LED
The "Transmit" LED will turn on solid during actual data transmissions and at times during the power up sequence.

Error LED
The red "Error" LED signals various fault conditions through a series of flashing codes.

Testing

The following field test and on-line checks are recommended to verify that the system is setup and working properly. Review the Installation Checklist before testing the system.

After the start up routine is completed and at least one signal strength LED is illuminated, trigger the service input or provide a signal to one of the float or pump inputs. Any of these inputs can be simulated by temporarily connecting the input to a common ground on the MS1. As soon as the input is triggered, the corresponding input indicator LED should light up and a transmission will be made. The message transmission is indicated when the "Transmit" LED comes on and the "Status" LED increases to a rapid rate. The "send now" function can be tested by pushing the "B" button on the MS1. This will transmit the latest conditions to the database and update the website. Verify that the "Transmit" and "Status" LED's respond correctly when the "B" button is pushed.

Verify Message Receipt

To verify the alarm messages are received by the programmed SMS recipient and/or by the website, see the "Dashboard", "Events", and/or "Chart" pages of the website. Review the website and/or SMS Messages section of this manual for further details.

Troubleshooting

Error LED CODE	Reason
"Error" LED off	No Error Occurring
"Error" LED flashes one flash every second	SIM not Present The SIM not present error signifies that the SIM card is either missing or not making good contact. Turn off power and check the SIM slot to verify a valid SIM card is present
"Error" LED flashes two flashes every two seconds	GSM Network Not Preset The GSM network not present error signifies the MS1 is not able to establish a cell phone connection to a cell network. Check that the "Status" LED is illuminated and there is at least one "Signal Strength" LED it. Verify that the Service Activation Form was filled out and sent in, and an email confirmation that the SIM card has been registered and activated.
"Error" LED Solid ON	Loss of GPRS or Server Comm Failure. The no GPRS error signifies that the MS1 has detected a GSM (cellular) network and registered on that network but lost the GPRS session or was otherwise unable to complete a data transmission with the server. GPRS is the protocol over which data is exchanged with the server. The LED will turn off by itself if a server connection is reestablished.
Input Indicator OFF	The input LED's give a visual indication of the state of the digital inputs. Whenever the MS1 senses that an input is active, the corresponding LED will light up. The digital inputs are dry contact type and are active when the attached switch is closed.

Problem	Indications	Possible Causes	Actions
The MS1 does not start	NO LED's lit	No Power	Check Power Connections. Verify 12-24 VDC between power and ground
No Communication	All signal strength LEDs off	No Signal	Verify coverage maps for GSM network service. Verify antenna is connected and mounted with a clear path to nearest cell tower.
	Signal strength LEDs active, Error LED flashes 1 flash every second	SIM not installed properly	Verify SIM is clean, oriented and fully seated
	Error LED flashes 2 flashes every second	SIM not activated	Verify Service Activation Form was sent in and received at least 24 hours prior to instalation
Inputs	No LED when switched	Wiring	Verify all wiring and connections
		Wrong input type	The digital inputs are dry contact type - be sure the inputs are not providing voltages and/or currents
Pump Current	Pump Current not reporting	Digitals not hooked up	Current readings only occurs 10 seconds after digital pump run input Is activated and maintained for 10 seconds. Confirm pump digital inputs are properly wired
Pump Current	Pump Current not reporting	CT Type	Make sure current transmitter is appropriate size and has a 4-20mA output
		CT not sensing	Be sure load wire is running through current transmiter and the CT is producing an appropriate output current

	Incorrect Current Reading	CT Size	Check to see that current produced by CT is as expected for the given load current. Be sure CT is rated for currents
		CT Wiring	Be sure CT is wired per instructions
		Incorrect CT wrapping	Be sure the wire passes through the core the correct number of times and always in the same direction
Unexpected Alarms	False alarms	System noise	Be sure input wires are as short as possible and routed away from noise-generating equipment and conductors. Use shielded wires if necessary

Functional Description

I/O Description

Alarms

There are three inputs that are dedicated to alarm conditions. Other conditions can be configured to generate alarms. The float inputs as well as a power loss will generate SMS (test messages) alarm messages to the recipient(s) specified on the Service Activation Form. Other alarms may be initiated by the data portal when configured conditions are detected.

Power Outage Alarm

When the MS1 detects loss of power, it will establish data communications with the database and initiate a power outage alarm. Once the unit has detected power loss and confirmed delivery of the message to the data portal, the MS1 will go into a standby or "sleep" mode. During the sleep mode, all other input monitor is suspended until power is returned. Upon return of power, the MS1 will send a "power restored" message that is handled similarly to all other alarm messages.

Float Alarms

The MS1 accepts dry contact signals from up to two level floats. Generally, these are configured as a high water or overflow float and a low level float. When either of these inputs detects a contact closure, an alarm condition is recognized which triggers the alarm handling routines as configured from the MarineSync Portal. An "alarm cleared" database entry is generated upon return to normal conditions.

Other Alarms

Other conditions may be configured through the MarineSync Portal to process alarms based on levels and conditions sensed on the other input lines. For instance, alarm thresholds can be set from the website to create an alarm if the configured current limit is exceeded by a pump current sensor.

Service Button

The service input is provided as a means to log service call times to the database. A panel mounted push button or a door interlock switch may be wired directly to this input. When activated, the MS1 will provide a timestamp to the database to capture a record of when the panel was opened or serviced. This may also be used as a tamper detector.

Pump Inputs (3)

The MS1 has inputs for monitoring up to three pump signals. The signal is a dry contact that will close while a given pump is running. The MS1 will count the number of pump starts and accumulate seconds of run time for each pump. The cycle count and accumulated run time are displayed on the website along with daily averages. Usually the pump signals are generated by spare contacts attached to the pump drive relay in the control panel.

Pump Currents (3)

The pump current inputs are to be attached to 4-20mA current transducers affixed to one leg of the pump wires. The current reading can be scaled from the website to adjust the display to most standard current transducers in common use. The pump current inputs operate by taking "snapshot" readings of the current sensor 10 seconds after the associated digital pump input is activated and held for 10 seconds. This yields one current reading for each pump run cycle. The reading is logged and transmitted to the database for data analysis and trending.

Each current reading is compared against high and low limits (when enabled) set in the website configuration page. Alarm events are initiated if the measured current falls outside the configured normal operating range.

Notifications

Alarms and certain events detected by the system shall cause a notification scheme to be executed. The means by which the MS1 and MarineSync Data Portal deliver notifications include SMS messages, email services, and the website dashboard. Notifications may be initiated by the MS1, but all notifications are sent by the MarineSync database application.

SMS Messages

SMS Messages (text messages) are sent to the subscribers' cell phones or pagers from the MarineSync Web Portal database when notified by the MS1 of an event.

Subscriber numbers and address may be changed by the administrator from the "subscriptions" tab at the "system" level on the navigation pane on the website.

Alarms may not be cleared or acknowledged through the SMS services. The user must log on to the associated website to manage or clear alarms.

The SMS message contains information about the alarm including the name/ location of the alarming MS1, the alarm type, and the time & date of the alarm. Note: For power outage alarms, a message will be sent upon restoration of power. Below is a sample of the SMS messaged received from the MS1.

MOTOROLA

FRM: notifier@MarineSync.com
SUBJ: Notification,
Sea World Marina, Fuel Dock,
Pump 2, Power Lost
4 /6/2009, 8:05:10 AM PT
Esc-1 (End)
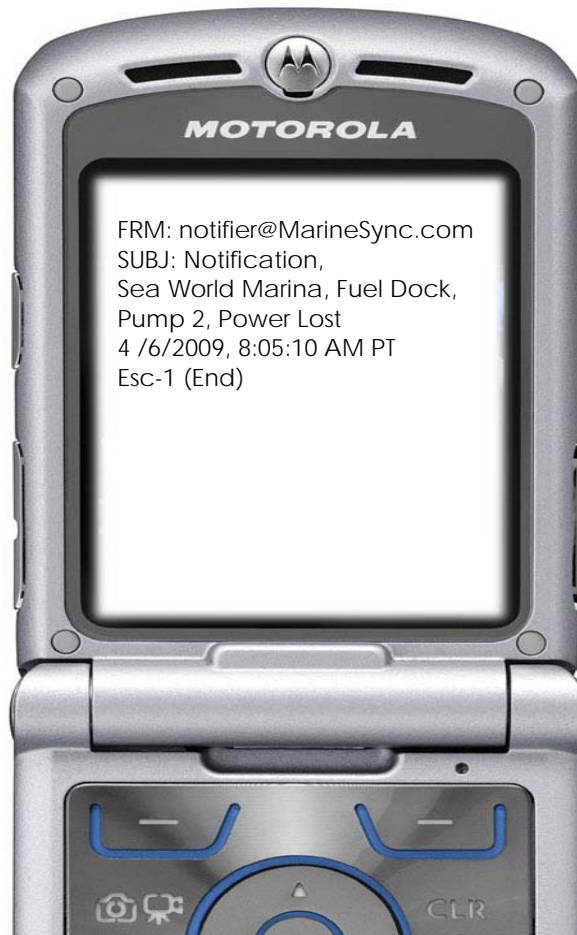
![MarineSync logo](target icon) **Website**

Registration

Before operating the MS1, the Service Activation Form must be completed and sent in. When the information on the form is received, the MS1 will be configured over the cell network and a webpage will be created using the information supplied. When the Service Activation Form is accepted and the configuration is completed, an email message will be sent to the individual identified on the form as the local administrator. The email will contain instructions on finding the website and login credentials (username and password).

