



RST620

Fixed In-Vehicle Hands Free car kit

Installation & User Manual



Beam Communications Pty. Ltd.

Remote Satellite Terminal **RST620**

Installation and User Manual

Version 1

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Product name:	RST620 In Vehicle Hands Free Car Kit
Manual revision:	1
Part Number:	USRMAN005001
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Package Contents

Check that your RST620 package contains:

- 1 x RST620 Hands Free Interface (HFI) module
- 1 x Intelligent Handset & cradle
- 1 x Speaker
- 1 x Microphone
- 1 x 9522B Iridium L-Band transceiver
- 1 x L-Band transceiver bracket & Velcro fastener
- 1 x L-Band transceiver cable
- 1 x 3-wire Power cable harness & 2 Fuses
- 1 x SMA – TNC Antenna Cable Adaptor
- 1 x socket wrench / Allen key
- 1 x Printed RST620 User Manual
- 1 x Printed Iridium Antenna Installation Guide

Optional Accessories

The following optional accessories are available for your RST620.

- *Handset Extension Cable*
- *Antenna Cable*
- *Antenna*

See your Service Provider for pricing and availability of these quality BEAM accessories.

User information



Please record your serial number here for future reference:



Model: BEAM RST620

Serial no #:

This number can be copied from the white shipping label on the RST620 box

Eg. HF102803

The following PIN codes may be required to use your RST620, please complete these details for future reference.

PIN Name	Function	Symptom	Your PIN
SIM PIN <i>Supplied by your Service Provider</i>	Unlocks SIM card to enable calls to be made	Signal LED flashes Red	 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
PUK <i>Supplied by your Service Provider</i>	Unlocks a locked SIM card	Signal LED flashes Red	 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

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Safety Information



IMPORTANT!

Please read the following information carefully before installing and using this BEAM equipment. 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.

Your RST620 is a low power radio transmitter and receiver, when ON, it receives and sends out radio frequency (RF) signals.

The design of your RST620 system complies with international safety standards.

Refer to the appropriate section of this *RST620 Installation & User Manual* for additional safety information.



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.”

Conventions in this Manual

Warnings, cautions and notes appear throughout this manual and are represented by following conventions.



Warning:

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



Note:

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



Interference:

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



Record:

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

Exposure to Radio Frequency Signals

Your wireless mobile telephone is a low power radio transmitter and receiver. When it is ON, it receives and also sends out radio frequency (RF) signals.

International agencies have set standards and recommendations for the protection of public exposure to RF electromagnetic energy.

- 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

These standards are based on extensive scientific review. For example, over 120 scientists, engineers, and physicians from universities, government health agencies, and industry reviewed the available body of research to develop the updated ANSI standard.

Antenna Care

Use only the supplied or an approved replacement antenna. Unauthorized antennas, modifications, or attachments could damage the phone and may violate local agency regulations. Please refer to your Service Provider for further information.

Phone Operation

Do not operate your mobile telephone when a person is within 4 inches (10 cm) of the antenna. A person or object within 4 inches (10 cm) 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.

Driving

Check the laws and regulations on the use of wireless telephones in the areas where you drive. Always obey them. Observe the following guidelines when using your phone while driving.

- Give full attention to driving—driving safely is your first responsibility.
- Use hands-free phone operation, as provided by this kit
- Turn off the road and park before making or answering a call if driving conditions so require.

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.

Vehicles

RF signals can affect improperly installed or inadequately shielded electronic systems in motor vehicles. Check with the manufacturer or its representative regarding your vehicle. You should also consult the manufacturer of any equipment that has been added to your vehicle.

Posted Facilities

Turn your phone OFF in any facility where posted notices require.

Aircraft

Airline regulations prohibit using your phone while in the air. Consult the local Aviation Authority for guidelines on use of the equipment on board an aircraft.

Potentially Explosive Atmospheres

- Turn your phone OFF and do not remove your battery when you are in any area with a potentially explosive atmosphere.
- Obey all signs and instructions.
- Sparks from your battery in such areas 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:
 - fueling 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 vehicle engine.

For Vehicles Equipped with an Air Bag

An air bag inflates with great force.

Do NOT place objects, including both installed and portable wireless equipment, in the area over the air bag or in the air bag deployment area.

If in-vehicle wireless equipment is improperly installed and the air bag inflates, serious injury could result.

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 specialized communications equipment for the Iridium 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, Defense, 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.

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About your RST620

This guide outlines the details for installing the Beam In-vehicle hands free telephone. This kit should not be used with any other device other than the components supplied.

Features



Full In-vehicle Integration

The Beam In vehicle kit allows for a quality permanent installation to the vehicle. The antenna, microphone and speaker are simply installed in a convenient location within the vehicle following the instructions provided with the kit. The handset is simply installed in a cradle or secure location ready for use.

Functionality

The major advantage of an in-vehicle kit is the hands-free use along with the permanently installed antenna for increased call quality and signal penetration.

The Intelligent Handset will support all the standard functionality whilst being used with the Beam In-vehicle kit.

Intelligent Handset Interface

The In-vehicle kit uses the Beam Intelligent Handset, RST970. The handset supports voice calls as well as utilizing the Iridium SMS service. The handset is compact and includes an inbuilt ring alert. The handset also enables a private in vehicle conversation, when the handset is taken out of the cradle (cup).

RS232 Data Port

A RS232 serial data port is provided via the “Comm Port” allowing data calls, or tracking / alerting modules or a PC to be connected. Refer to the AT commands guide on the CDRROM for modem commands.

(Optional) Alert / Tracking Interface

The Beam LeoTRAK terminals are an intelligent Alert / Tracking and Monitoring unit all-in-one and are available for all Beam terminals. LeoTRAK allows the deployment of various applications including vehicle, asset, asset tracking, monitoring and condition reporting, remote control and configuration. Alert/Alarm monitoring applications are available.

The LeoTRAK interface is highly intelligent and the ability to configure many parameters in the terminal locally or remotely enables a great deal of customization and flexibility.

Key Features:

- Convenient Hands-free Operation
- Supports Intelligent Handset
- Handset Charging
- Horn Alert Integration
- 11-32V DC Input
- Supports Voice & Data Services
- Full Duplex Hands-free Operation
- Echo Cancellation
- Stereo Integration Capable (Line I/O)
- Supports DC Power Input
- Convenient Installation

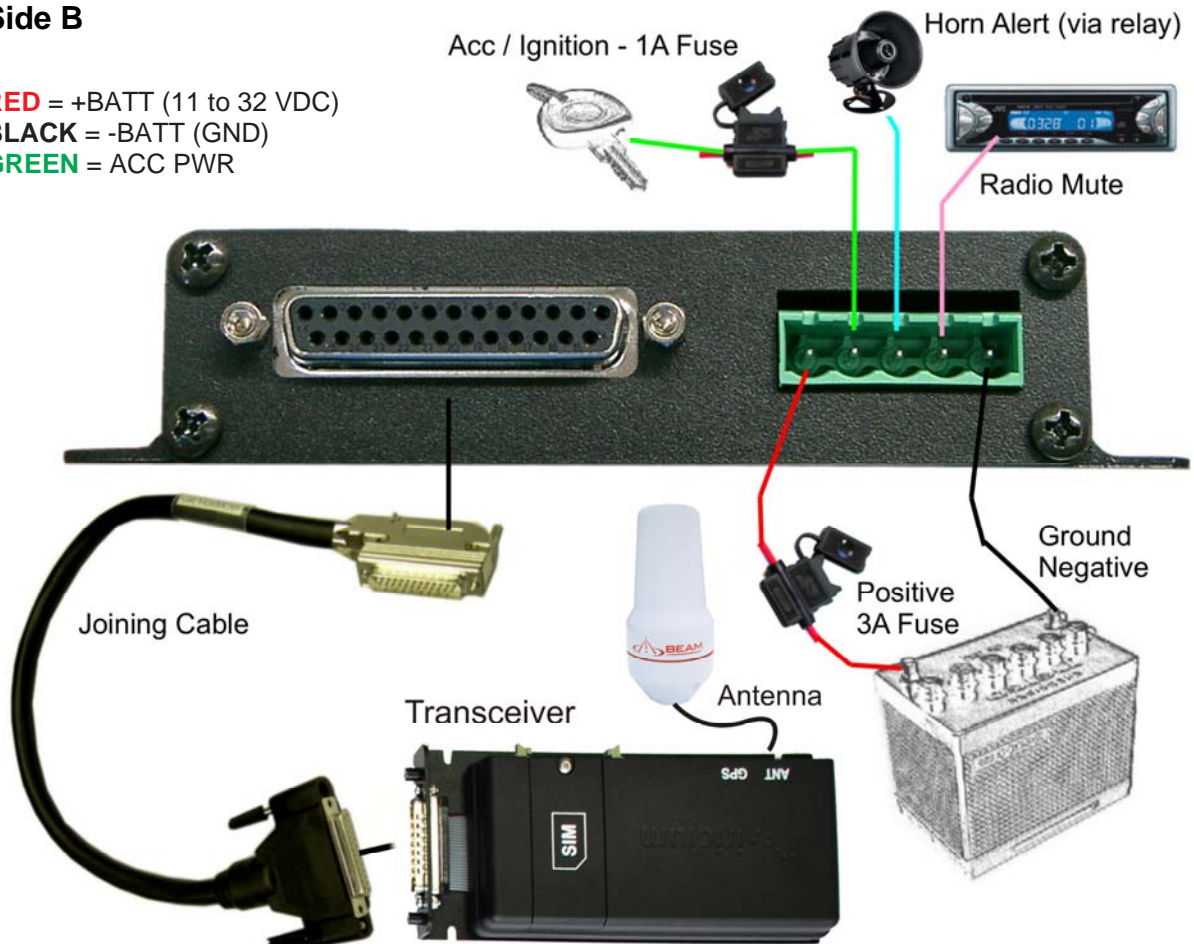
Equipment Overview

Side A



Side B

RED = +BATT (11 to 32 VDC)
BLACK = -BATT (GND)
GREEN = ACC PWR



Installation Guidelines

Wherever you install your equipment, follow these guidelines:

- The units must be protected from dirt and moisture.
- Ensure that each mounting surface is strong enough to support the component being mounted to prevent the component from loosening over time.
- The space around the units is sufficient to allow for cooling.
- Select sites for mounting components that do not interfere with driver or passenger seating or leg space.
- Ensure that any wires or cable that attach to the item being mounted will not interfere with driver or passenger seating or leg space.
- Mount all components securely to prevent shifting that could cause injury or could interfere with safe vehicle operation. Always use the supplied mounting hardware.
- The units can be easily removed.
- The location allows for adequate clearances for cables
- Only qualified personnel should install communication equipment. If necessary, contact the vehicle manufacturer for air bag information specific to the vehicle.



