



# Terra 400 / Oceana 400



User Manual (DRAFT)



# Terra 400 & Oceana 400

## Installation and User Manual

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BEAM Communications Pty Ltd  
8 Anzed Court, Mulgrave,  
Victoria, 3170, AUSTRALIA

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## About BEAM Communications

**BEAM Communications**, a wholly owned subsidiary of World Reach Limited (WRR), listed on the Australian Stock Exchange, is a world leader in design, manufacture and distribution of specialised communications equipment for the Inmarsat Satellite Network.

**BEAM's** commitment to be at the forefront has continued to increase its share of the global satellite communications market. Its premium distribution network spans the world.

Recognized as a leading provider of satellite communication solutions, **BEAM** specializes in Voice, Data, Tracking and customized solutions. **BEAM** develops innovative products and services to meet market demands and niche applications.

**BEAM's** leading edge products are deployed in a wide range of vertical markets including Maritime, Transport, Government, Defence, Mining, Construction, Forestry, Emergency Services, Relief Aid, Telemetry and Rural Telephony.

Supported by a dedicated team of professionals, **BEAM** has developed solid relationships with its peers and network of distributors worldwide.



**BEAM Communications Pty Ltd**

8 Anzed Court, Mulgrave,  
Victoria, 3170, AUSTRALIA

Web: [www.beamcommunications.com](http://www.beamcommunications.com)  
Information: [info@beamcommunications.com](mailto:info@beamcommunications.com)  
Support: [support@beamcommunications.com](mailto:support@beamcommunications.com)

Tel: +61 3 8588 4500  
Fax: +61 3 9560 9055

## Conventions in this Manual

These notes will appear throughout this manual and should be taken into consideration.



### **Warning or Caution**

*This symbol and associated text indicate a warning note providing information to prevent damage to equipment or personal injury.*



### **Note/Important/Tip Header**

*This symbol and associated text indicate a note providing general operating information.*



### **Interference Header**

*All wireless phones may get interference, which could affect performance.*



### **Record Header**

*Write details of your unit for easy reference when required. Ideal when troubleshooting.*

## Terminology

TERM	DESCRIPTION
TR400/OC400	Terra 400 Terminal or Oceana 400 Terminal
Falcon	Falcon application - MS Windows Install
SMS	Short Message Service
Mobile Originating	Describes a call initiated by the TR400/OC400
Mobile Terminating	Describes an incoming call being answered by the TR400/OC400
®	The ® symbol, mark and logos are owned by the respective companies of which the symbol follows. Any use of such marks by Beam Communications is under license. Other trademarks and trade names are those of their respective owners.
RF	Radio Frequencies
SMA	Sub Miniature version A co-axial RF connection
RJ11	Connector type and reference for the POTS telephone port
POTS	Plain Old Telephone Service
GPS	Global Positioning System
GSPS	Inmarsat's Global Satellite Phone Service
PABX	Private Analogue Branch Exchange
IP53	Ingress rating specifying the environmental protection.

## Package Contents

Check that your TR400 or OC400 package contains all of the following items:

1 x Terra 400 Terminal

OR

1 X Oceana 400 Terminal

AND

1 x 110-240V AC Plug Pack

1 x 10-32V DC Power Cable

1 x USB Cable

User Manual & Quick Start Guide

Falcon application is available for download from:  
<http://www.beamcommunications.com/support>

## Optional Accessories

The following optional accessories are available for your TR400 or OC400 terminal

### Active Antennas

- ISD710 Maritime Antenna (Active)
- ISD715 Transport Magnetic Antenna (Active)
- ISD720 Transport Bolt Antenna (Active)

### Antenna Cable Kits for Active Antennas

- ISD932 6m cable kit (Active)
- ISD933 13m cable kit (Active)
- ISD934 18m cable kit (Active)
- ISD935 31m cable kit (Active)
- ISD938 40m cable kit (Active)

### Passive Antennas

- ISD700 Directional/Fixed Antenna (Passive)

### Antenna Cable Kits for Passive Antennas

- ISD936 10m cable kit (Passive)
- ISD937 20m cable kit (Passive)
- ISD939 30m cable kit (Passive)
- ISD940 40m cable kit (Passive)
- ISD941 50m cable kit (Passive)

See your service provider for pricing and availability of these quality BEAM accessories.

## Additional Information

For the latest in supporting software and documentation for FleetPhone please contact [www.beamcommunications.com/support](http://www.beamcommunications.com/support)

### Other Resources Available Online

- Advanced Configuration – inbuilt to Falcon application
- Quick Start Guide & Manual
- Antenna Installation Guide
- FleetPhone firmware upgrade if required

## Safety Information

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### **IMPORTANT!**

Please read the following information carefully before installing and using the TR400/OC400.

Failing to follow instructions may compromise the safety of the product and may result in personal injury and/or equipment damage. Please consult your supplier if you have any further questions.

---

Refer to the appropriate section of this TR400/OC400 Installation & User Manual for additional safety information.

- Store the system in a cool and dry area.
- Do not submerge the system in water.
- Do not place foreign metal objects or debris in the system. If debris enters into the system, please return to factory for service.



### **WARNING**

DO NOT open equipment. There are no user-serviceable parts inside.

If a DC power supply is to be used, its output must comply with the Safety Extra Low Voltage (SELV) requirements of IEC60950.

All connectors must only be connected to equipment ports which comply with the Safety Extra Low Voltage (SELV) requirements of IEC60950.

### **POTENTIALLY EXPLOSIVE ATMOSPHERES**

- Obey all signs and instructions.
- Sparks may occur during cable installation and could cause an explosion or fire resulting in bodily injury or even death.

- Areas with a potentially explosive atmosphere are often but not always clearly marked. They include, but are not limited to:
  - » fuelling areas such as gasoline stations
  - » below deck on boats;
  - » fuel or chemical transfer or storage facilities;
  - » areas where fuel odors are present (for example, if a gas/propane leak occurs in a car or home);
  - » areas where the air contains chemicals or particles, such as grain, dust, or metal powders;
  - » any other area where you normally would be advised to turn off your vessel engine.



## Safety - Inmarsat Transceiver Terra 400 and Oceana 400

The TR400/OC400 is a low power radio transmitter and receiver. When it is ON, it receives and also sends out radio frequency (RF) signals.