Upon entering the website, the user will be required to enter the username and password to proceed.

When logging in for the first time, the end user license agreement will appear in a pop-up window. The user must click the "accept" button to continue. Please read the end user license agreement before proceeding – it contains important and useful information. A copy of the Device and Service Agreement is included in Appendix D of this manual.

If you experience problems signing in, don't know your username and/or password, or have questions about the Device and Service agreement contact an MS1 Customer Service Representative at 888.988.SYNC (7962).

Login Page

When accessing the website at https://www.meshvista.net/MarineSync, you will be directed to the login page where you must enter your assigned username and password.

If you do not have your username and/or password, please verify that the Service Activation Form has been completed and sent in.

If you are the administrator as identified on the form, and you have not received or have lost your username and/or password, please call 888.988.SYNC (7962). Please have the information on your device available.

If you are not the assigned administrator, please check with your system administrator as all other user accounts are created and maintained by the local administrator and MS1 support personnel do not have access to individual account information.

The first time you log in to the MS1 website, you will be asked to review and accept the MS1 Device and Service Agreement. The agreement is included in Appendix D on this manual for your reference.

MS1™ Device & Service Agreement

This MS1™ Device & Service Agreement (the "**Agreement**"), effective on the Effective Date (as defined in *MS1 Service Activation form*, attached hereto and made a part hereof), by and between **MarineSync Corporation**, a California corporation having its principal place of business at 3235 Hancock Street, Suite 250, San Diego, CA 92110, (hereinafter "MarineSync Corporation") and **Subscriber** (as listed on service activation agreement). In consideration of the mutual promises contained herein, and other good and valuable consideration, the parties hereby agree as follows

1.   **Notification Services.**

   1.1   **Background**. MarineSync Corporation provides Notification Services
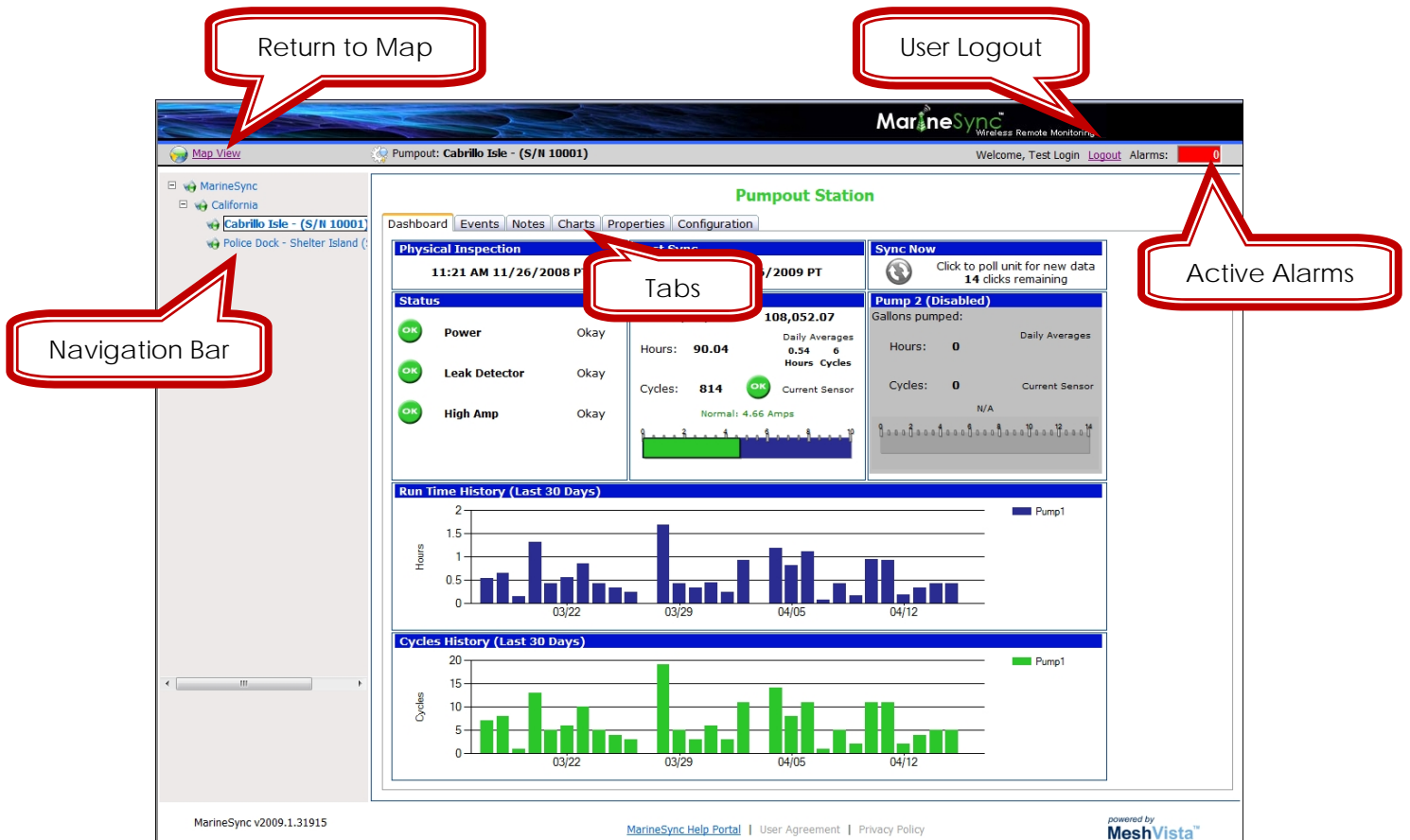
By clicking on "Agree/Continue" below, the user agrees to the above:

Date: 4/16/2009
Your IP address 68.15.   has been recorded for security reasons

Email Address: ab@marinesync.com

Accept/Continue   Cancel

Website Structure

All pages within the MS1 website have the same basic structure and common component parts:

Map View

The default page that appears after login is the map view which automatically zooms to include all the pumps or devices for which the user has viewing rights. The map can be viewed as a traditional street map, satellite view or as bird's eye image. The user may zoom in and out freely.
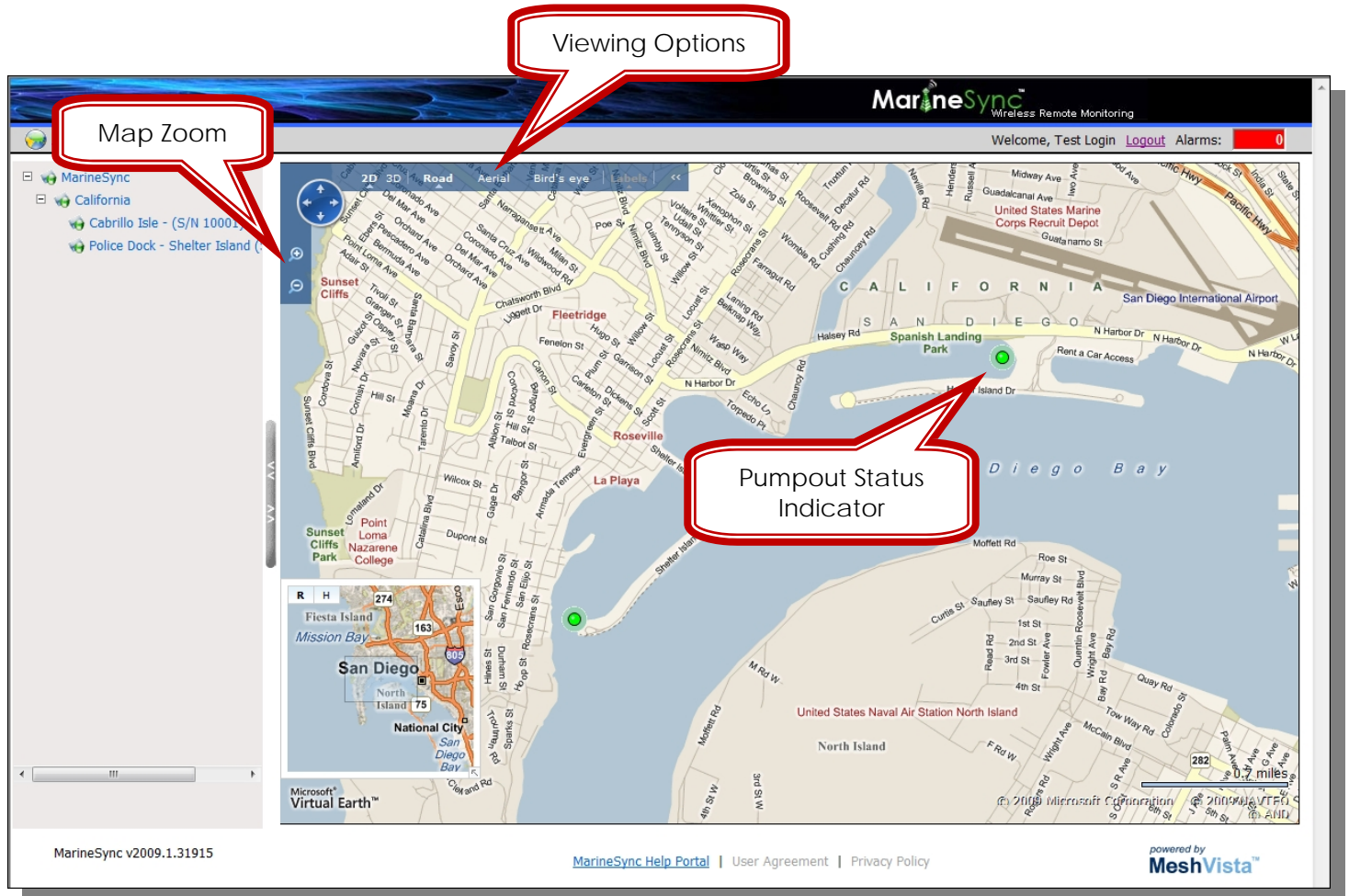
Each pump location is identified on the map with a real-time status dot. A green dot signifies the device is operating normally and a red dot represents an alarm.

