



## Remote Vessel Monitoring System



### Owners' Operation Manual

Version 5.2



[illegible]


RECORD DATA BEFORE INSTALLATION FOR FUTURE REFERENCE	
Model #:	
Serial #:	
Date of Purchase:	
Date of Installation:	

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# 1 INTRODUCTION

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This document is intended to clearly present comprehensive product data and provide technical information to assist the end user in the installation and operation of Boat-Pulse Remote Vessel Monitoring and Alarm System (RVMAS).

AOS Ltd. reserves the right, without notice, to change the design, or construction, of any products and to discontinue or limit distribution of any products. Across Ocean Systems Ltd. also reserves the right to change or update any technical information contained within this document without notice.

## 1.1 CONTACT

**Across Ocean Systems Ltd**  
131 West 4<sup>th</sup> Street  
North Vancouver, British Columbia  
Canada, V7M 3C8

Sales Tel: +1-236-688-8948  
Email: [sales@boat-pulse.com](mailto:sales@boat-pulse.com)  
[www.acrossoceansystems.com](http://www.acrossoceansystems.com)  
Website: [www.boat-pulse.com](http://www.boat-pulse.com)

Across Ocean Systems Ltd. recommends that customers visit our website to check for updates to this Manual. Once a product has been selected for use, it should be tested by the user to ensure proper function in all possible applications. For further instructions, please contact our distributors or visit our website.

## 1.2 COMPLIANT USE

Boat-Pulse RVMAS is an aid only and should not be used as the sole method of decision making. Pulse VMAS will not protect the systems that it is monitoring. Boat-Pulse RVMAS utilizes digital and analog data and electronic information from the various marine electronic instruments or sensors on-board the vessel. This device is only intended for use by persons trained in operating marine systems and only as an operational aid.

The user shall:

- Only use non-defective products.
- Check the safety of operation and the condition of the device before each use.
- Verify that the product is operational at all times and keep it in good working conditions.

Only Across Ocean Systems Ltd. Authorized Dealers or Authorized Technicians are to repair Boat-Pulse RVMAS.




## 1.3 COPYRIGHTS & TRADEMARKS

All product names, logos and brands are property of their respective owners. All company, product and service names used in this manual are for identification purposes only. Use of these names, logos, and brands does not imply endorsement.



## 2 SAFETY

Throughout this manual, the following symbols are used to alert the user to special instructions concerning a service or operation that may be hazardous if performed incorrectly or carelessly. The associated risk levels are stated below.

### 2.1 SAFETY ALERTS

 <b>DANGER</b>	This symbol indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 <b>WARNING</b>	This symbol indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 <b>CAUTION</b>	This symbol indicates a hazardous situation, which if not avoided, could result in minor or moderate injury.
<b>NOTICE</b>	This symbol informs the reader of events not related to personal injury but which there is a risk of damage to property or equipment.
<b>SAFETY INSTRUCTIONS</b>	This symbol informs the reader of safety-related instructions or procedures.

### 2.2 PRODUCT HAZARDS

 <b>WARNING</b>	<b>Disconnect Power:</b> Turn off power at distribution panel before beginning installation to protect installer from electrical hazards.
 <b>CAUTION</b>	<b>Voltage and Current Compatibility:</b> Confirm that the power source is compatible with the maximum voltage and current ratings of it's product variant. Failure to do so could result in damage or fire.

## 3 ABOUT BOAT-PULSE RVMAS

### 3.1 PRODUCT DESCRIPTION

Boat-Pulse RVMAS (Remote Vessel Monitoring and Alarm System) by Across Ocean Systems Ltd. is an integrated data acquisition system that acts as a hub for vital information about the vessel and its environment. This system is designed to be highly configurable, to monitor and provide warnings for parameters that have gone below or above set values.

Boat-Pulse RVMAS will work with analog voltage sources such as voltage of batteries, or with digital input sources such as high water alarm switch, etc. Boat-Pulse VMAS will raise a warning if the preconfigured warning conditions are met. The information is collected and sent to a server, where it is securely stored for access by the boat owner. The data could be sent either via built in Wi-Fi or Mobile Phone type of connection for which a service subscription is required.

The R5.0 version of the hardware has built in or could be interfaced to the following sensors and accessories:

- External sensor to measure the temperature and humidity in the vessel - provided
- Internal GPS unit with connector to external GPS antenna – built-in
- External GPS Antenna – easy and convenient to place at position with better GPS coverage (outside of the installation cabinet location) - provided
- Internal Accelerometer for measuring boat movement and estimating sea state and wind force – no external connections necessary – built-in
- Mobile phone type of connectivity – built-in (limited time service included with the purchase of the device)
- Wi-Fi connectivity – built-in, configurable via Bluetooth App
- Bluetooth connectivity – built-in, BLE Bluetooth connectivity to Boat-Pulse Bluetooth free App available for iPhone and Android devices
- Four analog input voltmeters to measure up to four batteries – built-in, the unit power terminal is internally connected to the House Battery Input. The remaining 3 battery inputs have independent positive inputs, but share the same negative input



**CAUTION** All batteries must share the same negative/ground terminal (GND)



**NOTICE** When Wi-Fi is enabled the inputs for the third and fourth batteries are not functional.

- Four dedicated built-in digital inputs to connect to
  - D1 - High Water Alarm switch (NC) – provided
  - D2 - Optional intruder reed switches (NC) – customer provided or available to purchase. Multiple switches must be connected in series
  - D3 – Optional PIR motion detection device (NC) – customer provided or available to purchase
  - D4 – Dedicated input to connect hidden intruder alarm on/off switch – customer provided or available to purchase.
- Two dedicated built-in outputs that are internally programmed and available to connect to:
  - P1 – Anchor light automation
  - P2 – Siren output for the intruder alarm functionality of the system

- Notification system via email – built-in. Data is sent to Boat-Pulse Server and the server dispatches an email notification as soon as the data is outside of safe zone that is configured in the alarm section.

### 3.2 INTENDED USE

Boat-Pulse RVMAS is designed to aid the user to identify possible issues and malfunctions of systems on the vessel, while the vessel is unattended, thus help the user make a timely decision to protect equipment from sudden failure.

### 3.3 TECHNICAL SPECIFICATIONS

The table below lists the Technical Specifications of the Pulse VMAS device.