- The TR400/OC400 has an in-built transceiver which is designed to be used with an external antenna. The antenna transmits RF energy. The antenna (fitted via an extension coaxial cable to the terminal) must be located more than > 55cm from the human body (person) when in operation.
- International agencies have set standards and recommendations for the protection of public exposure to RF electromagnetic energy. These standards are based on extensive scientific review by scientists, engineers, and physicians from universities, government health agencies, and industry groups. They review the available body of research to develop ANSI standard. These ANSI standards are reviewed regularly for research development:
  - » International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1996
  - » Verband Deutscher Elektrotechniker (VDE) DIN-0848
  - » United States Federal Commission, Radio Frequency Exposure Guidelines (1996)
  - » National Radiological Protection Board of the United Kingdom, GS 11, 1988
  - » American National Standards Institute (ANSI) IEEE. C95. 1-1992
- Do not operate your satellite telephone when a person is within 55cm of the antenna. A person or object within 55cm of the antenna could impair call quality and may cause the phone to operate at a higher power level than necessary and expose that person to RF energy in excess of that established by the FCC RF Exposure Guidelines.
- As a precaution, please maintain the maximum body distance possible from the antenna during call transmission.



### **IMPORTANT**

*Cellular & Satellite terminals or mobiles operate using radio signals and communication networks. Because of this, the connection cannot be guaranteed at all times or under all conditions. Therefore, you should never rely solely upon any wireless device for essential communications, for example emergency calls.*

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## Terra 400 and Oceana 400

### FCC Information

This equipment has been tested and found to comply with the limits for a Class B digital devices, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device has been designed to operate with antennas ISD710 AT1595-82, ISD715/ISD720 AT1595-83/ISD700 and having a maximum gain of 6dBi dB. Antennas having a gain greater than 6dBi dB are strictly prohibited for use with this device.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that required for successful communication



#### **WARNING**

*Changes or modifications not expressly approved by Beam Communications could void the user's authority to operate the equipment.*

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## Electronic Devices

Most modern electronic equipment is shielded from RF signals. However, certain equipment may not be shielded against the RF signals from your wireless phone.

## Pacemakers

The Health Industry Manufacturers Association recommends that a minimum separation of six inches (6") be maintained between a wireless phone's antenna and a pacemaker to avoid potential interference with the pacemaker.

These recommendations are consistent with the independent research by and recommendations of Wireless Technology Research.

Persons with pacemakers:

- *Should ALWAYS keep the phone more than six inches from their pacemaker when phone is turned ON.*
- *Should turn the phone OFF immediately if you have any reason to suspect interference is taking place.*

## Other Medical Devices

If you use any other personal medical device, consult the manufacturer of your device to determine if it is adequately shielded from external RF energy. Your physician may be able to assist you in obtaining this information.

Turn your phone OFF in health care facilities when any regulations posted in these areas instruct you to do so. Hospitals or health care facilities may be using equipment that could be sensitive to external RF energy.

## Vessels

RF signals may affect improperly installed or inadequately shielded electronic systems in vessels. Check with the manufacturer or its representative regarding your vessel. You should also consult the manufacturer of any equipment that has been added to your vessel. Performance of electronically controlled brake and/or guidance systems can, under certain unique conditions, be subject to interference by mobile radio operation. Although the transceiver meets all requirements regarding RF emissions, you should mount the transceiver as far as possible from the guidance system to minimize any interference.

## Posted Facilities

Turn your phone OFF in any facility where posted notices require such as hospitals and on-board aircraft.

## Key Features

### Terra 400 & Oceana 400

TR400/OC400 is an intelligent basic terminal specifically designed for the Inmarsat network. TR400/OC400 enables you to use an RJ11/POTS connection with a standard corded, cordless or DECT handset. Alternatively, it can also be interfaced with a PABX system.

### TR400/OC400 Design

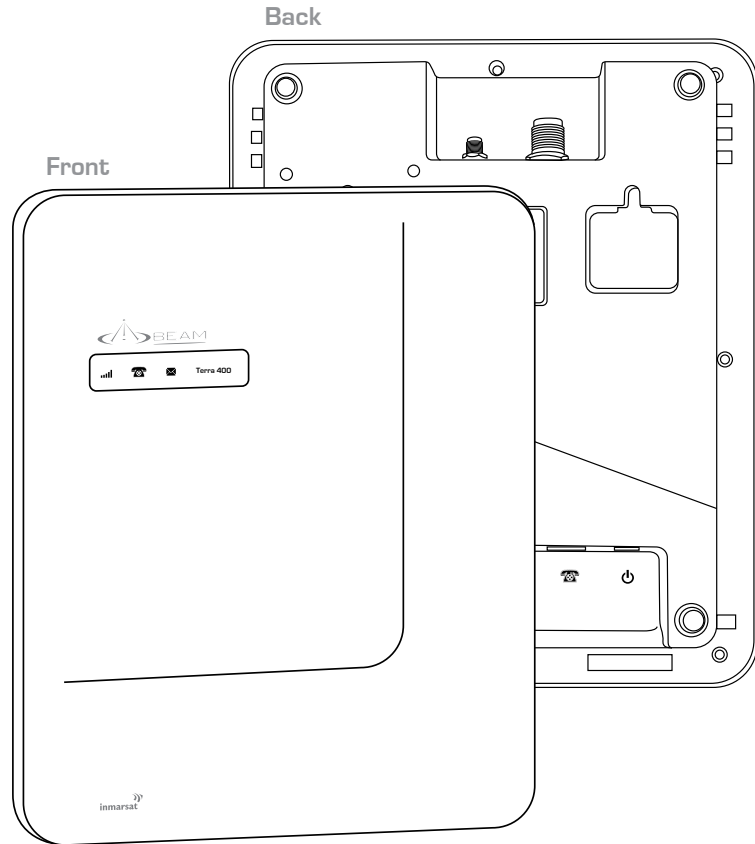
- High quality ABS Plastic
- Wall mounting
- Integrated antenna connections
- IP53 Rated (Rain proof enclosure) when mounted vertically.