To view the data of a particular pump, mouse-over the dot and a dialog box will appear that shows details of the site and current status. Click on the "manage" link to open the dashboard.
The user may also navigate to any asset, or to organization and system levels, by clicking on the desired link within the navigation bar which is visible at all times on the left of the display.
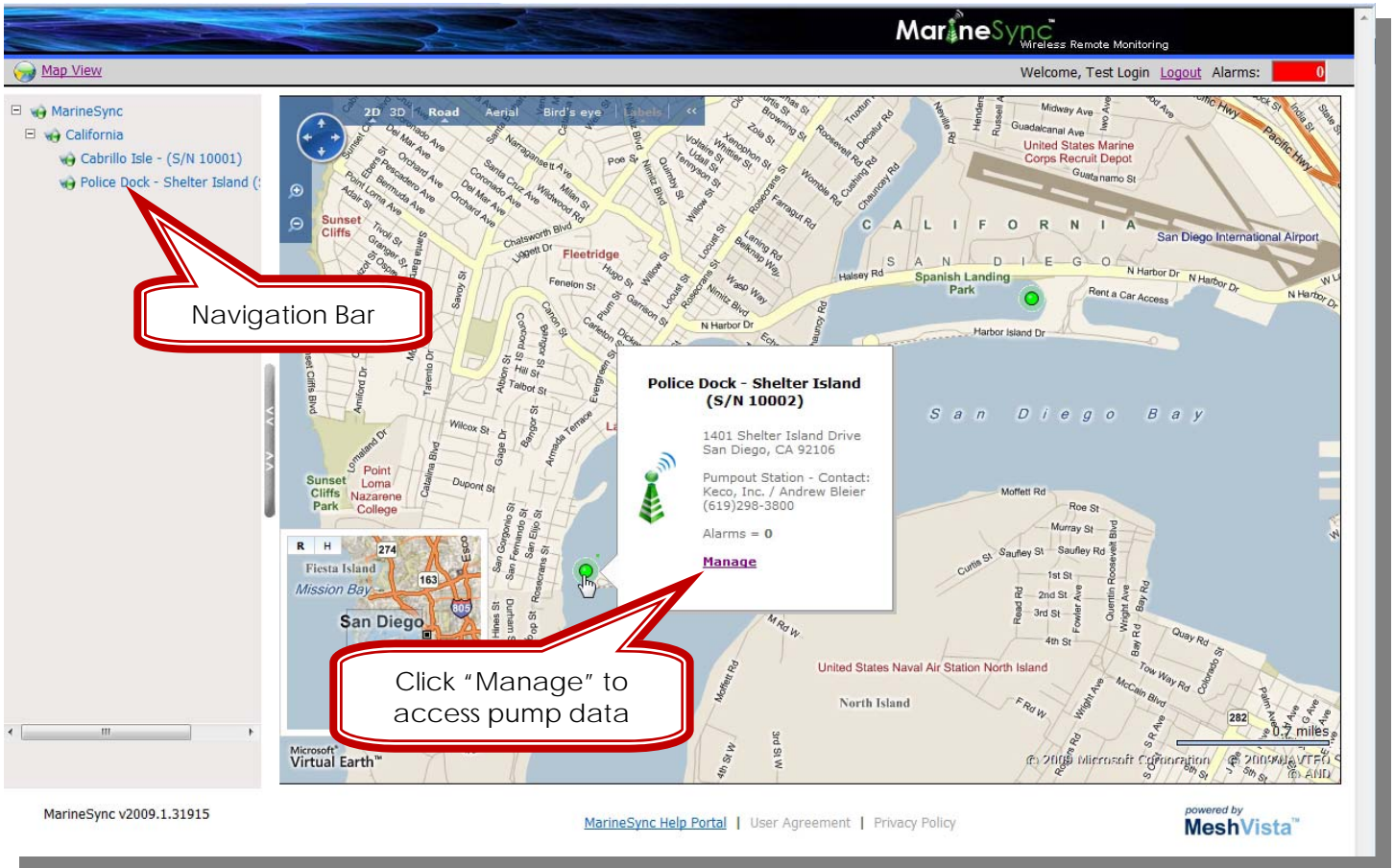
Navigation

The website consists of many web pages organized for easy navigation. The navigation bar on the left side of all pages shows the organizational structure of the monitoring system. Each level within this organization comprises several pages using tabs across the top of the information display area. The site is structured as follows:

Organization Name

System Name

Device Names
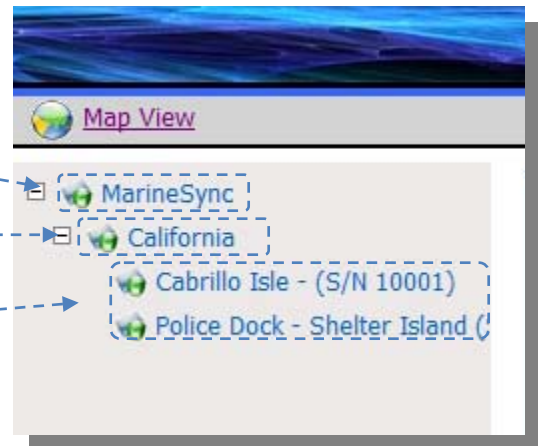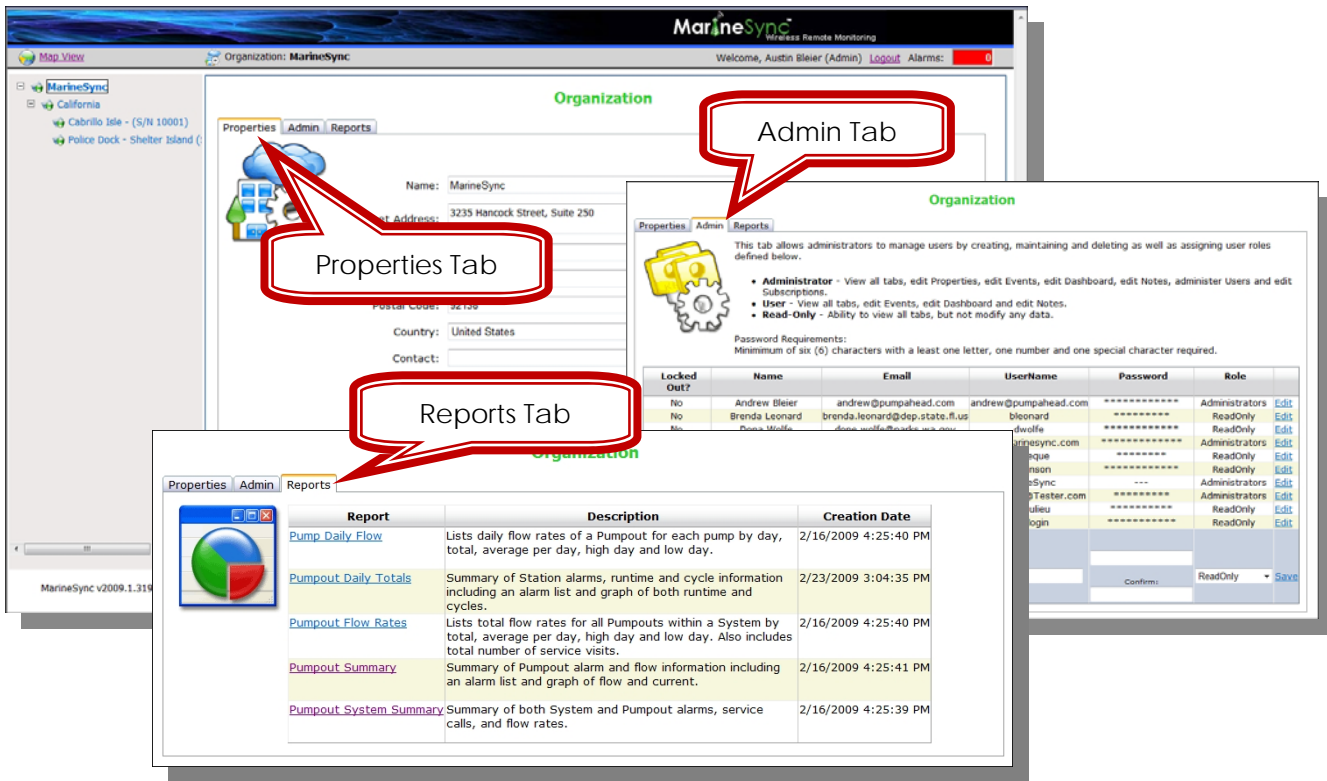
Organization Page

