

USER MANUAL
FOR SEA TEL MODEL
FX 250 FLEETBROADBAND
ANTENNA SYSTEM



Sea Tel, Inc.
4030 Nelson Avenue
Concord, CA 94520
Tel: (925) 798-7979
Fax: (925) 798-7986
Web: <http://www.cobham.com/seatel>

Sea Tel
COBHAM

Sea Tel Europe
Unit 1, Orion Industrial Centre
Wide Lane, Swaythling
Southampton, UK SO 18 2HJ
Tel: 44 (0)23 80 671155
Fax: 44 (0)23 80 671166
Web: <http://www.cobham.com/seatel>

Sea Tel Inc is also doing business as Cobham Antenna Systems

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Sea Tel Marine Stabilized Antenna systems are manufactured in the United States of America.



Sea Tel is an ISO 9001:2008 registered company.
Certificate Number 13690 issued March 14, 2011.

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Revision History

REV	ECO#	Date	Description	By
X1	N/A	May 18, 2012	PRELIMINARY Release.	MDN

Regulatory Information

Federal Communication Commission Notice

FCC Identifier: BJJ-STFX250BDE

USE CONDITIONS:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two Conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

NOTE:

This equipment has been tested and found to comply with the limits for a Class B digital device, 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 instructions, 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 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.

IMPORTANT NOTE: EXPOSURE TO RADIO FREQUENCY RADIATION

This Device complies with FCC & IC radiation exposure limits set forth for an uncontrolled environment. The Antenna used for this transmitter must be installed to provide a separation distance of at least 100cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter

FCC CAUTION:

Any Changes or modifications not expressly approved by the manufacturer could void the user's authority, which is granted by FCC, to operate this satellite FleetBroadband System Sea Tel FX 250.

Industry Canada Statement:

IC: 10236A-FX250BDE

This device complies with Radio standard specification RSS -170 and RSS-210 of Industry Canada Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE: Radiation Exposure Statement

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This antenna used for this transmitter must be installed to provide a separation distance of at least 100cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

EC Declaration of Conformity:

Sea Tel Inc., 4030 Nelson Avenue, Concord, California 94520, United States of America, declares under our sole responsibility that the Product, brand name as Sea Tel and model: FX 250 Fleet broadband satellite communication system, to which this declaration relates, is in conformity with the following standards and/or other normative documents:

ETSI EN 301 444, ETSI EN 301 489-1, -17, -19 & -20, ETSI EN 300 328 IEC 60945 / EN 60945,
IEC 60950-1 AND EN 60950-1, ITU-R M.1480

We hereby declare that all essential radio test suite have been carried out and that the above named product is in conformity to all the essential requirements of Directive 1999/5/EC.

The Conformity Assessment procedure referred to Article 10 and detailed in Annex [III] or [IV] of Directive 1999/5/EC has been followed with involvement of the following notified body (ies):

TIMCO ENGINEERING Inc., P.O BOX 370, NEWBERRY, FLORIDA 32669.
Identification mark: 1177 (Notified Body number)

CE 1177 

The technical documentation relevant to the above equipment are held at:

Sea Tel Inc. , 4030 Nelson Avenue , Concord, California 94520, USA
Signed by Mr. John Phillips (VP Engineering , 17 May 2012) and
Mr. Richard C. Dean (Supervisor of Electronics Engineering, 17 May 2012).

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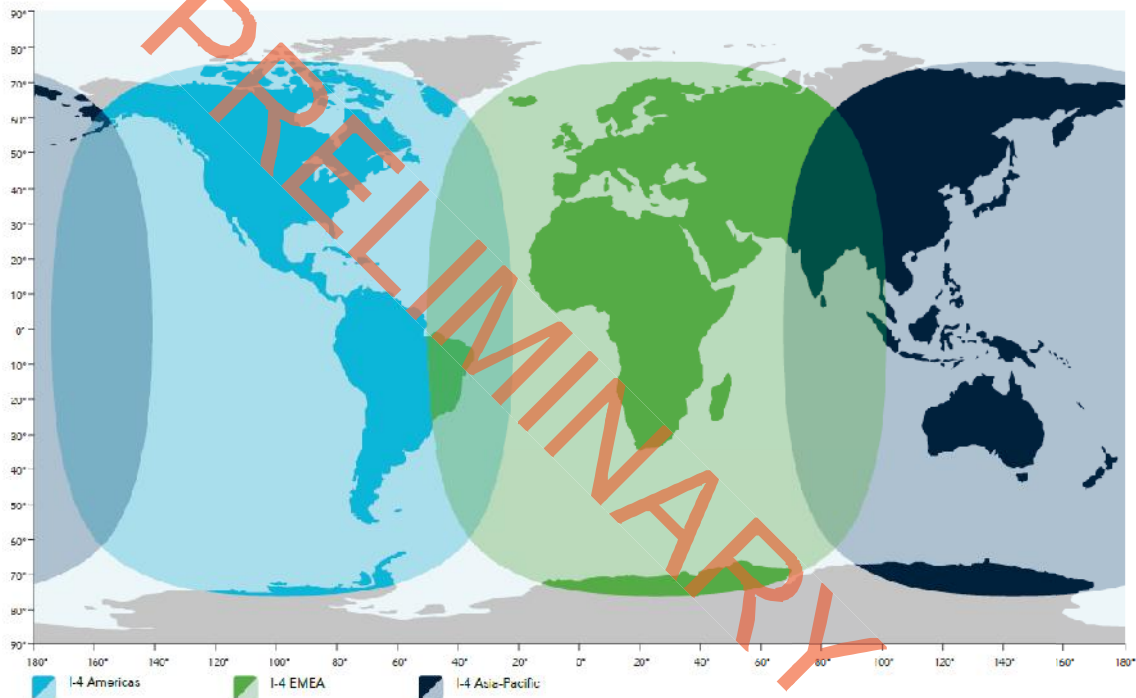
1. Overview of the FleetBroadband system

BGAN Services

The Broadband Global Area Network (BGAN) is a global Satellite Internet Network using portable terminals. The terminals are usually connected to a laptop computer to access broadband Internet in remote locations, where a line-of-sight to the satellite exists. The user can make phone calls, access the Internet, check e-mail, download files, or perform any other Internet activity using the terminals. The network is provided by Inmarsat and uses three geostationary satellites called I-4 to provide almost global coverage.

The map below shows the three I-4 satellite coverage regions.

FleetBroadband coverage



Note: The above map depicts Inmarsat's expectations of coverage, but does not represent a guarantee of service. The availability of service at the edge of coverage areas fluctuates depending on various conditions.

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2. Introduction

2.1. General Description

The FX 250 User Equipment (UE) is a dedicated compact solution specifically designed to meet the FleetBroadband (FBB) services for the maritime environment, providing seamless ocean coverage from 76° North to 76° South. FleetBroadband is the marine version of the highly successful BGAN (Broadband Global Area Network) from Inmarsat.

Using a maritime BGAN antenna, this equipment provides constant, simultaneous access to voice and high-speed data in a compact solution. This allows you to run an online operational system and still have access to email, intranet, and voice calls, achieving greater operational efficiencies and significantly reducing the cost of both business and crew communications.

2.2. Range of Services

- Email and webmail
- Secure Communications
- Intranet and Internet access
- SMS and instant messaging
- Videoconferencing and streaming
- Phone and fax services
- Large file transfers

2.3. Features

The FX 250 offers the following features:

Coverage	Voice, fax and data are available globally, except for the extreme polar regions
Voice	4kbps AMBE+2 3.1KHz Audio
Fax	Group 3 fax via 3.1KHz Audio.
SMS	Standard 3G (up to 160 characters) per SMS. Maximum of 4 chained SMS.
Data	Standard IP: Up to 432 kbps Streaming IP: 32, 64, 128, 256 kbps
WiFi	Wi-Fi Compliant IEEE802.11b/g

2.4. Interfaces

The FX 250 has the following connecting interfaces:

- +12V/24V DC Power Input Connector
- Antenna Connector (N-Type)
- SIM Card Slot for FleetBroadband (SIM: Subscriber Identity Module)
- Dedicated Primary Handset port
- I/O Port
- GPS Output Port

The number of RJ45 Ethernet ports and RJ11 ports for the BDUs of the FX 250 are illustrated below:

RJ45 Ethernet Ports for PC and router	4 LAN Ports (including 2 PoE)
RJ11 Phone	Yes
RJ11 Fax	Yes
Built-in WiFi	Yes

3. Main Units

3.1. Above Deck Unit (ADU), the antenna unit

The FX 250 ADU is maritime FleetBroadband Class 8, 3-axis controlled antenna.

The antenna is self-tracking, based on patented beam squint technology.

The simple and robust electromechanical system, with one motor per free axis, provides full coverage in azimuth and elevation.

Tracking is accomplished by measuring signals being continuously broadcast from the satellite.

The radome covers the antenna equipment, which is comprised of:

- Antenna Unit
- RF and LOS circuit
- Rotary joint
- Antenna pedestal

The antenna unit includes a LNA (low noise amplifier), HPA (high power amplifier), and tracking receiver circuitry to ensure communication even in adverse circumstances.

All signals (and power) pass through a single coaxial antenna cable, which connects the ADU to the BDU.



3.2. Below Deck Unit (BDU), the communication unit

The BDU is the central unit of the FleetBroadband equipment.

It has been developed for maximum flexibility and is the controlling unit for the FX 250. It features a reliable industry standard interfacing field and enables users to have optimal connectivity no matter what the conditions or your position at sea.



The BDU has a built-in Web Console, through which you can manage your phone book, messages, and calls, as well as customize the terminal to your specific needs. The Web Console can be accessed from a computer, connected to the BDU, using an Internet browser. The Web Console provides easy configuration of the BDU, firmware upgrade, and daily use. For more information see Chapter 4, Using the Web Console.

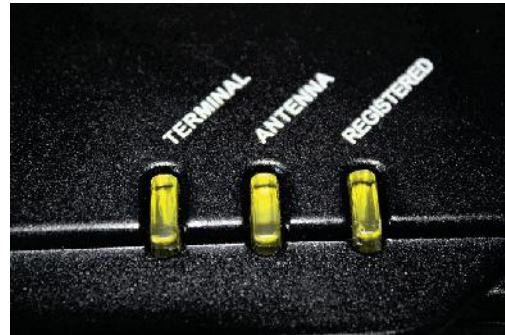
The BDU is supplied by a +12V or +24V DC power supply, and it supplies power to the ADU via a single RF coaxial antenna cable.

3.2.1. **Status LEDs**

There are 3 Status LEDs to indicate the operational status of the BDU at a glance.

These LEDs are assigned to the following functions:

- BDU Terminal Status
- ADU Status
- Registered to Network Status



3.2.2. **SIM Card Slot**

The BDU has a SIM card slot located on the connector panel behind a small cover plate.

This system requires a dedicated FleetBroadband SIM card to access the FleetBroadband network and configure the settings of the system.



3.2.3. BDU Connections

The BDU has several interface ports. It handles all communication links between the ADU, the primary handset, and the local communication devices, such as analog telephone, computer, network equipment, navigation equipment, etc.



3.3. Wired Primary handset with cradle

The Primary Handset (corded) has a color LCD and keypad for making voice calls and sending SMS using an interface similar to that of a mobile phone. It can be used to control and configure the BDU.

<p>The handset can serve as a remote access for a user to access various BDU functions.</p> <p>The Primary Handset's connector is plugged into the BDU's primary handset port. It is powered directly from the BDU.</p> <p>A cradle is provided with the handset.</p> <p>The ringer is located at the back of the handset.</p>	
--	--







4. Preparation for Operation

4.1. **Installing the SIM card.**

The system requires a SIM card to access the Inmarsat's FleetBroadband network and it is provided by your Airtime Service Provider.

