



# VAM-HD RUGGED Installation Guide

NOTE: This Product is intended for installation by a professional installer only! Any attempt to install this product by any person other than a trained professional may result in severe damage to the electrical system and to vehicles components.



## Table of Contents

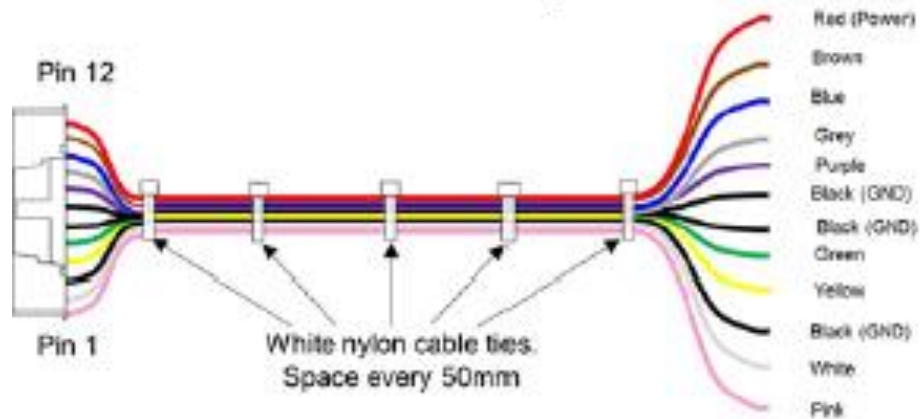
Getting Started .....	3
VAM-HD Rugged 12 pin harness .....	4
Wiring Instructions .....	4
Testing the VAM-HD Rugged .....	5
Status LED Diagnostics .....	6
Battery Replacement .....	7

**1 VAM RUGGED GETTING STARTED**



**12 WIRE Harness**

**VAM1 Standard System Cable**



Length: 300mm ± 10mm  
 Connector: SMH200-12 (Yeonho)  
 Wire: 22AWG  
 Crimps: YST200 (Yeonho)

Red and Black  
 wire ends stripped  
 and tinned 10mm

PIN	Description	Standard	Premium	Colour of Wire
1	GPIO 0 (Panic Switch/Power Take off switch/Privacy Switch)	Yes	Yes	Pink
2	GPIO 1 (Ignition Sense)	Yes	Yes	White
4	GPIO 2	Yes	Yes	Yellow
5	Relay Driver 1, (Starter Disable)	Yes	Yes	Green
6, 3	GROUND	Yes	Yes	Black
7	Analog Input	Yes	Yes	Orange
8	Serial #1 OUT	Yes	Yes	Purple
9	Serial #1 IN	Yes	Yes	Grey
10	ON_OFF (Reserved for VAM Premium)	NO	Yes	Blue
11	Relay Driver 2, output	Yes	Yes	Brown
12	Vehicle Supply	Yes	Yes	Red

## 1.1 Installation Points

The ideal location to mount the VAM Rugged is underneath the dashboard in the cabin of the vehicle.

The product should not be installed in the engine bay of the vehicle.

**The VAM should always be installed with the label facing up so that the internal antennas have a good clear view of the sky.**

If the module is to be installed under the vehicle's dashboard, mount it as high as possible to enhance its line of sight to the sky

Do not place directly underneath a metal panel as this will affect the GPS and GSM performance. Plastic and glass do not block the signal unless they are metal coated such as Solar Glass windshields.

**Do not install the VAM where it will be subjected to direct sunlight – such as directly underneath the windshield.**

Use the Velcro strip and/or the cable ties to mount the VAM securely onto the vehicle.

The VAM module has internal antennas for GPS satellite reception and GSM communication. These should be sufficient to enable the VAM to obtain a GPS fix, providing the mounting position guidelines have been followed as described



## 1.2 Installation Procedure

The VAM Rugged contains an internal battery and does not require a permanent connection to the vehicle supply. Battery life is limited and varies with usage and temperature.

Disconnect or cut the blue wires. This will activate the internal battery.

A digital multi-meter will be needed to test the wiring. Turn your meter on to DC voltage and Ground the black lead of the meter, you can now use the red lead of the meter to test for your ignition and +12 volt sources.

If at all possible it is highly recommended that you locate a +12VDC or +24VDC supply in the vehicle that is not affected by the ignition status. The simplest location to find such a supply is a connection direct from the battery or within the ignition wiring harness. (Refer to your specific vehicle's wiring diagram). Connect the red wire to the permanent +12VDC or +24VDC supply of the vehicle.

Connect the black wire to a solid chassis ground that is clean and free of paint or dirt. Use the star washer and the self-tapping screw for this purpose

Connect the white wire on the VAM-HD Rugged harness to an ignition sense. The ignition sense wire can be identified by grounding the black lead of the meter and probing with the red lead of the meter.