### Power

- Supports 10-32V DC power input
- 110-240V AC plug pack, included

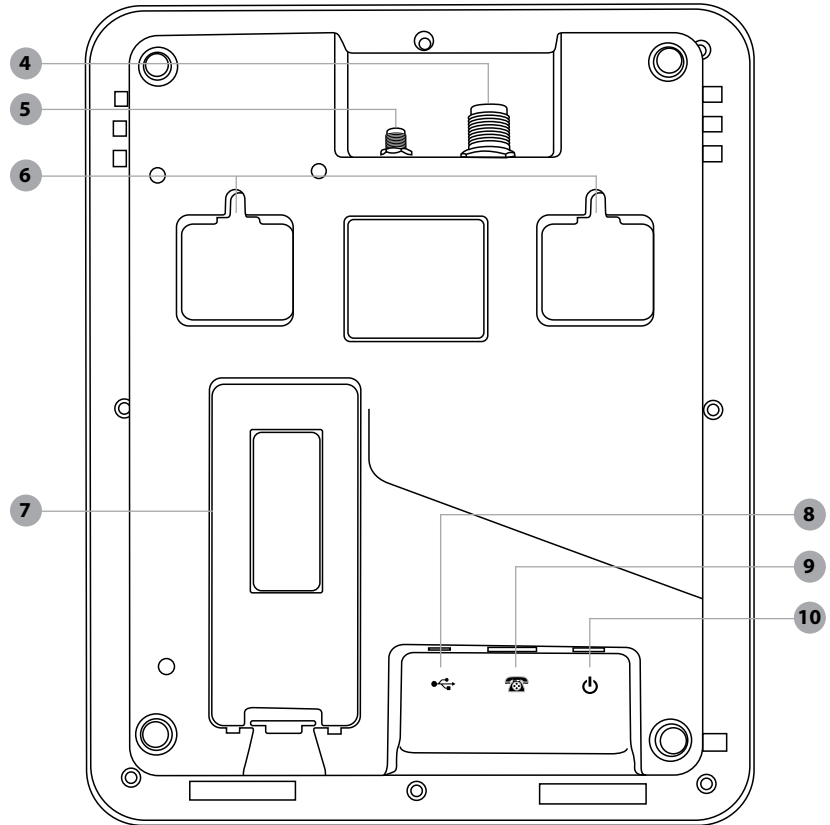
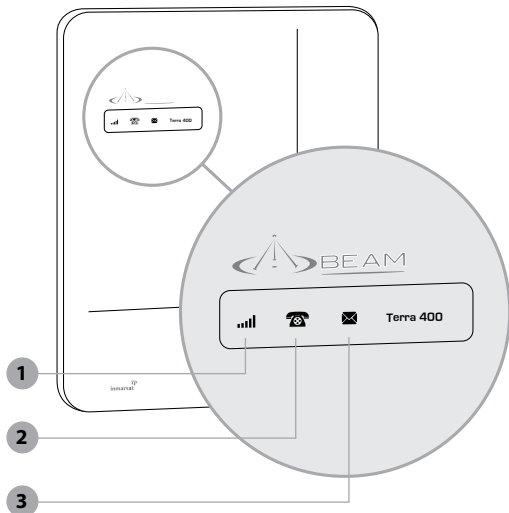
### Other Key Features

- USB data port
- STATUS LED indicators
- Primary "default" rear access SIM port
- Supports Beam Active & Passive Antenna



## Equipment Overview

1. Signal LED
2. Call LED
3. Message LED
4. Antenna TNC Connector
5. GPS SMA Connector
6. Wall Mounting Hooks
7. SIM Card Slot and Cover
8. USB Port
9. POTS/RJ11 Port
10. Power Port



## Installation Guidelines

This guide outlines the process for installing the TR400/OC400 Terminal.

This kit must not be used with any other device.

- Only qualified personnel should install this communication equipment.
- Ensure that the units are protected from dirt and moisture.
- Select an area to mount components where there is no interference from other objects.
- Ensure that each mounting surface is strong enough to support the component being mounted to prevent the component from loosening over time.
- Mount all components securely to prevent shifting that could cause injury or could interfere with safe vessel operation. Always use the supplied mounting hardware.
- Leave space around the units to allow cooling and ensure there are adequate clearance for cables.
- Ensure the units can be easily removed.
- Vertical (wall) mounting orientation is required to maintain IP53 rain protection.

## Routing Cables

- Route cables so they are protected from pinching, sharp edges, and crushing.
- Use grommets wherever a cable must pass through a hole in a metal panel
- Keep all in-line connectors accessible.
- For an extra clean installation, a hole may be driven through the surface directly .

## Guidelines for Electrical Connections

The system is designed to operate in negative ground 10 to 32 Volt DC electrical systems only.

If using the DC cable lead:

- The best power connection point for the positive primary power lead is the positive terminal of the battery. Often, direct connection to the battery is inconvenient, and you may find it easier to connect the positive leads to the starter solenoid. Always select a point as close as possible to the battery.
- Connect the negative primary power leads to a good ground point on the vessel chassis or at the battery. If you must attach the negative primary power lead directly to the negative pole of the battery, you may optionally insert a 10-amp fuse (not included) into the ground (0V) line. Failure to insert a fuse can cause

equipment to overheat if a wiring fault exists.

- Many parts of a vessel can produce electrical noise that interferes with the electrical radio system operation. The ignition system is the most common source of electrical noise interference. Before you begin installation, ensure that the ignition wiring and connections to the vessel battery are in good working condition.
- Verify that low resistance connections are present between the battery negative terminal, the vessel chassis, and/or the engine block. All wire connections should be clean and tight.



### **WARNING**

*Do not connect the TR400/OC400 interface power cable to the unit until the full installation is completed.*

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## Installation Procedure

### Installing the TR400/OC400 Terminal

Install the components in the following order. More detailed instructions can be found in the sections following.

1. Install the external Inmarsat antenna
2. SIM installation
3. Wall mounting orientation
4. Rear connector bay
5. Connect POTS/RJ11 interface
6. USB port connection
7. Connect power to terminal
8. Configuration settings

### 1) Inmarsat Antenna Connection

The two external antenna connectors can be found in the cavity at the top of the TR400/OC400 Terminal. There are two RF connections required, the Satellite TNC – Female Connector and GPS SMA-Female connector.

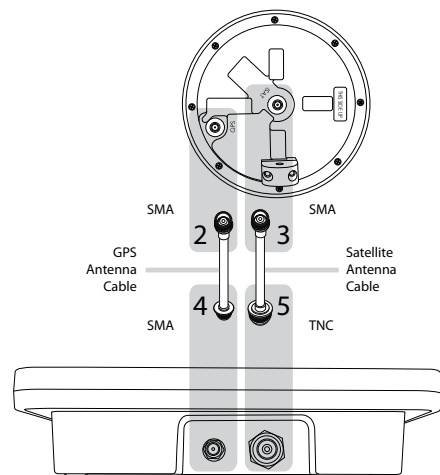
1. Refer to the antennas installation guide for antenna mounting and location requirements.
2. Connect the antenna cable labelled “GPS” to the antenna connector labelled “GPS” via the SMA connector
3. Connect the antenna cable labelled “Inmarsat” to the antenna connector labelled “ISAT” via the SMA connector.
4. Connect the GPS-SMA (F) cable end to the TR400/OC400’s SMA connector
5. Connect the GPS - TNC (F) antenna cable end to the TR400/OC400’s satellite connector



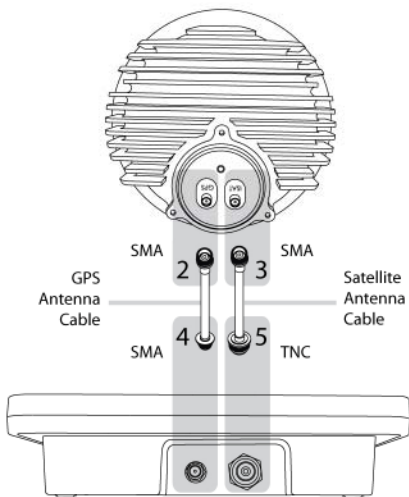
#### **Warning**

*To avoid sparking if a short circuit is present, turn OFF power to the terminal BEFORE connecting antenna cables.*

### Antenna Connection Diagram (Fixed/Directional Antenna)



**Antenna Connection Diagram  
(Maritime & Passive)**



**ISD710**  
Marine Active  
Antenna with Pole  
Bracket



**ISD700**  
Passive Antenna  
with Bracket



**NOTE**

Refer to the section "Assuring Quality of Inmarsat Service" for more information on antenna placement and installation.  
Only Beam approved antenna cables should be used with all terminals and antennas.