4.1.1. Insert the SIM card into the BDU as follows:

<p>1. Make sure that the BDU is powered down before removing or installing a SIM card.</p>	
<p>2. Tilt open the SIM Card cover.</p>	
<p>3. Notice that there is a symbol of a SIM Card and an arrow showing the correct orientation of the SIM Card. 4. Position the SIM card with its gold-contacts facing down. 5. Push the SIM card gently until it clicks and is locked in place.</p>	
<p>6. Tilt down the SIM card cover to its original position.</p>	

4.2. Powering up the system

After powering up the system you will verify that the three LEDs are lit in Green.





4.2.1. Power up the system as follows:

<p>1. Use the ON/OFF switch on the BDU front panel. It normally takes about 1.5 to 3 minutes for it to be completely powered up.</p>	
<p>2. Wait for all LED indicators to turn Green.</p>	

TERMINAL	Steady Amber	BDU is powering up
	Steady Green	BDU has powered up successfully
	Steady Red	BDU detects failure
	Blinking Amber	Switching OFF BDU
ANTENNA	Steady Amber	ADU is powering up
	Steady Red	ADU is not OK/Error
	Blinking Amber	ADU is calibrating
	Blinking Green	System performs satellite search
	Steady Green	ADU has locked on to the satellite
REGISTERED	Steady Amber	Attempting network registration
	Steady Red	Network failure/Error
	Blinking Amber	Ready for voice only
	Blinking Green	Ready for packet data only
	Steady Green	Ready for all (Voice and Data)

5. Using the web console

5.1. Register to the Network

<p>1. Connect your computer to the FleetBroadband BDU using a standard Ethernet LAN cable.</p>	
<p>2. When the connection has been established, open the web browser. 3. Type http://192.168.1.35/ into the Address bar and press Enter.</p>	
<p>4. Type in admin in the Username field and 1234 in the password field. 5. Click the Login button.</p>	
<p>The FleetBroadband BDU Web Console will appear on your screen.</p>	

The FleetBroadband BDU will automatically register to the network. This process will include GPS acquisition, satellite tracking and registration with the network, which will take a few minutes.

Once the process is completed, you will see the following message appearing at the bottom line of the Web Console:

Registered to Network but no active data connection exists. You are now able to make phone calls and send SMS. Please activate a data connection before doing any data transfer

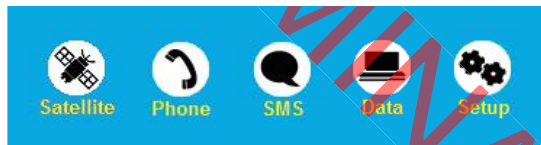
Upon successful registration, with all three BDU's LED indicators lit in green, the system will be ready for normal operation.

5.2. Navigating the Web Console

5.2.1. Menu Overview



There are five main menu icons:



A White "Data" icon indicates that there is an active data connection. Click this icon to activate or deactivate a data connection (to browse Internet, FTP, email, etc.).

Below you can see all of the sub menu tabs, under each icon menu item.

Satellite	
Phone	
SMS	
Data	
Setup	

5.2.2. **Status/Action Indicators**

5.2.2.1. **Status Icons**

Circuit Switch

Shows the Circuit Switch service status (Voice calls, SMS, FAX).

Packet Switch

Shows the Packet Switch service status (Internet Browsing, FTP, email).

New 3D GPS

Shows whether a new GPS fix is available or not.

Internet Connection

Shows that the unit is currently connected to the internet.

Ciphering



Shows that ciphering is enabled or disabled.

Click on this icon to enable or disable ciphering.

These icons indicate the status of the FleetBroadband BDU.

<p>Green indicates the item is active. Red indicates the item is inactive.</p>	
<p>Log Off Button The user can log out from the web console.</p>	

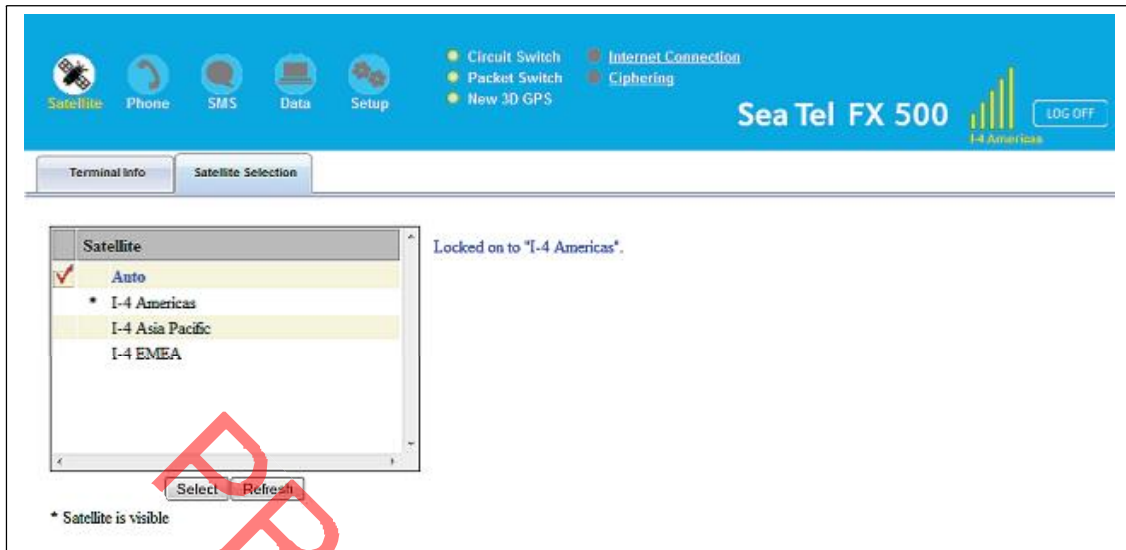
5.2.3. **Viewing Terminal Information**

<ol style="list-style-type: none"> Click . Click the Terminal Info tab. <p>The terminal information tab shows Signal strength, Temperature, GPS Status, Elevation angle and Registration status.</p>	
--	--

Below you can see all of the sub menu tabs, under each icon menu item.

Signal	Indicates the received signal strength (C/No in dBHz)
Temperature	Indicates the Terminal Unit's current operating temperature status
GPS	Indicates the latitude, longitude, type and time of the GPS acquisition
Pointing Angle	Indicates the azimuth and elevation angle of the antenna for the satellite that is currently in view. The satellite name is also displayed.

5.3. Satellite Selection



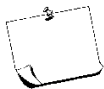
The latest generation of Inmarsat Geostationary FleetBroadband satellites are listed below:

- I-4 Americas Satellite at 98° W Longitude
- I-4 Asia-Pacific Satellite at 143.5° E Longitude
- I-4 EMEA Satellite at 25° E Longitude





(Refer to the coverage map, Section 1.)

The default Satellite Selection is in **Auto** mode. In **Auto** mode, the system will scan all the visible satellites and track the satellite with the most optimum elevation angle or the last used satellite. This is the recommended mode of operation.

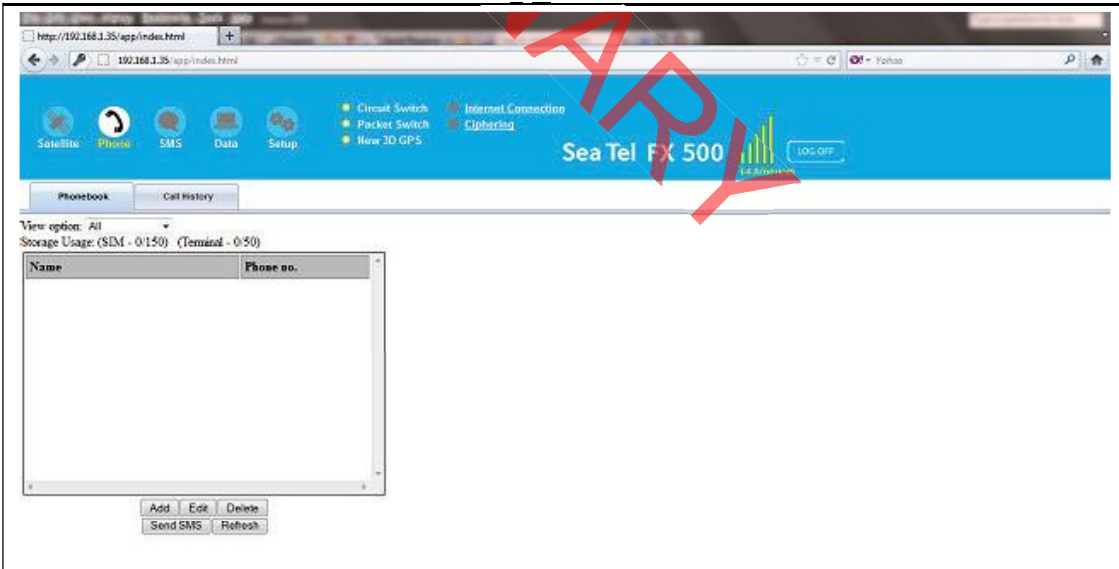


NOTE: Changing the satellite selection will terminate any existing active voice/fax call or data connections..

Follow these steps to change your satellite selection:


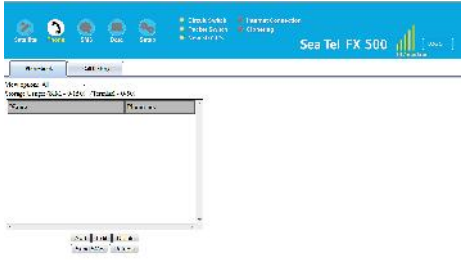
<ol style="list-style-type: none"> 1. Click . 2. Click the Satellite Selection tab to view the visible satellites. <ul style="list-style-type: none"> • The visible satellites will be displayed for your selection. • Also displayed is the satellite information for the satellite that you are locked on to. 3. Click on your choice of visible satellites. <ul style="list-style-type: none"> • Also displayed is the satellite information for the satellite that you are locked on to. • If you do not see the desired satellite click the Refresh button. 4. Click the Select button to point the antenna to the selected satellite in exclusive mode. 5. The satellite selection will be saved, and each time you power on the system, the satellite selection choice will remain until you make the next selection change. <ul style="list-style-type: none"> • The system will attempt to track the newly selected satellite even if the elevation angle is not optimum. 	
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5.3.1. Phone Menu



The screenshot shows the 'Phone' menu in the web console. At the top, there are navigation icons for Satellite, Phone, SMS, Data, and Setup. The 'Phone' menu is active, showing options for Circuit Switch, Packet Switch, and New 3D GPS. Below the navigation, there are tabs for 'Phonobook' and 'Call History'. The 'Phonobook' section displays 'View option: All' and 'Storage Usage: (SIM - 0/150) (Terminal - 0/50)'. A table with columns 'Name' and 'Phone no.' is shown, currently empty. Below the table are buttons for 'Add', 'Edit', 'Delete', 'Send SMS', and 'Refresh'.

