

# SABRE<sup>TM</sup> RANGER

M2M

## Installation Guide

Rev 1.0



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**SABRE™ Ranger M2M Installation Guide [October 2013]**

## Safety Information

For your safety and protection; and to reduce the risk of hazards, read this entire user's manual before you attempt to use the SABRE™ Ranger M2M satellite terminal. In particular, read this safety section carefully. Keep this safety information where you can refer to it if necessary.

The following general safety precautions must be observed during all phases of operation, service and repair of this equipment.

Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture and intended use of the equipment.

Addvalue Communications Pte Ltd assumes no liability for the customer's failure to comply with these requirements.



### General

Handle your satellite terminal with care. The enclosure is weather resistant (IP65); however, do not submerge the unit or expose it to severe rainstorms.

Avoid placing the satellite terminal close to cigarettes, open flames or any source of heat.

Changes or modifications to the satellite terminal not expressly approved by Addvalue Communications Pte Ltd could void your authority to operate this equipment.

Only use a soft cloth moisten with water to clean the satellite terminal. Do not use any detergents or cleaning agents on the satellite terminal.

To avoid impaired satellite terminal performance, please ensure the unit's antenna is not damaged or covered with foreign material like paint or labeling. When inserting the SIM card, do not bend it or damage the contacts in any way. When connecting the interface cables, do not use excessive force.



**WARNING**

Please follow strictly the warning instructions listed below to avoid personal injury.

**Use Approved Accessories Only**

Use only the AC/DC power adapters and accessories provided with the satellite terminal. Use of non-approved adapters and accessories may result in loss of performance, damage to the satellite terminal, fire, electric shock or injury. The AC/DC power adapters are for indoor use only.

**Do Not Operate in an Explosive Atmosphere and Hazardous Locations**

Do not operate the equipment in the presence of flammable gases or fumes. Operation of any electrical equipment in such an environment constitutes a definite safety hazard.

**Keep Away from Live Circuits**

Do not remove the terminal covers. Only qualified maintenance personnel are allowed to perform component replacement and internal adjustment. Do not replace components with the power cable connected. Under certain conditions, dangerous voltages may exist even with the power cable removed. To avoid injuries, always disconnect power and discharge circuits before touching them.

**Qualified Installation**

The satellite terminal must be installed by a qualified personnel in accordance with applicable local and national regulations (e.g. CEC, NEC, FCC, SCC, etc).

**Lightning Protection During Installation**

Ensure lightning protection devices are installed prior to the installation of the satellite terminal. Do not disconnect and reconnect cables during a lightning storm.

**Do Not Service Alone**

Do not attempt internal service or adjustments unless another person, capable of rendering first aid resuscitation, is present.

**Connecting Devices**

Never connect incompatible devices to the satellite terminal. When connecting the satellite terminal to any other device, read the device's User Manual for detailed safety instructions.

**Connecting Phone Devices**

This satellite terminal is not intended to be connected to any North American (U.S., Canada) TNY circuit or PSTN (Public Switch Telephone Network).

**Do Not Substitute Parts or Modify Equipment**

Because of the danger of introducing additional hazards, do not substitute parts or perform any unauthorized modification to the satellite terminal.

### Do Not Substitute Parts or Modify Equipment

Because of the danger of introducing additional hazards, do not substitute parts or perform any unauthorized modification to the satellite terminal.

### Do Not Stand In Front Of The Antenna



This satellite terminal emits radio frequency energy. To avoid injury, do not place head or other body parts in front of the satellite antenna when system is operational. Maintain a distance of one meter or more from the front of the satellite terminal antenna.

### FCC RF Hazard Warning

High levels of radio frequency radiation are considered health hazardous. Although no single value of “safe radiation level” has been agreed upon by all countries, the American National Standards Institute (ANSI/IEEE C 95.1-1992) recommends that people should not be exposed to radiation stronger than 1 milliwatt per square centimeter at the frequencies used in the Addvalue’s Wideye SABRE™ Ranger M2M terminal. Accordingly, the operator of the terminal should ensure that the area extending 1 meter from the front of the antenna be kept clear of personnel when the terminal is transmitting.

The antenna is built-in within SABRE™ Ranger M2M. You, as the qualified end-user of this radio device must control the exposure conditions of bystanders to ensure the minimum separation distance (above) is maintained between the antenna and nearby persons for satisfying RF Exposure compliance. The operation of this transmitter must satisfy the requirements of Occupational/ Controlled Exposure Environment, for work-related use. Transmit only when person(s) are at least the minimum distance from the front face of the antenna.