Table 1: Technical Specifications

MODEL	Pulse VMAS
AOS LTD. PART #	BP-800
OPERATING VOLTAGE	9 - 32 VDC (Nominal 12 VDC or 24 VDC)
MIN VOLTAGE PROTECTION	Selectable in the software
OPERATING CURRENT	<b>Sleep:</b> 15 mA / <b>Active:</b> 230 mA @ 12 VDC <b>Sleep:</b> 8 mA / <b>Active:</b> 120 mA 270 mA @ 24 VDC
OUTPUT VOLTAGE	Same as Operating voltage connected to the system
OUTPUT CURRENT	Max 200mA - Internally protected with 200mA thermal fuse
DIGITAL INPUT VOLTAGE	10V to 28V DC
DIGITAL INPUT MODE	NO or NC selectable via Software
IINTRUDER ALARM INPUT	NC Digital input, PIR (Optional motion sensor), Accelerometer Motion
DISPLAY SIZE	Attached to any iPhone, Android or web enabled computer
OPERATING TEMPERATURE	-13°F to 131°F [-25°C to 55°C]
STORAGE TEMPERATURE	-22°F to 158°F [-30°C to 70°C]
OPERATING HUMIDITY	95 % (Non-Condensing)
DIMENSIONS	4.5" x 3.5" x 1.6" [114 mm x 90 mm x 40 mm]
WEIGHT	0.8 lbs. [0.36 kg]
STORAGE HUMIDITY	75 % (Non-Condensing)
RREPORTING	
REPRTING METHODS	GPRS, Wi-Fi
REPORTING INTERVALS	5min, 15min, 0.5hr 1hr, 24hrs or auto
AUTO REPORTING INTERVAL	5min when vessel is moving, otherwise 30min
ALARMS REPORTING INTERVALS	Unit will attempt to send alarms as they are triggered. The speed will depend on network availability and load
NOTIFICATION PERIOD	Once alarm data is received from the server the server will attempt to send data. The speed the email is received depends on the client connectivity and email settings. Please enable notifications in your email program
WEB ACCESS	Available for unlimited access with web client. Provides vessel dashboard of the last known data report as well as an access to historical data

<b>VESSEL DASHBOARD DATA</b>	<ul style="list-style-type: none"> <li>• Position Lat. and Long.</li> <li>• Temperature</li> <li>• Humidity</li> <li>• House battery voltage and trends (provides power to the device)</li> <li>• Starting Battery voltage and trends (if connected)</li> <li>• EXT1 and EXT2 batteries voltage and trends (if connected)</li> <li>• Bilge-water - % of time it's been present in the reporting interval (if connected)</li> <li>• Sea state estimated from the movement of the vessel</li> <li>• Wind strength estimated based on the sea state</li> <li>• GPRS Connection strength in %</li> <li>• Last report time and date</li> </ul>
<b>HISTORICAL DATA</b>	Same as above going back up to two months

Table 2

### 3.4 VISUAL OVERVIEW

The unit electronics are hosted in a DIN-Rail mountable enclosure, but also has flanges with screw holes for wall or desktop mounting.

Figure 1: Boat-Pulse RVMAS Dimensional drawing

#### 3.4.1 Connectors

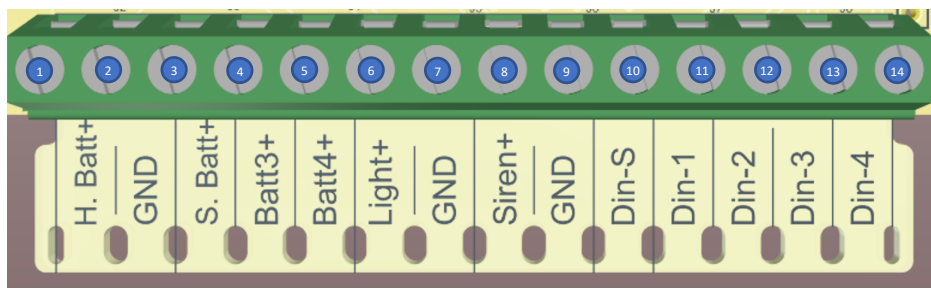


Figure 2: Boat-Pulse RVMAS Connector View

Table 3: Pulse VMAS Back Panel Connectors

NO.	NAME
1	"H. Batt+" House Battery Positive (+) Power Connector
2	"GND" House Battery Negative (GND) Power Connector
3	"S. Batt+" Starting Battery Positive (+) Power Connector
4	"Batt3+" Optional Battery3 Positive (+) Power Connector
5	"Batt4+" Optional Battery4 Positive (+) Power Connector
6	"Light+" Anchor Light Output Positive (up to 200mA)
7	"GND" Anchor Light Output Negative (GND)

8	"Siren+" Siren Output Positive (up to 200mA)
9	"GND" Siren Output Negative (GND)
10	"S+" Digital Source Connector – provides source for DI
11	"D1" Digital Input 1 – High Water Alarm float
12	"D2" Digital Input 2 – Doors/hatches reed contacts
13	"D3" Digital Input 3 – PIR Sensor input
14	"D4" Digital Input 4 – Hidden intruder alarm disable switch

**CAUTION**

\*D1 is dedicated to a bilge pump, D



## 4 TERMINOLOGY AND FUNCTIONS

Before proceeding with the configuration and operation of Boat-Pulse RVMAS, is it important for the user to become familiar with the terminology and basic functions used throughout this manual.

### 4.1 INPUTS/OUTPUTS

Inputs serve the purpose of connecting different boat devices to the system in order to provide information for analysis and reporting

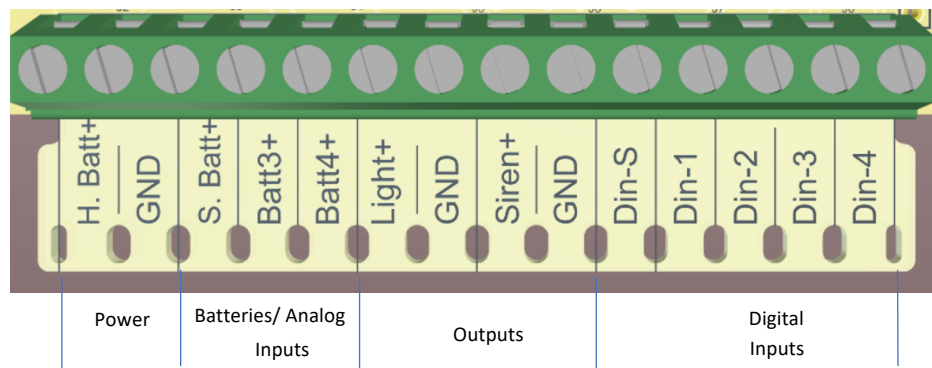


Figure 3: Boat-Pulse Connectors

#### 4.1.1 Analog Input

Input which is connected to internal voltmeter and can measure different voltage, e.g. Starting Battery is being measured via Analog Input

#### 4.1.2 Digital Input

Digital Input is best described as an input from a switch. It senses if signal (voltage) is present or not, e.g. High Water Alarm switch is being monitored via Digital Input

#### 4.1.3 Outputs

The Menu Screen is the screen that holds the Panel Buttons. Outputs are purposed voltage sources that are internally connected to the House Battery voltage via solid state switches controlled by the software of the device. Maximum output current is limited to 200mA and protected internally with thermal fuse.