Organization Name

Properties Tab

At the Organization level, the Org Properties tab gives some basic information about the company, municipality, or other group that is assigned as the system overseer. This information may be updated by users with read/write access.

Administration Tab

At the Organization level, the Administration tab provides the local system administrator the tools to add, delete, or edit user access credentials and rights. Users assigned "Administrator" rights can view and edit all pages and can assign/edit users and subscriptions. A "user" can view and edit pages but may not change any configuration or data.

Report Tab

At the Organization level, the Report tab provides several options for reports that may be generated. These reports are meant to present system information in summary form over a chosen time period. Report information showing flow is derived from runtime and the Gallons/Liters per hour value entered on the device configuration tab. If the flow readings are blank, check to be sure a value is entered in the configuration.

System Page

Events Tab

At the System Level, the Events tab shows a listing vs. all system alarms. Alarm events are considered active until they are cleared from this screen or the events screen at the device level.

To clear an alarm, click the check box next to each alarm to be cleared. Add any notes about the alarm event and hit the "Clear Alarm" button. To add a note without clearing the alarm, type in the notes and click on the "Comment Only" button. Multiple alarms may be cleared by clicking the check boxes for the desired alarms and then clicking the "clear alarm" button. Comments added will be identical for each alarm cleared in this fashion. The alarm records may be sorted by any of the column headings by clicking on the desired heading.

An individual event can be examined in detail by clicking on the EventID next to the check box on each event line. Clicking on the EventID will open a popup window for the individual event. The window shows the EventID number, status, type, descriptive name, time of event, duration, any notes and/or instructions and details about who cleared the event and when.

Subscriptions Tab

The Subscriptions tab is used to set up notification recipients. Subscribers can be set up to receive email or SMS (text) messages. Choose the username for (an event subscriber must first be registered as a user at the Organization level). The user's email address will appear in the address field. The email address may be edited or you may choose SMS in the format column to use a text message. After choosing SMS, you will need to enter the SMS address in the address field. If you do not know the address, click on "SMS Address Help" link to the left. This will open a list of SMS address formats for the various cell phone carriers. You must know the cell phone number and the carrier.

Choose the escalation configuration in the escalation level column. Alarms are first sent to level 1 subscribers. If the alarm is not cleared within one hour, level 2 subscribers will get a notification.

Likewise, un-cleared alarms will be escalated to level 3 after another hour. Note: Once a notification has been sent to the level 3 subscriber, no other notification will be sent even if the alarm condition has not been cleared. Users may be assigned to more than one level. After saving a subscription, you may test the notification by clicking on "Test" in the action column.

Note: The period of time between escalation levels can be increased to provide more time between notifications. However, the initial value of time must become the multiplier for subsequent levels.

Properties Tab

At the System level, the Properties tab will display basic information for each MS1 system. Certain information on this display may be edited by administrators and users.

Device Page

Device Name

Dashboard Tab

The dashboard provides a graphical display of the data collected at the MS1. The graphic format is intended to give an easy, "at-a glance" look at the operating status of the device.
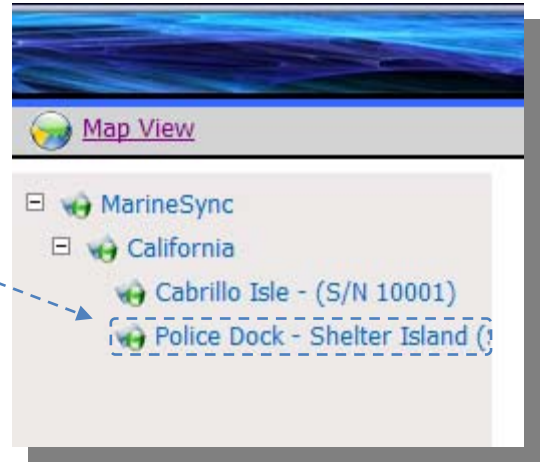
The dashboard shows the last data received by the database from the MS1. As such, it is a 'snapshot' of the last reported status. If fresh data is desired, the user may request an update from the unit and the new data will be displayed. Manual refreshes of the data cause the MS1 to generate network traffic, so a monthly limit is placed on the number of refreshes allowed. A new monthly allotment of refreshes will appear every month.

Across the top level of the dashboard are three information boxes. The left-most box displays the last time a service event was logged. Service button activation at the remote site is logged locally and sent in daily. The second display box shows the time at which the MS1 last sent in data. This includes regular, scheduled call-ins, alarm notifications, and manual data requests.

The third box contains a 'Sync Now' control. Clicking on the refresh button causes the database to request an immediate data update from the MS1. Completing the request and receiving new data takes approximately 90 seconds or more. The dashboard will refresh when the new data is received. This action causes network traffic and limits have been placed to avoid excessive network usage. Every time a refresh is requested, the counter will decrement. Further refresh requests will be blocked if the counter reaches zero. The number of remaining refreshes will be reset on the first of each month.

The Status display is located directly under the last service box and shows the current status of three alarm conditions. The "Power" alarm normally has a green "OK" icon showing the MS1 is currently on and power to the unit is normal. If power to the MS1 is currently off, the icon will turn red and the time at which power was lost will be displayed. Note that an alarm "event" may be active even after power is restored to the device. This simply means that an event (power outage) has occurred, but the event has not yet been cleared in the database. The status display will show the current status of the power, regardless of whether active alarms are still pending.

The "Leak Detector" and "High Amp" status displays operate in the same way as the power status. The "Leak Detector" alarm represents a leak detection sensor located on the pump. If the pump manufacturer has not provided a leak detection sensor, MarineSync Corporation Part# ES2001.000 can be used universally to provide leak detection. The "High Amp" input is tied to the CT, but may be wired to a PLC or other system fault output. In either case, the display shows the current status of the sensor, but there may still be active alarm events associated with the input until they are manually cleared.

Across the middle of the dashboard are two pump data gauges. Note: If the associated remote system has less than two pumps, any unused gauges will be grayed-out in the display or removed. If the pump is not equipped with a current sensor, the