### Antenna Safety Instructions

Antenna Minimum Safe Distance: 1 meter

### WARNING:

Maintain a separation distance from the antenna to a person(s) of at least 1 meter.

|||||

### OBTAINING LICENSING FOR INMARSAT TERMINALS

Under rights given under ITU Radio Regulations, local telecommunications administrations establish and enforce national rules and regulations governing types of emissions, power levels, and other parameters that affect the purity of signal, which may be radiated in the various frequency bands of the radio spectrum.

To legally operate Inmarsat equipment, it is necessary to obtain permission from the local telecommunications regulatory authorities of the country you are operating from. Using your equipment in any country without permission causes you to run the risk of confiscation of the equipment by the local authorities. The normal procedure to bring such equipment into another country is to apply for a license before travel. If a license has not been obtained before travel, the equipment may be put in to storage by local authorities until such time license is obtained.

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# 1 Getting Started

Congratulations on the purchase of your SABRE™ Ranger M2M terminal.

When you unpack the package, please check that the following items are present:

- SABRE™ Ranger M2M terminal
- Mounting Frame (including four allen screws with washers, four bolts with nuts and washers)
- Two U-bolts with four washers and nuts
- Ethernet cable (RJ45, Cat 5 Straight, 1.5m)
- Serial cable (DB9 to RS232, 1.8m)
- DC power cable (DC Plug to open end wires, 1.5m)
  - RED wire: Positive DC supply
  - BLACK wire: Negative DC supply
- Multi-function cable (10m)

If any of the items are missing from the package, please contact your reseller where you have purchased the SABRE™ Ranger M2M terminal package.

Prior to the installation, you are recommended to have the following tools:

- Pliers
- Compass
- Allen key; #6
- Philips screwdriver; #2
- Adjustable spanner 6" (Imperial for UK); others 15cm (for metric)

### SABRE™ Ranger M2M:

This terminal with IECEx Zone 2 certification has only one cable gland hole on the connector cover to connect the Multi-function cable.



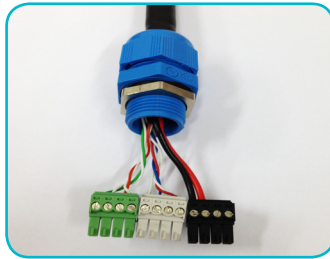




### 3 Connecting the Multi-function Cable

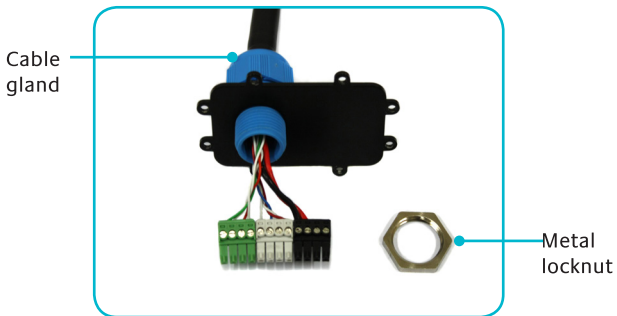
Follow these steps to connect the Multi-function cable:

1. Use the adjustable spanner to loosen the metal locknut from the cable gland.



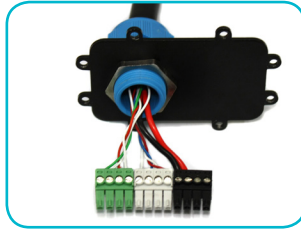
SABRE™ Ranger M2M  
Multi function cable

2. Remove the metal locknut carefully and set aside.
3. Thread the connectors of the Multi-function cable through the connector cover.



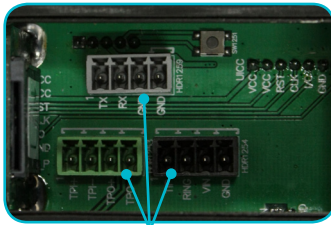
- Now replace the metal locknut to secure the Multi-function cable to the connector cover.

**Note:** Put the green plug through the metal locknut first. Repeat the same procedure for the grey and black plugs.



SABRE™ Ranger M2M  
Multi function cable plugs

- Insert the green plug into the green header, then connect the grey and the black ones.



SABRE™ Ranger M2M  
Multi function cable headers

- Install and secure the connector cover with the eight thumb screws.