## 5 SIMPLIFIED INSTALLATION

### *BOAT-PULSE* SIMPLIFIED CONNECTION DIAGRAM

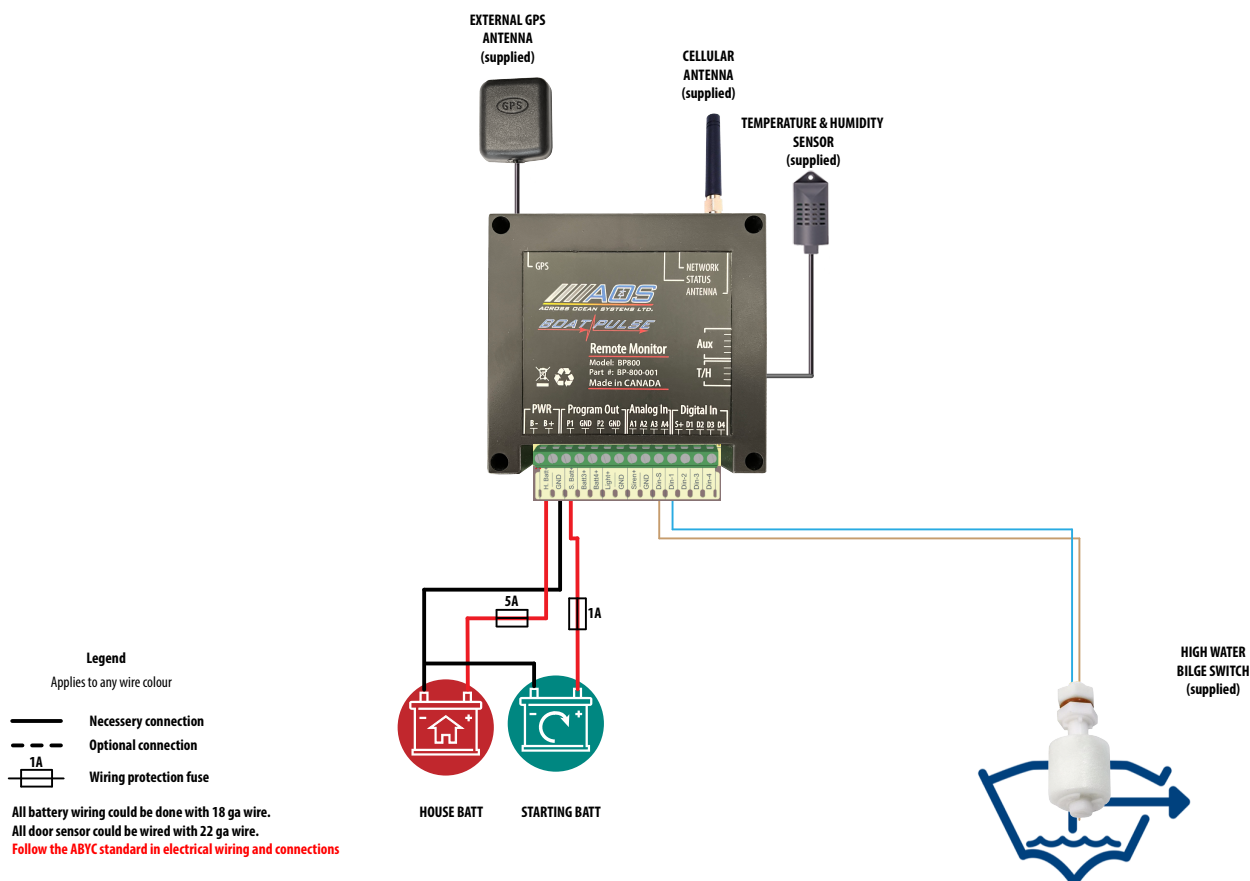


Figure 4: Simplified connection diagram

Above diagram shows simplified installation. Connecting only the house battery to the Boat-Pulse will power the system. Once powered, the system will be capable of reporting temperature, humidity, geographic location, house battery voltage, as well as any voltage of the additional batteries connected. After time, the system will average the movement of the vessel and will estimate the sea state and the wind force associated with that sea state. When powered up for a first time, please allow up to one hour for the system to initialize and establish connection to the network.