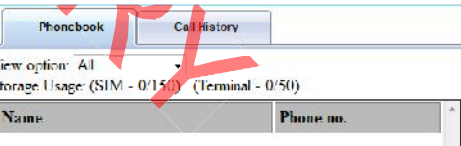
5.3.1.1. Phonebook

<ol style="list-style-type: none"> 1. Click . 2. The Phone menu provides the following options: <ul style="list-style-type: none"> • Allows you to view, add, edit and delete entries on your Phonebook list. • You can make and send SMS messages directly from your Phonebook entries. • The Phonebook entries can be stored on the SIM card or the FleetBroadband BDU. 	
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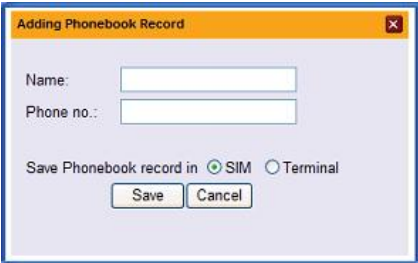
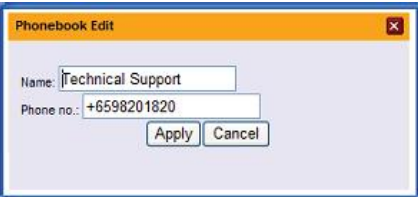
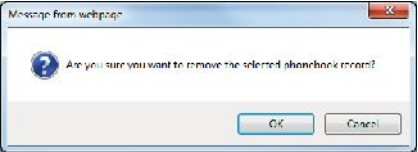
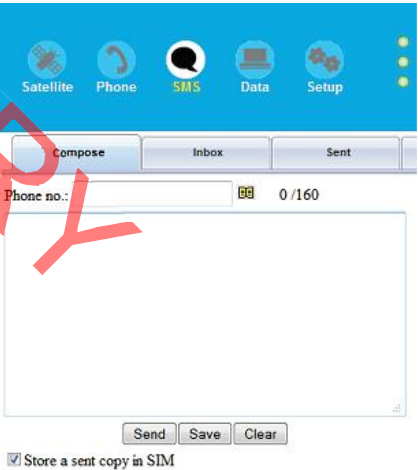
<p>View option The View option allows you to view the Phonebook entries from the different storage locations.</p>	
--	--

From the drop-down menu, select

All	To view the entries stored in the SIM card and FleetBroadband BDU.
SIM only	To view the entries stored in the SIM card.
Transceiver only	To view the entries stored in the FleetBroadband BDU Terminal Unit.

<p>Storage Usage Shows the number of Phonebook entries used in the SIM card and terminal unit locations. For example: (SIM - 2/150) indicates:</p> <ul style="list-style-type: none"> • Storage location – SIM card • Total number of entries used = 2 • Total number of entries available = 150 	
--	--

Here is how to perform some common functions.

<p>Adding a new Phonebook entry</p> <ol style="list-style-type: none"> 1. Click the Add button. 2. Enter the Name and Phone number. 3. Select the storage location and click the Save button. 	
<p>Editing a Phonebook entry</p> <ol style="list-style-type: none"> 1. Select the entry from the Phonebook list. 2. Click the Edit button. 3. Change the Name and/or Phone Number. 4. Click Apply. 	
<p>Deleting a Phonebook entry</p> <ol style="list-style-type: none"> 1. Select the entry from the Phonebook list. 2. Click the Delete button. 3. Click the OK button to confirm. 4. If you do not want to delete the entry click the Cancel button. 	
<p>Sending SMS from the Phonebook Follow these steps to send SMS from the Phonebook:</p> <ol style="list-style-type: none"> 1. Select the entry from the Phonebook list. 2. Click the Send SMS button. <ul style="list-style-type: none"> • The Phonebook console switches over to the Compose SMS console. 3. Type in the text message and click the Send button. 	

Sending SMS from the Phonebook

Follow these steps to send SMS from the Phonebook:

1. Select the entry from the Phonebook list.
2. Click the **Send SMS** button.
3. The Phonebook console switches over to the Compose SMS console.
4. Type in the text message and click the **Send** button.

5.3.1.2. Call History

To check on the history log of calls made and received.

Phone no.	Time
0019257587982	12/01/27 22:21:51
0016257587982	12/01/27 22:23:13
006596227072	12/01/20 03:43:09
006591468876	12/01/20 03:28:41
008585095701	12/01/20 03:28:55
+5591468876	12/01/20 03:28:18
+5591468876	12/01/20 03:27:51

View option

To view the Call History entries.

1. From the drop-down menu, select:

All	To view the list of the dialed, received and missed calls.
Dialed Call	To view the list of dialed calls.
Received Call	To view the list of received calls.
Missed Call	To view the list of missed calls.

Sending SMS from the Call History list

1. Select the entry from the list.
2. Click the Send SMS button.

The screenshot shows the 'Call History' tab selected. A table lists call entries with columns for 'Phone no.' and 'Time'. The entry for '+6591468876' is selected. Below the table are buttons for 'Send SMS', 'Delete', and 'Refresh'.

The Call History console switches over to the Compose SMS console.

3. Type in the text message and click **Send**.

The screenshot shows the 'Compose' tab selected. A text input field is visible with '0 / 160' characters. Below the input field are buttons for 'Send', 'Save', and 'Clear'. A checkbox labeled 'Store a sent copy in SIM' is checked.

Deleting a Call History entry

1. Select the entry from the Call History list.
2. Click the **Delete** button.
3. Click the **OK** button to confirm or click **Cancel** to abort deleting the entry.
4. Click the **Refresh** button to refresh the Call History list.

Phone no.	Time
0019257987982	12/01/27 22:24:34
0019257987982	12/01/27 22:23:13
006596227072	12/01/20 03:43:09
006591468876	12/01/20 03:29:41
006565095701	12/01/20 03:28:55
+6591468876	12/01/20 03:28:18
+6591468876	12/01/20 03:27:31

5.3.2. SMS Menu

To send and receive text messages


The SMS menu provides the following options:

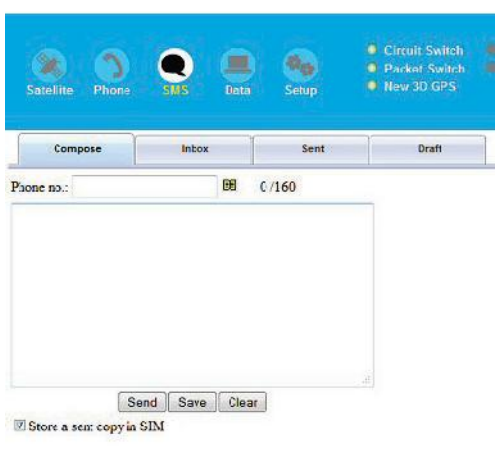
Compose
To compose and send text messages simply enter a mobile number, type your message, and click **Send**.

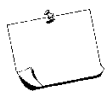
Inbox
Shows the details (Sender information, Message, Date and Time stamp) of all SMS

<p>received.</p> <p>Sent</p> <p>Shows the details (Receiver information, Message, Date and Time stamp) of all SMS sent.</p> <p>Draft</p> <p>Stores unsent messages for retrieval later.</p>	
---	--

5.3.2.1. Composing a New Message

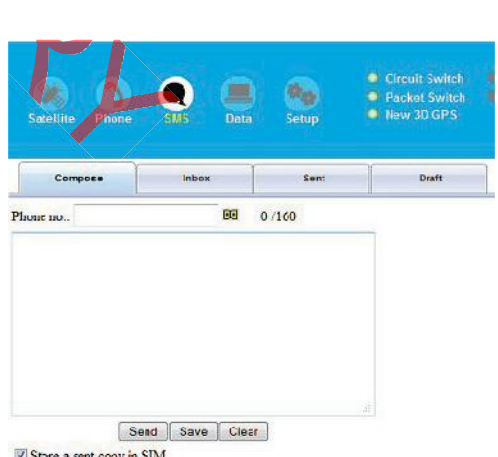
1. Enter the receiver's phone number in the Phone no. field or click the **Phonebook** icon  if the receiver's number is listed in the **Phonebook**.
2. **Type the message** in the text editor box.





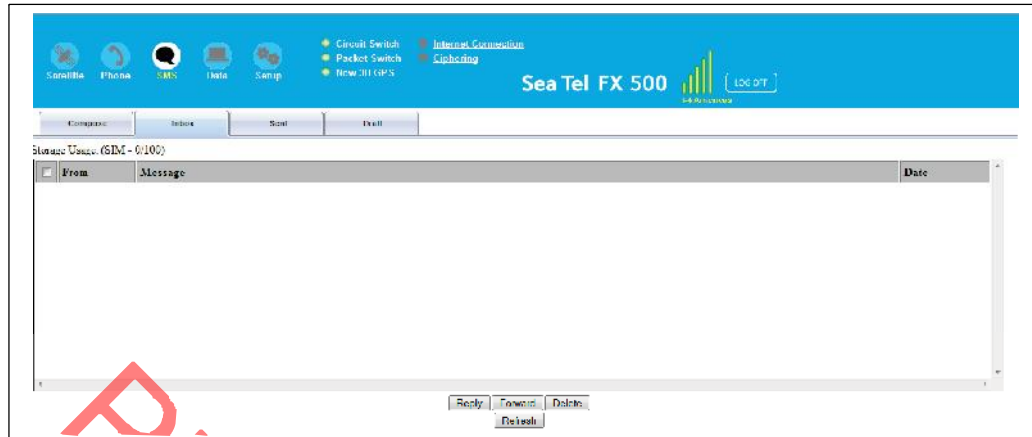
NOTE: All characters count against the **total characters** allowed. Therefore, characters carried forward from a previous **message** will be charged again.

1. Click the **Send** button to send the SMS.
2. To save an unsent SMS, click the **Save** button and the unsent SMS will be saved in Draft.
3. To clear the typed message on the text editor, click the **Clear** button.



5.3.2.2. **Inbox**

Shows the details (Sender information, Message, Date and Time stamp) of all SMS received.

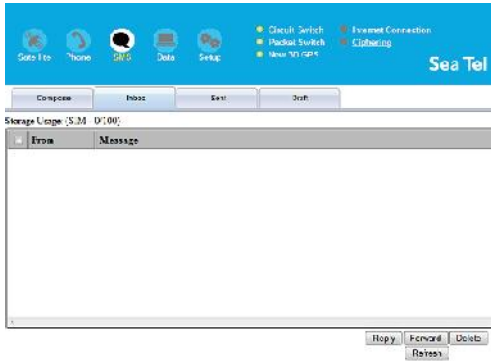

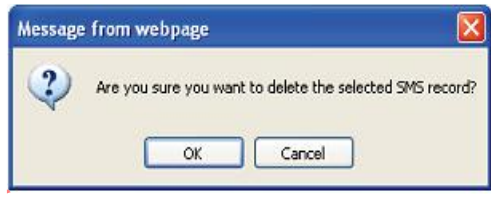


NOTE: The message is limited to 160 characters (using 7 bit encoded default alphabets), including spaces between words. But it is limited to 70 characters per message using Unicode (UCS2) text message (such as message typed in Chinese, Japanese, etc).

For sending a long SMS to another BGAN transceiver, the message is limited to 608 characters (using 7 bit encoded default alphabet) or 266 characters using Unicode (UCS2) text messages including spaces between words.

If you do not wish to store a copy of the sent SMS into SIM card uncheck "Store a copy" in the SIM checkbox.

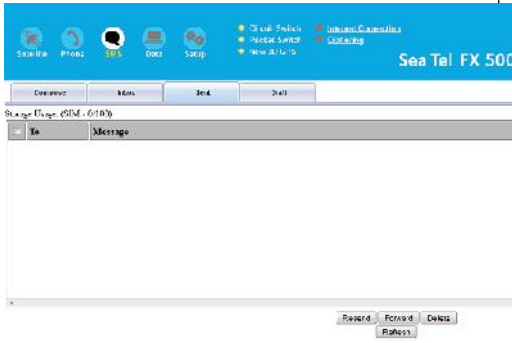
<p>Replying to a SMS</p> <ol style="list-style-type: none"> 1. Click on an SMS to select it. <p>The selected SMS will be highlighted in light blue.</p> <ol style="list-style-type: none"> 2. Click Reply. 3. Click OK to reply with the original contents or Cancel to reply without the original content. <ul style="list-style-type: none"> • The Inbox console switches over to the Compose console. 	
<ol style="list-style-type: none"> 4. Enter your reply in the text editor. 5. Click Send to send your reply SMS. 	