Caution:

Air bags inflate with great force. DO NOT place objects, including communication equipment, in the area over the air bag or in the air bag deployment area. If the communication equipment is improperly installed and the air bag inflates, serious injury could result

Routing Cables

If your vehicle is equipped with wiring troughs in the doorsills, use them to simplify cable installation and to provide maximum protection for the cables.

If wiring troughs are not available, route cables according to these guidelines:

- Route cables so they are protected from pinching, sharp edges, and crushing
- Where possible, avoid routing cables above the catalytic converter
- Use grommets wherever a cable must pass through a hole in a metal panel
- In a vehicle equipped with electronically controlled anti-skid brakes, route all cables on the opposite side of the vehicle from the braking modulator box to minimize possible interference from the phone.
- Keep all in-line connectors accessible.

The suggested path for routing cables in vehicles without wiring troughs is alongside the drive shaft hump, under the carpet.

Guidelines for Electrical Connections

The System is designed to operate in negative ground 11-32 volt electrical systems only.

- The best power connection point for the positive primary power leads is the **positive terminal of the vehicle 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 vehicle chassis or at the battery.
- Many parts of the vehicle 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 vehicle battery are in good working condition.
- Verify that low resistance connections are present between the battery negative terminal, the vehicle chassis, and the engine block. All wire connections should be clean and tight.

At 13.6 volts, the phone draws less than 3 amps when transmitting. Confirm that the vehicle's battery and alternator have sufficient current capacity to deliver at least 3 amps more than the maximum current that may be required by the vehicle and its other accessories.



Warning:

Do not connect the RST620 to the connector cable until the full installation is completed.

Installation Procedure

Install the components in the following order:

1. Installing your handset & holder
2. Installing your Hands Free Interface Unit (HFI)
3. Installing your Transceiver Module & SIM Card
4. Installing your Directional Microphone
5. Installing your Speaker
6. Installing your Antenna cable & Antenna system
7. Connecting Power to Components

1. Installing your handset & holder/hang-up cup

Mount the hang-up Cup of the Intelligent Handset so that the handset is within easy reach of the driver during normal operation. Remembering that the handset needs to also connect to the Hands Free Interface.

Allow enough room so that you can easily insert the smart handset into and remove it from the hang-up cup.



Step 1 Remove cover on hang-up cup (Pic 1)

Step 2 Affix the Hang-up cup in location using the holes in the cup (Pic 2)

Step 3 Once in place replace cover on hang up cup

2. Installing your Hands Free Interface Unit (HFI)

In many vehicles, the best location for these units is on the floor or the rear vertical panel of the trunk compartment. Alternate locations include under the dashboard, under the front or rear seat, or under the rear speaker deck panel.



Caution:

Always use the supplied mounting hardware for mounting the units. If not mounted properly, the transceiver may shift when the vehicle is moving, which can interfere with proper operation of the vehicle.

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 exceeds all requirements regarding radio frequency emissions, you should mount the transceiver as far as possible from the guidance system and/or braking modulator box (usually located in the trunk) to minimize any possible interference.

The best location for mounting the HFI Adapter Box is under the dashboard or front seat within reaching distance of the handset when in the cradle.

To install the box, follow these steps:

1. Using the Hands Free Interface as a template, mark the screw hole locations.
2. Remove the bracket, and use an awl or similar device to start the holes at the marked locations.
3. Drill the holes & mount using the six screws provided with the fuse kit.

3. Installing your Transceiver Module & SIM Card

Mounting the Transceiver

Mount the Transceiver module in a safe location away from driver obstruction.

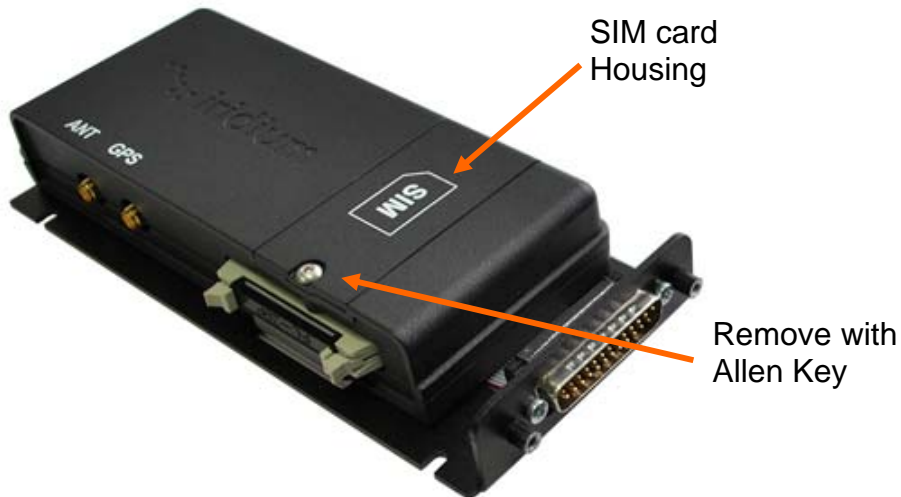
Ensure the distance between the transceiver module and the Hands Free Interface enables the D25 Connector cable to reach both units.

Use the 3x 4mm slots located in the mounting bracket to mount the transceiver module in the suitable safe location.

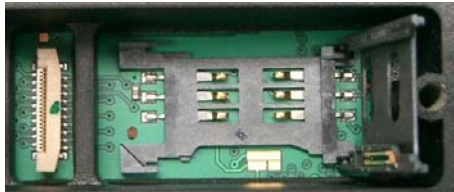


Installing SIM Card

1. Use the hex wrench (Allen key) to remove the screw on the transceiver module to remove the SIM card cover plate as shown. Keep the screw in a safe place whilst you install / remove the SIM card.



2. Once the cover is removed slide the plastic SIM card holder sleeve (opposite direction of the arrow) to release it from the locked position.



3. Insert the SIM card as shown, with the golden connectors facing inwards and the 'cut corner' of the SIM card facing uppermost.



4. Close the plastic sleeve down, and slide in the direction of the arrow until you feel it click into place.



5. Replace the cover, and fasten the screws.



Caution:

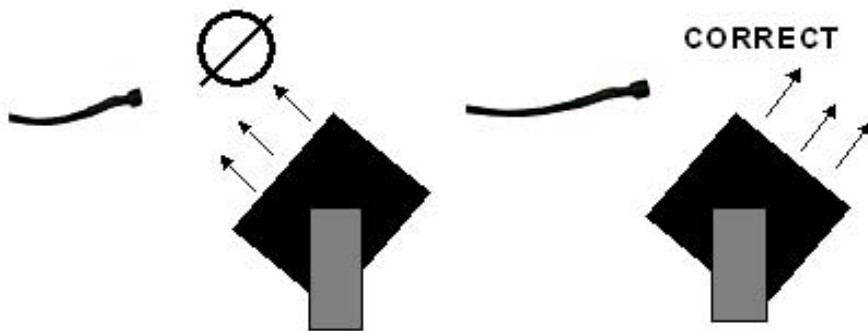
Scratching or bending the SIM card can easily damage the card or its metal contacts. So handle the SIM card with care. Avoid exposing the card to static electricity.

4. Installing the Directional Microphone

The hands-free directional microphone must be properly positioned in the vehicle to ensure optimum performance.

When selecting a location for the microphone, consider these guidelines:

- Mount the microphone near the centre of the vehicle, either on the driver-side sun visor or on the head-liner above the driver.
- Do not position the microphone where it may be blocked by the visor.
- Position the microphone so that it faces the user of the mobile when the user is seated normally.
- Do NOT position the microphone near a window or in any location where road noise or any ambient background noise may be high (above 85 dB SPL).
- Do NOT position the microphone where it will be affected by the output of the speaker (see below).



Follow these steps to mount the microphone:

1. Installing the microphone cable in a concealed area, where the cable will not get damaged, typically down the drivers A pillar,
2. The microphone can then be simply left exposed to a short distance as per the picture below. The microphone should be installed in a location that is no greater than 45cm / 1'6" away from the driver. Distance greater than this will cause an attenuated voice level received.

The microphone can also be installed in the centre of the cabin if required so it is central to the vehicles interior space.

Follow these guidelines for positioning the microphone:



1. Do not place the microphone so that the visor can block it when flipped up or down.
2. Do not place the microphone where it is exposed to direct air flow from an open window
3. Route the cable carefully to ensure that it does not get crimped by any heavy objects or enclosures this will avoid damaging the cable.
4. Ensure the Microphone is not installed in a location that is subject to excessive driving or this may impact on the call quality.