**WARNING**

DO NOT pull with force on the cables from the rear of the TR400/OC400. Please install strain relief clamping for the antenna cables where required. Correct installation of the antenna system is a vital part of the TR400/OC400 terminal, to ensure reliable functionality, and drop-free calls.

**WARNING**

Changes or modifications not expressly approved by Beam Communications could void the user's authority to operate the equipment.

**WARNING**

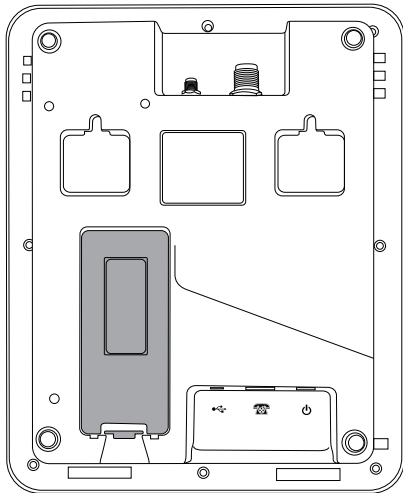
To satisfy FCC RF exposure requirements for mobile transmitting devices, a separation distance of 20cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance is not recommended.



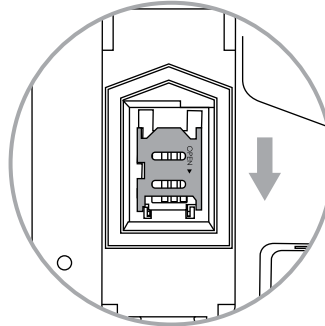
## 2) SIM Installation

If your Service Provider has not installed the SIM card for you, follow these steps to install.

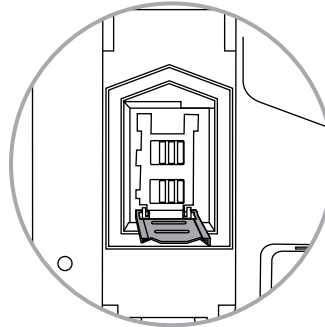
1. Turn power OFF to the Terminal. Failure to turn OFF can result in corruption of your SIM card memory.
2. Release the SIM cover by unlatching the latch with your finger or thumb. The SIM Cover is shown highlighted below.



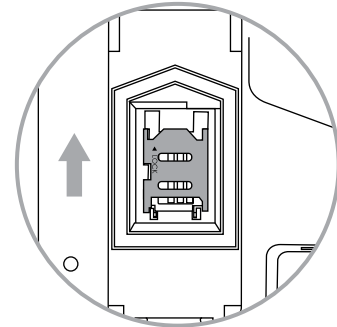
3. Slide the tray guide of the SIM connector into the Open position.



4. Raise the SIM tray as shown below to have access to insert the SIM card.



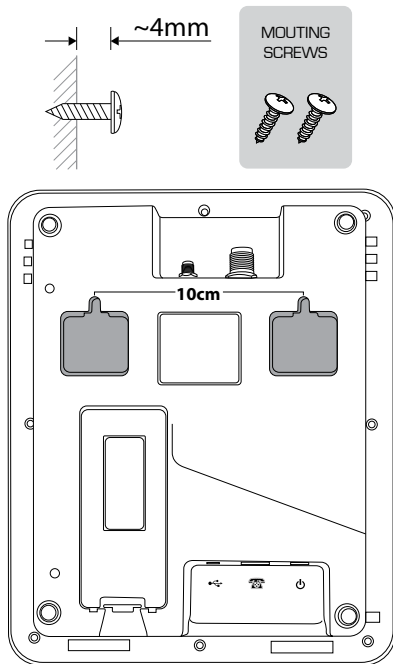
5. Gently insert the SIM card into the tray slots making sure that the golden connectors are facing downwards.
6. Lower the tray and slide the tray guide into the lock position.



7. Replace the SIM cover.

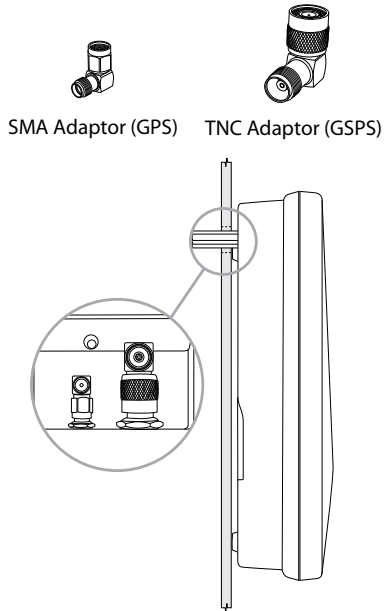
### 3) Wall Mounting Orientation

There are two mounting holes at the back of the terminal (as shown, shaded, in the below image). The distance (from centre to centre) between the mounting holes is 10 cm. You are required to use the included two mounting screws (as shown below) on the wall which will securely mount the terminal on the wall in a vertical position.



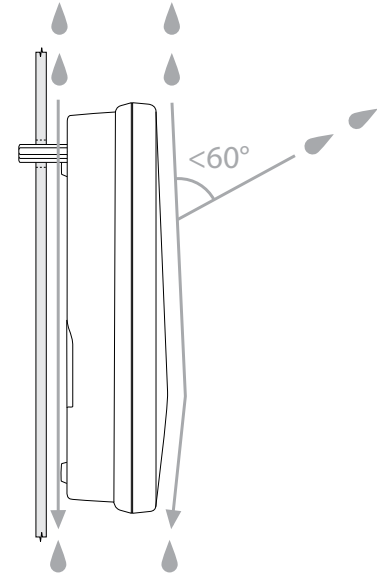
### Optional through-wall

Right angled adapters are optionally fitted to the external antenna connectors to allow routing of cables through a wall. A "clean" installation free of any visible cabling can be achieved with the use of right angled connectors.