current portion of the gauge will be grayed-out.
Each pump gauge displays the total accumulated run time in hours and the accumulated cycle count. These values are also displayed as daily averages. When equipped and enabled, the gauges also show pump currents. The pump current is a 'snapshot' value which is taken once for each pump cycle at 10 seconds after the pump digital input is activated for at least 1 second. If the snapshot reading falls outside the high and low alarm thresholds, an alarm event is initiated and the status icon will show red. The alarm thresholds may be configured for various conditions. The dashboard gauge shows the last reading in the database. To look at previous readings, go to the "Charts" tab.
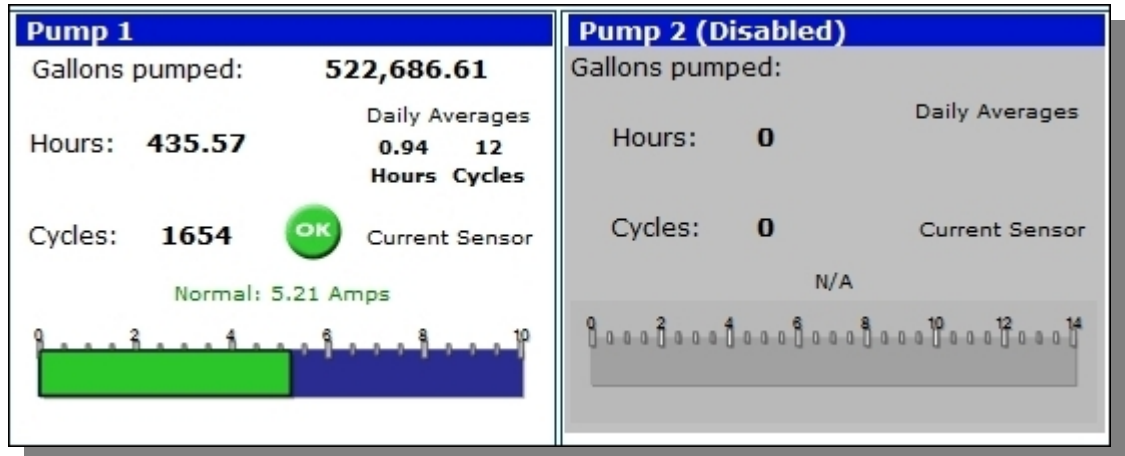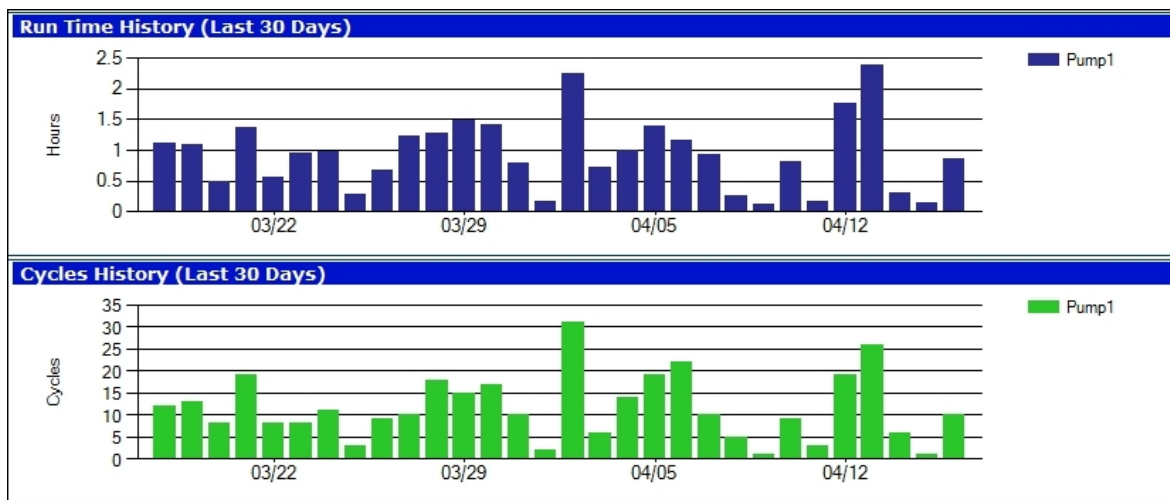
The "Run Time" history graph shows the most recent daily run time totals for up to three pumps. The graph will show up to the last 30 days of data. Each pump is represented by a different color bar on the graph. This graph is meant to give an at-a-glance look at the status of the pump control. Depending on the control logic of multi-pump systems, the bars for different pumps should be similar over time. If one pump appears to be running significantly longer than others, it may represent a problem with one or more of the pumps. Check with your controls engineer to determine if a run time imbalance is normal for your system.

Events Tab

The Events tab at the Device level displays a list of all the events captured for the individual device. Viewing and clearing these events is done in the same way as the System level events tab. Click the check box next to each alarm to be cleared. Add any notes about the alarm event and hit the "Clear Alarm" button. To add a note without clearing the alarm, type in the notes and click on the "Comment Only" button. Multiple alarms may be cleared by clicking the check boxes for the desired alarms and then clicking the "clear alarm" button. Comments added will be identical for each alarm cleared in this fashion.

| Dashboard | Events | Notes | Charts | Properties | Configuration |

⊻ Show Filters...

EventId	Status	Pumpout	Type	Esc. Level	Date / Time	Description	Pending For	Resolved In
☐ 16309	Cleared	Police Dock - Shelter Island (S/N 10002)	Alarm	3	2009-04-06 5:25 PM PT	Power, Lost		217 Hrs 14 Min
☐ 16308	Cleared	Police Dock - Shelter Island (S/N 10002)	Alarm	3	2009-04-06 5:25 PM PT	Power, Lost		217 Hrs 14 Min
☐ 16307	Cleared	Police Dock - Shelter Island (S/N 10002)	Alarm	2	2009-04-06 4:20 PM PT	Power, Lost		1 Hrs 4 Min
☐ 16306	Cleared	Police Dock - Shelter Island (S/N 10002)	Alarm	2	2009-04-06 4:20 PM PT	Power, Lost		1 Hrs 4 Min
☐ 16305	N/A	Police Dock - Shelter Island (S/N 10002)	Advisory	1	2009-04-06 2:06 PM PT	Power, Normal		
☐ 16304	Cleared	Police Dock - Shelter Island (S/N 10002)	Alarm	1	2009-04-06 1:46 PM PT	Power, Lost		2 Hrs 33 Min
☐ 16303	N/A	Police Dock - Shelter Island (S/N 10002)	Advisory	1	2009-04-06 1:11 PM PT	Power, Normal		
☐ 16302	Cleared	Police Dock - Shelter Island (S/N 10002)	Alarm	1	2009-04-06 12:58 PM PT	Power, Lost		3 Hrs 21 Min

Archive Notifications...

Notes: [   ]   [Clear Alarm]   [Comment Only]

Notes Tab

The Notes tab at the Device level opens a display of notes captured for the individual device. The user may view/edit/ add comments or notes that will be saved in the database associated with the device. These notes are different from the comments associated with events. Adding notes to this display can be a useful tool in tracking the history of the remote equipment.
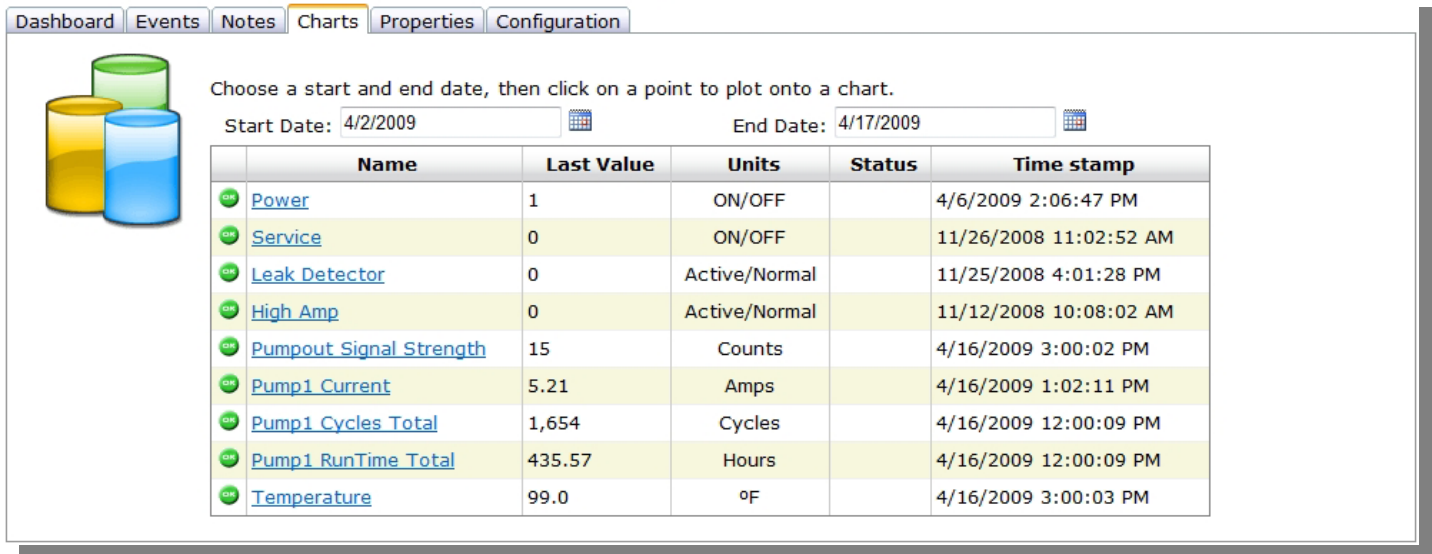
| Dashboard | Events | Notes | Charts | Properties | Configuration |

Name	Date/Time	Note	
Austin Bleier	3/3/2009 11:32:29 AM	Demo Unit - Tuesday Checkup	Edit	Delete
Austin Bleier	2/6/2009 3:42:45 PM	Friday Testing - Feb 8th, 2009	Edit	Delete
Add New:		[ ]	Save