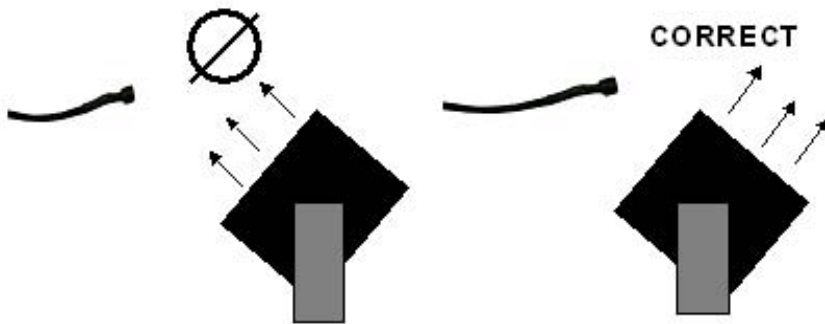
5. Installing the Speaker

Follow these steps to mount the speaker:

1. Mount the speaker to the transmission hump or underneath the dashboard on the passenger side.
2. Do not mount the speaker so that it faces the microphone directly or this will cause heavy feedback within the system.
3. Route the cable carefully to ensure that it does not get crimped by any heavy objects or enclosures this will avoid damaging the cable.

The speaker can be mounted in a convenient safe location where it does not obstruct the driver. The bracket attaches to the Speaker using the bolt supplied. The Bracket itself can be then mounted in a suitable position.

Correct microphone/speaker positioning.



It is advised the speaker be mounted under the dashboard, on the transmission hump, or in another suitable location, using the mounting bracket supplied with the speaker assembly.

When selecting a location for the speaker, consider these guidelines:

- Position the speaker so that it does not interfere with vehicle operation or with driver or passenger seating or leg space.
- Avoid locating the speaker behind a sound-absorbing barrier (for example, facing upward under a seat or behind a dashboard panel).
- Do NOT position the microphone where it will be affected by the output of the speaker

6. Installing the Antenna



The antenna cable should be connected to the “ANT” antenna socket of the transceiver module as shown above. The transceiver is fitted with an SMA connector, however a converter to change the connector to TNC is included in the kit.

Ensure the antenna cable is within specification for the length to maximise the quality of service and minimise loss of signal due to poor or lengthy cables. Once the cables are in place ensure they are firmly secured so as to ensure they do not work loose with vibration.

For detailed information on antenna installation and placement please see the specific *“Iridium Antenna Installation Guide”* available from www.beamcommunications.com

GPS Feed Through Specification

The GPS feed through connector is provided to allow an Iridium 9522B and a GPS module to share a single antenna. Then the GPS receiver module can be connected to the GPS feed through connector output on the 9522B. When the 9522B is powered **but not transmitting**, any GPS signal received on the antenna is passed through to the GPS output. Either a passive or an active GPS module can be connected to the 9522B GPS port.

The gain from the 9522B antenna input to the GPS connector is 0dB (+/- 2dB). The GPS output is available at all times when the 9522B is powered, except during the transmit cycle. (During the transmit cycle there will be some energy at the Iridium frequency which may adversely affect the AGC system of some GPS receivers.)



NOTE: THE TRANSCIEVER MODULE DOES NOT HAVE A GPS ENGINE INSIDE

The GPS antenna input is feed-through only. You will need your own GPS device to make use of the GPS antenna connector.

7. Connecting Power to Components

Caution: Failure to follow these steps may cause the accessory not to work properly and may cause damage to your equipment.



Warning:

DO NOT connect the terminal to the Battery Supply until the installation is complete.

1. Ensure the power and Interface cable to the RST620 Interface Unit will reach from the RST620 unit to the point at which vehicle power is being sourced **DO NOT** connect to the interface box until after the installation is complete.
2. Route the power cable from the RST620 Interface unit to the connection point.
3. Note: To limit ground loops and high impedance ground paths, run the green/red-stripe and black wires directly to the battery, or as close as possible to the battery. Use a grommet or other protection to prevent wear on metal surfaces for these wires.
4. Prepare the fuse block. Remove all fuses, and tape them to their respective holders, before making any connection. **DO NOT** insert fuses until you have completed and inspected all connections.
5. Connect the **BLACK** Ground wire to negative battery / vehicle chassis (if negatively grounded chassis).
6. Connect the **RED** +Battery wire to the vehicle + Battery (eg. +12V) via a 3A fuse.
7. Connect the **GREEN** Accessory wire to the vehicle accessory power, via a 1A fuse. (This may be connected to Vehicle Ignition voltage if Accessory power is unavailable). If wiring for constant on, this wire must be wired to +Battery.

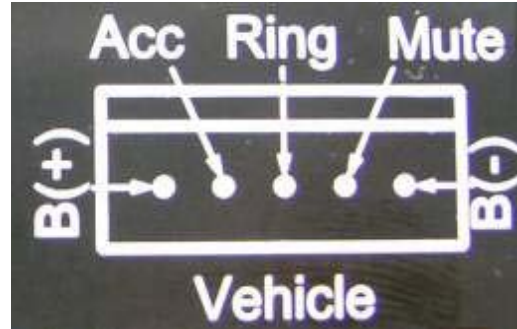
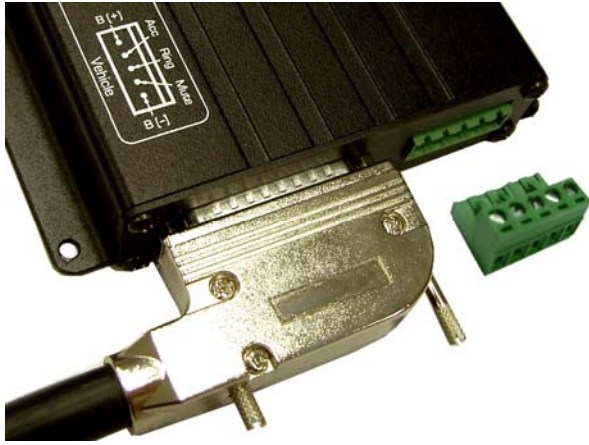


Warning:

DO NOT replace any fuse with a higher amperage fuse.

The screw connector enables the cables to be securely fastened. Ensure that no wires are exposed once the screw is fastened to avoid blowing a fuse.

The cables should only be connected as specified according to the below diagram. The external ring alert and the Mute connector are for optional wiring. Refer to the earlier section for details.



1 3 2

ELECTRICAL LEGEND

- 1 - RED = BATT+ (eg. +12v)
- 2 - Black = GND (BATT-)
- 3 - Green = Accessory Power (Acc)

Radio Mute & Horn Alert: Output switch to ground when active, via open-collector transistors.

Wiring for Additional Features

Convenient On/Off Feature

The power cable includes a **Green** ACC wire which, when connected to sense the status of the vehicle ignition, enables the user of the mobile to conveniently turn the phone on and off with the vehicle ignition. If this function is not required, you **MUST** connect this wire to constant power (BATT+) to ensure unit remains on.

Entertainment Mute Feature (optional)

The entertainment mute output connects to the mute input on your car radio, if the radio includes a mute function. The entertainment mute feature automatically mutes the radio when you place or receive a call. This feature needs to be integrated with a car radio that supports this functionality.

Note: This output signal from the “Mute” connector sinks a maximum of 100mA (0.1A) to ground.

Horn Alert (Ring) Feature *(optional)*

The horn Alert (Ring) output connects to the horn of the vehicle or other device for alerting when an incoming call is received on the terminal.

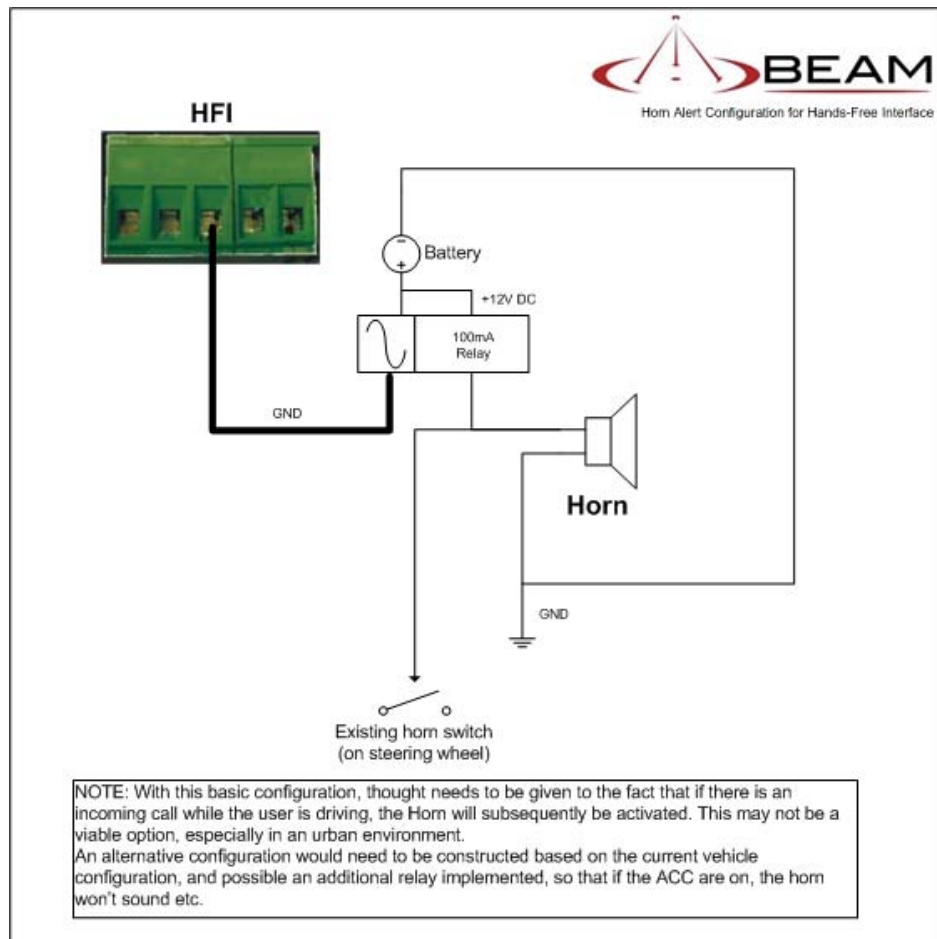
Local laws and regulations regarding the connection of Audible horn Alerts must be abided by. Please consult local authorities in your area prior to wiring in this feature.