## 6 FULL INSTALLATION

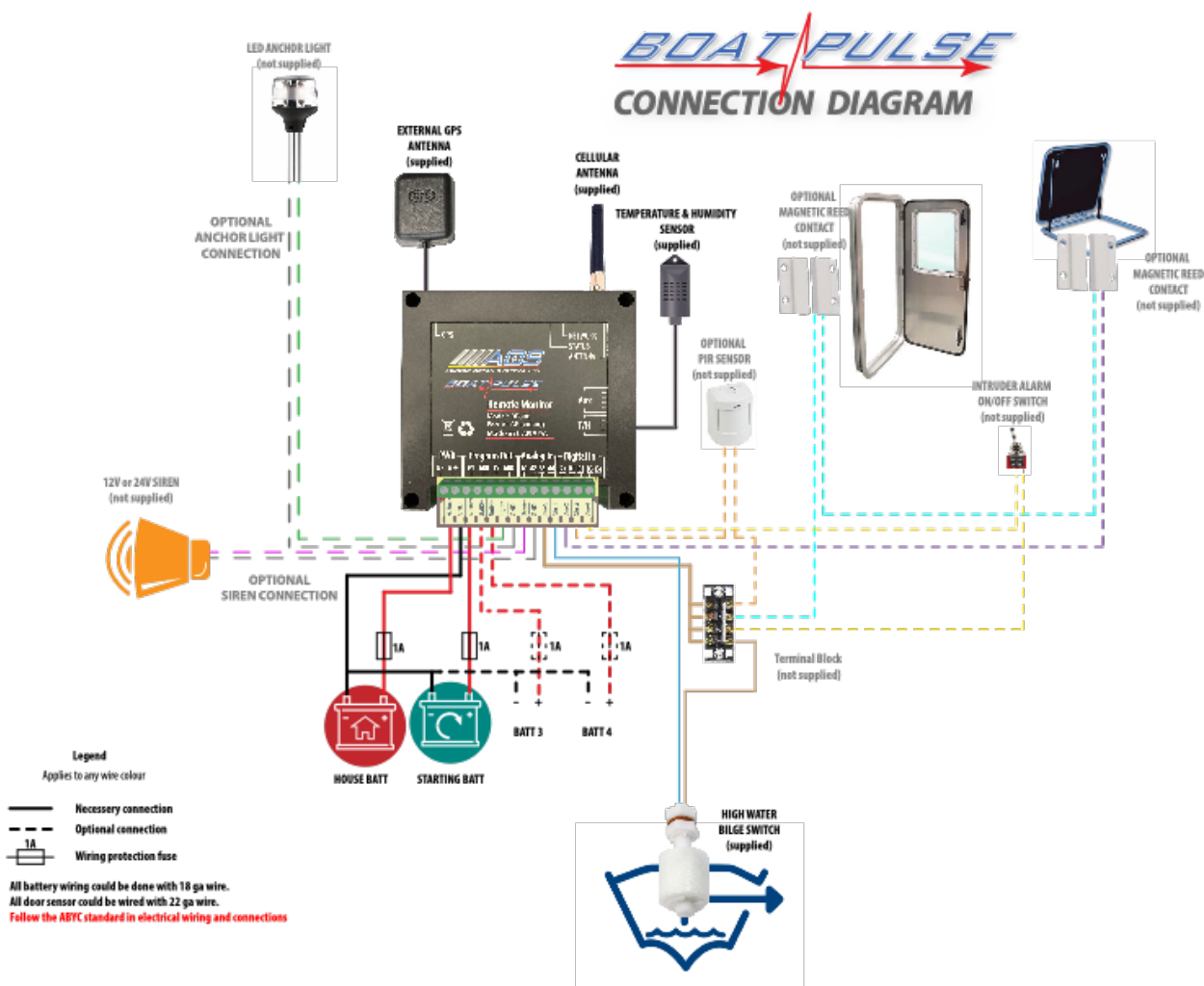


Figure 5: Complete Connection Diagram

Above diagram shows full system installation that includes not only House and Starting Batteries, but includes intruder detection circuits, intruder deterrent circuit, automatic anchor light control, and additional batteries monitoring. As in the simple installation, connecting the house battery to the Boat-Pulse will power the system. Once powered, the system will be capable of reporting temperature, humidity, geographic location, house battery voltage, as well as any voltage of the additional batteries connected. After time, the system will average the boat movement and estimate the sea state and the wind force associated with that sea state. When powered up for a first time, please allow up to one hour for the system to initialize and establish connection to the network.

In the above example, after the intruder detection and deterrent circuits are in place, the user will be able to configure the system for intrusion detection. When leaving the vessel, the system could be armed either through the Bluetooth application, or via the Intruder alarm on/off switch installed in a hidden location. For more information of how to setup the system for intruder detection, please check Intruder detection section of this manual



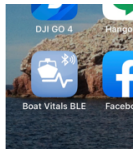
## 7 CONFIGURATION

### 7.1 INITIAL CONFIGURATION

Once the system is installed and powered up, open your mobile phone and download an application called “Boat Vitals BLE”.

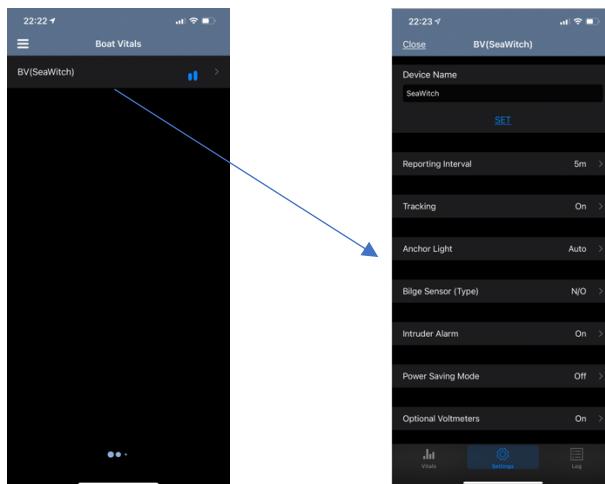
To begin customizing, please cycle the power to Boat-Pulse hardware. Once restarted the system will allow Bluetooth connection for 5 minutes without prompting for password.

The user must locate and **TAP** the “Boat Vitals BLE” icon. The application will launch and search for available Boat-Pulse hardware.



*Figure 6: Bluetooth BLE application Icon on your mobile device*

In few seconds your system will show on the list. **TAP** on your system in the list displayed and enter the system connection.



*Figure 7 Select Boat-Pulse hardware to view data being measured*

Accessing your hardware setting After the application connects to the system, the user is then presented with three TABs.

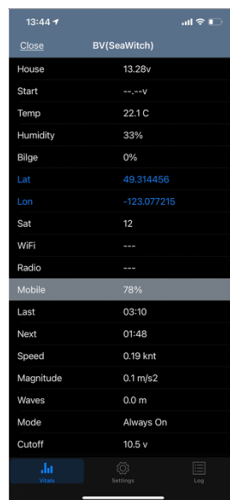
The TABs are:

- Vitals
- Settings
- Log

Below is an explanation of each TAB.


### 7.1.1 Vitals TAB

By **TAPPING** the Vitals TAB, the user can see the fields updating as they are read from the unit. The following information is being displayed in real time:



BV(SeaWitch)	
House	13.28v
Start	---
Temp	22.1 C
Humidity	33%
Bilge	0%
Lat	49.314456
Lon	-123.077215
Sat	12
WiFi	---
Radio	---
Mobile	78%
Last	03:10
Next	01:48
Speed	0.19 knt
Magnitude	0.1 m/s <sup>2</sup>
Waves	0.0 m
Mode	Always On
Cutoff	10.5 v

Figure 8: Bluetooth BLE application real time data display page1



BV(SeaWitch)	
Humidity	33%
Bilge	0%
Lat	49.314456
Lon	-123.077215
Sat	12
WiFi	---
Radio	---
Mobile	78%
Last	03:27
Next	01:32
Speed	0.09 knt
Magnitude	0.2 m/s <sup>2</sup>
Waves	0.0 m
Mode	Always On
Cutoff	10.5 v
Reporting	00:05:00
Optional Voltmeter 1	---
Optional Voltmeter 2	---

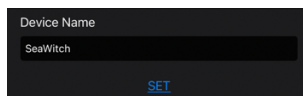
Figure 9: Real time data display page2

- House Battery Voltage
- Starting Battery Voltage
- Temperature
- Humidity
- Bilge (running time as % of reporting time)
- Lat. & Long.
- Satellites acquired by the GPS unit
- Wi-Fi signal strength
- Radio signal strength (for unit equipped with LoRa radio modules)
- Mobile signal strength
- Last report transmission
- Next report transmission schedule
- Speed
- Magnitude of the mean wave
- Wave height estimation
- Mode of operation
- Low voltage cut-off
- Current Reporting interval
- Optional voltmeter 1 voltage
- Optional voltmeter 2 voltage

### 7.1.2 Settings TAB

Settings TAB is where the system is setup to operate properly and where it can be fine-tuned to better fit the specific customer requirements and installation. The information is more than what can be displayed on a single screen, thus scroll to see the fields that are below the lower portion of the screen to reveal them.

#### 7.1.2.1 Device Name

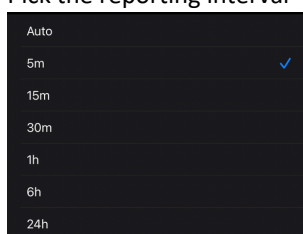


Enter your Vessel name and press SET

#### 7.1.2.2 Reporting Interval



Pick the reporting interval - default is 30min, available options are:



#### CAUTION

If an interval less than 30min is selected the system will transmit reports at the selected interval for 24hrs and then will go back to the default reporting period of 30 minutes

#### 7.1.2.3 Tracking

Options are On/Off. If you decide not to send data to the server select Tracking to be Off. Otherwise leave it on the default On setting.



#### CAUTION

If you turned Tracking to Off for the duration of a specific trip, please do not forget to switch it back to On when you finish your trip, otherwise there will be no reports or alarms initialized by the system

#### 7.1.2.4 Anchor Light

Options are On/Off/Auto

- On will turn on output P1, thus will turn on the anchor light that is connected to the P1 output
- Off will turn off the P1 output
- Auto will use the GPS data to calculate sunrise and sunset time for the day and the location where your boat is located and will turn on the P1 output at sunset and off at sunrise

#### 7.1.2.5 Bilge Sensor Type

Options are NO (normally open) and NC (normally closed)

- NO – Boat-Pulse will expect that there is no connection between DS and D1 input. The system will wait for a contact closure in order to trigger an alarm.