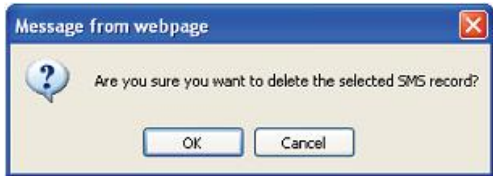
<p>Forwarding an SMS</p> <ol style="list-style-type: none"> 1. Click on an SMS to select it. 2. The selected SMS will be highlighted in light blue. 3. Click the Forward button. 4. The Inbox console switches over to the Compose console. 	
<ol style="list-style-type: none"> 5. Enter the receiver's number in the Phone No. field. (or click on a phone book icon). 6. Click Send to forward the SMS. 	
<p>Deleting a single SMS from the Inbox list</p> <ol style="list-style-type: none"> 1. Click on an SMS to select it. 2. Click the Delete button. 3. Click the OK button to confirm, or click Cancel to abort deleting the SMS. 	

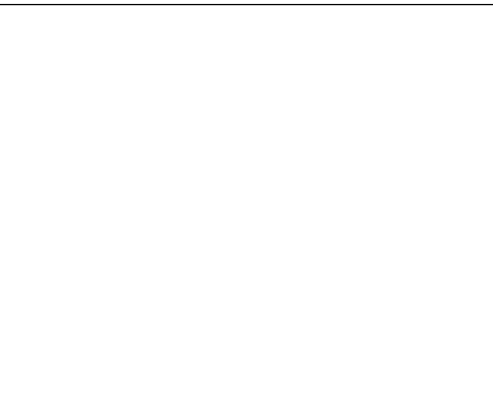
5.3.2.3. Sent

Shows the details (Receiver information, Message, Date and Time stamp) of all SMS sent.



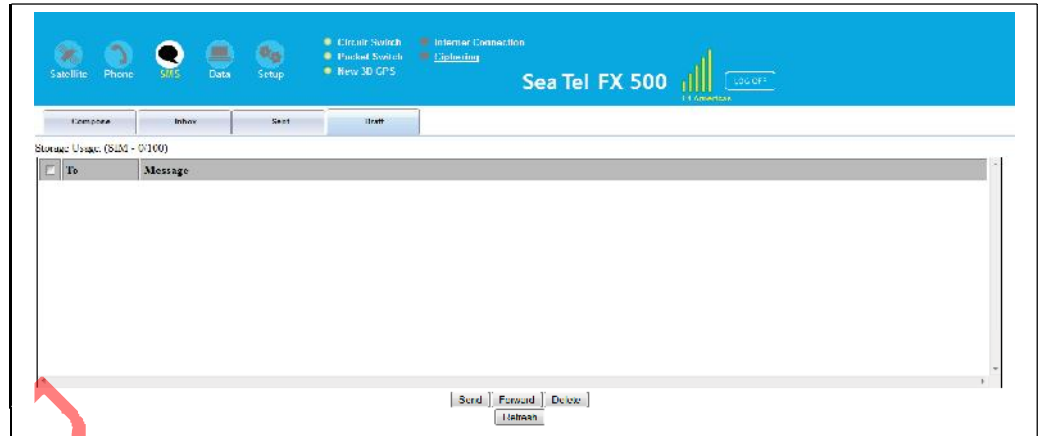
<p>Resending a sent SMS (Sending the same SMS to the same receiver)</p> <ol style="list-style-type: none"> 1. Click on an SMS to select it. 2. Click Resend. 	
--	--

<p>Deleting a SMS from the Sent list To delete a single SMS from the Sent list:</p> <ol style="list-style-type: none"> 1. Click on an SMS to select it. 2. Click Delete. 3. Click OK to confirm, or click Cancel to abort deleting the SMS. 	
--	--

<p>Deleting multiple SMS from the Sent list To delete multiple SMS from the from the Sent list</p> <ol style="list-style-type: none"> 1. Select the message by checking the checkboxes beside each SMS. 2. Click Delete. 3. Click OK to confirm the delete, or Cancel to abort the delete. 4. Click Refresh to refresh the Sent list. 	
--	--

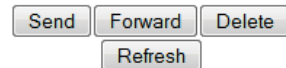
5.3.2.4. Draft

Stores SMS saved from the Compose console.



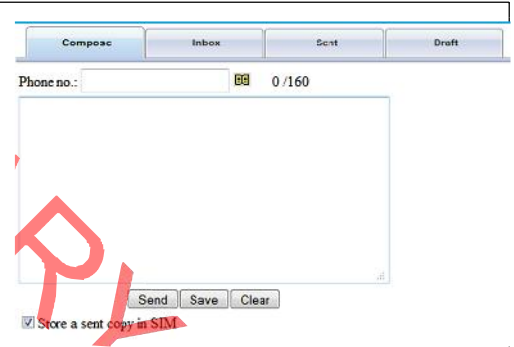
Send a draft SMS:

1. Click on an SMS to select it.
2. Click **Send**.



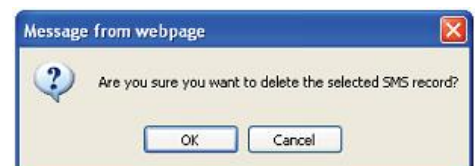
Forwarding a draft SMS to another recipient

1. Click on an SMS to select it.
 2. Click **Forward**.
- The Draft console switches over to the Compose console.
3. Enter the receiver's number in the Phone No. Field.
 4. Click the **Send** button to forward the SMS.



Deleting a SMS from the Draft list

1. Click on an SMS to select it.
2. Click the **Delete** button.
3. Click **OK** to confirm, or click **Cancel** to abort deleting the SMS.

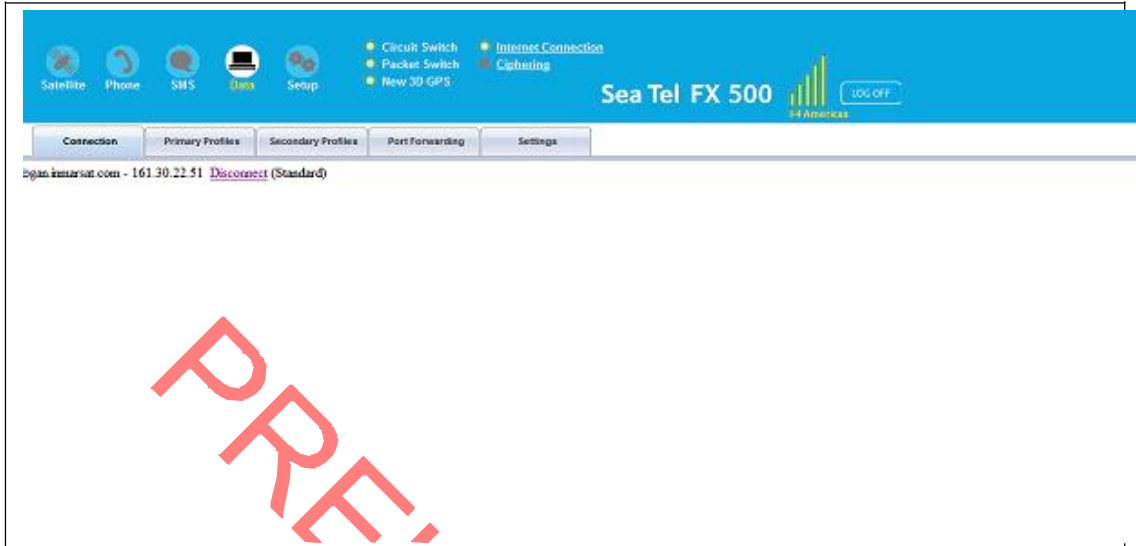


Deleting multiple SMS from the Draft list

1. Select the messages by checking the checkboxes beside each SMS.
2. Click the **Delete** button.
3. Click **OK** to confirm the delete, or **Cancel** to abort the delete.
4. Click **Refresh** to refresh the Draft list.



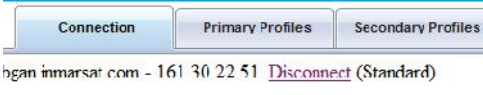
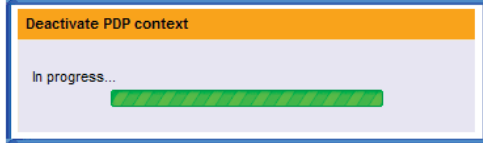
5.3.3. **Data Menu**

1. Click the  Data Menu icon.



Data menu provides the following options:

5.3.3.1. **Connection**

<p>To activate the default profile, click the Activate Default Profile button.</p>	
<p>After about 30 to 40 seconds, the data connection will be activated with a notification of the public IP address assigned to the active data connection.</p>	
<p>When connected, APN (Access Point Name) and the assigned public IP Address details will be displayed. You can proceed to access the Internet and use the related features. To disconnect the data connection, click Disconnect.</p>	
<p>The PDP context will be deactivated.</p>	

5.3.3.2. Primary Profiles

Primary profiles define the connection type.

1. Enable the checkbox of "Set as default".
2. Verify that the Profile Name is initially "Standard".
3. Under Access Point Name (APN) activate the "SIM" radio button

You can select from a list of profiles to be the default primary profile and connection type. From Profile 7 to Profile 10, you can create your own customized primary profile.



NOTE: The Standard profile is set as the default primary profile and the default connection type is standard (this is charged by the volume [in kilobytes] of data used).



NOTE: The text in the Primary Profiles screen states, "Using this connection type you will be charged for the volume (kilobytes) of data used. For this connection type for TCP/IP applications, data exchange, and transfer, such as Email, Internet Browsing, FTP, etc."

Profile Name

Change the profile name as desired.

Connection Type

Change the type of connection. By default the connection type will be Standard.

Access Point Name (APN)

By default, the APN from the SIM will be selected.

Follow these steps to change the Access Point Name:

1. Select User Defined by activating the "User Defined" radio button.
2. Enter the new APN in the field space provided (e.g. BGAN inmarsat.com).
3. Enter the username and password if required.

IP Configuration

By default, the Dynamic IP Address is selected.

Follow these steps to use Static IP Address:

1. Select Static IP Address and enter the IP Address in the space provided.
2. Check the Header Compression checkbox if it is required to use Header Compression.

5.3.3.3. Secondary Profiles

Connection Primary Profiles **Secondary Profiles** Port Forwarding Settings

FTP
Quick Link
Quick Time M
Real Media
Streambox
Win Media
Profile 7
Profile 8
Profile 9
Profile 10

Profile Name:

Streaming Parameters:
 Desired Rate:
 Minimum Rate:
 Use error correction

Refresh

Destination Port Ranges:

From	To	Protocol	
20	21	TCP	Delete

Secondary profiles setting are used mainly for streaming connections. You may select one of the secondary profiles to be used during streaming connection. You may also create a customized secondary profile; choose from profile 7 to 10.

It also has the same time/volume limited data connection feature as the Primary Profiles.

5.3.3.4. Port Forwarding

Port Forwarding is a feature for Router (Multi-user Mode).

This feature sets the FleetBroadband BDU to direct incoming traffic on certain TCP/UDP port to a specific port on a local PC (IP Address).