Charts Tab
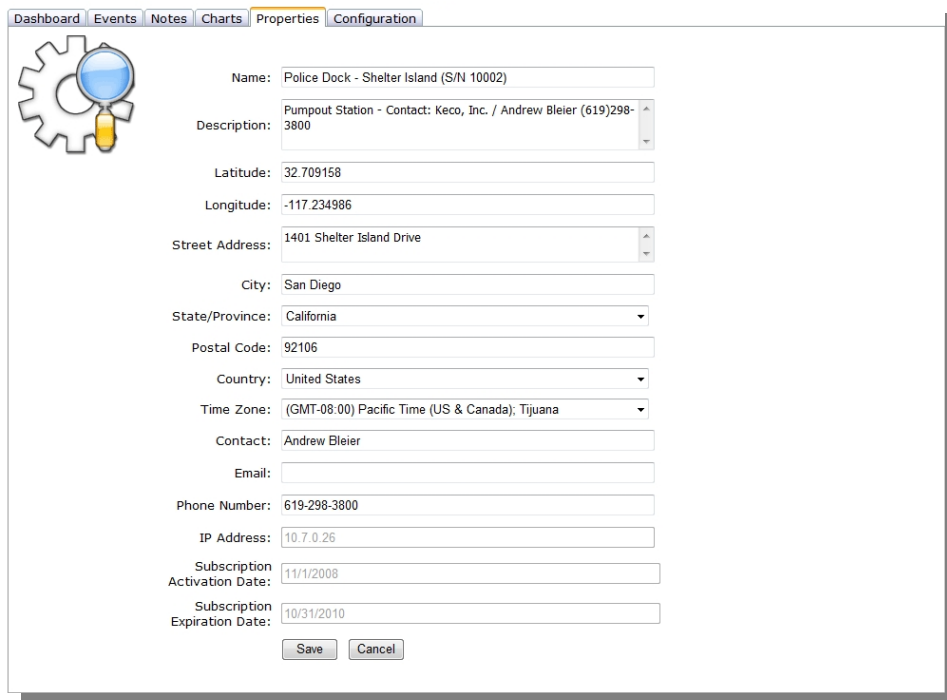
The charts tab opens a page that allows the user to view database information associated with individual inputs on the MS1. Choose a date range and click on the name of the data variable you wish to view. A pop-up window will appear with a graph of the information. The user may click and drag any area in the graph to 'zoom in' on data of interest.

Properties Tab

At the Device level, the Device Properties tab gives some basic information about the individual remote device. This information may be updated by users with read/write access. Information included in this section will appear in the roll-over in Map View.

Configuration Tab

The Configuration tab on the Device level displays hardware configuration parameters to help make the dashboard display more meaningful for each installation. It allows the user to change the MS1's unit of measure for the tank level display, as well as configure the range of the pump current graph for the current sensors used. The user may also set tank levels and alarm levels for pump current.

The tank level display can be configured by choosing the display units in feet or meters (Note: Configurations will vary. Please contact MarineSync if interested in this feature). The tank height should be chosen to match the output of the sensor, regardless of actual tank height. The tank maximum height should be set to the highest reading of the sensor. For instance, if the 4-20mA output of the sensor represents 0 to 12 feet depth, the maximum height value should be set to 12 feet, even if the actual tank is only 10 feet deep. The maximum height is the value reflected by the 20mA output. The minimum height is the corresponding level at 4mA sensor output and will rarely be anything other than 0 feet.

Click the check boxes next to "High Alarm Threshold" and "Low Alarm Threshold" to enable alarming. Set the thresholds in the units of the display.

To configure pumps, first choose the number of pumps to be enabled by clicking the check boxes in the title bars of pump 2 and pump 3. Then click the check boxes named "Current Sensor" for any pumps that have a current sensor installed. The Gallons/Liters per hour value may be entered. This value is used for certain reports to estimate the total system throughput based on pump run time and the gallons/Liters per hour value. The value should be chosen based on nominal conditions and average expected performance. The report data base on this value are only presented as estimates and are not intended to be accurate, measured numbers.

Appendices

Appendix A - Hardware Specifications

Power:	12VDC @ 330mA or 24VDC @ 170mA
Storage Temperature:	-40°F to 156°F (-40°C to 70°C)
Operating Temperature:	-21°F to 144°F (-30°C to 65°C)
Humidity:	0-100% non-condensing
ESD Immunity:	EN61000-4-2
Radiated Immunity:	EN61000-4-3
EFT/Burst Immunity:	EN61000-4-4
Conducted Emissions:	EN61000-4-6
Radiated Emissions:	FCC Part 15, Class A
	EN61326-1, Class A
	EN55011:2007+A2:2007 (CISPR 11)
FCC License:	ID# R17GE864
Digital Inputs:	(6) Dry Contact
Digital Outputs:	(1) Dry Contact (120VAC,1Amp max)
Analog Inputs:	(4) 4-20mA (100 Ohm load)
Cell Network:	GSM
Data Protocol:	GPRS
Antenna:	3db Omni directional
Back-up Power:	Capacitor- backed (>175 F)

Appendix B - Dimensions

Appendix C - Service Activation Form
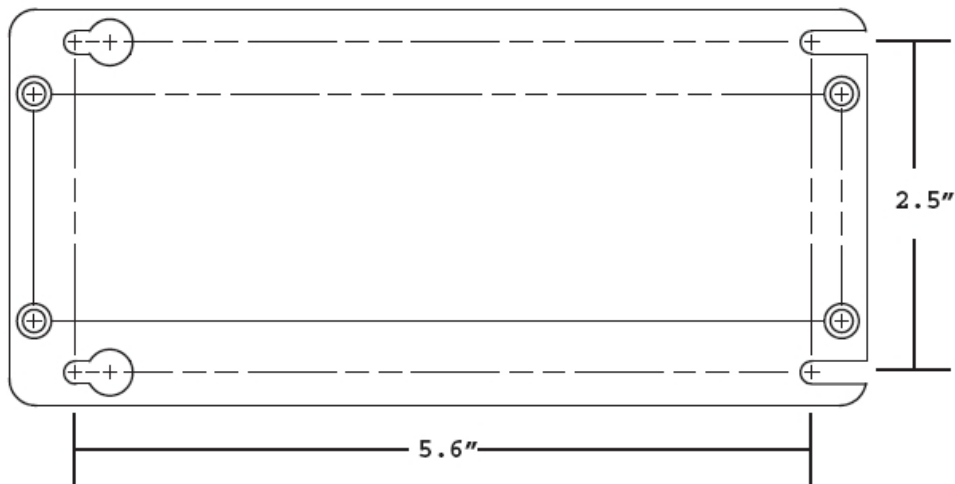
MS1 - Service Activation Form

MarineSync Corporation requires the following activation form be complete to initiate data services for the MS1 - Pump Monitoring System. Activation may require up to 72 hours. Every MS1 device requires a complete form. The form may be submitted by e-mail to activation@marinesync.com or by fax at (619)298-7828. MS1 Services & Fees subject to terms and conditions. If you have any questions or comments, please contact our offices toll-free at (888)988-7962.

1. **Billing Information**   ☐   I already have an account

Subscriber Name:

Department:

Billing Address:

City: State: Zip Code:

Phone: Fax: State:

2. **Point of Contact**

Name: Note: The "Point of Contact" can be issued an administrative Username & password to access the Web Portal. Within the Portal, the POC can update and modify settings.

Cell Phone:

E-mail:

3. **System Information**   ☐ Adding to an Existing Organization

Organization Name: Note: System information is based on a hierarchy allowing organizations to manage multiple locations and pumps. The "Organization Name" identifies the highest level of the hierarchy, i.e. AB Marina Management or Boating & Waterways. "Facility Name" identifies the location of the equipment, i.e. Sea World Marina. "Pump Description" identifies the actual pump, i.e. Fuel Dock Pumpout 1.

Facility Name:

Pump Description:

Pump Manufacturer: Flow Rate (less 30%):

Motor HP: Motor Voltage: Full Load Amperage:

Site Address:

City: State: Zip Code:

GPS Coordinates:

MS1 Serial Number: SIM Card #:

4. **Data Subscription & Activation**

Effective Date: Service Term: ▼

Payment Options: ◯ American Express   Card Number:
◯ Credit Card   ◯ Mastercard   Expiration Date:
◯ Bill me   ◯ Visa   Cardholder Name:

[Submit by E-mail]   [Print Form]

MS1™ Device & Service Agreement

This MS1™ Device & Service Agreement (this "**Agreement**"), effective on the Effective Date (as defined in *MS1 Service Activation Form*), is made by and between **MarineSync Corporation**, a California corporation having its principal place of business at 3235 Hancock Street, Suite 250, San Diego, CA 92110, and **Subscriber** (as listed on *MS1 Service Activation Form*). In consideration of the mutual promises contained herein, and other good and valuable consideration, the parties hereby agree as follows:

1.   **Notification Services.**

  1.1   **Background**. MarineSync Corporation provides Notification Services for the management and monitoring of remote equipment. The Notification Services utilize devices ("**MS1 Devices**") that are capable of transmitting data or information by means of third-party carriers of wireless communications ("**Carriers**"). For purposes of this Agreement "**Notification Services**" is defined as comprising two functions: i) off-site monitoring, which is the receiving of data or information sent by an MS1 Device, and ii) the sending ("**Message Delivery**") of notification messages ("**Notification Message**"), to addresses configured by Subscriber, in response to the data or information received from the MS1 Device.