## NOTICE

Use this setting if you have nothing connected to the D1 input.  
Use this setting if you would like to connect D1 input directly to a bilge pump or Bilge pump switch

- NC – Boat-Pulse will expect that there a constant connection between the DS and D1 input. The system will wait for the contact to open or the connection to get dropped (broken wire) in order to trigger an alarm. This is more reliable way and commonly used in security systems, but requires NC contact on the sensor.

The High-Water switch provided with the system is acting as NC (normally closed) contact if installed with the threads pointing up and NO (normally opened) if installed with the threads pointing down



NC



NO

Figure 10: Installation position for NC

Figure 11: Installation position for NO

Custom bracket (not supplied) will be required to attach the sensor to appropriate place in the bilge compartment/ compartments of the vessel.

### 7.1.2.6 Intruder Alarm

Selection choices are:

- On - to arm the intruder alarm (please make sure you have installed and configured the intruder door sensors or PIR sensor)
- Off - to disarm the intruder alarm

### 7.1.2.7 Power Savings mode

This option is useful if the system is on the vessel that is left unattended for long period of time and it is not attached to shore power or other means of charging the batteries. It is only working properly and can be effective if the reporting period is set to 30 minutes or more

Boat-Pulse hardware will transmit a message, and after that will go to a “deep sleep”, consuming very little energy from the batteries. During the “deep sleep” it still monitors the majority of the inputs and it will wake and send data to the server either if the inputs are triggering an alarm condition, or the time interval between two reports, e.g 30 min has expired and is time for new transmission. In the case as the above, we advise to setup the reporting period to higher value e.g. 3hrs or 6hrs.

### 7.1.2.8 Optional Voltmeters

Selection choices are:

- On – enables the two additional analog inputs (A3 and A4) to measure voltage from extra batteries, such as bow thruster or generator batteries. These two inputs are only monitored and the data is being recorded but not alarmed, thus it needs to be reviewed by the owner when feedback is required. It is in our plan to enable alarming of these two inputs in a future version of the device firmware
- Off – disables the two additional analog inputs (A3 and A4)



**CAUTION**

If the Wi-Fi is enabled on the system the A3 and A4 will not be operational regardless of the setting applied to the Optional Voltmeters

#### 7.1.2.9 Cut-off Voltage

Cut-off voltage is the voltage above which the system will operate. If the the voltage of the house battery drops below the selected cut-off voltage and the Boat-Pulse hardware will go to “deep sleep” not discharging the batteries any further. While in “deep sleep, it will monitor the voltage of the house battery which is actually the battery powering the unit). As the battery voltage goes over the cut-off voltage for 10 minutes, the system will wake up and attempt to send data to the servers again. This fully automated process is designed to protect your batteries from over discharge and it will repeat itself if necessary.

- The selection choices for 12V system are: 10V, 10.5V, 11V, 11.5V, 12V, 12.5V;
- The selection choices for 24V system are: 20V, 21V, 22V, 23V, 24V, 25V;

#### 7.1.2.10 House Voltmeter Calibration (B+ input)

We recommend that during installation voltage on the battery terminals be measured with a precise digital voltmeter (such as FLUKE or other brand) and calibration be applied in order to match this measured voltage to the reading of the house battery voltmeter of Boat-Pule as closely as possible. The positive correction will add to the value read by the Boat-Pulse Voltmeter and the negative Values will subtract from its readings, e.g. if the battery voltage measured on the battery terminals is 12.6V and Boat-Pulse is reading 12.5V correction factor of +0.1V will be appropriate, if the voltage on the battery terminals reads 12.5V and Boat-Pulse is reading 12.6V correction factor of -0.1V will be appropriate.

- The selection choices are: -0.3V, -0.25V, -0.2V, -0.1V, 0V (default), +0.1V, +0.2V, +0.25V, +0.3V;

#### 7.1.2.11 Starting Battery calibration (A1 Input)

Starting battery calibration process is the same as the house battery calibration process described above

#### 7.1.2.12 Opt Voltmeter 1 calibration (A3 input)

Opt Voltmeter 1 calibration process is the same as the house battery calibration process described above

#### 7.1.2.13 Opt Voltmeter 2 calibration (A4 input)

Opt Voltmeter 2 calibration process is the same as the house battery calibration process described above

#### 7.1.2.14 Intruder Alarm Delay

Intruder alarm delay specifies the countdown that is triggered before the system sends an alarm message if configured or sound the siren if connected and configured. This delay is necessary so the owner can enter the boat and disarm the the intruder alarm from the intruder alarm on/off switch in the event he hasn't done that via the Bluetooth app from outside the vessel.

- The selection choices are: 15 sec, 30 sec, 60 sec;

This delay is also applied to how the siren output is controlled, e.g. if 15sec is selected, the siren will engage 15 seconds after the alarm trigger has been detected (door open, PIR sensor activated, etc.), then will sound for 15 seconds, pause for 15 seconds, sound again for 15 seconds and so on, till 5 minutes' time has passed. At this point the siren will be silenced, but alarm notification will be sent with every reporting packet of data, thus the customer will get multiple emails as notifications of the event

#### 7.1.2.15 Intruder Alarm Door Sensor

Specifies if intruder sensors are installed

- The selection choices are: Yes, No;

Selecting Yes for this option will inform the Boat-Pulse system that intruder detection sensors are installed to doors/windows/hatches and force the system to monitor D2 input for interruption of the connection. All sensors installed must be NC type and connected in series



Figure 12 Connecting multiple door magnetic read contact sensor in series (must be NC type)

#### 7.1.2.16 Intruder Alarm PIR Sensor

Specifies if there is PIR motion sensor installed

- The selection choices are: **Yes, No;**

Selecting **Yes** for this option will inform the Boat-Pulse system that PIR motion detection sensors are installed to doors/windows/hatches and force the system to monitor D3 input for interruption of the connection. All sensors installed must be NC type and connected in series

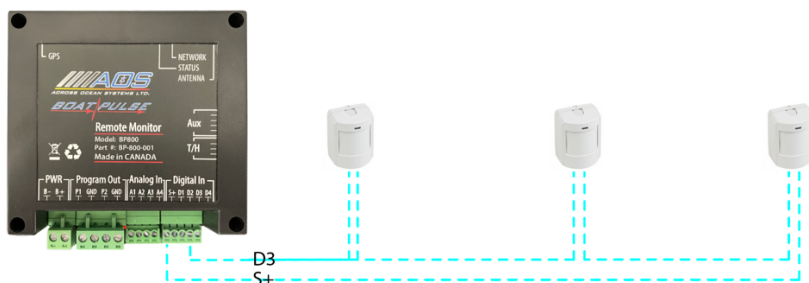


Figure 13 Connecting multiple PIR sensors in series (must be NC type)

#### 7.1.2.17 Intruder Alarm Motion Sensor

This feature is effective only on smaller vessel under the size of 28-30 feet. It is based on data from the internal accelerometer and it detects sharp unusual motions/vibration of the vessel. The feature is trying to differentiate between the normal boat movement and someone stepping on the vessel and creating sharper than usual movement of the vessel. It has a sensitivity scale and is proven to work well, but it is not as good as installation of PIR or door/hatch sensors.