Connection Primary Profiles Secondary Profiles **Port Forwarding** Settings

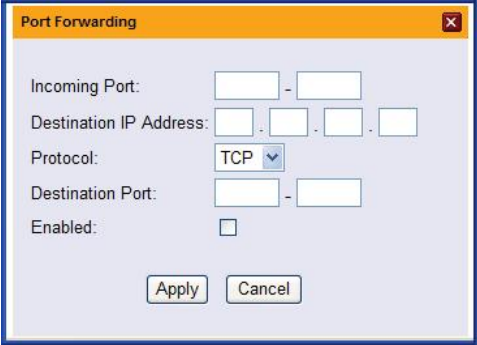
Incoming Port	Protocol	Destination IP Address	Destination Port	Enabled	
0	-	0.0.0.0	0	<input type="checkbox"/>	Add
0	-	0.0.0.0	0	<input checked="" type="checkbox"/>	Add
0	-	0.0.0.0	0	<input type="checkbox"/>	Add
0	-	0.0.0.0	0	<input checked="" type="checkbox"/>	Add
0	-	0.0.0.0	0	<input type="checkbox"/>	Add
0	-	0.0.0.0	0	<input checked="" type="checkbox"/>	Add
0	-	0.0.0.0	0	<input type="checkbox"/>	Add
0	-	0.0.0.0	0	<input checked="" type="checkbox"/>	Add
0	-	0.0.0.0	0	<input type="checkbox"/>	Add
0	-	0.0.0.0	0	<input checked="" type="checkbox"/>	Add

Refresh

To add a new forwarding rule:

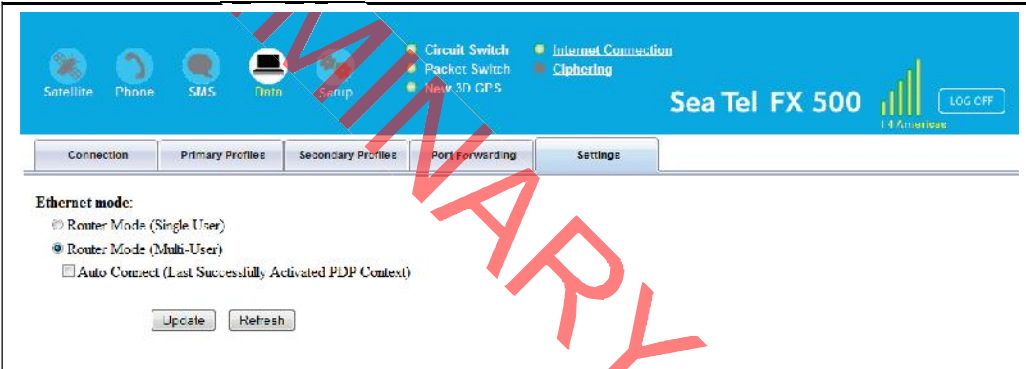
1. Click the **Add** button.
2. Enter the **Incoming Port** number in the space provided.
(For example, the user expecting HTTP traffic, the port is 80).
3. Enter the **Destination IP Address**.
(For example, the IP Address of the PC that is connected to the BDU).
4. Select the Protocol type **TCP** (e.g. for HTTP, it will be TCP) or **UDP**.
5. Enter the **Destination Port** number in the space provided.
(For example: the listening port of the particular service, such as TCP port 80 for web server, on the PC that is connected to the BDU).

 Click **Apply** to allow the settings to take effect.



5.3.3.5. Settings

You can select the **Ethernet** mode to be used for data connection.



Follow these steps to select the **Ethernet** mode:


1. Select the desired mode to be used during the data connection:
 - “**Router Mode (Multi-User)**” with NAT/PAT enabled for multi-users.
 - “**Router (Single User)**” with NAT/PAT disabled
2. Click the “**Auto Connect**” checkbox if it is required to get the standard IP Data connection reconnected automatically, in the event that the connection is disconnected without user intervention, i.e. antenna blockage, etc.



NOTE: You cannot change the **Router** settings while a Data connection is active, you must first **disconnect** your **Data session**.

3. Click **Update** to allow the selection to take effect.
4. Click **Refresh** to query the current mode.

5.3.4. **Setup Menu**

1. Click on the  icon.

There are nine sub-menu tabs under the Setup icon.



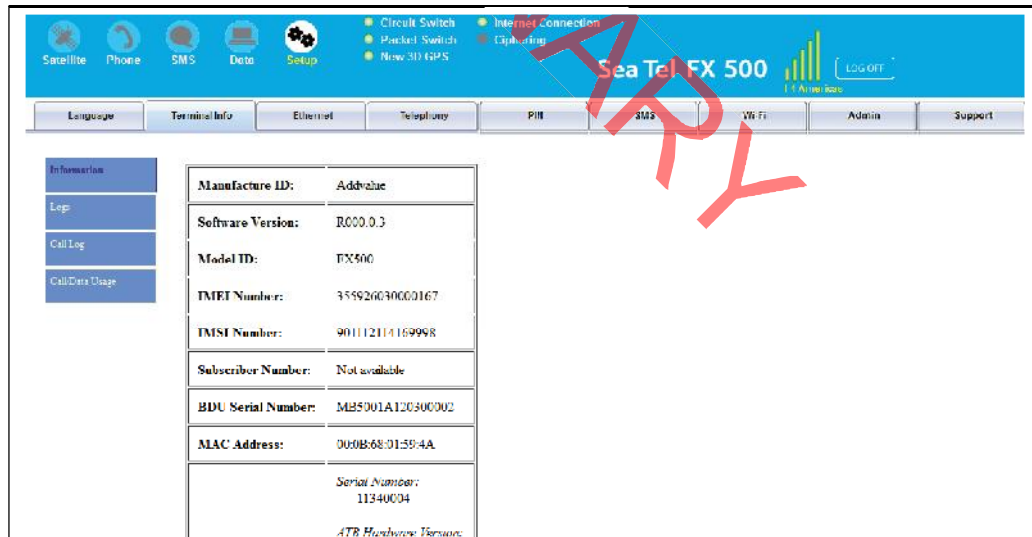
5.3.4.1. **Language**

This allows the user to select the desired language for the Web Console to be displayed.



5.3.4.2. **Terminal Info**

This tab shows general information about the Terminal, Error/Event Logs and Call Logs.



5.3.4.2.1. Information

Displays information about the Manufacture ID, Software version, Model ID, IMEI number, IMSI number (only when a SIM card is inserted), Subscriber number and Antenna Unit's serial Number.

Information	
Manufacture ID:	Adtech
Software Version:	8000.0.1
Model ID:	FX500
IMEI Number:	95926090000107
IMSI Number:	00111214169998
Subscriber Number:	Not available
BDI Serial Number:	MRS001A120300002
MAC Address:	660B:68:01:954A
	Serial Number: 11249004

5.3.4.2.2. Logs

Displays event and error logs of the terminal unit.

5.3.4.2.3. Call Log

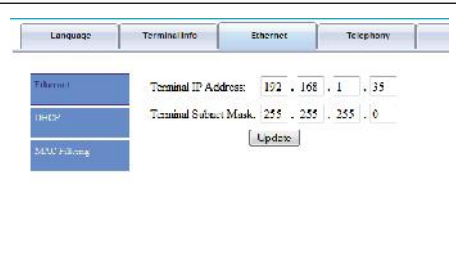
Displays the call history, including standard voice calls, high-quality/fax calls, standard data sessions and streaming data sessions.

5.3.4.3. Ethernet



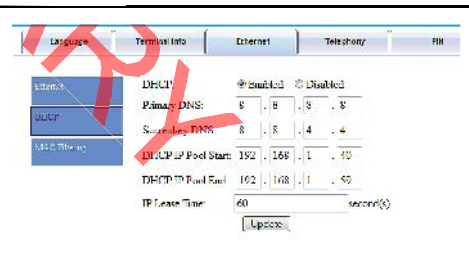
5.3.4.3.1. Ethernet

1. Click the Ethernet tab to view and edit the Ethernet settings.
2. Click the Update button to allow the settings to take effect.



5.3.4.3.2. DHCP

1. Click DHCP to view and edit the DHCP settings.
2. Click Update to allow the settings to take effect.



5.3.4.3.3. Mac Address Filtering

1. Click **Mac Filtering** to view and edit the Mac Filtering settings.
2. Click **Update** to allow the settings to take effect.

Language	Terminal Info	Ethernet	Telephony
Ethernet			
DHCP			
MAC Filtering			

MAC Filtering: Enabled Disabled

Use: Reject List Allowed List

*Your MAC Address: 64:31:50:90:85:1A

- **Reject List**
 - All PCs/Laptops will be allowed to access the Terminal Unit except for those (MAC addresses) listed in the Reject List.
- **Allow List**
 - All PCs/Laptops will be denied access to the Terminal Unit except for those (MAC addresses) listed in the Allow List. When selecting this list, at least one entry should be there to access the Terminal Unit.

5.3.4.4. ~~Telephony~~

5.3.4.4.1. Interface

1. Select **European Caller Line ID Phone connected** or **US Caller Line ID Phone connected** from the Telephone Interface Configuration drop-down menu.
2. Click **Update** to allow the setting to take effect.

Language	Terminal Info	Ethernet	Telephony	PIM
Interface				
Port Configuration				
Caller ID				
Call Waiting				
Call Forward				
Call Forward				

Telephone Interface Configuration: US Caller Line ID Phone connected

5.3.4.4.2. Port Configuration

For each of the 3 ports, a choice of the quality calls can be selected. Select your ideal call quality and click **Update**.

For the fax port, if no subscription is made, there will be no choices.

If fax subscription is made, 3.1KHz high quality fax call will be available.

Port	Call Type	Service Type	
Primary Handset	Incoming Call	Standard voice call Standard voice call None	Update
	Outgoing Call	Standard voice call Standard voice call None	Update
PHONE Port	Incoming Call	Standard voice call Standard voice call None	Update
	Outgoing Call	Standard voice call Standard voice call None	Update
FAX* Port	Incoming Call	None None	Update
	Outgoing Call	None None	Update
FAX Port	Incoming Call	3.1KHz high quality voice/fax call 3.1KHz high quality voice/fax call None	Update
	Outgoing Call	3.1KHz high quality voice/fax call 3.1KHz high quality voice/fax call None	Update


5.3.4.4. Caller ID

1. Click **Retrieve** to get current setting of the **Allow called party to see your number** configuration.
2. To change the setting, select **Yes**, **No**, or **According to network subscription** for the **Allow called party to see your number** configuration.
3. Click **Apply** to allow the setting to take effect.

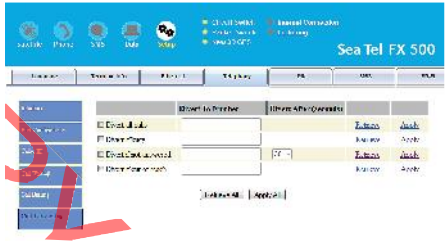
5.3.4.4.1. Call Waiting

1. Click **Retrieve** to get current setting of the **Enable call-waiting** configuration.
2. To change the setting, select **Yes** or **No** for the **Enable call waiting** configuration.
3. Click **Apply** to allow the new setting to take effect.

5.3.4.4.2. Call Barring

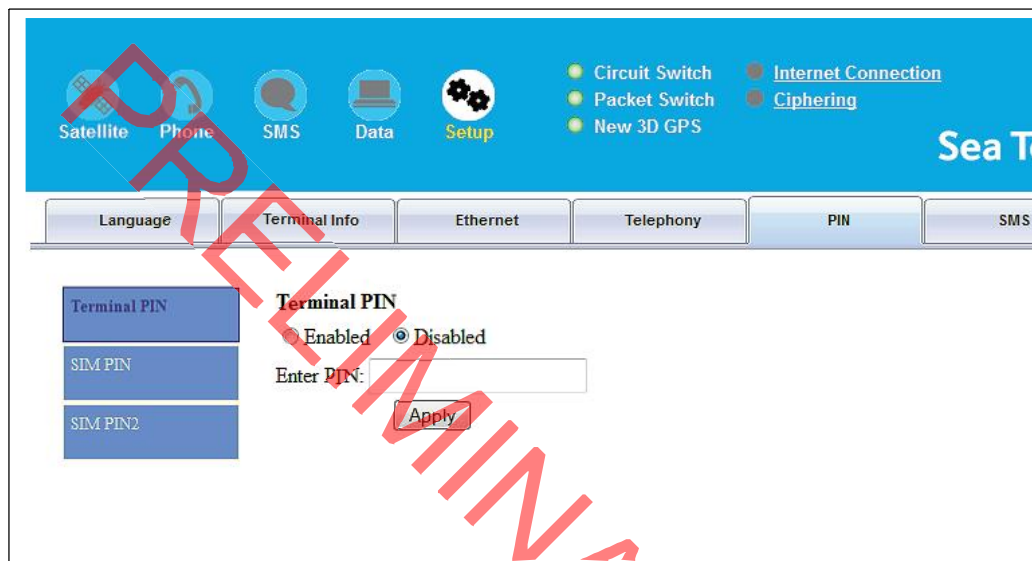
<ol style="list-style-type: none"> 1. Click any individual Retrieve option to get the current setting of the corresponding scenario in which the calls would be barred. 2. Select the scenario in which the calls would be barred, or deselect the scenario to disable the corresponding call barring. 3. In the Barring PIN field, input a PIN for call barring setup. 4. Click Apply to allow the corresponding setting to take effect. 5. Clicking Retrieve All will retrieve the current settings of all four call barring scenarios at the same time. 6. Clicking Apply All will allow the settings of all four call barring scenarios to take effect at the same time. 	
---	---

5.3.4.4.3. Call Forwarding

<ol style="list-style-type: none"> 1. Click any individual Retrieve option to get current setting of the corresponding scenario in which incoming calls would be forwarded. 2. Select the scenario in which the calls should be forwarded, or deselect the scenario to disable the corresponding call forwarding setting. 	
<ol style="list-style-type: none"> 3. In the Divert to Number field, input the phone number where the incoming calls should be forwarded to (+<country code><telephone number>). 4. If the Divert if not answered option is selected, select from the Divert After (seconds) drop-down list, the period of time the network should wait before forwarding the calls. 	