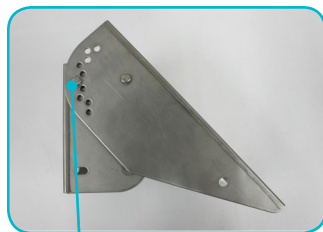
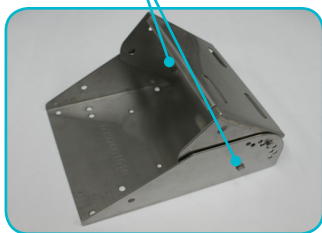
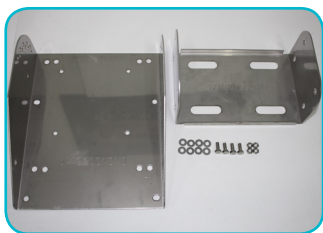
**Note:** Ensure the cover with cable gland is oriented correctly on the opposite end to the SIM card slot. The SIM card slot may be damaged if the connector cover is secured in the wrong orientation.



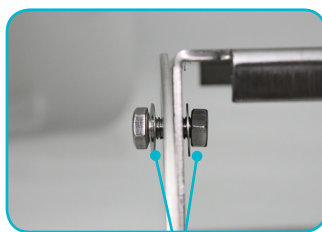
## 4 Setting Up the Mounting Frame

Follow these steps to set-up the mounting frame:

1. Align the two parts of the mounting frame together.
2. Install two of the bolts with washers to secure the mounting frame together as a hinge.



Bolt at 50°  
elevation  
angle



Bolts and washers

3. The mounting bracket has a series of position holes where there is a 10° interval in between each of them. It represents 0° when horizontally mounted and 90° when vertically mounted. It is recommended to set the elevation angle on the ground prior to the installation to the pole.
4. Now lock the elevation angle with the two remaining bolts, washers and nuts.

**Note:** The elevation angle for your location should have been pre-calculated by software tools and it can be found in the Web console under **Setup>Terminal Info**.

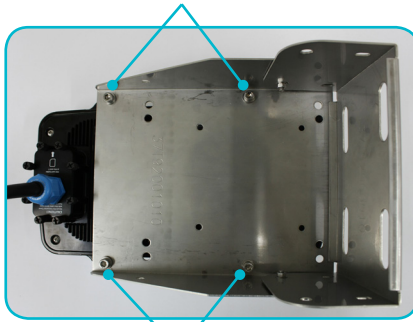
## 5 Installing the Mounting Frame

Follow these steps to install the mounting frame:

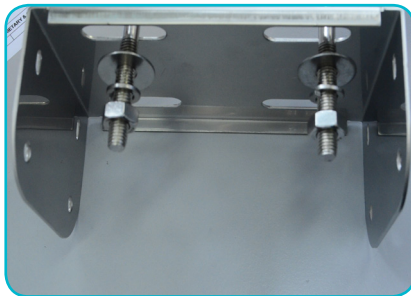
1. Place mounting frame on the underside of the SABRE™ Ranger M2M terminal.
2. Orientate the mounting frame to desired position.
3. Install four allen-screws with washers to secure mounting frame to the SABRE™ Ranger M2M terminal.

Note: It is recommended to prepare all the necessary cabling and connection on the ground before proceed for the mounting of the Sabre Ranger M2M Terminal.

Allen screws



Allen screws



Position of the U-bolts,  
nuts and washers

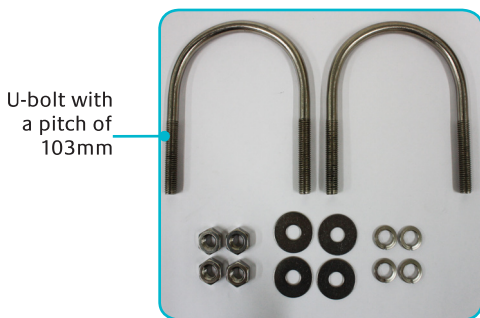
## 6 Mounting the SABRE™ Ranger M2M

Follow these steps to mount the SABRE™ Ranger M2M terminal:

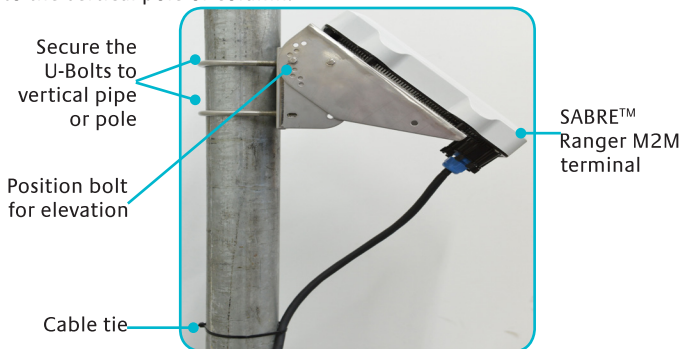
1. Locate a vertical pole or column to mount the SABRE™ Ranger M2M terminal.