  1.2   **Notification Services**. Subject to the terms and conditions of this Agreement, MarineSync Corporation shall provide Subscriber with Notification Services during the Service Term and at the Service Level set forth in the *MS1 Service Activation Form*. Each MS1 Device contains a SIM card that once activated will commence the Service Term set forth in the *MS1 Activation Form* for the device. MarineSync Corporation is responsible only for providing off-site monitoring of data and information received from an MS1 Device and sending Notification Messages. MarineSync Corporation shall not respond or otherwise take action regarding any event which MarineSync Corporation monitors or for which MarineSync Corporation sends a Notification Message. Subscriber acknowledges and understands that Notification Services are not intended to be used as the primary life-safety, burglary, or fire detection and reporting system, that Notification Services rely on the telecommunication services of Carriers, over which MarineSync Corporation has no control, and that MarineSync Corporation is not responsible or liable for the reliability or availability of Carriers' telecommunications services or the Message Delivery by the Carrier. Furthermore, Subscriber acknowledges and understands that 100% wireless communications service coverage for any on-street or in-building area at all times is improbable, even within coverage areas shown on Carriers' coverage maps, which are intended to indicate expected coverage and not an exact representation of coverage.

  1.3   **MS1 Devices**. Subscriber shall purchase and install on Subscriber's premises the MS1 Devices specified in *MS1 Service Activation Form*. MarineSync Corporation shall be responsible for delivering the MS1 Devices to Subscriber, and risk of loss to the MS1 Devices shall transfer to Subscriber upon shipment from MarineSync Corporation. Subscriber is responsible for installation of the MSI Devices. Subscriber shall take reasonable actions to maintain and protect the MS1 Devices. Subscriber shall not modify, alter, disassemble, or damage an MS1 Device. Subscriber acknowledges and agrees that the placement of the MS1 Device, prevailing weather conditions, the presence and configuration of buildings, and placement of antenna can impede or limit signal strength and communication performance. If any MS1 Device is damaged or otherwise becomes nonfunctional for any reason, Subscriber acknowledges and understands that Notification Services cannot be provided, and that MarineSync Corporation has no liability for failure to provide Notification Services. Subscriber shall be responsible for purchasing a new MS1 Device whenever an MS1 Device is damaged or otherwise becomes nonfunctional.

2.   **Fees and Payment**. Subscriber shall pay MarineSync Corporation the purchase price ("**Purchase Price**") for the MS1 Devices and the annual fee ("**Annual Fee**") for Notification Services (collectively, the "**Fees**") in the amount set forth in *MS1 Service Activation Form*, if any, otherwise in the amount shown on the MarineSync Corporation website, or in a MarineSync Corporation communication in response to the *MS1 Service Activation Form*. The Purchase Price and Annual Fee is payable with the order, or, with the consent of MarineSync Corporation, within 30 days of delivery to Subscriber of the MS1 Device. Subsequent Annual Fees are due 30 days before the first day of each renewal term thereafter. MarineSync Corporation shall submit an invoice to Subscriber in a timely manner for all Fees. Fees not paid within terms will result in deactivation of the Notification Services and Subscriber will be responsible for payment of a reactivation fee and any applicable penalties. All Fees are payable in U.S. dollars and are nonrefundable. The Fees exclude applicable sales, use, withholding and other governmental taxes, fees, duties and charges (collectively, "**Taxes**"). Subscriber is responsible for payment of all Taxes and any penalties and interest thereon arising from the purchase of the MS1 Devices, the purchase of the Notification Services or the payment of the Fees. Subscriber will make all payments of the Fees to MarineSync Corporation free and clear of, and without reduction for, any Taxes. Any Taxes imposed on purchase of equipment or services or payment of Fees to MarineSync Corporation will be Subscriber's responsibility, and Subscriber shall defend, indemnify and hold MarineSync Corporation harmless therefrom.

3.   **MarineSync Corporation Responsibilities**. MarineSync Corporation shall provide Notification Services to Subscriber on a commercially reasonable efforts basis and MarineSync Corporation shall use commercially reasonable efforts to complete each Message Delivery. MarineSync Corporation maintains physical, electronic and administrative policies and procedures designed to restrict access to Subscriber's personal information. These include programs and specifications for physical security; computer and communication security measures reflected in system design, password protection and data management practices and other measures to restrict access to MarineSync or Subscriber data, held in either physical or electronic form; and archiving service records for one year, after which time MarineSync Corporation will have no responsibility for records retention. MarineSync Corporation will be exposed to Subscriber data in the normal operation and maintenance of its database. MarineSync Corporation will hold confidential all of Subscriber's data exercising the same degree of care that a reasonable and careful company would exercise with similar data of its own, and not use such data without the consent of Subscriber. From time to time, MarineSync Corporation shall make changes and improvements to the Notification Services that may result in short periods of service outage. MarineSync Corporation shall make reasonable efforts to notify Subscriber of such outages at least 24 hours prior to such outages. MarineSync Corporation will not be responsible for any natural disaster, acts or omissions of Carriers or others that are beyond the control of MarineSync Corporation and which impair the provision of Notification Services.

4.   **Subscriber Responsibilities**. Subscriber shall input its Message Delivery address information (i.e. phone numbers, pager numbers, and e-mail addresses) into the MarineSync Corporation website. Subscriber may, from time to time, change the Message Delivery address information. Subscriber is responsible for the accuracy of all Message Delivery address information. Subscriber shall implement reasonable security and environmental precautions to ensure MS1 Devices and Subscriber's monitored equipment and systems are not tampered with. Subscriber is responsible for: i) installation of the MS1 Devices; ii) maintaining the MS1 Devices and Subscriber's monitored equipment/systems in good working order; iii) installing and maintaining antenna hardware and equipment sufficient to ensure necessary signal strength as indicated on the MS1 Device strength indicator; iv) operating its MS1 Devices, equipment and systems in a manner that does not disrupt or otherwise interfere with MarineSync Corporation's Notification Services system; and, if desired by Subscriber, v) maintaining service records beyond one year.

5. **Term and Termination**

5.1 **Term**. This Agreement shall have the initial Service Term set forth in *MS1 Service Activation Form.* On condition that Fees have been paid in full, the term shall renew as set forth in *MS1 Service Activation Form* at the end of the initial Service Term and each subsequent renewal term, unless either party notifies the other, in writing, at least 30 days prior to the end of the then current term of its intention not to renew this Agreement. The Annual Fee for any renewal term may be increased by MarineSync Corporation to reflect increases in the cost of telecommunication and other necessary services or for any other reason in the discretion of MarineSync Corporation, provided that MarineSync Corporation notifies Subscriber of the change at least 30 days prior to the commencement of the renewal term.

5.2 **Termination**. A party may terminate this Agreement if the other party breaches any material provision of this Agreement and does not cure the breach within 30 days after receiving written notice thereof. MarineSync Corporation may also terminate this Agreement, without liability to Subscriber, upon notice in the event of any of the following: i) wireless communications service coverage becomes unavailable; ii) lack or unavailability of other equipment or services needed by MarineSync Corporation to provide Notification Services; or iii) Subscriber fails to pay any portion of the Fees when due. MarineSync Corporation shall have no liability to Subscriber for terminating this Agreement in accordance with above. MarineSync Corporation reserves the right to disable any MS1 Device that is believed to be operating outside its design or authorized parameters.

5.3 **Effects of Termination**. Upon termination or expiration of this Agreement for any reason, any amounts owed to MarineSync Corporation before such termination or expiration will be immediately due and payable, and all of MarineSync Corporation's obligations to provide Notification Services shall immediately cease. To the extent MarineSync Corporation terminates the Agreement pursuant to Sections 5.2(i) or 5.2(ii), MarineSync Corporation shall refund to Subscriber the pro-rated amount of the Annual Fee for that period after the termination date.

5.4 **Survival**. Sections 5.3 ("Effects of Termination"), 5.4 ("Survival"), 6 ("Warranty and Disclaimer"), 6.4 ("Liability Limitation"), 7 ("Indemnification") and 8 ("General") will survive termination or expiration of this Agreement for any reason.

6. **Warranty and Disclaimer**.

6.1 **Service Warranty**. MarineSync Corporation's sole and exclusive warranty regarding the Notification Services is that such services provided directly by MarineSync Corporation shall perform in conformity with standard industry practices. MarineSync Corporation does not warrant the complete accuracy of any coverage maps provided which are intended only to be an approximation of the coverage provided by a Carrier's wireless network, that the wireless communications service will be uninterrupted or that its operation will be error-free. MarineSync Corporation's sole obligation under this warranty is to promptly correct the Notification Services so that they reasonably conform to standard industry practices. If MarineSync Corporation is unable to so correct the Notification Services, then Subscriber or MarineSync Corporation may terminate this Agreement, immediately upon written notice to the other party, and MarineSync Corporation's sole liability shall be to refund Subscriber the pro-rated amount of the Annual Fee paid for that period after the termination date.