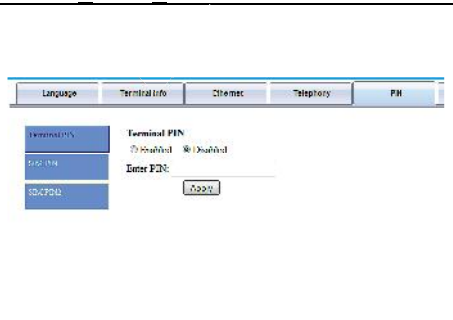
5. Click **Apply** to allow the setting to take effect.
6. Clicking **Retrieve All** will retrieve the current settings of all four scenarios in which the calls would be forwarded, at the same time.
7. Click **Apply All** to allow the settings of all four scenarios to take effect at the same time.

5.3.4.5. PIN

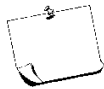


5.3.4.5.1. Terminal PIN

1. Click **Terminal PIN** to configure the Transceiver PIN settings.
2. Select **Disabled** if you do not need to set the Transceiver PIN.
3. Select **Enabled** to set the Transceiver PIN.
4. Enter the PIN number in the Enter PIN field and click the **Apply** button.




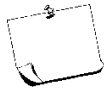
<p>Follow these steps to change the Terminal PIN:</p>	<ol style="list-style-type: none"> 1. Enter the old PIN number in the Enter Old PIN field. 2. Enter the new PIN number in the Enter New PIN field. 3. Re-enter the new PIN number in the Re-enter New PIN field. 4. Click Change PIN Password.
---	---



NOTE: The default Terminal PIN is “0000”.


5.3.4.5.2. SIM PIN

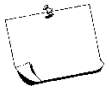
<ol style="list-style-type: none"> 1. Click SIM PIN to configure the SIM PIN settings. 2. Select Disabled if you do not need to set the SIM PIN. 3. Select Enabled to set the SIM PIN. 4. Enter the PIN number in the space provided and click the Apply button. 	
--	---



NOTE: The SIM PIN depends on the SIM card. Consult your airtime provider if necessary.

5.3.4.5.3. SIM PIN2

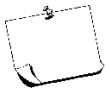
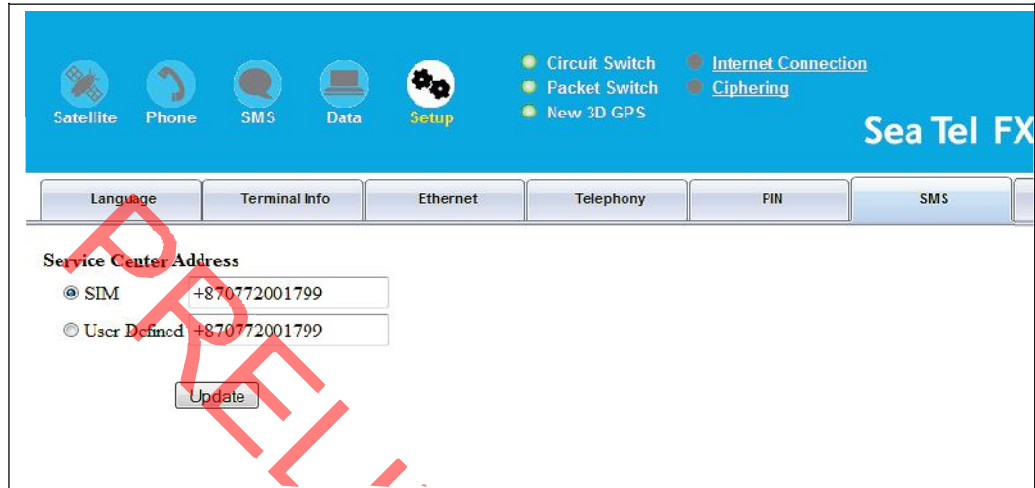
<ol style="list-style-type: none"> 1. Click SIM PIN2 to configure the SIM PIN2 settings. 2. Select Disabled if you do not need to set the SIM PIN2. 3. Select Enabled to set the SIM PIN2. 4. Enter the PIN number in the space provided and click the Apply button. 	
<p>Follow these steps to change the PIN Password:</p>	<ol style="list-style-type: none"> 1. Enter the old PIN number in the Enter Old PIN field. 2. Enter the new PIN number in the Enter New PIN field. 3. Re-enter the new PIN number in the Re-enter New PIN field. 4. Click Change PIN Password.



NOTE: The SIM PIN2 depends on the SIM card. Consult your airtime provider if necessary.

5.3.4.6. SMS

To change the SMS Service Center Address number, enter the new number in the space provided and click Update.

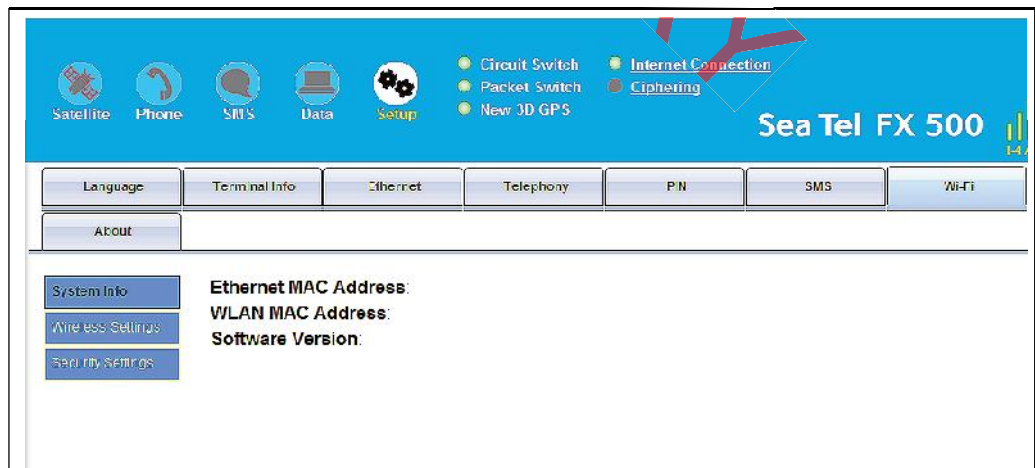


NOTE: Please contact your air time provider if you do not know the Service Center Address.

5.3.4.7. Wi-Fi Module Configuration

5.3.4.7.1. System info

Shows you software version and MAC address.

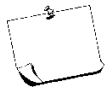


5.3.4.7.2. **Wireless Settings**

- Allows you to enable/disable wireless connection.
- Choose the desired network mode, channel bandwidth and channel.
- Allows you to name your network.

5.3.4.7.3. **Security Settings**

Follow the steps to configure the security settings of the Wi-Fi module.



NOTE: There are four sets of security passwords available for your security configuration and you can only select one set of passwords.

1. Select the security mode and authentication key.
2. Select the default key to enable the desired password from Key 1 to Key 4 respectively.

5.3.4.8. **Admin**

Satellite
 Phone
 SMS
 Data
 Setup

Circuit Switch
 Packet Switch
 New 3D GPS
 Internet Connection
 Ciphering

Sea Tel

Language
Terminal Info
Ethernet
Telephony
PIN
SMS

- Change Password
- Firmware Upgrade
- Reboot Terminal
- Factory Reset
- Save Settings
- GPS Output

Old Password:

New Password:

Re-type Password:

5.3.4.8.1. **Change Password**

<p>Follow these steps to change the Web Console login Password:</p> <ol style="list-style-type: none"> 1. Enter the old password in the Old Password field. 2. Enter the new password in the New Password field. 3. Re-enter the new password in the Re-type Password field. 4. Click Update. 	
--	--

5.3.4.8.2. **Firmware Upgrade**

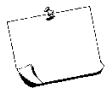
Firmware upgrade is to update your FleetBroadband BDU with the latest firmware.

The latest firmware may be obtained from: _____.

<ol style="list-style-type: none"> 1. Download or acquire the new firmware from your respective distributor and save it in your computer's hard drive. 2. Make sure the FleetBroadband BDU is switched on and connected to the desktop/laptop computer using a LAN cable. 3. Select Firmware Upgrade at the left. 	
<ul style="list-style-type: none"> • Be sure to read the Disclaimer message before continuing. <ol style="list-style-type: none"> 4. Click the Firmware Upgrade button at the right. 	
<p>The FleetBroadband BDU will reboot into Safe mode.</p>	<div style="border: 2px solid blue; padding: 10px; background-color: #e0e0e0;"> <p>Waiting for Terminal to reboot into safe mode.</p> </div>



WARNING: DO NOT abort the upgrading process or unplug the power of the FleetBroadband BDU during the firmware upgrade process at any time. Doing so will corrupt the existing firmware loaded onto the FleetBroadband BDU.



NOTE: All LEDs will turn to amber color and start blinking, which means it's in Safe mode.

<p>The FleetBroadband Web console will appear.</p> <p>5. Re-log in using the provided username and password.</p>	
--	--



NOTE: If the FleetBroadband BDU web console page didn't properly load you can manually refresh the web console by pressing the F5 (Refresh) key on your keyboard.

<p>6. Browse to the location of the new firmware, select, and click Upload.</p> <p>The firmware upgrade will take about 10 to 2 minutes to complete.</p> <p>You will be prompted with the message: Result: Firmware Upgrade Completed.</p> <p>7. Click Reboot Terminal to reboot the FleetBroadband BDU.</p>	
---	--

5.3.4.8.3. Reboot Terminal

<p>1. If you wish to reboot the FleetBroadband BDU, click Reboot Terminal. Click Reboot and wait for a few minutes to allow the Terminal Unit to reboot.</p> <p>2. Refresh your browser to update the Web Console page after reboot.</p>	
---	--

5.3.4.8.4. **Factory Reset**



WARNING: All of the settings and user data (e.g., Phone Book, GPS, etc.) of the FleetBroadband BDU will be cleared and reset to the default settings. If you do not wish to lose critical user data, such as Phone Book, please use limited reset option, available via the Primary Handset.

<p>To perform a Factory Reset, enter the Security code 0000 and click Factory Reset.</p>	
---	--



~~5.3.4.8.5~~ **Save Settings**

To ~~power down~~ the FleetBroadband BDU Transceiver Unit using the main power switch, it is ~~recommended~~ to save the recent setting changes.

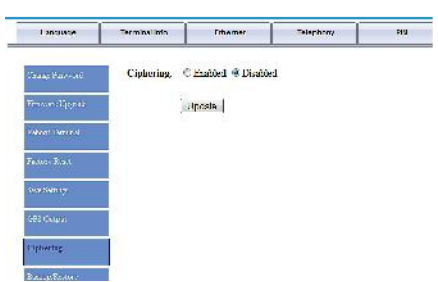
<p>To save the recent changes, click the Save Now button.</p>	
--	--

The note on the displayed page states: "If you ~~intend~~ to power off the BDU using the main power switch, it is recommended to save the ~~recent changes~~ in settings by clicking on this button. Otherwise, changes made in the last 15 ~~minutes~~ might not be saved in non-volatile memory. If you use the Primary Handset to power ~~off the BDU~~, this action is not required."