**Note:** The diameter of the pole can range from 75 to 88mm.

2. Mount the SABRE™ Ranger M2M terminal to the vertical pole or column using the two U-bolts, four nuts and washers supplied.



3. Tighten the four nuts evenly to secure the SABRE™ Ranger M2M terminal to the vertical pole or column.



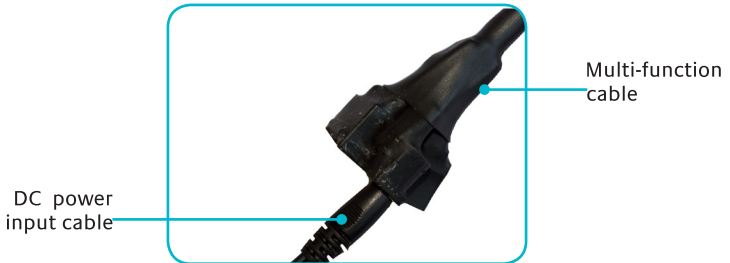
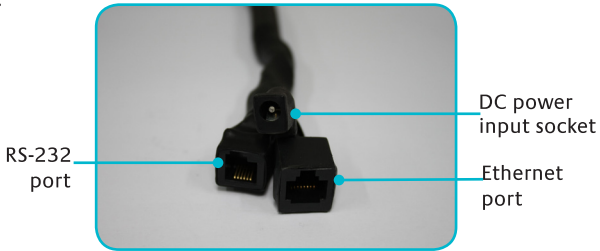
4. Secure the Multi-function cable to the pole or column using sufficient cable tie at appropriate intervals.

**Note:** Ensure there is some slack at both ends of the Multi-function cable to avoid any stress to the cable, which may damage the cable gland.

## 7 Powering Up the SABRE™ Ranger M2M

Follow these steps to power up the SABRE™ Ranger M2M terminal:

1. Connect the DC power cable to a suitable power supply.
2. Insert the power plug into the DC power input socket on the Multi-function cable.

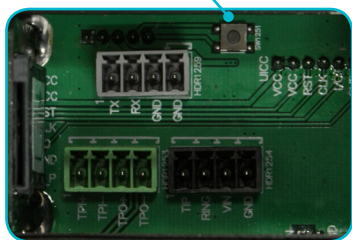


3. Turn on the power to power up the SABRE™ Ranger M2M terminal.

## 8 Powering Up in Safe Mode

The tact switch will be used only if firmware recovery under Safe Mode is required, after an unexpected firmware corruption during firmware upgrade.

Tact Switch

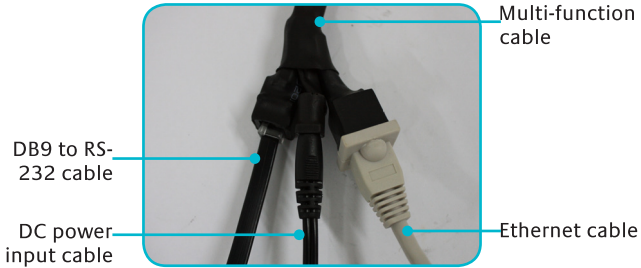


SABRE™ Ranger M2M  
Tact Switch

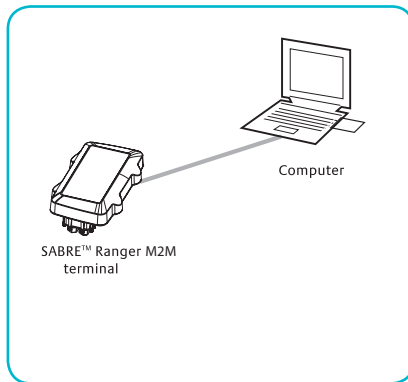
## 9 Connecting to your Computer via Ethernet

Follow these steps to connect the SABRE™ Ranger M2M terminal to your computer using Ethernet:

1. Insert one connector end of the Ethernet cable to the Multi-function cable's Ethernet port.



2. Insert the other end of the Ethernet cable to your computer's Ethernet port. A message confirming connection is displayed on your computer (Operating system dependent).