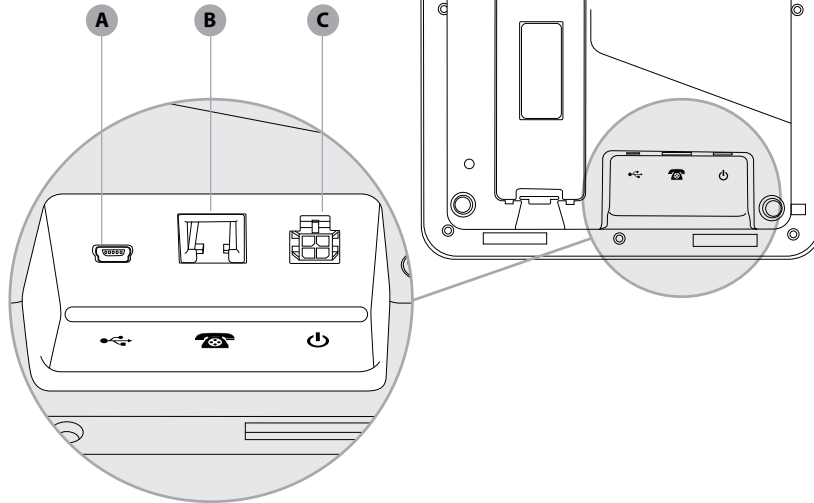
### NOTE

*Vertical (wall) mounting orientation is required to maintain IP53 rain protection.*



## 4) Rear Connector Bay

- A. USB Data Port
- B. RJ11/POTS Port
- C. DC power and accessory input

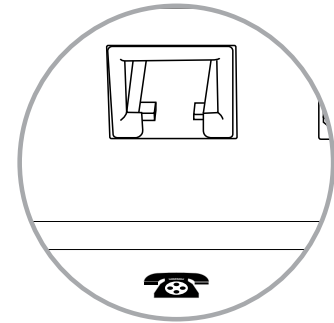


## 5) Connect RJ11/POTS Interface

Any standard analogue POTS telephone (POTS = **Plain Old Telephone Service**) is supported by the TR400/OC400 Terminal. The Terminal supplies power to the analogue phone as well as ring, dial and busy tones.

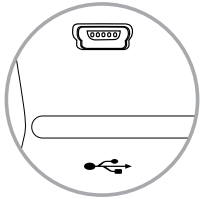
Route the telephone cabling (up to 600m) from the analogue phone.

Mount the analogue phone if required, and plug the RJ11 cable into the TR400/OC400 RJ11 port.



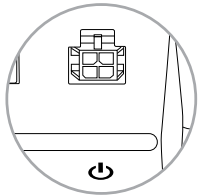
## 6) USB Port Connection

The TR400/OC400 terminal has a mini USB data port to enable upgrading of the firmware, advanced configuration, and data connection.



## 7) Connecting Power to the Terminal

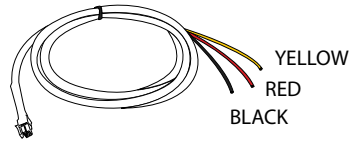
The TR400/OC400 terminal can be powered from the supplied AC Plug pack, or connect to an external 10-32V DC power source.



## ISD950 AC Plug Pack Installation

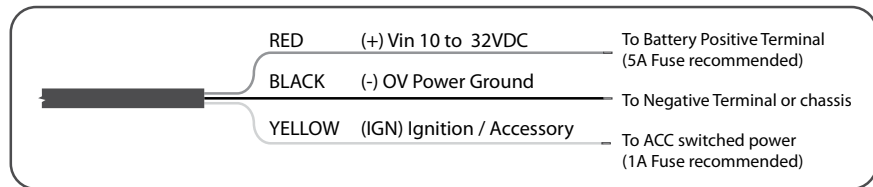
For installation using ISD950 110-240 AC plug pack, connect the 4-way Microfit connector from the plug pack to the 4-way power connector on the rear of the TR400/OC400 terminal. In this configuration the ignition/accessory status is always ON.

## DC Power Source Installation



The DC power cable has three wires, RED, BLACK and YELLOW. The RED and BLACK wires are used for the power connection while the YELLOW wire can be connected to a vessel accessories, ignition sense or other similar circuits to control the ON/OFF status of the TR400/OC400 terminal in synchronization with a vessel operation. By default, the TR400/OC400 terminal will stay on for 20 minutes after this input (YELLOW wire) is switched off. If a call is in progress while this occurs, the TR400/OC400 terminal will stay on for 20 minutes after the call is terminated. Please follow the steps below to connect the DC power cable to the battery power and the TR400/OC400 terminal.

1. Route the wire end of the DC power cable to the connection point.
2. Connect the BLACK wire to the negative terminal of the battery (10A fuse recommended) or the vessel chassis (if negatively grounded chassis).
3. Connect the RED wire to the positive terminal of the battery. It is recommended to add the 5A fuse (supplied) between them.
4. Connect the YELLOW wire to the vessel accessory power. If the accessory power is unavailable, this may be connected to a vessel ignition voltage. It is recommended to add a 1A fuse between them. The accessory wire enables the TR400/OC400 to turn on and off as the vessel key is enabled or disabled. If this function is not required, the YELLOW wire MUST be connected to the RED wire.
5. Connect the 4-way Microfit connector on the DC power cable to the 4-way power connector on the rear of the TR400/OC400.



## 8) Configuration Settings

The TR400/OC400 terminal is ready for you to make voice calls as soon as it is registered. But if required, your TR400/OC400 terminal allows advanced configuration to customise operation. This first step for configuration is to install the Beam USB driver.

### USB Driver Installation

TR400/OC400 Terminal USB data port requires an interface driver to be installed on the user's computer prior to undertaking data communication. This driver supports the following operating systems:

#### **Windows XP (SP3 or above) & Windows 7**

The Windows Driver for the TR400/OC400 is contained in the Falcon application download. If required separately, the USB driver can be downloaded from:

<http://www.beamcommunications.com/support>

### Configuration using Beam Falcon application

The Falcon application can be downloaded from:  
<http://www.beamcommunications.com/support>

Follow the instructions in the downloaded application to install. Launch the Falcon application which is used to connect to the terminal via the USB port. You can then use the application for a range of options such as:

- View the status of the terminal (signal, temperature, input voltage)
- firmware maintenance
- configure different POTS/RJ11 settings
- configure power modes
- SIM card PIN/PUK handling

## SIM PIN

If your SIM Card requires activation, simply follow the instructions provided by your authorised Inmarsat Service Provider.

Your SIM has a PIN which can be enabled to be entered each time the terminal is powered and registered. If you require to use the PIN for extra security then follow these steps during power-up to enter the SIM PIN and allow the unit to register on the network:

1. Turn ON power to the TR400/OC400 terminal. The Signal LED will flash RED.
2. Lift the RJ11/POTS handset, and listen for a PIN tone. (See "Types of tones on RJ11/POTS" page 25).
3. Enter the PIN on the handset keypad, followed by the # button.
4. Hang up the RJ11/POTS handset and wait for the TR400/OC400 terminal to acquire lock and registration.