A larger number corresponds to higher sensitivity.

- The choices are: **Off, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10;**



Please take your time to fine-tune the sensitivity and field test this feature in order avoid annoying false alarms

#### 7.1.2.18 Intruder Alarm Switch

This option will tell the system if hidden switch that will be used for arming and disarming the alarm is installed.

- The selection choices are: **Yes, No;**

If you are planning to use the intrusion detection and alarming functionality, we recommend installing one of these switches in a hidden but easily accessible location inside the vessel. This switch will be useful to flip on before you leave the vessel and flip back off when you arrive on the vessel. Of course the same can be achieved via the Bluetooth application by changing the Intruder Alarm – On/Off setting described earlier in this paragraph. The Bluetooth app has priority over the mechanical switch, e.g. if the intruder alarm switch is ON, the application can still disarm the alarm with the switch in on position. In order to arm the alarm again with the switch the switch must be toggled to off position first then to On position. At this point the normal alarm arming cycle will start and the system will count-down the Intruder Alarm Delay before it starts monitoring the intruder detection sensors and/or PIR sensors, giving the user enough time to leave the vessel and close the door.

#### 7.1.2.19 Intruder Alarm Siren

This function will enable the output to the siren. Leave it on if you have siren installed and would like the siren to sound when the breach of the security parameter is detected.

#### 7.1.2.20 Mobile

This option is for setting the parameters for mobile communications

The default settings are:

##### 7.1.2.20.1 APN

APN: **iot.1nce.net** (default)

##### 7.1.2.20.2 User

User: blank (no user)

##### 7.1.2.20.3 Password

Password: blank (no password)

#### 7.1.2.21 Wi-Fi

Below settings are to connect to the vessel's existing Wi-Fi network

##### 7.1.2.21.1 SSID

SSID: \_\_\_\_\_

Enter the desired SSID

##### 7.1.2.21.2 Password

Password: \_\_\_\_\_

Enter the password for this access point

#### 7.1.2.22 Check for updates

From time to time we provide software updates to the Boat-Vitals hardware. Please check for new software availability by tapping "**Check For Update**"

If a new version is available, you can initiate a download:

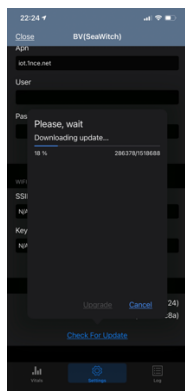


Figure 14: New version downloading

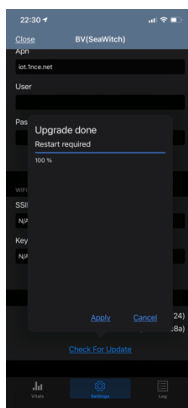


Figure 15: New version installed (press **Apply** to restart)

Once the download is completed, the “Upgrade” will become available. **TAP** on it to start the upgrade. The upgrade process usually takes less than 5 minutes. Do not disconnect power from the device or walk away outside of Bluetooth range. Distance of 2m to 3m (7' to 10') between the Boat-Pulse device and the mobile phone performing the upgrade from is required.

When the upgrade is completed, **Apply** button will become available. **TAP** on Apply to restart the device and continue to enjoy your device’s updated functionality.

### 7.1.3 Log TAB

The Log tab is to assist technical support with troubleshooting your hardware. Please follow the instructions of Boat-Pulse Technical Support about collecting the necessary information and press the Email

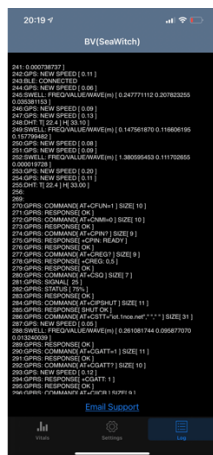



Figure 16: Logging functionality

## 8 REVIEWING BOAT DATA

### 8.1 BOAT DASHBOARD

When Boat-Pulse system is activated after your purchase, you will receive a support email with a private encrypted URL (web address) that will allow you to access the data your vessel sends to the server.

 <b>WARNING</b>	<p>Keep this URL secure. If you would like, you can share it amongst your family, but be aware that anyone with access to this URL will be able to see the vessel's location and other data, as well as change the notifications/alarms email address, change alarms values and turn them on or off.</p> <p>We recommend NOT sharing the URL if you don't trust the person you are planning to share it with.</p>
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### 8.2 SETTING UP THE URL ON DIFFERENT DEVICES

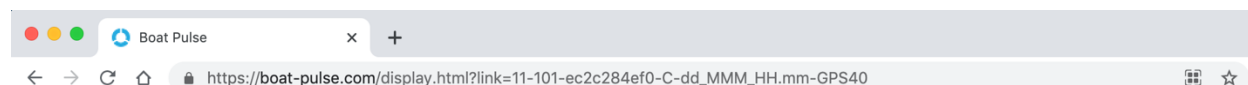
Once installed and powered up the Boat-Pulse hardware, leave it for about 1 hour to stabilize, acquire GPS, connect to the server and start reporting. Usually the defaults are to transmit one data point average per 30 minutes, but in unfavorable conditions the first data point after power ON can take up to 1hr

#### 8.2.1 Setting the URL on your computer

Open your browser (Chrome browser is preferred and performing best on Windows and on MAC)

Copy the URL from the email received from us to your browser address line:

It should look something like this:

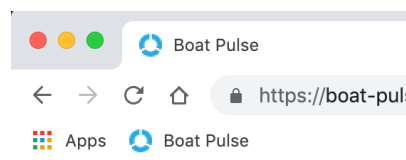


press enter and that will get you to your vessel page.

##### 8.2.1.1 Add the URL to your Bookmarks

On Chrome go to Bookmarks menu and select "Bookmark This Tab"

The bookmark will show in your browser and be available for future quick access



## 8.2.2 Setting up Boat-Pulse access to your vessel on you iOS device

### 8.2.2.1 Open the camera application on your phone and point towards the provided QR-Code.



Figure 17: QR-Code reading

### 8.2.2.2 Scan the QR-Code on the box

Once the camera detects and reads the QR-Code, it will Prompt on the top: “Open boat-pulse.com in Safari”


### 8.2.2.3 TAP the prompt specified above and Safari will open your vessel’s personal data page

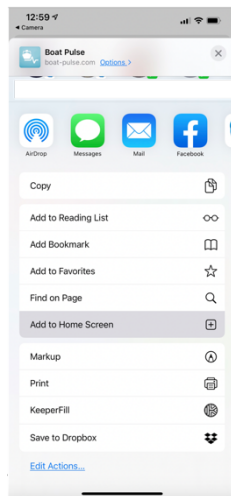


Figure 18: Your Vessel Personal data Page

### 8.2.2.4 Adding Boat-Pulse Icon to your iPhone Home Screen

Here is how to create shortcuts to rapidly access your Boat-Pulse on Android type mobile device (Phone and Tablet):

Once your personal vessel data page is opened, TAP  on the bottom of the screen.



at the top change the options if it's desired, and then select **Add to Home Screen**

the Boat-Pulse Icon will be placed on your iPhone or iPad home screen for convenient fast access in the future. The icon will appear on your home screen like any other app shortcut or widget so you can drag it around and put it wherever you like.