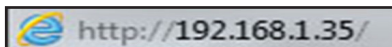


## 10 Obtaining GPS Co-ordinates

The BGAN network requires valid GPS co-ordinates to successfully register your SABRE™ Ranger M2M terminal for the first time or after you have performed a **Factory Reset**. The terminal will perform the GPS acquisition automatically.

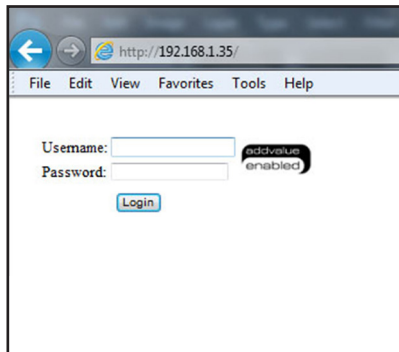
Follow these steps to obtain GPS co-ordinates:

1. Ensure that the SABRE™ Ranger M2M terminal is facing upwards and with an open view of the sky.
2. Start your Internet browser.
3. Type `http://192.168.1.35` in the Address field and press **Enter**.



The **Connect to 192.168.1.35** login screen appears.

4. Type in **admin** in the **Username** field and **wideye** in the **Password** field. Click **Login**.



5. The SABRE™ Ranger M2M Web Console will appear on your screen.

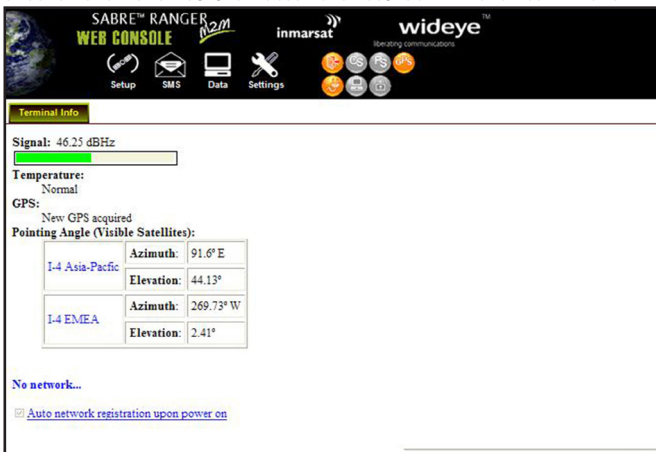


6. Allow the terminal a few minutes to acquire the GPS co-ordinates. Once the GPS co-ordinates are acquired, the New GPS acquired message is displayed.

**Note:**

The GPS co-ordinates will not be displayed until you click Register Network to register to Inmarsat’s BGAN network. The GPS display prohibited message will be displayed if the GPS coordinates are prohibited by the country where you are installing the terminal.

It is recommended to register to the BGAN network after acquiring new GPS co-ordinates before powering down the terminal. This will ensure the GPS co-ordinates are stored in the terminal’s memory.



## 11 Registering with the BGAN Network

Establishing a connection with the BGAN network requires the careful orientation of the SABRE™ Ranger M2M terminal towards the satellite, a process called antenna pointing.

**Note:**

SABRE™ Ranger M2M is set to auto network registration by default. For the first antenna pointing, we suggest that user should turn off the auto network registration and follow the instruction below to obtain the maximum signal strength. To turn off the auto network registration, simply click on the Settings icon and select Network.

To perform antenna pointing, you will need a compass and the following information from the Web Console:

- **Pointing Angle** (Azimuth and Elevation)
- **Signal strength indicator bar**

With the SABRE™ Ranger M2M Web Console launched, follow these steps to register with the network:

1. Select the satellite that you want the SABRE™ Ranger M2M terminal to point to.
2. Rotate the terminal left or right until it points in the correct horizontal direction as indicated in the **Azimuth** reading with the aid of a compass.
3. Tilt the terminal slowly up or down until it points in the correct vertical direction as indicated in the **Elevation** reading.
4. With the aid of the **Signal** indicator bar on the **Web Console**, fine tune the pointing direction to obtain the maximum signal strength.