Note: This output signal from the “Ring” connector sinks a maximum of 100mA (0.1A) to ground. Therefore it can only be used to drive a relay (maximum coil current of 100mA), which in turn activates the horn.

DO NOT connect this output directly to the horn.

EXAMPLE:



Line In/Out *(optional)*

The **Line In/Out** pluggable screw terminal allows interfacing to the vehicles' existing communications system.

Preliminary Testing

1. Unpack all components and assemble them on a service bench.
2. Position the antenna several meters from the other components to avoid potential interference.

Using a bench power supply in place of the vehicle battery, verify that all components are functioning properly.

Operation of the In-Car Kit

Now that you have completed all installation steps, follow these steps:

1. Ensure the Satellite terminal has power to the unit.
2. Ensure that the vehicle is located in an area where quality signal is available
3. Ensure that the Intelligent Handset is plugged into the HFI
4. Turn on the ignition to ACC or ON position
5. The handset should now be on, attempting to find Satellite network
6. Wait for the unit to register on the network (20 to 40 seconds).
7. You are now ready to make and receive calls.

Checking Performance after Installation

To confirm that the phone is working properly, follow the instructions in this section.

Checking Phone Performance

1. Place a call. Place a call from the mobile and confirm proper operation.
2. Answer a call. Have someone place a call to the mobile, and confirm proper operation.

Checking the Entertainment Mute Feature

If the entertainment mute feature has been connected, check it by following these steps:

- *Enable the entertainment mute feature. Prepare the mobile to receive test calls by enabling the entertainment feature*
- *Turn on the car radio and set the volume to an audible level.*
- *Place a call. Place a call from the mobile and verify that the car radio volume is muted.*
- *Answer a call. Have someone place a call to the mobile. Verify that the car radio volume is muted.*

Important Operational Notes

1. *When the vehicle ignition is turned off, the handset will be turned off after a delay as follows: The unit will prepare to turn-off phone after the first 5 seconds. The vehicle ignition can be returned to ACC / ON position during this time, and the phone will remain on without phone power dropout. This is useful if the vehicle was inadvertently turned off during a voice-call. If ACC remains off, then the Interface unit will also turn off after a further few seconds.*

2. *If during operation of the Hands free unit the unit either does not turn on or will not turn off, it is recommended to follow these steps:*
 - *Turn vehicle Accessories off*
 - *Turn the terminal off*
 - *Wait 10 seconds*
 - *Turn on the vehicle Accessories once more.*

3. *If the power button is pressed after the accessories has already been turned off in the vehicle the telephone will operate for a period of 20 minutes before the unit will power off. If after 19minutes a call is in progress the terminal will stay on for another 20 minutes. This feature is to minimise drain on the battery.*

4. *The power to the terminal is dependent on the power source chosen during installation. If power is required at all times even when the vehicles turned off then the power should be connected to constant 11-32V DC input.*

5. *Be aware of the possibilities of this however flattening the vehicle battery.*

Hands-free Interface LEDs

The Interface unit has a green status indicator (LED), which indicates:

Indicator state	State description
Flash (slow)	Unit is powered, transceiver not registered yet
Steady on	Transceiver registered
Flash (fast)	Call in progress

TURN THE POWER ON AND OFF

The phone is typically powered on / off by the vehicles ignition system. Depending on how the unit has been wired the In-vehicle kit will work with Accessory power and or Vehicle ON power as controlled by the ignition key.

If the unit is off, it will then automatically power on when the Acc key is turned on. You can also use the power control button on the handset to power the unit on/off. The handset on/off button can be used when the Acc key is turned on OR off. This allows turning the unit on when the Car Acc Key is off.

When you turn your phone power on, it performs a self test to let you know it is operational. You may see a number of other power-on messages (see below).

When the 0 (no service) indicator disappears and the (home system) indicator appears, you are ready to start calling.

Assuring Quality of Iridium Service

Iridium is committed to providing subscribers around the world consistent, reliable, quality voice and data access all day every day. The Iridium 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 – see *Antenna Manual* or www.beamcommunications.com
- Cabling
- RF Interference

Cabling

Using an externally mounted antenna provides an ideal solution for many applications. If you have or plan to install an external antenna, it is very important that the cables used meet the Iridium guidelines established for proper performance.

For optimal performance, we recommend using the shortest length of cable and the fewest number of connectors possible.

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 Iridium phone 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 Iridium unit.

Mitigation of RF Interference

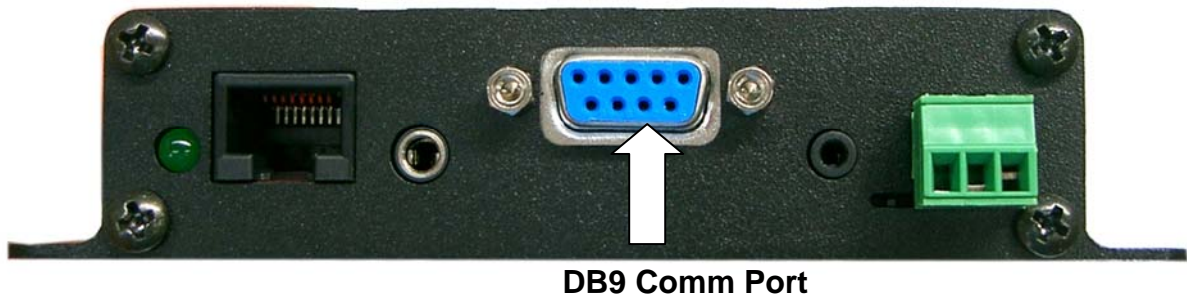
Iridium Service degradation due to RF interference can be significantly improved by:

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

Using the Communication Port

The Hands-free interface provides the convenience to access data services from anywhere on earth. You should consult your service provider for full details on the availability of this service with your account.

RS232 Data Port



An RS232 serial data port is available via the “Comm Port” allowing data calls, or tracking / alerting modules or a PC to be connected.

The DB9 Comm Port enables any data device to be connected to the Hands-free Interface unit. To use this service over the Iridium network you must ensure that Data Access has been set up with your service - consult your Service Provide.



TIP:

Learn more about Data Services available at www.beamcommunications.com

Using the Line In/Out

The **Line In/Out** pluggable screw-terminal allows interfacing to the vehicles' existing communications system. The Line audio level of this interface is that of typical equipment being -10dBV, which is about 0.3V.



Line In/Out

Pinout:

- 1 (left) = Line In (uplink audio)
- 2 (middle) = ground
- 3 (right) = Line Out (downlink audio)

NOTE:

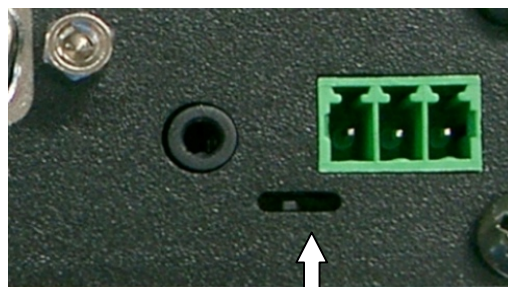


It is recommended to use screened 2-core audio cable in making the plug. It may be required to adjust the gains of the communications system that is being interfaced in order to achieve optimum levels

NOTE:



The microphone port needs to be disabled when the line-In, by switching the slide switch to the RIGHT. Use the tip of a pen to gently click the slide switch over to the RIGHT



Slide Switch

Iridium Display Definitions



Signal Strength Indicator

indicates the strength of the signal from the network. The signal strength indicator appears continuously in the top left hand corner of the display. The more segments displayed in the bar graph, the stronger the signal. Five bars indicate full signal strength.

No bars indicate a weak signal.



Battery Charge Indicator

indicates the strength of the battery charge. The more segments displayed, the greater the battery charge. You can also check the strength of the charge at any time through the menu.



Real Time Clock Indicator

Displays the time in either 12-hour or 24-hour format.



Message Indicator

Appears when you receive a new message. It flashes when the SIM card is full.



Satellite Mode Indicator

Appears when your phone is in satellite mode.



Home System Indicator appears when the phone has successfully registered with the Iridium satellite



No Service Indicator

Appears when your phone is not capable of placing or receiving calls



In Use Indicator

Appears when a call is in progress.



Scroll Bar

Appears on the right of the display when in a menu.



Check Mark

Indicates a menu item is selected.



Hourglass Icon

Appears in the display when your phone has to request settings from the network.



Quick Access Menu Icons

Allow you to easily identify Quick Access features as you scroll through the Quick Access menu.

Using Your Intelligent Handset

The phone is powered on and off by the vehicles ignition system. Depending on how the unit has been wired the In-vehicle kit will work with Accessory power and or Vehicle ON power as controlled by the ignition key.

If the unit is off, it will then automatically power on when the Acc key is turned on.

You can use the power control button on the handset to power the unit on/off. The handset on/off button can be used when the Acc key is turned on OR off. This allows turning the unit on when the Car Acc Key is off.