Alternatively, the SIM PIN can be disabled so that the terminal will automatically register. Please use the Falcon application to perform this SIM card configuration. The Falcon application also allows the SIM PIN to be changed, and the PUK to be entered if SIM is locked.



*NOTE: If you enter the PIN incorrectly 3 times, the SIM card locks, and you need to enter the PUK. You must use the PUK code supplied by your Service Provider to unlock the SIM. If you don't have a PUK code please contact your Service Provider.*

---

## SIM PUK

If you have locked your SIM card, you can enter the PUK and then reset the PIN via the Falcon application.

You must use the PUK code supplied by your Service Provider to unlock the SIM.

Alternatively you can enter the PUK via the RJ11/POTS handset:

1. Turn on power to the terminal. The Signal LED will flash RED.
2. Lift the RJ11/POTS handset, and listen for a PUK tone. (See "Types of tones on RJ11/POTS" page 25).
3. Enter the PUK on the handset keypad, followed by the # button.
4. Hang up the RJ11/POTS handset and wait for the TR400/OC400 terminal to acquire lock and registration.

5. The terminal has now loaded a default PIN of "1111" into the SIM. The TR400/OC400 terminal has also DISABLED the SIM PIN requirement on powering up of the terminal.
- 



*NOTE: If you require to change the SIM PIN from the default PIN, please use the Falcon application*

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## Operation

### Registration

1. Turn on power to the terminal. The Signal LED will start flashing RED.
2. Wait for the terminal to acquire GPS lock and register to the Inmarsat network. This may take up to 2 minutes.
3. The Signal LED will then be solid GREEN or YELLOW and the terminal is ready for calls.



*NOTE: If your SIM has the PIN enabled, see section "SIM PIN use" to enter PIN, or to permanently disable PIN. The terminal will not register if PIN is required.*

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### RJ11/POTS Phone Use

#### Mobile Originating

1. Lift the RJ11/POTS phone handset "OFFHOOK" and listen for the dial tone. The call LED will flash GREEN to indicate the RJ11/POTS is in use.
2. Dial (using the full country codes) on the RJ11/POTS telephone keypad.
3. Once the call is connected, the POTS STATUS LED will flash to indicate a call is in progress.
4. Place the RJ11/POTS phone handset "ONHOOK" to terminate the call.

#### Mobile Terminating

1. The RJ11/POTS phone will sound its ringer.
2. Lift the RJ11/POTS phone handset "OFFHOOK" to answer the call.



*NOTE: (Default Operation)  
For mobile Terminated calls, the call will remain active for ~90 seconds even if the RJ11/POTS phone is placed ONHOOK. To end the call immediately, the other calling party must hang up (ONHOOK) the call.*

---

#### Data Use

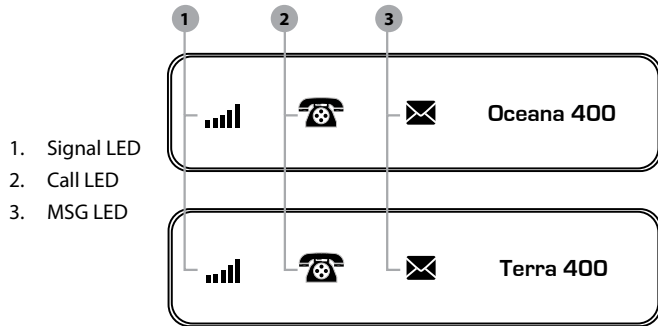
Ensure that you have installed the Beam USB driver – see section "Configuration Settings" (shown on page 21).  
The TR400/OC400 terminal allows for circuit switched data via the Beam USB data port that is presented when plugged into your PC. Follow the normal procedures with your data application to connect. Once connected, the Call LED will be flashing YELLOW. Once the circuit switched connection has ended, the Call LED will turn off.



*NOTE: During a Data connection, the RJ11/POTS handset cannot make or receive voice calls. An unavailable tone will be heard on the RJ11/POTS handset.*

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## Terra 400 & Oceana 400 LED Status



## Terra 400 & Oceana 400 LED Status Table

All LED status lists below exclude error states.

SIGNAL LED	GREEN	RED	YELLOW
ON	Good signal Registered	No signal Registered	Poor signal Registered
FLASHING	Good signal Not registered	No Signal Not registered	Poor signal Not registered
ALTERNATING	Alternating GREEN, YELLOW, RED. Error state entered. The Call and Message LED's indicate the error code.		
MESSAGE LED	GREEN	RED	YELLOW
ON	N/A	N/A	N/A
FLASHING	Voice mail has been received	SMS is present in the inbox	Both a voice mail and inbound SMS has been received
ALTERNATING	N/A	N/A	N/A
CALL LED	GREEN	RED	YELLOW
ON	POTS off-hook	N/A	DTR present on data port
FLASHING	POTS call in progress	N/A	Data call in progress (DCD active)
ALTERNATING	N/A	N/A	N/A



## Error Codes

When the signal LED is cycling between GREEN, YELLOW, and RED:

CALL LED	MESSAGE LED	DESCRIPTION/ERROR CODE
GREEN	GREEN	SIM PIN required
GREEN	OFF	Insert SIM card
OFF	GREEN	PUK code required
RED	RED	Fail to communicate with core module
RED	OFF	GPS antenna power error
OFF	RED	SAT antenna power error
RED	GREEN	SIM locked. Contact Service provider
GREEN	RED	System error

## Special Modes of Operation

Firmware Upgrade Mode

- In firmware upgrade mode all LED's will flash RED.

Transceiver (USB Bridge) Mode

- In this mode all LED's will flash GREEN.

## Types of Tones on RJ11/POTS

TYPE OF TONE	SOUND	DESCRIPTION
Dial Tone	Continuous tone	Telephone ready for use
Progress Tone	Continuous short beep, with 3 second interval	Number has been dialed but call has yet to connect.
Unavailable Tone	Beeping tone (engaged)	Phone is not registered, or no signal. Calls cannot be made
SIM PIN Required	TBC	A simpin is required to be entered
SIM PUK Required	TBC	A PUK code is required to be entered
Phone off-hook	Fast ascending tone, repeating.	Phone has been left offhook for > 15 seconds and is not in a call.