5.3.4.8.6. **GPS Output**

<p>By default, the FleetBroadband BDU Terminal Unit outputs the GPS data in NMEA format (at 9600bps) via the NMEA 0183 Connector for GPS output.</p>	
<p>For a technician who wants to diagnose the system, he/she may collect the debug log messages by selecting Output Debug Log. Since the debug mode is not required for normal users, it is recommended not to make any changes to this setting.</p>	


5.3.4.8.7. **Ciphering**

<p>Enabling the Ciphering option will enable the FleetBroadband BDU to exchange voice and data in secure mode, by encrypting them over the air.</p> <p>To enable/disable the Ciphering, select the option Enabled or Disabled respectively and click Update to make it take effect.</p>	
---	--


5.3.4.8.8. **Backup/Restore**

<ol style="list-style-type: none"> If you wish to backup your current settings, you may choose Full backup or Partial Backup: <p>Full backup – applies only on the same terminal, and not for distribution on other terminals.</p> <p>Partial backup – allows distribution of certain settings to many terminals of the same Model and Firmware version.</p> To restore the previous backup settings, you may click on Browse to locate the backup file and restore accordingly. 	
--	---

5.3.4.8.9. **Feature**

<p>Displays the Optional Feature enabling for Fax operation.</p> <p>To activate the Fax feature, an activation PIN is required.</p> <p>Please contact your Distribution Partner for assistance.</p>	
---	--

5.3.4.8.10. **Support**

<p>Display information of the support telephone number, support email address, Support URL and Services URL. (The information shown is for sample purpose only.)</p>	
--	---

6. USING THE PRIMARY HANDSET

6.1. The Primary Handset

The Primary Handset is connected to the FleetBroadband BDU using the dedicated **HANDSET** port and is powered directly from the BDU. Equipped with a large 2 inch, 65K CSTN, 220 Liquid Crystal Display (LCD), Primary Handset not only acts as a standard phone that allows you to make and receive voice calls, it also serves as an operator interface for you to access various configurations supported by the BDU.

6.1.1. Primary Handset offers the following features:

- Making standard CS voice calls
- Making standard/streaming PS background data connections
- Messaging (SMS)
- User contacts (combined SIM and BDU storage)
- Speed dial
- Call logs
- Managing BDU security settings
- Accessing BDU settings that includes:
 - Ethernet
 - Ciphering control
 - Satellite selection
 - Supplementary services
 - Terminal restart
 - Limited factory reset
- Displaying various BDU status and information
- Local handset configurations



6.1.2. Powering Up the Primary Handset

The Primary Handset is automatically powered up once it is connected to the dedicated **HANDSET** port. Depending on the conditions of the BDU, the Primary Handset may start in the following modes:

6.1.3. Full functioning mode

Primary Handset starts in this mode once it has successfully connected to the BDU and there is no PIN authentication required. All BDU settings including contacts, messages and call logs are loaded into local memory of the Primary Handset once the BDU is configured. You will be able to access all the menus and making voice or data calls once the Primary Handset is ready.

6.1.4. PIN mode

Primary Handset starts in this mode once it has successfully connected to the BDU and PIN authentication is required. Depending on the enabled PIN, you are required to enter the correct PIN/password before proceeding to Full functioning mode. Refer to Security settings menu for more information on the types of security PIN in the BDU.

6.1.4.1. To enter the PIN:

1. Key in the PIN of the security key using the alpha-numeric keypad.
2. Press the OK key to confirm.

6.1.4.2. To cancel PIN entering:

1. Press the **Right** selection key

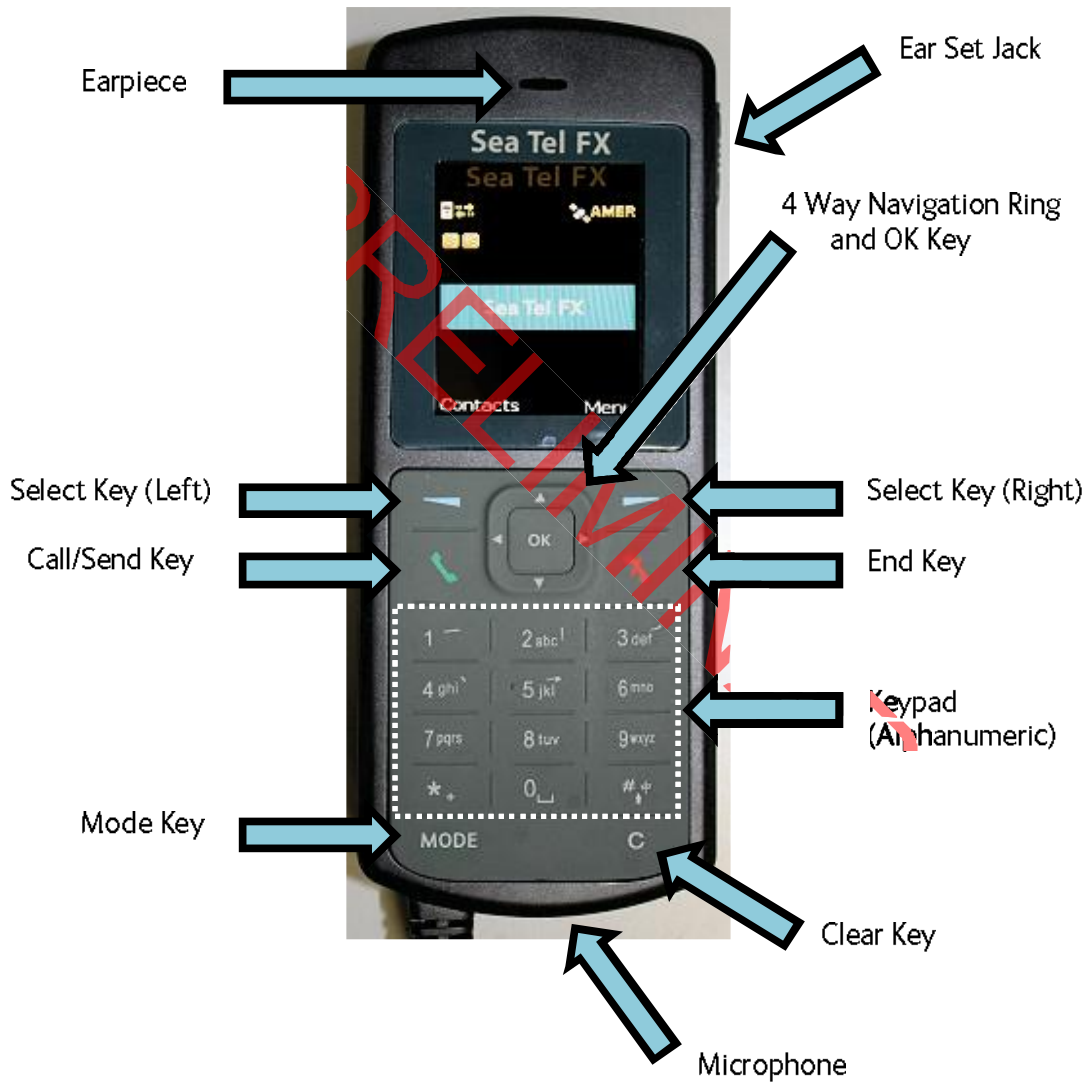
- 2. Confirm to start in Emergency only mode by pressing the OK key.

6.1.5. Emergency only mode

The Primary Handset starts in this mode once it has successfully connected to the BDU and PIN entering is bypassed (i.e. when you have forgotten the required PIN). You can only make emergency calls or access local Phone manager menu in this mode.

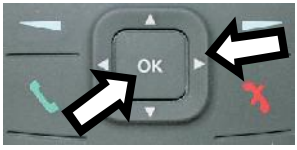






6.2. Primary Handset and Keypad



Below, the parts and functions of the Primary Handset are shown.



Handset - Parts and Functions

6.3. Handset - Parts and Functions

Keys	Description/Functions
	<p>4-way navigation ring. Press the 4-way navigation ring to scroll left, right, up, and down on the display. Enables scrolling through names, phone numbers, menus or settings.</p> <p>OK key. Pressing this key selects/confirms the function highlighted on the display.</p>
	<p>Left and Right selection keys. The functions of these key depends on the guiding text shown on the display above the keys.</p>
	<p>Call/Answer key After entering a phone number: Initiates a call to the number. From Main Display screen: Opens a list of dialed calls When Ringing: Answers the incoming call.</p>
	<p>Call/Menu/End key Press this key to end active calls or exits from any menus or sub menus.</p>
	<p>Keypad Used to enter numbers and characters. Press 0 to add a space when writing text. The functions available depend on whether you are typing a phone number (number mode) or text (text mode).</p>
	<p>Star * key When entering a phone number, press this key to insert a *. Press and hold this key to insert a +. When writing text, press this key to access a list of special symbols.</p>
	<p>Hash # key When entering a phone number, press this key to insert a #. To quickly change the text input method when writing text, press this key repeatedly, and check the indicator at the top of the display In standby mode, press and hold this key to set the Primary Handset into silent mode.</p>

	<p>Clear Key Press key once to clear one character at a time or press and hold this key to clear the whole text entry.</p>
	<p>Mode key Unplug the handset from BDU, press and hold this key when handset unplugged and plug in the Handset. Handset power up in Firmware Upgrade Mode.</p>

6.4. ~~Using the Handset~~

6.4.1. ~~The Main Display Screen~~



6.4.1.1. BDU Status Indicator line

The indicator line shows status symbol informing you about the operating conditions of the BDU.

6.4.1.2. Satellite

The indicator line shows status symbol informing you about the satellite service.

6.4.1.3. Handset Status Indicator line












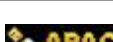




The indicator line shows status symbols informing you about the operating conditions of the Primary Handset.

6.4.1.4. Selection Key line

The Selection key line operates using the **Left** or **Right** selection keys with the **OK** key to access menus and controls.




6.4.1.5. Primary Handset Status Indicators

The table below explains the meaning of each status indicator displayed in the Main Display screen.

Status Indicator	Description
	New short message (SMS) in inbox
	Available CS domain services
	Available PS domain services
	Data connection is inactive (available in Manage profiles sub menu only)
	Data connection is active
	Ciphering is enabled
	Radio silent is active
	Primary Handset keypad lock is active
	Primary Handset disconnected from BDU
	Primary Handset connected to BDU
	The terminal has locked on to Inmarsat satellite "I-4 Asia Pacific"
	The terminal has locked on to Inmarsat satellite "I-4 EMEA"
	The terminal has locked on to Inmarsat satellite "I-4 Americas"
	Primary Handset in silent mode
	Telephony CS port is engaged
	Radio Silence is enabled

6.5. Making a Voice Call

Before making a voice call, please make sure that:

- The Primary Handset is connected to the BDU ( status indicator should be on).
- The Primary Handset is NOT radio silent ( status indicator should be off).
- The BDU has successfully registered with the network, and is ready for CS domain (voice) services ( status indicator should be on)

You can use the following two options for making a call:

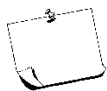
6.5.1. Manual Dial:

Using the alphanumeric keypad, dial 00 <country code> <phone number>.

Press the  key.

6.5.2. Using ~~Contact~~ or Call Log list from the Primary Handset:

	
<p>Enter the Contact list of the Primary Handset; scroll to the desired number and press  key, or</p>	<p>Enter the Log list of the Primary Handset; scroll to the desired number and press the  key.</p>



NOTE: For voice calls and SMS, you may also use '+' by pressing and holding the *+ key instead of "00" at the beginning of dialed number string as an alternative (+ <country code> <phone number>).