When you turn your phone's power on, it performs a self test to let you know it is operational. You may see a number of other power-on messages (see below).

When the 0 (no service) indicator disappears and the (home system) indicator appears, you are ready to start calling.

Power-On Messages

Once your phone is powered on, you may see:

Message	Description
Searching...	The phone is attempting to establish communications with the satellite network. See "Accessing the Network" for more information.
Registering	Your phone is registering with the network. When the process is complete, you will see Registered. See "Accessing the Network" for more information.
Enter Phone Unlock Code	Your phone was locked after the last use. Enter your four-digit unlock code and press to proceed. See "Locking and Unlocking Your Phone" for more information.
Enter PIN	Enter the four-to eight-digit SIM card PIN code provided by your service provider and press to proceed. See "Protecting the SIM Card" for more information.
Insert Card	Power off your phone; make sure your SIM card is inserted completely; and then power your phone on again.
Check Card	This message indicates that the SIM card is damaged or inserted the wrong way.
Blocked	If the SIM card PIN code is incorrectly entered three times in a row, your phone becomes blocked. See "Unblock the PIN Code" for instructions on how to unblock it.
!Blocked	If the SIM card PIN2 code is incorrectly entered three times in a row, your phone becomes blocked. See "Unblock the PIN2 Code" for instructions on how to unblock it.
Bad Card See Supplier	Your SIM card has been damaged or incorrectly issued. Contact your service provider.
Check Signal	Your phone is unable to establish registration with the satellite network. Move to a location with a clear unobstructed view of the sky.
Invalid Account	Contact your service provider.
Enter Phone Unlock Code	Your phone was locked after last use. Enter your four-digit unlock code and press OK
Busy Try Later or Please Try Later	The phone is unable to access the network. Try again in a few minutes.
Restricted Area	The phone is unable to access the network. Move to an area where calls are allowed.
Redial?	Press OK to redial the number automatically.

Phone Overview



Volume Keys	The Volume keys are on face of the handset as shown above. This controls the in call volume as well as the ring volume.
Placing a Call	To place a call, your phone must be powered on, have a SIM card inserted, be unlocked, and be in contact with the satellite network. See "Accessing the Network" for network information.
Making A Hands-Free Call:	Enter the number you wish you call Use the + symbol for international calls Once the number is entered the Call? will appear Press OK to attempt call To end call End Call? appears press OK To end call press C.
Making A Private Call:	Remove handset from cradle/holder Enter the number you wish you call Use the + symbol for international calls Once the number is entered Call? will appear Press OK to attempt call To end call if End Call? appears press OK To end call press C or replace handset in cradle

If you make a mistake, press C once to delete the last digit, or press and hold C to clear all digits.

If the call connects and is answered, Connected appears on the display for a few seconds, followed by End Call?

Automatic Redial

If the number or your network is busy, you will see Redial? for five seconds.
Press **OK** to redial the number automatically.



NOTE:

*The maximum number of redial attempts is set by your service provider. If the call cannot be connected within this maximum, you will see the message **Redial failed***

Redial Last Number Called

Whenever your phone is on standby, you can redial the last number called

1. Press **OK** to display the last number dialed.
2. Press **OK** again to place the call.

International Dialing

To make an international phone call:

1. Press and hold *****. After a few seconds the international dialing prefix **+** appears in the display. This allows you to call from any country without knowing the local international access code.
2. Enter the country code followed by the phone number. The country code follows the conventional format.

Dial a Number from the Phone Book

Your phone contains a phone book that you can use to store names and telephone numbers. Once you have stored information in your phone book, you can save dialling steps by using:

- *one-touch dialing*
- *an entry from a location*
- *an entry of a name*
- *one of the last ten numbers called* **Make an Emergency Call**

Emergency Number Dialing

Refer to your service provider for availability of this service.

Ending a Call




To end a call, perform one of the following tasks:

- Press **C** or if End Call? appears press **OK**
- Replace the handset in the hang-up cup, for an in-vehicle installation



Receiving Calls

To receive a call, your phone must be powered on, have a SIM card inserted, be unlocked, and be in contact with the satellite network. See "Accessing the Network" for network information.

Receiving Hands-free calls

1. In call alert leave the handset in the hang-up cup
2. **Press**  to answer call
3. Direct your conversation to the hands-free mic
4. To end call End Call? appears **press** 
5. **To end call press** 

Receiving Personal Calls on the handset

1. In call alert, remove handset from hang-up cup
2. Call should answer if removed from hang-up cup
3. Direct your conversation to the handset
4. To end call End Call? appears **press** 
5. **To end call press** 

Unanswered Calls

If you are away from your phone or choose not to answer a call, your phone displays the message Unanswered Call 1.

Voicemail Mailbox

Callers who are unable to reach you can leave voice messages if this feature is active. You will also need to ensure your diversions have been set to perform this. The next time you register with the satellite network, you will receive notification of voice messages being left in your mailbox / voicemail.

Changing From Private to Hands-free

1. Remove the handset from the cradle, for privacy mode
2. Replace the handset into the hang-up cup, you are now in direct conversation with Speaker & Microphone operational



NOTE:

It is possible to switch between hands-free and private mode without ending your call.

Adjusting Earpiece Volume

To adjust earpiece volume:

Increase the volume by pressing the upper volume key.

Decrease the volume by pressing the lower volume key.

As you press the keys, the phone's speaker demonstrates the new volume level. The bar graph in the display represents the volume level. The higher the bar, the louder the volume.

Adjusting Ringer Volume

Use this feature to adjust the volume of the ringer. The phone sounds the new volume level as you adjust it. To adjust the ringer volume:

1. **Press** MENU until you see Phone Setup, and then **press** OK
2. **Press** MENU until you see Adjust Ring Volume, and then **press** OK to select.
3. **Increase** the volume by pressing the upper volume key. **OR**
 - A. **Decrease** the volume by pressing the lower volume key.
 - B. **Press and hold** C to exit the menu.

Using In-Call Feature: Muting a Call

For privacy during a call, try muting the phone. You hear the party on the other end, but the other party does not hear you.

To mute a call:

While in a call **Press** MENU until you see Turn Mute on or off.

Press OK to select. You will see Mute.

To remove the mute (un-mute) a call:

Press MENU until you see Turn Mute on or off

Press OK to un-mute.

Using the Menus

Many of your phone features are organized into lists of options called menus. There are three menus: the Options menu, the Quick Access menu, and the In-Call menu. Some of these options give you access to additional lists of options called submenus.

Navigate the Options Menus

Learning how to use just a few keys enables you to move freely through the entire menu system.

If you want to...	Then...
Enter the Options menu	Press MENU to access the Options menu. You will see the first available submenu.
Scroll through the Options menu	Press MENU to scroll forward. Press * or # to scroll backward or forward.
Select options and submenus	Press OK to select a menu option or submenu when that option or submenu name is displayed.
Exit features and menus	Press @ to exit the feature or submenu. Press and hold @ to exit the Options menu.



By pressing **MENU** during a call, you will see the In-Call menu.

Using the Quick Access Menu

The Quick Access menu is a way to keep your favourite menu options readily accessible. Each digit key has a Quick Access feature assigned to it. If you know the number of the feature, activating that option takes only two button pushes! If you do not know the number or want to review your options, just scroll through the icon menu and read the tag attached to each option.

Activate the Feature Directly

To access the feature directly:

Press **MENU**, and then **press** the digit key of the feature.

Scroll to the Feature by:

Pressing **MENU** to scroll through the available features **OR**

Press * or # to scroll backward and forward.

Press **OK** to select a feature.

Default Quick Access Settings

Menu Number	Quick Access Feature
1	Find Name searches your Phone Book by the full name.
2	Check Signal checks the strength of the signal from the satellite network.
3	Call Voicemail calls your Voicemail number to check your Voicemail
4	Mute Phone mutes the phone.
5	Lock Now locks your phone immediately.
6	Adjust Ring displays and sets the incoming call ring tone volume.
7	Read Messages displays the newest message received
8	Register Now initiates a systematic manual search for a network on which to register. You must wait three minutes between registration attempts.
9	Forward On/Off activates or deactivates unconditional call forwarding depending on the current setting.

Using the In-Call Menu

This menu lets you access specific features while you are in a call. Because this menu is not available until you are actually in a call, you cannot review it off-line.

Entering the In-Call Menu

While in a call:

Press **MENU** to view the In-Call menu features.

In-Call Menu Features

The In-Call menu dynamically changes depending on the type of call you are in.

Managing the Phone Book

Your satellite phone can store up to 100 names and numbers, and your SIM card expands memory capacity even more.

Use the dedicated keys or the Options menu to access the same functions. With the Options menu you can also access Phone Book maintenance and security features.

Entering the Phone Book Menu

To enter the Phone Book menu:

1. Press **MENU** to open the Options menu.
 2. Press **MENU** to scroll forward.
- or
1. Press ***** or **#** to scroll backward or forward.
 2. Press **OK** when you see:

Organising Your Phone Book

Each name and phone number in your Phone Book is stored in a numbered memory location. The satellite phone has two types of memory—phone memory and SIM card memory.

	Phone Memory	SIM Card Memory
Personal Numbers	100 entries	155 entries
Phone Number Digits	32	20
Name Characters	16	16
Location Numbers	1-100	101-255

SIM card capacity varies depending upon the card issued by your service provider. Your phone's memory can seem overwhelming if you do not have a strategy for organizing your Phone Book. Begin setting up your Phone Book by asking yourself these questions:

Which numbers do I call most?

Make a list of the numbers you call most frequently. You will probably want to store these numbers in the first nine memory locations of your Phone Book. You can then dial them with a single keystroke by using One-Touch dialling.

When do I use these numbers?