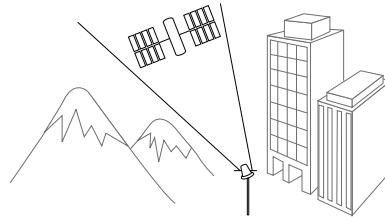
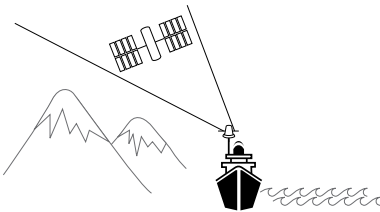
## Assuring Quality of Inmarsat Service

Inmarsat is committed to providing subscribers around the world with consistent, reliable, quality voice and data access all day, every day. The Inmarsat satellite system is monitored for call performance from numerous locations 24 hours a day, 7 days a week in order to achieve this. There are conditions that can compromise the quality of the service you may receive. These include:

- Obstructions
- Cabling
- RF Interference

### Obstructions

Nearby tall buildings or similar structures, heavily leafed trees and mountains can all degrade performance as they block the signal between the antenna and the satellites. Inmarsat performance is immune from natural environments such as clouds, fog, rain, snow, wind and smoke.



### Cabling

Using an externally mounted antenna provides an ideal solution for many applications. It is very important that both the antenna cabling and antenna are Beam approved products. Always ensure all RF connectors are screwed together firmly and ensure there are no sharp bends in the cabling between the TR400/OC400 and the antenna.

### RF Interference

All wireless devices, including satellite telephones, are susceptible to RF (radio frequency) interference from other electronic devices. This problem is more evident when numerous antennas and broadcasting devices are located within close proximity to each other.

### Symptoms of RF Interference

Symptoms of RF interference often resemble those that arise when an antenna is being operated with an obstructed view of the sky. Some of these symptoms include; erratic or no signal strength indication dropped calls or warbled or otherwise distorted voice. These symptoms may be intermittent or persistent, depending largely on the interference source, its distance, strength and frequency relative to the Inmarsat unit.

### Mitigation of RF Interference

Inmarsat Service degradation due to RF interference can be significantly improved by:

- Increasing the distance and moving the Inmarsat antenna off axis from the source of the interference, and
- Using an external band pass filter and an external antenna.



### **WARNING**

*Failure to use Beam approved antenna cables will result in degraded performance and may damage the TR400/OC400 terminal.*

## Specification Summary

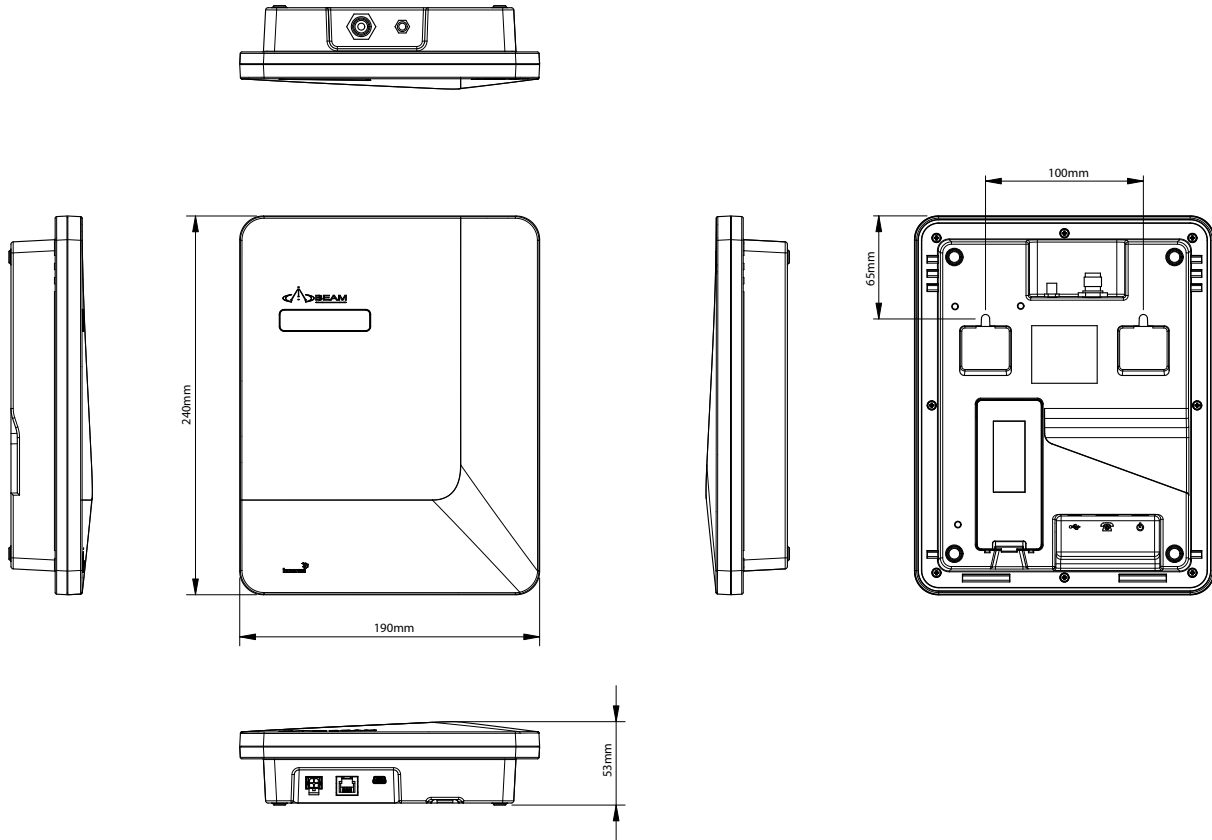
### Electrical & Environmental Specifications - TR400/OC400

Average Power Consumption ( <i>Active Antenna Connected</i> )	Current @ 15v DC	Power
Standby	0.21A	3.1W
Transmit	0.57A	8.5W
Sleep Mode	TBD	TBD
Peak Current	1.73A	25.9W
Average Power Consumption ( <i>Passive Antenna Connected</i> )	Current @ 15v DC	Power
Standby	0.17A	2.5W
Transmit	0.29A	4.4W
Sleep Mode	TBD	TBD
Peak Current	0.56A	8.4W
Physical Specifications		
Dimensions	240 x 190 x 53 (mm)	8.0 x 7.5 x 2.1 (inches)
Weight	0.58kg	1.28lbs
Total Kit Weight	TBD	TBD
Environment Specifications		
Operating Range	TBD	TBD
Storage	TBD	TBD
Humidity		TBD

Transceiver	
Inmarsat-4 Satellite GMR-2+ Frequency Bands	
Tx Operating Frequency	1626.5 - 1660.5 MHz
Rx Operating Frequency	1518 - 1565 MHz (Inmarsat) 1565.19 - 585.65 MHz (GPS)
RF Output Impedance:	50 Ohms
Carrier frequencies	Channel 0 = 1626.525 MHz Channel 169 = 1660.475 MHz
TX Modulation	GMSK
RX Modulation	OQPSK
Connectors / Interfaces	
POTS/RJ11	RJ11/2-wire, 5REN @ 600m, Adjustable dial, ring, busy tone configured frequency and adaptive impedance.
Inmarsat Antenna	TNC-Female
GPS Antenna	SMA-Female
10-32 V DC	4-way microFit (AC/DC adator, or DC lead)
Configuration/Data	USB Mini B
Certifications	
IP53 Rating 5 = Protected against dust limited ingress (no harmful deposits). 3 = Protected against direct sprays of water up to 60° from the vertical.	
Inmarsat, FCC, CE Compliance, Electrical Safety, RoHS, Industry Canada, C-Tick	