- Secure the mounting after obtaining maximum signal strength.

**Note:**

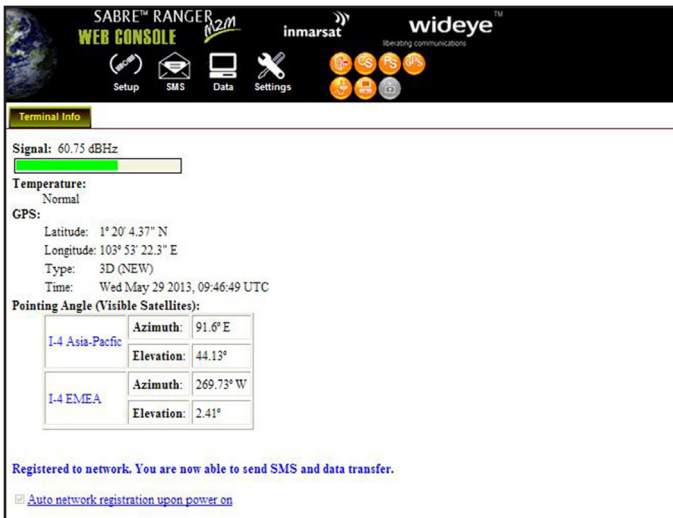
For any service to commence, minimum 45dBHz signal strength is required.

- Click **Register Network** to register to the BGAN network.

Once network registration is completed, the message “Registered to network with an active data connection. You are now able to send SMS and data transfer” message will be displayed.

**Note:**

The GPS co-ordinates will not be displayed until you click **Register Network** to register to Inmarsat’s BGAN network. The **GPS display prohibited** message will be displayed if the GPS coordinates are prohibited by the BGAN network.

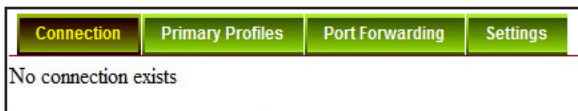


## 12 Activate PDP Connection

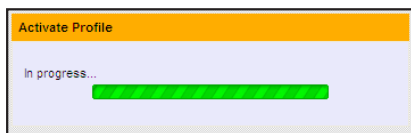
Follow these steps to activate the default profile:

1. Click **Activate Default Profile**.

The PDP context will be activated.



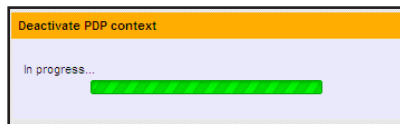
When connected, APN and IP Address details will be displayed. You can proceed to use the IP communication features.



Follow these steps to disconnect the data connection:

1. Click **Disconnect**.

The PDP context will be deactivated.



Note: By default, the Auto PDP context is set to auto activation.

## 13 Technical Specifications

### Frequency Band

Receive: 1525MHz - 1559MHz  
 Transmit: 1626.5MHz - 1660.5MHz

### Antenna

Type: Built-in patch antenna

### Bearer Data Rate

Receive: 384kbps (Max)  
 Transmit: 240kbps (Max)

### GPS Air Interface

Integrated GPS receiver and antenna

### Services

Standard IP, SMS

### Interfaces

Ethernet connection (RJ45)  
 RS232 (DB9) 9600bps with 10m  
 Multi-function cable

### Firmware Upgrades

Over-the-air or via Ethernet RJ45

### Supports 3GPP AT Commands

### Electrical

DC Input: 12 - 18VDC Min 2A

### Power Consumption

Receive: 6W  
 Transmit mode: 22W

### Environmental

Operating Temp: -40°C to +75°C  
 -40°F to +167°F  
 Operating Humidity: 95% (Condensing  
 at 40°C or 104 ± °F)  
 Storage Temp: -40°C to +80°C  
 Storage Humidity: 5% to 95% (RH)  
 Water & Dust: IP65 compliant

**Weight:** 1.5Kg / 3.3lbs

### Dimensions

305 x 186 x 49 mm  
 12 x 7.32 x 1.93 in

**Wind loading:** Up to 100 mph

### Certificate of Compliance

Inmarsat Type Approval  
 CE  
 FCC  
 IC (Industry Canada)  
 CSA (Safety mark - cCAus)  
 NEMA Type 4X  
 RoHS  
 IP65  
 Class | Div.2 and ATEX Zone 2, Group  
 II, Category 3

### Operating System Support

Microsoft Windows  
 Linux  
 Mac OS