From now on, every time you need to check on your vessel, you can simply TAP on the Boat-Pulse icon on your home screen.

### 8.2.3 Setting up Boat-Pulse access to your vessel on your Android device

Here is how to create shortcuts to rapidly access your Boat-Pulse on Android type mobile device (Phone and Tablet):

**8.2.3.1** *Open the camera application on your phone and point towards the provided QR-Code and scan.*  
Open the link in Chrome (for Android please use Chrome only)

**8.2.3.2** *Tap the menu button and tap 'Add' to home screen.*

**8.2.3.3** *You will be able to name the shortcut and then 'Chrome' will add it to your home screen*

**8.2.3.4** *The icon will appear on your home screen like any other app shortcut or widget so you can drag it around and put it wherever you like.*

### 8.2.4 Dashboard layout and features

*Every time you access your boat page regardless if it is on PC, MAC or mobile device, (the application dynamically resizes for the screen width resolution of your display, thus it could have differences in the representation on devices with different screen resolutions. You should see a similar dashboard:*

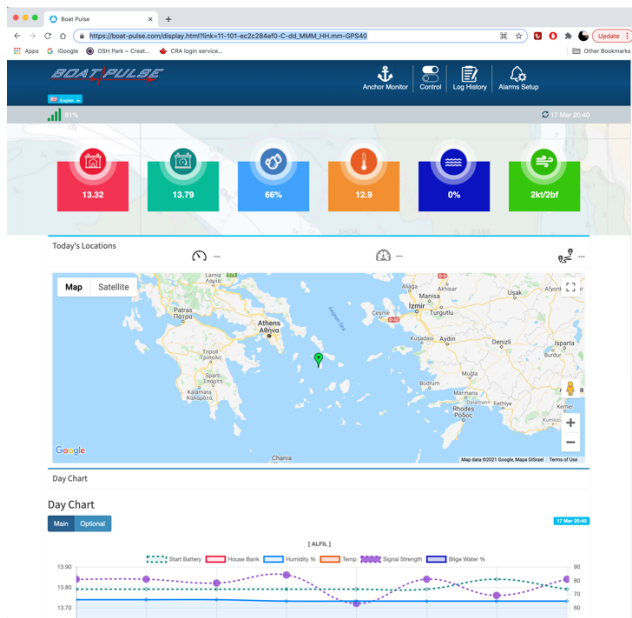


Figure 19

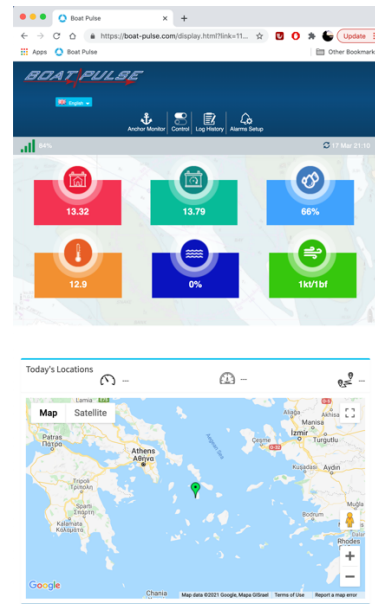


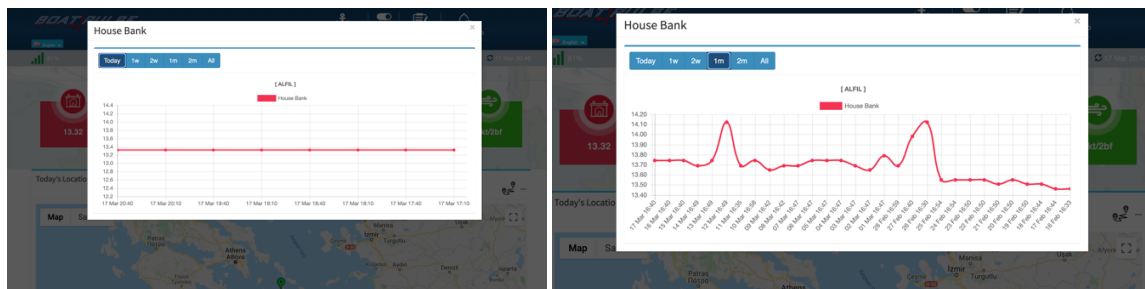
Figure 20

## NOTICE

Please note that the page has a modern dynamic layout and will adjust itself to your device/browser resolution so it might appear in a slightly different order but will have the same attributes and information displayed

### 8.2.5 Getting detailed information

If you click on any of the icons representing different monitored parameters, such as house or starting battery etc., window will pop-up with today's data plotted in graphical format



## NOTICE

By clicking on the data range selection buttons, the data for Today, 1w (one week past), 2w (two weeks past), 1m (one month past) or 2m (two months past) could be reviewed and analyzed

This information could be extremely useful to show trends of your battery charging systems, temperature, humidity etc.

### 8.2.6 Menu buttons for accessing additional functionality:

There are four menu buttons to allow access to additional features or functionality:



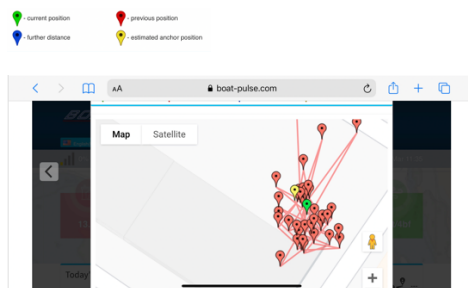


#### 8.2.6.1 Alarms Setup.

First and foremost, one needs to setup the email address to which notifications will be sent and then enable alarms for the parameters that would want to trigger notifications

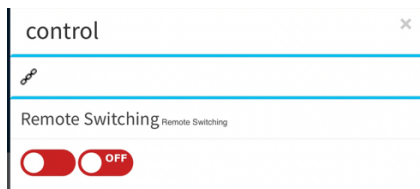
#### Anchor Monitor

Anchor monitor is an automatic feature that starts monitoring the boat position if the boat is stationary. In order to get notifications, one must specify the anchor safe radius in the alarms setup above and turn on the alarm notifications for this feature.



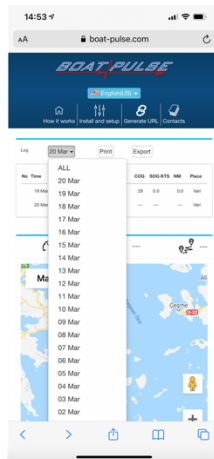
#### 8.2.6.2 Control

This is where control of the inputs will be implemented in future revisions.