Accessories	
ISD932	IsatDock 6m SMA/TNC cable kit (Active)
ISD933	IsatDock 13m SMA/TNC cable kit (Active)
ISD934	IsatDock 18m SMA/TNC cable kit (Active)
ISD935	IsatDock 31m SMA/TNC cable kit (Active)
ISD938	IsatDock 40m SMA/TNC cable kit (Active)
ISD936	IsatDock 10m SMA/TNC cable kit (Passive)
ISD937	IsatDock 20m SMA/TNC cable kit (Passive)
ISD939	IsatDock 30m SMA/TNC cable kit (Passive)
ISD940	IsatDock 40m SMA/TNC cable kit (Passive)
ISD941	IsatDock 50m SMA/TNC cable kit (Passive)
RST055	UPS Battery Pack
Kit Contents Terra 400	
Terra 400 Terminal	
110-240V AC Plug Pack 15v DC Out	
10-32V DC Power Cable, & USB Cable	
User Manual & Quick Start Guide	
2 x screws for wall mounting	
ISD700 Directional/Fixed Antenna (Passive)	
Kit Contents Oceana 400	
Oceana 400 Terminal	
110-240V AC Plug Pack 15v DC Out	
10-32V DC Power Cable, & USB Cable	
User Manual & Quick Start Guide	
2 x screws for wall mounting	
ISD710 Maritime Antenna (Active)	

## Physical Dimensions - TR400/OC400



## Trouble Shooting

This chapter provides information to help you troubleshoot problems you may encounter while running the TR400/OC400.

<b>Q1</b>	<b>How do I know if my TR400/OC400 is registered on the Inmarsat network?</b>
A	<i>The signal LED on the terminal will change to GREEN or YELLOW when it is registered and able to make calls on the network.</i>
<b>Q2</b>	<b>No power on TR400/OC400.</b>
A	<i>Check power is connected to the interface unit, and fuse ok. Ensure the Connector cable to the TR400/OC400 is firmly fitted. Check for Short-circuit on antenna cables.</i>
<b>Q3</b>	<b>The signal LED is flashing and call quality is poor.</b>
A	<i>Ensure all antenna connectors are tight. The antenna is operating in a location that it can see the satellite and there are no obstructions. Beam certified antenna cabling is being used and there are no sharp bends or cuts in the cable. If using a fixed passive antenna, ensure it is orientated correctly and pointing at the satellite.</i>
<b>Q4</b>	<b>I am looking for the latest manuals and support information for the TR400/OC400 terminal?</b>
A	<i>Visit: <a href="http://www.beamcommunications.com/TR400/OC400">http://www.beamcommunications.com/TR400/OC400</a></i>

<b>Q5</b>	<b>Dropped calls</b>
A	<i>When you are in motion the satellite signal may become obstructed (such as buildings, bridges, tunnels, larger vessels). Check the antenna connection. Ensure the antenna cable has not been damaged. Ensure that only approved antenna cable has been used. Refer to Antenna Install Guide on Beam website support.</i>
<b>Q7</b>	<b>The TR400/OC400 appears to be turning ON/OFF and is not registering.</b>
A	<i>Ensure the power supply can provide at least 3.5A at 12volts. If power is being supplied from a battery, ensure the connections are tight and the contacts are clean. Check for short-circuit on antenna cables.</i>

## Beam Warranty Conditions

BEAM Communications gives this express warranty (along with extended warranty endorsements, where applicable) in lieu of all other warranties, express or implied, including (without limitation), warranties of merchantability and fitness for a particular purpose. This constitutes our sole warranty and obligation with regard to our products as well as the Customer's sole remedy.

BEAM Communications expressly disclaims all liability and responsibility for any special, indirect or consequential damages or any further loss of any kind whatsoever resulting from the use of our product(s).

The Customer's sole and exclusive remedy and the limit of BEAM liability for any loss whatsoever, shall not exceed the purchase price paid by the Customer for the product to which a claim is made.

All products manufactured by BEAM Communications are warranted to be free from defects in material and workmanship in accordance with and subject to the following terms and conditions:

1. This warranty is limited to the original Customer only. It cannot be transferred or assigned to third parties unless the intent to transfer to a third party is expressly indicated in a purchase order and/or warranty-processing arrangements have been agreed upon in writing by BEAM.
2. BEAM Communications does not warrant any installation, maintenance or service of the Products not performed by BEAM, nor does it warrant the use of Products with unapproved ancillary products.
3. BEAM Communications will correct any defects in material or workmanship of products manufactured by BEAM which appear within (12) months and (24) months replacement warranty for IsatDock cradles ONLY, from the date of shipment by BEAM Communications to the Customer. BEAM Communications will repair or replace, at our option, any defective product, provided that our analysis and/or inspection discloses that such defects developed under normal and proper use.
4. This warranty does not extend to goods subjected to liquid or particulate ingress, extreme humidity, misuse, neglect, accident or improper installation, or to maintenance or repair of products that have been altered or repaired by anyone except BEAM Communications unless otherwise stated in writing.
5. The warranty is a return-to-base warranty and freight is paid by the sender.
6. A charge of USD \$150 including return freight will be made for testing returned product which is not defective or is found to be defective as the result of improper use, maintenance or neglect.
7. BEAM Communications will not accept responsibility for any invoiced goods or services that are not covered by a BEAM Communications written purchase order. Under no circumstances does BEAM Communications agree to pay for labour or other related expenses associated with the troubleshooting and/or repair of our product without prior specific written authorization.
8. Information in our descriptive literature is based on product specifications that are current at the time of publication. Product specifications, designs and descriptive literature are subject to change as improvements are introduced. Although we announce changes as they occur, we cannot guarantee notification to every Customer. BEAM Communications warrants delivered product to conform to the most current specifications, designs and descriptive literature.
9. This warranty policy may be expanded or limited, for particular categories of products or Customers, by information sheets published as deemed appropriate by BEAM Communications. The warranty for third party Products is that of the third party and not BEAM warranty.



BEAM Communications  
8 Anzed Court, Mulgrave  
Victoria, 3170, AUSTRALIA

Tel: +61 3 8588 4500 Fax: +61 3 9560 9055

Web: [www.beamcommunications.com](http://www.beamcommunications.com)  
Info: [info@beamcommunications.com](mailto:info@beamcommunications.com)  
Support: [support@beamcommunications.com](mailto:support@beamcommunications.com)