This wire will show no voltage on the meter with the key off and when the ignition is switched on, the ignition sense wire on the vehicle will go to 12VDC or higher.

When the ignition is turned back off, this voltage will drop back to 0V. Connect the White wire on the VAM-HD Rugged harness to this. Once all connections have been made.

Once installed, use the remaining cable ties to tidy the wires on the system cable.

The unit is sealed to IP67. It is the responsibility of the installer to terminate the unused wires sufficiently to stop water wicking down the ends of the wires.

## 1.3 Installation Testing

Park the vehicle in a fairly open area outdoors to receive GPS signals, with engine off. The VAM unit is set to automatically search for a GPS fix as soon as power is applied. Once a fix has been found, the unit will send a "First Fix Message" via the GSM network to the Back Office provider.

Next turn the engine on and observe the LED flash sequence as described in the table in section 6.

Ensure that the GPS is able to achieve a 3D fix by observing the 3 short green flashes. A 3D fix will take several minutes to achieve.













Ensure that the VAM connects to the GSM network. This can take several minutes AFTER the 3D GPS fix is obtained. Ensure the VAM thinks the engine is running by observing the rapid flashes. Two should be seen in green. This should take several seconds after the



ignition is switched on. If you only get one rapid flash the device thinks that the vehicle is not running. CHECK YOUR IGNITION CONNECTION! Turn the engine off. The VAM diagnostic LED sequence indicates the GPS and communications network status, plus engine running detection. These three sequences are repeated in a loop with a one second gap between each sequence. A full engineering diagnostic cycle lasts between 4 seconds with no GPS or GSM and no engine running to 10½ seconds with 3D GPS, GSM SMS active and the engine running.

To save power, the LED will be switched off when the VAM is in Sleep Mode.

### Diagnostic LED flash sequence

LED Flash	Colour	Type	Description
<b>GPS</b>			
	Red	1 short flash	No GPS
	Orange	2 short flashes	2D GPS fix
	Green	3 short flashes	3D GPS fix
<b>GSM/GPRS Network Connection</b>			
	Orange	1 medium flash	GSM network available (SMS only)
	Green	2 medium flashes	Data link available (GPRS)
	Orange	3 medium flashes	SMS(s) being transmitted or received since last sequence cycle
	Red	4 medium flashes	No network coverage (No GSM, GPRS)
<b>Ignition Status</b>			
	Orange	1 rapid flash	Ignition OFF
	Green	2 rapid flashes	Ignition ON
<b>Bluetooth</b>			
	Orange	1 long flash	Searching for a Bluetooth connection
	Green	2 long flashes	Bluetooth connected
	Red	1 long flash	Bluetooth not connected/off

## Rugged Battery Replacement

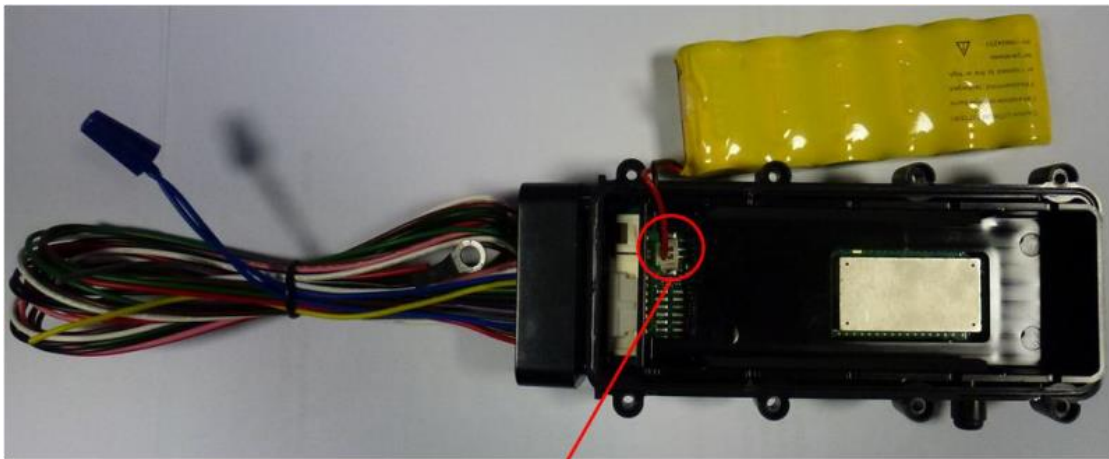


On older Rugged devices, the battery is NOT rechargeable, but replacement batteries can be purchased by contacting REDTAIL.

The battery can be replaced by unscrewing the 8 screws around the case and separating the two halves of the caseworks.

Once the casing is separated, simply unplug the old battery pack to remove it and plug in the new battery pack. (see image below)

Once the battery has been replaced make sure the gasket is fit correctly prior to putting the screws back in to ensure the device retains its dust proof and water proof qualities.



Fit the battery to the connector on the PCB