Group the numbers on the list according to when you use them. Most people call a different set of numbers during the day than they do in the evening and on weekends. You can switch one-touch dialling to your phone's memory (locations 1-9), your SIM card's memory (locations 101-109), or to your fixed dial list (locations 1-9). Store your evening and weekend numbers on one type of memory and your daytime numbers on another.

Getting to Personal Numbers...

1. Press **MENU** until you see Phone Book, and then **press** **OK**.
2. Press **MENU** until you see Personal Numbers, and then **press** **OK**.
3. Press **MENU** to scroll to one of the features described below.

Storing Names and Numbers

Add an Entry

Use the Options Menu

1. Follow the steps in "Getting to Personal Numbers..." to get to Add Entry, and then **press** **OK**.
2. Press **MENU** to scroll to Add to Phone Memory or Add to SIM Memory.
3. Press **OK** to select. You will see Enter Number.
4. Enter a number, and then **press** **OK**. You will see Enter Name.
5. Enter a name and then **press** **OK**. You will see Enter Location.
6. Enter a location number, 1-100 for phone memory or 101-255 for SIM memory*, and then **press** **OK**. You will see Stored XXX.

Or

1. Press **OK** to select the next available location. You will see Stored XXX.
2. Press and hold **OK** to exit the menu.

Entering Names

You can use the keypad to produce any letter in the alphabet. For example, press **2** to enter the letters **A**, **B**, or **C**, as shown:

Correcting an Entry

To make a change:

1. Press ***** or **#** to scroll to the character you want to delete.
2. Press **OK** to delete one character at a time. **OR**
 B. Press and hold **C** to clear the display.

Calling, Modifying, or Erasing an Entry

Once you have selected a Phone Book entry, you can call, change, or erase that entry.

Call a Selected Entry

1. Find an entry, and then **press** **OK**. See Locating Entries
2. Press **MENU** until you see Call Number, and then **press** **OK**. You will see calling followed by the number you dialed.

Modify a Name or Number

1. Find an entry, and then **press** **OK**.

2. **Press** **MENU** until you see **Modify Name or Number**, and then **press** **OK**. You will see **Edit Number**, followed by the phone number stored in that entry.
3. Enter changes to the number, and then **press** **OK**. You will see the name stored in that entry.
4. Enter changes to the name, and then **press** **OK**. You will see **Modified XXX**.

Erase a Name and Number

1. Find an entry, and then **press** **OK**.
2. **Press** **MENU** until you see **Erase Name and Number**, and then **press** **OK**. You will see **Erased xxx**.

Storing Your Voicemail Number

To store a voicemail number:

1. Go to **"Message Settings"**, and then **Press** **OK** to select.
2. **Press** **OK** to select **Voicemail Number**. You will see **Enter Voicemail Number** followed by your current voicemail number. If this is the first time you have stored a number, continue with to step 4.
3. **Press** **C** to clear one digit at a time, or **press and hold** **C** to erase the entire number.
4. Enter the new number, and then **Press** **OK**. You will see **Completed**.
5. **Press and hold** **C** to exit the menu.

Managing Your Messages

How Your Phone Notifies You of Messages

If your phone is powered on, it notifies you of received messages in the following ways:

- An alert sounds.
 - Your phone beeps three times to inform you of an incoming message.
 - The (message) indicator is displayed.
 - The message is displayed immediately if the message is a voicemail notification message. The message remains on the display for several seconds
- OR**
- **Message Read Now?** Is displayed if the message is an alphanumeric, text message of up to 160 characters. For more information see "Read a New Message"

How Messages Are Stored

Your phone stores all messages on your SIM card. The total number of messages that you can store depends on your service provider.

If the message indicator is flashing, your SIM card is full. See "Delete Messages" to make room for the new message.

What Messages Contain

You can receive short text or numeric messages in your Personal Mailbox. Text messages may contain up to 160 characters.

Messages contain multiple screens with the following information:

- the message
- the date and time the message was sent
- the phone number (if available) from which the message was sent

Accessing Your Messages...

1. **Press** MENU until you see Messages, and then **press** OK.
2. **Press** MENU until you see Received Messages, and then **press** OK.
3. **Press** MENU to scroll to one of the features described below.

Read a New Messages Notification Message

When you receive an incoming fax or voicemail notification message, it automatically scrolls across your screen. You can:

- **Press** OK to store it on your SIM card.
- **Press** OK to delete it.

Text Messages

When you receive a new alphanumeric message, you will see Message Read Now? To read it:

Press OK and continue with step 2. or

Press OK to read the message later.

To read a Stored Message

1. Follow the steps in "Accessing Your Messages..." to enter the message menu. If you have messages you will see the number of messages stored. If you do not have any messages, you will see No Messages.
2. **Press** MENU to move forward through a message one screen at a time.
3. **Press** OK to access options for that entry or **Press and hold** C to exit the menu.

Delete Messages

Use this option to make room for new messages:

1. Follow the steps in "Go to the Next Message" until you see the message you want to delete, and then **press** C.
2. **Press** MENU until you see Delete Message, and then **press** OK. You will see Message Deleted.
3. **Press and hold** C to exit the menu.

Accessing Your Messages...

1. **Press** MENU until you see Messages, and then **press** OK
2. **Press** MENU until you see Received Messages, and then **press** OK
3. **Press** MENU to scroll to one of the features described below.

Go to the Next Message

1. Follow the steps in "Read a Stored Message"
2. **Press** MENU until you see Go To Next Message and then **press** OK
You will see the next message. If at the end of your message list you will see the first message again.
3. **Press** MENU to move through a message one screen at a time. **Repeat steps 2 to 3** until you have read all your messages. **Press and hold** C to exit the menu.

Return a Call from number in message

A call-back number appears in quotes within the message. If one is enclosed, you can instantly place a call to that number. If one is not included, your phone selects the first number in the message.

1. Follow the steps in "Go to the Next Message" to display the desired message, and then **press** OK
2. **Press** MENU until you see Return Call 1.
3. **Press** OK to place a call to that number. You will see the number followed by Calling.

Customising Phone Features

Once you are comfortable with the basic features of your new phone, use this chapter to set up your phone the way you like it.

Entering the Phone Setup Menu

1. **Press** MENU to open the Options menu.
2. **Press** MENU to scroll forward OR
1. **Press** * or # to scroll backward or forward.
2. **Press** when you see:
Press MENU to scroll through the submenu. OR
Press * or # to scroll backward or forward through the submenu.

Getting to Phone Setup...

1. **Press** MENU until you see Phone Setup, and then **press** OK.
2. **Press** MENU to scroll to one of the features described below. You will see the feature name, followed by Select?

Adjusting the Ringer Volume

The phone sounds the new volume level as you adjust it.

1. Follow the steps in "Getting to Phone Setup..." to get to Adjust Ring Volume, and then **press** **OK** to select.
2. **Increase** the volume by pressing the upper volume key. **OR**
 - A. **Decrease** the volume by pressing the lower volume key.
 - B. **Press and hold** **C** to exit the menu.

Setting the Ringer Tone

Select your favourite tone from 10 different options.

1. Follow the steps in "Getting to Phone Setup..." to get to Set Ringer Tone, and then **press** **OK** to select.
2. **Press** **MENU** to scroll through the following options:

<i>Standard Tone</i>	<i>Bravo Tone</i>
<i>Single Ring Tone</i>	<i>Three Ring Tone</i>
<i>British Tone</i>	<i>Siren Tone</i>
<i>French Tone</i>	<i>Quick Tone</i>
<i>German Tone</i>	<i>High Tone</i>

You will hear a one-ring-cycle demonstration.

3. **Press** **OK** to select the desired option.
4. **Press and hold** **C** to exit the menu.

Getting to Phone Setup...

1. **Press** **MENU** until you see Phone Setup, and then **press** **OK**
2. **Press** **MENU** to scroll to one of the features described below. You will see the feature name, followed by Select?

Setting the Keypad Tones

Choose the sounds your phone makes when its keys are pressed.

Note: This feature is available only when the extended menus are activated. See "Activating Extended Menus"

1. Follow the steps in "Getting to Phone Setup..." to get to Select Keypad Tones, and then **press** **OK** to select.
2. **Press** **MENU** to choose Normal Tones, Single Tone, or No Tones, and then **press** **OK**
3. **Press and hold** **C** to exit the menu.

Locking and Unlocking Your Phone

These features can help you prevent unwanted use of your phone.

Lock the Phone Automatically

Use this feature to set your phone to lock itself every time it is powered on.

1. Follow the steps in "Getting to Phone Lock..." to get to Automatic Lock, and then **press** **OK** to select.
2. **Press** **MENU** to choose On or Off, and then **press** **0** to select. You will see Completed.
3. **Press and hold** **0** to exit the menu.

Lock the Phone Instantly

Use this feature to lock your phone immediately.

1. Follow the steps in "Getting to Phone Lock..." to get to Lock Now.
2. **Press** **OK** to select. You will see Locked.



NOTE:

Once you unlock your phone, it remains unlocked until you lock it again.

Unlock the Phone

1. **Enter unlock code.** Enter your four-digit phone unlock code.
2. Press **OK**.

Change the Unlock Code

The unlock code is originally set to 1234. You should change it as soon as possible.

1. Follow the steps in "Getting to Phone Lock..." to get to Change Unlock Code, and then **press** **OK** to select. You will see Enter Security Code.
2. **Enter security code.** Enter your six-digit security code. You will see your current lock code and **Enter Phone Unlock Code**.
3. **Press** **0** to clear one digit at a time, or **press and hold** **C** to clear all the digits.
4. **Enter new code.** Enter a new four-digit unlock code, and then **press** **OK**. You will see Phone Lock and the new lock code.
4. **Press and hold** **C** to exit the menu.