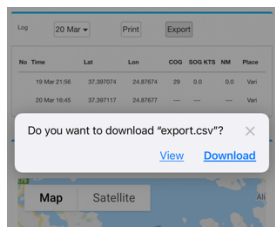


#### 8.2.6.3 Log History

Displays the log history vessel's movements on a daily basis. Selecting the date from the drop-down list will display the information for the vessel location, speed, etc. for this particular date.



One has the option to **Export** the log data to CSV file to use for review or analysis in different applications



## NOTICE

Please note that Log History is only available if the boat has moved on the selected date. If the boat has been stationary (at the dock) there will be just one position recorded.

## 9 MAINTENANCE

The Boat-Pulse RVMAS unit requires very little maintenance. If the user follows the guidelines below, Boat-Pulse RVMAS will remain in peak condition for years.

### 9.1 CLEANING

To clean the screen surface, use a soft dry non static cloth and wipe the enclosure. Do not attempt to use any chemicals for cleaning the plastic enclosure. Using anything else but a soft cloth, could damage the enclosure.

### 9.2 PREVENTATIVE MAINTENANCE

1. Quarterly (4 times per year)
  - a. Clean the unit with soft cloth
  - b. Visually inspect all wire connections and the antennae for signs of wear
2. Every year
  - a. Inspect enclosure to ensure no adverse wear due to environment
  - b. Confirm all electrical connections are secure
  - c. Check calibrations against known good measurement of the parameter being calibrated


#### NOTICE

It is recommended that any required service work on Boat-Pulse unit should be performed by a factory authorized service representative. Please contact the nearest AOS Ltd. authorized distributor for assistance.

# 10 TROUBLESHOOTING

In the event of an abnormal operation, check the error message against this section of the manual and try to rectify the problem as specified in the error message or in this section of the manual.

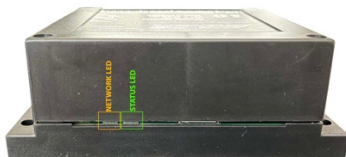
If it is not possible to locate or eliminate the problem using this section, or if the dysfunction is still present, switch off the device and contact Across Ocean Systems Ltd. technical support department.

 <b>WARNING</b>	The user must not attempt to repair the unit themselves. It is strongly recommended that any required service work on a AOS Ltd. unit be performed by a factory authorized service representative. Please contact the nearest AOS Ltd. authorized distributor for assistance.
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## 10.1 LED LOCATION, COLOUR AND FLASHING CODES

### 10.1.1 LED Location

There are two indicator LEDs inside the Boat-Pulse unit. The LEDs are not brought to the exterior of the enclosure. They can be seen through the small opening on the enclosure end opposite to the electrical connectors.



### 10.1.2 Green LED

The green LED is called STATUS LED.

Its function is to inform the user of the current status of the system in case troubleshooting is required

There are three possible conditions represented with the following flashing codes:

- No flash – the unit is not powered or the microprocessor unit is not operational
- Flash fast – 1 per second – the system is operating properly, but no Satellite fix/lock yet
- Flash slow – 1 per three seconds system is operating properly and a GPS fix is acquired

### 10.1.3 Orange LED

The orange LED is called NETWORK LED.

Its function is to indicate the status of the mobile network.

There are four possible conditions represented with the following flashing codes:

- No flash – there is no power redirected internally to the mobile communication module
- Very fast flashes – the module is connected to the server and transmitting data
- Fast flash
- Slow flash
-

Table 3: Troubleshooting procedures

Problem (Issue Encountered)	Cause (What it Means)	Corrective Action (What to Do)
<b>There are no LED indicators lighting up on power up</b>	Most likely there is no power applied to the unit	<ul style="list-style-type: none"> <li>• Ensure that there is 12V or 24V DC power applied to the connectors marked B+ and B-</li> <li>• Cycle the breaker providing power to Pulse VMAS.</li> <li>• Check for power available to Boat-Pulse R VMAS screen by measuring the connector marked with B+ and B-.</li> </ul>
<b>The Green LED flashes fast</b>	There is communication with the GPS but no satellite fix has been acquired yet.	<ul style="list-style-type: none"> <li>• Wait till stable fix (4 or more satellites) is acquired by the GPS in the unit</li> <li>• If the unit has an internal antenna, relocate the unit to a better location where it will be exposed to stronger signal from the satellites.</li> <li>• If the unit has an external GPS antenna relocate it to a better position</li> </ul>
	GPS antenna is not connected or not operational	<ul style="list-style-type: none"> <li>• Cycle the breaker providing power to Pulse VMAS.</li> <li>• Check for power available on the back of Pulse VMAS screen by measuring the connector marked with "+/-".</li> </ul>
<b>The Orange LED flashes about 1 times per second</b>	The unit has not yet acquired mobile signal	<ul style="list-style-type: none"> <li>• Check the mobile antenna connection.</li> <li>• Move the unit to better location</li> <li>• If the signal is poor in the area, order an external antenna that will help with the reception.</li> </ul>

# 11 WARRANTY

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Across Ocean Systems Ltd. ("AOS Ltd.") warrants the Products and Parts manufactured by AOS Ltd. to be free from defects in workmanship or material and that said products are designed mechanically and functionally to perform to specifications.

This warranty is effective providing:

- The equipment is used within the intended operating conditions and in accordance with AOS Ltd. recommendations
- The equipment is installed according to equipment diagrams, specifications and recommendations which AOS Ltd. has provided

This warranty becomes invalid if the factory supplied serial number has been removed or altered on the product. This warranty does not cover cosmetic damage or damage caused by an act of God, accident, misuse, abuse, negligence or modification of any part of the product. This warranty does not cover damage due to improper operation or maintenance, connection to inappropriate equipment or attempted repair by anyone other than an authorized AOS Ltd. representative.

Upon identification of a potential issue or defect with a AOS Ltd. Product or Part, the Warranty Applicant ("Applicant") must immediately contact AOS Ltd. and describe the issue in writing, by letter, fax, email or other electronic conveyance. AOS Ltd. will then assess the cause of the defect and determine warranty applicability and appropriate remediation.

If any part is found to be defective, AOS Ltd. will replace said part FOB the AOS Ltd. factory provided that any such defective part is returned by the Buyer with freight and applicable forwarding charges prepaid by the Buyer. AOS Ltd.'s sole obligation to the Applicant will be to repair or replace the defective part with same or similar product, to a maximum value of the list price of the product or part. The AOS Ltd. warranty does not cover labour charges, travel or any other associated expenses.

All Products and Parts manufactured by AOS Ltd., are subject to a warranty against manufacturer's defects in materials or workmanship for a period of one (1) years from the date of purchase.

AOS Ltd. will be responsible for all Products or Parts sold by AOS Ltd. but manufactured by 3<sup>rd</sup> party manufacturing companies. However, these products and parts are subject to applicable 3<sup>rd</sup> party warranties and may not be the same as the AOS Ltd. warranty.