6.2 **MS1 Device Warranty.** MarineSync Corporation's sole and exclusive warranty regarding the MS1 Device is that the MS1 Device shall be free of defects in materials and workmanship at the time of shipment from MarineSync Corporation for the term of one (1) year. MarineSync Corporation's sole obligation under this warranty is to repair or replace the MS1 Device if such MS1 Device does not function properly due to any component which proves to be defective due to defective materials or workmanship of MarineSync Corporation; provided, however, that said malfunction was not caused by: (i) lightning or other natural forces; (ii) units not installed, operated, or maintained in accordance with instructions provided, applicable local codes, ordinances, or accepted trade practices; (iii) failures resulting from abuse, misuse,

accident, or negligence; (iv) units repaired and/or modified without prior authorization from MarineSync Corporation; or (v)any other acts or omissions of Subscriber or unauthorized personnel. Subscriber shall assume all responsibility and expense for removal, reinstallation, and freight related to warranty service. Any item to be repaired or replaced under this warranty must be returned to MarineSync Corporation, or such place as designated by MarineSync Corporation. Contact customer service at 1-888-988-SYNC for a Return Material Authorization number (RMA) on any product being returned for a warranty claim.

6.3   **Disclaimer.** MarineSync Corporation makes no representation that Notification Services or MS1 Devices shall eliminate loss to Subscriber's equipment or other property. THE EXPRESS WARRANTIES IN THIS SECTION 6 ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, REGARDING THE NOTIFICATION SERVICES OR MS1 DEVICES, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT OF THIRD PARTY RIGHTS. MARINESYNC CORPORATION DOES NOT WARRANT THAT SUBSCRIBER'S USE OF THE NOTIFICATION SERVICES OR MS1 DEVICES SHALL BE ERROR-FREE OR UNINTERRUPTED. SUBSCRIBER ACKNOWLEDGES THAT IT HAS RELIED ON NO WARRANTIES OTHER THAN THE EXPRESS WARRANTIES IN THIS SECTION 6.

6.4   **Liability Limitation**.

6.4.1   **MARINESYNC CORPORATION'S LIABILITY**. IN NO EVENT WILL MARINESYNC CORPORATION BE LIABLE FOR ANY CONSEQUENTIAL, INDIRECT, EXEMPLARY, SPECIAL OR INCIDENTAL DAMAGES, INCLUDING ANY DAMAGED PROPERTY, LOST DATA OR LOST PROFITS, ARISING FROM OR RELATING TO THIS AGREEMENT AND USE OF THE NOTIFICATION SERVICES. MARINESYNC CORPORATION'S TOTAL LIABILITY IN CONNECTION WITH THIS AGREEMENT AND NOTIFICATION SERVICES, WHETHER IN CONTRACT OR TORT OR OTHERWISE, WILL NOT EXCEED THE ANNUAL FEE MOST RECENTLY PAID TO MARINESYNC CORPORATION BY SUBSCRIBER. SUBSCRIBER ACKNOWLEDGES THAT THE FEES REFLECT THE ALLOCATION OF RISK SET FORTH IN THIS AGREEMENT AND THAT MARINESYNC CORPORATION WOULD NOT ENTER INTO THIS AGREEMENT WITHOUT THESE LIMITATIONS ON ITS LIABILITY.

6.4.2   **Third Party Liability Exclusion**. Subscriber acknowledges that the Notification Services utilize MeshVista data portal technology provided to MarineSync Corporation by Mesh Systems LLC, and cellular telephone service by private network carriers pursuant to agreements between such parties. Said agreements have certain terms, conditions and limitations regarding the provision of such services. SUBSCRIBER FURTHER ACKNOWLEDGES THAT MESH SYSTEMS LLC, OTHER CARRIERS, AND MARINESYNC CORPORATION DISCLAIM ALL LIABILITY OF ANY NATURE TO SUBSCRIBER, WHETHER DIRECT, INDIRECT, INCIDENTAL OR CONSEQUENTIAL, ARISING OUT OF SUBSCRIBER'S USE OF MESHVISTA DATA PORTAL TECHNOLOGY AND MS1 DEVICE AND OTHER TELECOMMUNICATIONS SERVICES, AND SUBSCRIBER AGREES THAT IT SHALL HAVE NO CLAIMS, OF ANY KIND, AGAINST MESH SYSTEMS LLC, OTHER CARRIERS OR MARINESYNC CORPORATION WITH RESPECT THERETO.

7.   **Indemnification**. Subscriber agrees to defend, indemnify and hold harmless MarineSync Corporation, Mesh Systems LLC, and the Carriers, and their owners, directors, officers, and employees, from and against any damages, liabilities, claims, costs and expenses (including attorney's fees) to the extent arising out of or resulting from the Notification Services or Subscriber's negligence or willful misconduct. If Subscriber shall, within thirty (30) days after notice, fail to accept defense, the party seeking indemnification shall have the right, but not the obligation, to undertake the defense, and to compromise or settle any claims, for the account of and at the risk of Subscriber. If the claims cannot by their nature be defended solely by one party, the other party shall make available all information and assistance that may reasonably be requested, regardless of any obligation to indemnify hereunder.

8.   **General**.

8.1   **Assignment**. Neither party may assign or transfer, by operation of law or otherwise, any of its rights under this Agreement to any third party without the prior written consent of the other party, which consent shall not be unreasonably withheld or delayed.

8.2 **Notices**. All notices, consents and approvals under this Agreement must be delivered in writing by courier, by fax, or by certified or registered mail, to the other party at the address set forth in the *MS1 Service Activation Form*, and will be effective upon receipt or three (3) business days after being deposited in the mail as required above, whichever occurs sooner. Either party may change its address by giving notice of the new address to the other party.

8.3 **Governing Law and Venue**. The laws of the State of California will govern this Agreement, without reference to its conflicts of law principles. Venue for any arbitration or legal action shall be San Diego, California.

8.4 **Dispute Resolution**. Any action or proceeding arising from or relating to this Agreement shall be resolved by binding arbitration administered by the American Arbitration Association before a single neutral arbitrator pursuant to the commercial rules of the American Arbitration Association. The arbitration must be initiated with a claim filed with the American Arbitration Association within one (1) year after the claimed breach occurred. The failure to initiate arbitration within the one-year period constitutes an absolute bar to the institution of any proceedings based on such claim.

8.5 **Remedies Cumulative**. The parties' rights and remedies under this Agreement are cumulative.

8.6 **Waivers**. All waivers must be in writing. Any waiver or failure to enforce any provision of this Agreement on one occasion will not be deemed a waiver of any other provision or of such provision on any other occasion.

8.7 **Severability**. If any provision of this Agreement is unenforceable, such provision will be changed and interpreted to accomplish the objectives of such provision to the greatest extent possible under applicable law and the remaining provisions will continue in full force and effect.

8.8 **Entire Agreement**. This Agreement is effective only upon receipt by MarineSync Corporation of completed and signed *MS1 Service Activation Form* and supersedes all prior or contemporaneous agreements, understandings, and communication, whether written or oral. This Agreement may be amended only by a written document signed by both parties. The terms on any purchase order or similar document submitted by Subscriber to MarineSync Corporation will have no effect. This Agreement may be executed in one or more counterpart copies, each of which shall be deemed to be an original and all of which taken together shall be deemed one and the same instrument. Faxed or emailed signatures shall be deemed original signatures for all purposes.

Appendix E – Privacy Policy

Manufacturer of MS1 Privacy Policy

The manufacturer of the MS1 device's privacy policy is to respect and protect the privacy of its customers. This policy statement informs customers how the manufacturer of MS1 handles data gathered from the customer's gateway device during routine site maintenance and administration and information gathered when the customer visits the MS1 web site. It is the manufacturer of MS1's policy to use information supplied by customers for internal purposes only and to not share it with third parties for commercial purposes or for any other purpose.

The manufacturer of the MS1 device maintains physical, electronic and administrative policies and procedures designed to restrict access to customer's personal information. These include programs and specifications for physical security, record retention and disposal; computer and communication security measures reflected in system design, password protection and data management practices and other measures to restrict access to the data MS1 held in physical and electronic forms.

If you request information about the MS1 device, your request may be forwarded to our sales engineers, or marketing employees for use in contacting you for marketing purposes. When you visit the MS1 web site, the web server automatically tracks the domain from which you accessed the site and which pages you accessed. The manufacturer of the MS1 device may use and analyze this data to review trends to better understand how the MS1 web site is being used so that we can make it more effective for our customers. Unfortunately, no data transmission over the Internet can be guaranteed to be secure. While extensive site security has been put in place, any information sent to us is done at your own risk as the manufacturer of the MS1 device cannot ensure the security of that information.

The manufacturer of the MS1 device reserves the right to use any information submitted as a resource for the introduction of valuable offers, new product information, and wastewater treatment releases and alerts. If you do not wish to receive this information, please contact product support to have your name removed from our distribution list.

The manufacturer of the MS1 device reserves the right to modify and update these terms and conditions at anytime.

Last updated: March, 2009.

Appendix F – MS1 Support

For questions about your MarineSync MS1 device, service, billing, web portal or password, please contact MarineSync product support via email at help@marinesync.com or by telephone at 888.988.SYNC.