Getting to Require SIM Card PIN...

1. **Press** **MENU** until you see Phone Setup, and then **press** **OK**.
2. **Press** **MENU** until you see Require SIM Card PIN, and then **press** **0**.
3. **Press** **MENU** to scroll to one of the features described below. You will see the feature name, followed by View Options?

Protecting the SIM Card

You can use a Personal Identification Number (PIN) code to protect the information stored on your SIM card even when it is inserted into someone else's phone.

Activate and Deactivate the SIM Card PIN Code

When you activate the SIM card PIN code, your phone requests the code whenever the phone is powered on. To change this setting, you need to enter the PIN code that your service provider gave you.

1. Follow the steps in "Getting to Require SIM Card PIN...".
2. **Press MENU** to scroll to On or Off, and then **press OK**. You will see Enter PIN.
3. **Enter PIN code.** Enter the four- to eight-digit PIN code your service provider gave you, and then **press OK**. You will see Completed.
3. **Press and hold C** to exit the menu.

Getting to Require SIM Card PIN...

1. **Press MENU** until you see Phone Setup, and then **press OK**
2. **Press MENU** until you see Require SIM Card PIN, and then **press OK**
3. **Press MENU** to scroll to one of the features described below. You will see the feature name, followed by View Options?

Change the SIM Card PIN Code

To choose your own PIN code:

1. Follow the steps in "Getting to Require SIM Card PIN..." to get to Change SIM Card PIN, and then **press OK** to select. You will see Enter Old PIN.
2. **Enter the current PIN code**, and then **press OK**. You will see Enter New PIN.
3. **Enter a new PIN code**, and then **press OK**. You will see Repeat New PIN.
4. **Re-enter the new PIN code**, and then **press OK** again. You will see Completed.
5. **Press and hold C** to exit the menu.

Unblock the PIN Code

If your PIN code is entered incorrectly three times in a row, Blocked appears in the display. You need to enter a PIN unblocking key (PUK1), which you can obtain from your provider.

Getting to Phone Setup...

1. **Press MENU** until you see Phone Setup, and then **press OK**.
2. **Press MENU** to scroll to one of the features described below. You will see the feature name, followed by Select?

Selecting the Display Language

1. Follow the steps in "Getting to Phone Setup..." to get to language selection, and then **press OK** to select.
2. **Press MENU** to scroll through the choices, and then **press OK** to select the displayed option.
3. **Press and hold C** to exit the menu.

**NOTE:**

This feature is available only when the extended menus are activated. See "Activating Extended Menus"

Reset Options to Factory Defaults

Use the master reset option to reset all settings to their original default settings. The master reset option:

- resets audible call timers, the in-call timer, and the automatic lock
- resets extended menus to default setting
- restores keypad tones to normal, ringer tone to standard, and the volume level to the middle (fourth bar) of its range

To reset all settings:

1. Follow the steps in "Getting to Phone Status..." to get to Master Reset, and then **press** **OK** to select. You will see Enter Security Code.
2. Enter your six-digit security code. You will see Reset Complete.
3. **Press and hold** **C** to exit the menu.

Clear All Stored Information

The **Master Clear** option resets the same items as **Master Reset**, plus the following:

- clear phone book entries from phone memory (not from SIM memory)
- clear last calls made list
- reset resettable call timers

Master Clear does not clear the:

- fixed dial list
- my number(s) list
- received messages list

To clear the settings:

1. Follow the steps in "Getting to Phone Status..." to get to Master Clear, and then **press** **OK** to select. You will see Enter Security Code.
2. Enter your six-digit security code. You will see Reset Complete.
3. **Press and hold** **C** to exit the menu

Accessing the Network Selection Menu

To enter the Network Selection menu:

1. **Press** **MENU** to open the Options menu.
2. **Press** **MENU** to scroll forward. **OR**
 - A. **Press** ***** or **#** to scroll backward or forward.
 - B. **Press** **OK** when you see:
4. **Press** **MENU** to scroll through the submenu **OR**
5. **Press** ***** or **#** to scroll backward or forward through the submenu.

Getting to Network Selection...

1. Press **MENU** until you see Network Selection, and then press **OK**.
2. Press **MENU** to scroll to one of the features described below. You will see the feature name, followed by Select?

Registering With the Satellite Network

Your phone searches for the Iridium satellite network.

1. Follow the steps in "Getting to Network Selection..." to get to Register Now.
2. Press **0** to select. You will see Registering.... This may take a few seconds. If the phone finds the signal, you will see Registered and the signal strength indicator: The (home system) indicator appears. If the phone is unsuccessful you may see one of these messages: System Busy, Restricted Area, or Weak Signal.



NOTE:

You must wait three minutes between registration attempts.

Getting to Show Call Timers...

1. Press **MENU** until you see Call Meters, and then press **OK**.
2. Press **MENU** until you see Show Call Timers, and then press **OK**.
3. Press **MENU** to scroll to one of the features described below.

Showing Call Timers

This submenu helps you track your airtime. Keep a running tab of your monthly usage or view the airtime of your most recent call.

Show the Time of the Last Call

Use this feature to display the elapsed time of your most recent call.

1. Follow the steps in "Getting to Show Call Timers..." to get to Show Last Call, and then press **OK** to select.

You will see the airtime of the most recent call in hours, minutes, and seconds. After several seconds, the display returns to Show Last Call

2. Press and hold **C** to exit the menu.

Show Total Time for All Calls

Use this feature to display your total airtime since you last reset the Call Timer.

1. Follow the steps in "Getting to Show Call Timers..." to get to Total For All Calls, and then press **OK** to select.

You will see the airtime accumulated since the timer was last reset. The airtime is displayed in hours, minutes, and seconds. After several seconds, the display returns to Total For All Calls.

2. Press and hold **C** to exit the menu.

Getting to Audible Call Timers...

1. **Press** MENU until you see Call Meters, and then **press** OK.
2. **Press** MENU until you see Set Audible Call Timers, and then **press** OK
3. **Press** MENU to scroll to one of the features described below.
4. **Press and hold** C to exit the menu.

Specification Summary

Electrical	
Power	11VDC to 32VDC, 2.5A
Power Consumption (Average Current, HFI+9522B)	At Input Voltage: 12V 24V
Standby Mode	0.58 A 0.27 A
Talk/Transmit Mode	0.73 A 0.35 A
Standby Mode	0.47 A 0.15 A
Talk/Transmit Mode	0.54 A 0.24 A
RF Interface (L-Band Transceiver)	
Frequency range	1616MHz to 1626.5MHz
Average Power	7W during a transmit slot (max)
Average Power	0.6 W during a frame (typical)
Receiver Sensitivity	-118.5 dBm at 50W (typical)
Receiver Spurious Rejection	60 dB (at offsets > 1 MHz typical)
Duplexing method	TDD (Time Domain Duplex)
Oscillator stability:	±1.5ppm
Input/output impedance	50 Ohms
Multiplexing method:	TDMA/FDMA
Additional Interfaces	
Microphone	2.5mm mono jack, voltage biased
Speaker	3.5mm mono jack, 8-ohm, differential mode (10 Watt Output)
Entertainment Mute	Sinks 100mA (0.1A) to ground
Ring Alert	Sinks 100mA (0.1A) to ground
Line In/Line Out	-10dBV or 0.3V RMS (2V Peak to Peak Max) Input Z=50k Ohm, Output Z=1.2k Ohm
Environmental	
Operating Temp. Range	-30°C to +60°C ambient
Operating Humidity Range	25-75% RH non-condensing
Storage Temperature	-40C to +85C
Weight (modules)	0.5 kg (HFI module) 0.6 kg (L-band Trxvr)
Dimensions (HFI module)	L183 x W130 x H27mm
EMC Compliance	C-Tick (EN55022 / CISPR22)
RoHS	Full compliant EU2002/95/EC (All 6 items)
Atmospheric Protection	Conformal coating to circuit board assembly
Flame Retardant	UL94.0

RS232 (Comm Port) Specification

The RST620 is provided with a RS232 serial port for data connection. It is a 9-pin D-type (female) socket, wired DCE for connection to a standard PC with a 1:1 cable.

Physical Connection

The pin-out of both connectors is described in the following table:

Pin	Signal	Direction	Description
1	DCD	RST→PC	Data Carrier Detect
2	RXD	RST→PC	Received Data
3	TXD	PC→RST	Transmitted Data
4	DTR	PC→RST	Data Terminal Ready
5	GND		Signal Ground (Common)
6	DSR	RST→PC	Data Set Ready (CTS and DCD)
7	RTS	PC→RST	Request to Send
8	CTS	PC←RST	Clear to Send
9	RI	RST→PC	Ring Indicate (7.5V on Log port)

RS232 Port Signal Support and Handshaking

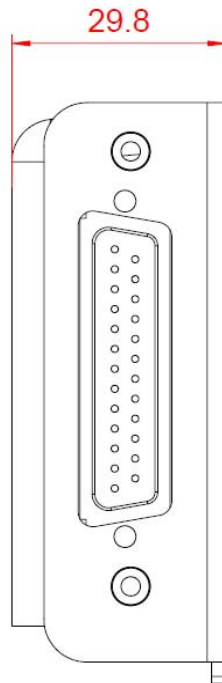
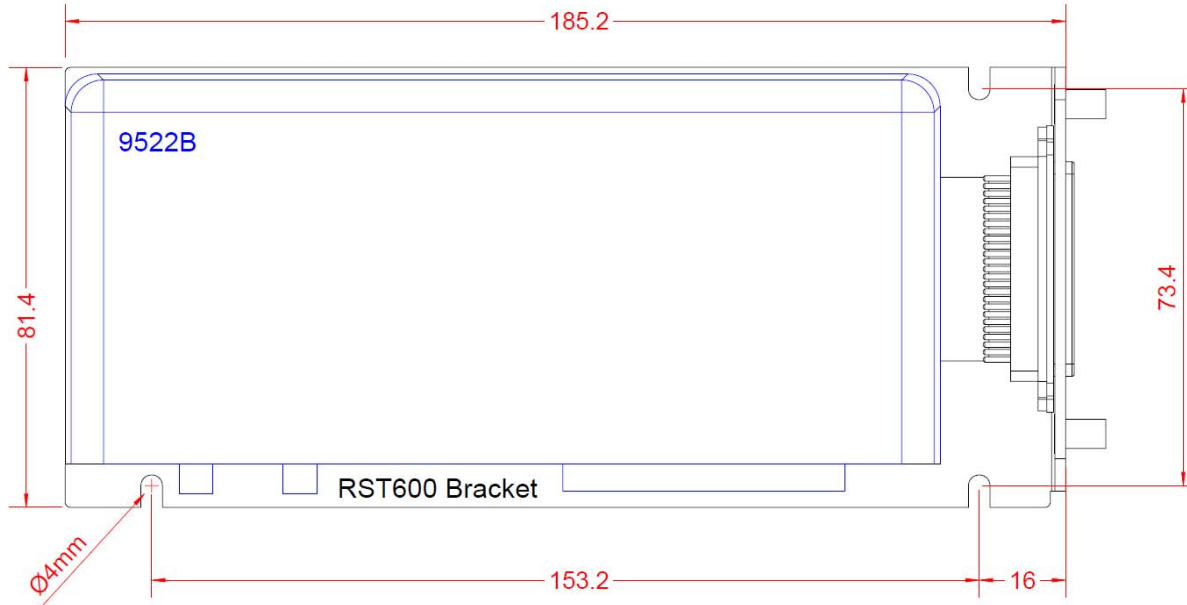
The Data port supports full software XON/XOFF handshaking on data (AT commands bypass this as standard for Hayes modems) or full hardware handshaking on RTS/CTS with DCD carrier indication.

RS232 Port Electrical Parameters

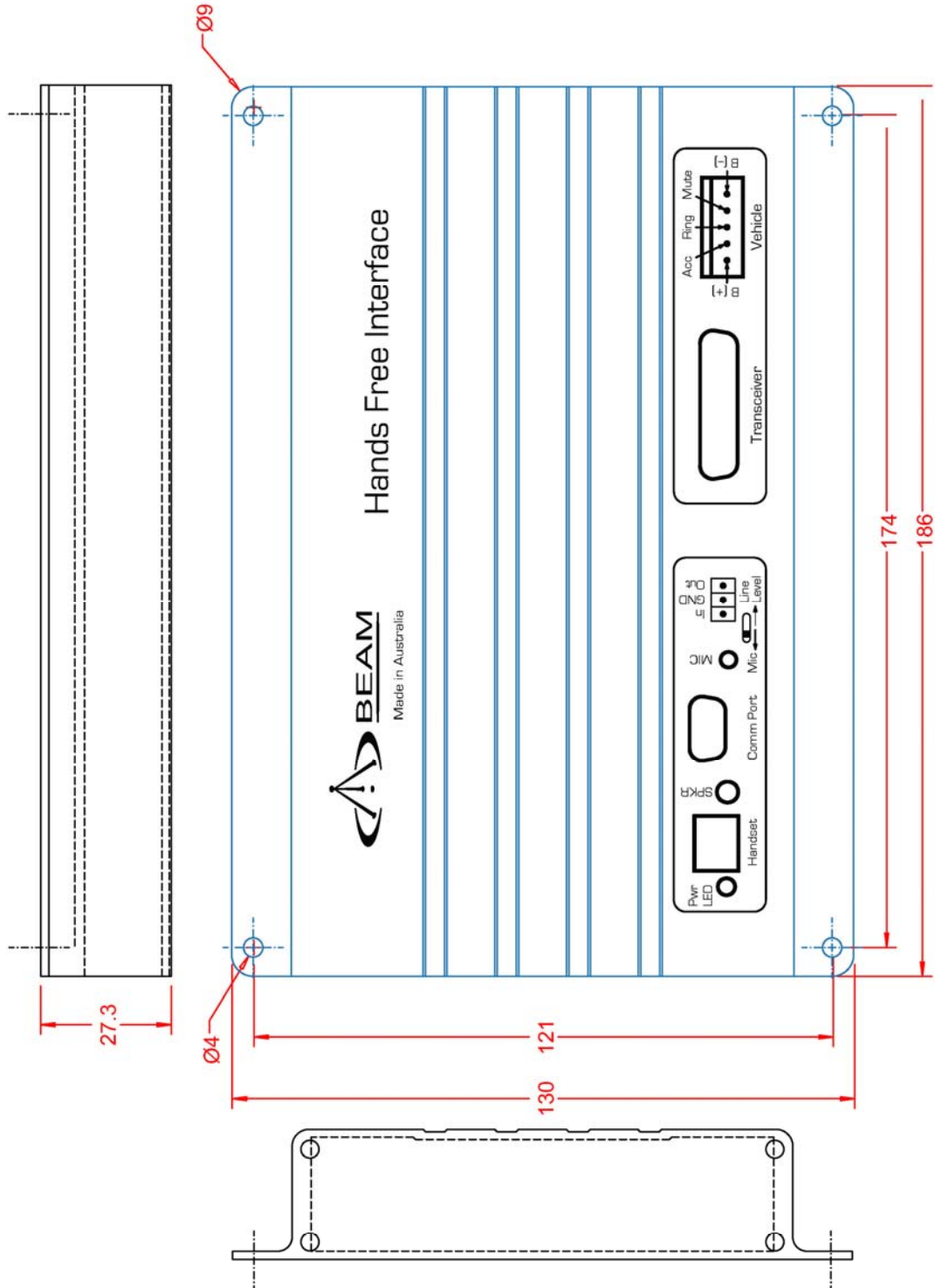
The Comm Port conforms to the RS232 interface specification with the following parameters:

Parameter	Specification
Communication Rate	220 to 19,200 Baud (recommended maximum)
Protocol	1 start bit, 8 data bits, no parity, 1 stop bit, asynchronous.
Voltage Levels and Sensitivity	RS232 compliant

9522B Mounting Bracket Dimensions



HFI Mounting Dimensions



Troubleshooting

This chapter provides information to help you troubleshoot problems you may encounter while running the RST620.

Q **No power on RST620**

A *Check power is connected to the terminal and the HFI units.
Check to see if the Green LED is on or Flashing*

Q **RST620 fails to register with the Iridium service after 30 seconds**

A *Check power connection
Check Antenna connection and location
Ensure SIM is inserted
Check correct power supply is being used*

Q **There is no Display on the Intelligent Handset**

A *Check if it is connected to the Handset connector. Try resetting the terminal by pressing the reset button.*

Q **There is no Audio from the Speaker**

A *Check that the speaker connector is installed directly to the HFI kit.
Check the signal strength on the intelligent handset*

Q **There is no Audio from the Microphone / Party B cannot hear your voice**

A *Check that the slide-switch is positioned to the LEFT to enable the microphone 2.5mm jack.
Check that the microphone connector is installed directly to the HFI kit.
Check the signal strength on the handset*

Q **There is no Audio from the Line In**

A *Check that the slide-switch is positioned to the RIGHT to enable the pluggable screw terminal audio path.*

Q **Your PIN is blocked**

A *Enter the PIN unblocking key (PUK1) or contact your service provider*

Q **Your PIN2 is locked.**

A *Enter the PIN2 unblocking key (PUK2) or contact your service provider.*

Q You can't make calls.

A *Check that the antenna is properly mounted.
Do you have a clear view of the sky?
Did you enter the number in international format?
All calls made from the Iridium® System require a special calling sequence, please refer to your Service Provider for these details.
Check the signal strength meter. If the signal is weak, move the vehicle to a more open area.
Check the Network Selection settings.
Check your Operator coverage map.
Is Restricted displayed? Check the Call Barring setting.
Has a new SIM card been inserted?*

Q You can't receive calls

A *Check to see that your phone is powered on.
Check the antenna. Is it properly mounted?
Do you have a clear view of the sky?
Check the signal strength. If the signal is weak, move the vehicle to a more open area.
Check the Call Forwarding and Call Barring settings.
Check the Ringer setting. If it is off, there is no audible ringer.*

Q You can't make international calls.

A *Have you included the relevant codes? Press and hold the (+) key to display the international dialling prefix (+), and then enter the appropriate country code, followed by the phone number.*

Q Your SIM card won't work.

A *Is the card inserted the correct way?
Is the gold chip visibly damaged or scratched? Return the card to your service provider.
Check the SIM and phone contacts. If they are dirty, clean them with an antistatic cloth.*

Q You can't cancel call forwarding or call barring

A *Wait until you are in an area with good network coverage and try again.*

Q **Your PIN is blocked**

A *Check Card or Insert Card.
Check the card is inserted correctly
Check the contacts of the card are clean
See your Service Provider if continues*

Q **Your SIM card won't work.**

A *Is the card inserted the correct way?
Is the gold chip visibly damaged or scratched? Return the card to your service provider.
Check the SIM and phone contacts. If they are dirty, clean them with an antistatic cloth.*

Q **You can't cancel call forwarding or call barring**

A *Wait until you are in an area with good network coverage and try again.*

Q **Your PIN is blocked**

A *Check Card or Insert Card.
Check the card is inserted correctly
Check the contacts of the card are clean
Clean the chip with a soft cloth
See your Service Provider if continues*

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, 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 the sender pays freight.
6. A charge of USD150 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.