6.6. End a Call


Press .

6.7. Receiving a call

When there is an incoming call, the Primary Handset will,

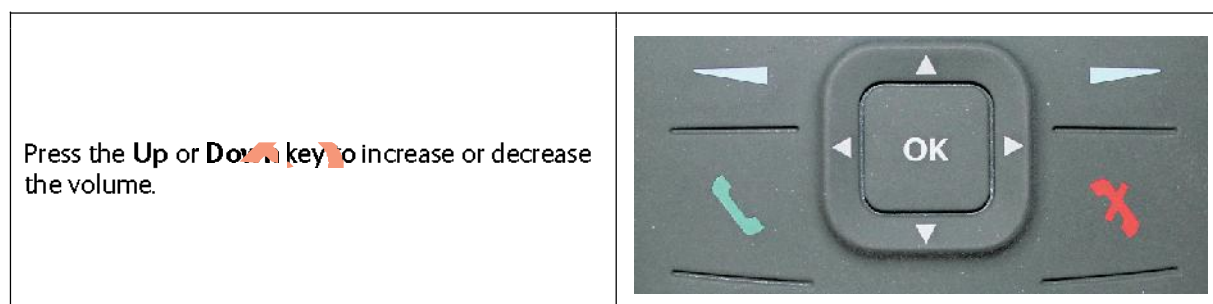
- Ring.
- The calling party's number will be displayed on the screen.

If the number is stored in the contacts, the corresponding name of contact will be displayed.

To answer an incoming call, press the  key.

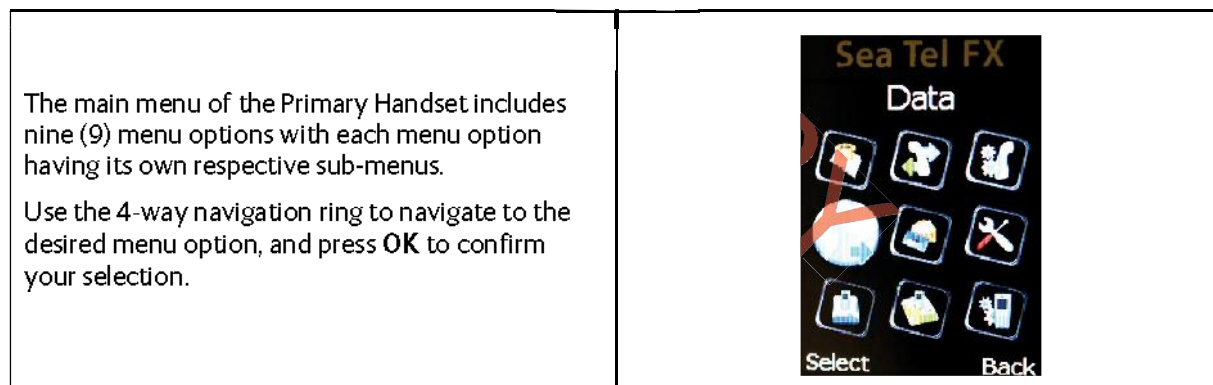
6.8. Adjusting volume during a call


Use the 4-way navigation ring to adjust the volume.



6.9. Using the Menus










You can access the Menu System by pressing the **Right** selection key in the Main Display screen.



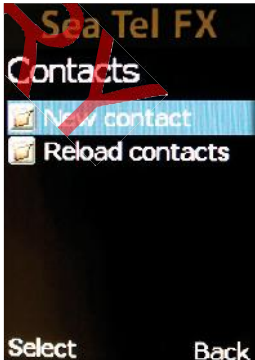
You can also exit the menu or sub menus and return to the Main Display screen at any time by pressing the  key.



6.9.1. **Menu Options**

The table below summarizes the functionalities within each menu option:

	Contacts This menu manages your user contacts.
	Log This menu allows you to view call histories.
	Telephony This menu configures settings related to CS voice telephony services.
	Data This menu configures settings or connections related to PS data services.
	Messaging This menu is for SMS related services.
	Settings This menu configures general BDU settings.
	Terminal This menu displays general BDU information.
	Security settings This menu configures security settings related to the BDU.
	Phone manager This menu configures local handset settings.

6.9.2.  **Contacts Menu**

<p>The Contacts menu allows you to store, retrieve and update names and phone numbers of your contacts in the Primary Handset memory and in the SIM card memory.</p> <p>You can also access this menu by pressing the Left selection key in Main Display screen.</p> <p>This menu lists all the contacts saved in both the BDU and SIM card memory where,</p>	
---	---

-  Indicates contacts that are saved in **BDU** and **SIM** card.
-  Indicates contacts that are saved in **SIM** card.


The following options are available when pressing the **Left** selection key while browsing through the contacts:

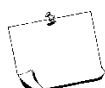
6.9.2.1. **New contact**

Add new contact to the memory. To add contact:

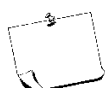
1. Select **New contact**.
2. Select where you want to store the contact (BDU or SIM).
3. Enter the name for the contact.
4. Enter the number for the contact.
5. Select **Save** (Left selection key) or pressing the **OK** key to save the contact to the selected memory.



NOTE: You can also make a voice call to the selected contact when browsing through or viewing the contacts by pressing the **Call**  key.



NOTE: Note: Press ***+** key to browse for symbols



NOTE: Stored number can be in any one of the following formats:

- '+ <country code> <phone number>
- 00 <country code> <phone number>

Press ***+** key to insert '+ ' sign.

Saving of a contact without a number is not allowed.

Search

Select this to enter a specific name to search within the contact list.

Delete

Delete selected contact.

- You can also delete the selected contact by pressing the Clear "C" key.

Copy

Select this to copy the selected contact from SIM card memory to BDU memory or vice versa.

View number

Display the number of the selected contact.

Assign Speed Dial

Add the selected contact to the speed dial list.

Reload Contacts

Select this to reload contacts from the BDU/SIM card into the local memory of the Primary Handset.

Memory Status

Select this to view the memory status of the contacts.

While browsing through the contact list, press the **OK** key to view the phone name and number or the selected contact.

The following options are available when pressing the Left selection key while viewing the selected contact:

Call

Make a voice call to this contact.

Send message

Open a SMS editor to send a text message to this contact.

Edit contact

Edit information of this contact.

Delete

Delete this contact.

Copy

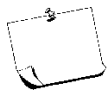
Select this to copy this contact from SIM card memory to BDU memory or vice versa.

Forward contact

Forward information of this contact using SMS.

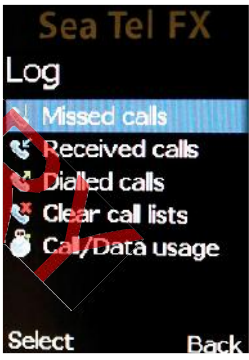
Assign Speed Dial

Add this contact to the speed dial list.



NOTE: You can also delete the entry by pressing the Clear key.

6.9.3.  Log Menu

<p>The Log menu allows you to view historical information about phone calls and data usage in chronological order with the following sub menus:</p>	
---	---

6.9.3.1.  Missed calls

6.9.3.2.  Received calls

6.9.3.3.  Dialed calls

The call history of the particular category is displayed in chronological order when selected. Up to 5 latest entries of each category can be saved.

The following options are available when pressing the Left selection key while browsing through or viewing the call log:

Delete

Delete the selected log entry from the list.

Call

Call the number in the selected log entry.

Send

Send an SMS to the number in the selected log entry.


Save

Save the number from the selected log entry to the contact list.



NOTE: The Save option is not available when the log entry already has an entry in the contact list.



NOTE: You can also make a voice call to the number of the selected log entry when browsing through or viewing the call log by pressing the Call  key.

6.9.3.4.  Clear call lists

Select this to clear the call log entries. Available log options are:


- Missed calls
- Received calls
- Dialed calls
- All calls

Delete all logs including Missed, Received and Dialed logs.

6.9.3.5.  Call/Data usage

Display the accumulated call and data duration. Press Left selection key to clear the call or data duration

6.9.4.  Telephony Menu

<p>The Telephony menu allows you to configure telephony related settings with the following sub menus:</p>	
---	---

6.9.4.1. Port Settings

Primary Handset

Contains options for incoming and outgoing call types.

Select this to configure the call type settings. The following options are available when pressing the Left selection key while browsing through the list:

- Standard
- NONE

Phone Port

Contains options for incoming and outgoing call types.

Select this to configure the call type settings. The following options are available when pressing the Left selection key while browsing through the list:

- Standard
- High quality [Only applicable if fax is purchased]
- **PTT** (only for incoming) [Only applicable if fax is purchased]
- **NONE**

Fax (OPT) Port

Contain options for incoming and outgoing call types.

Select this to configure the fax type settings. The following options are available when pressing the Left selection key while browsing through the list:

- High quality [Only applicable if fax is purchased]
- NONE

6.9.4.2. Speed dial Setting

Setting

Contains options to enable/disable the speed dial feature.

Speed Dial List

Select this to configure the speed dial list. The following options are available when pressing the Left selection key while browsing through the list:

Assign

Assign a contact to the selected entry. To assign a contact:

1. Select **Speed Dial List**.
2. Browse through the list to locate an empty entry.
3. Select **Options** by pressing **Left** selection key.
4. Select **Assign** and press **OK** from the option.
5. Select the desired contact to assign to the speed dial list.
6. Press **OK** to confirm your selection.

Delete

Remove contact from the selected entry. This option is not available for empty entry.


 **NOTE:** You can also delete the entry by pressing the Clear **C** key.

Call

Make call using the number from the selected entry.

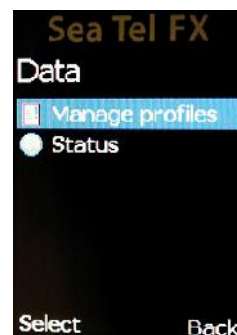
 **NOTE:** You can also make a voice call to the number of the selected entry by pressing the

Call  key.

You can make a voice call directly from the Main Display screen by pressing the corresponding speed dial entry number + Call  key, once the speed dial feature is enabled with valid contact entries.

6.9.5. Data Menu

The **Data** menu provides the following sub menus to manage and configure data connection (PDP profiles) for the BDU.




6.9.5.1. Manage profiles

Allows you to manage the Primary and Secondary PDP profiles.

Primary profiles

One Standard Primary PDP profile has been created in the Primary profile list as a default profile. The profiles listed in the list are:

- Standard
- 32k Streaming
- 64k Streaming
- 128k Streaming

You can press the Left  selection key for options available when browsing through the profile list. The list of options is:

Edit

Edit the selected profile.

Delete

Delete the selected profile.

Add

Add new profile into the list.

Reset table

Reset profile list. All profiles will be deleted and a default profile is created.

Adding/Editing profiles

You can press the Left selection or OK key from the option list to add new or edit existing profile settings.

Profile name

Specify the name of the profile.

Connection type

Both Standard and Streaming connection types are supported.

APN

Specify information of the APN (Access Point Name). Further available settings are:

APN: Specify the Access Point Name for the connection. Default APN is according to SIM card. Enter your own APN if you do not want to use the default APN from the SIM card.

Username: Specify the user name for Static IP configuration. Default is blank for Dynamic IP configuration.

Password: Specify the password for Static IP configuration.

Default is blank for Dynamic IP configuration.

You can press the **Left** selection key for the following options:

Exit

Quit the selected APN setting

Fetch from SIM

Fetch the APN from the SIM card. This option is only available when APN is highlighted.

IP configuration

Contains options for Static or Dynamic IP. Default is Dynamic IP configuration.

IP address

Specify the IP address for Static IP configuration. This field is ignored for Dynamic IP configuration. Default is blank for Dynamic IP configuration.

Header comp.

Contain options to enable or disable header compression. Default is Enabled.



NOTE: For 32k, 64k and 128k Streaming profiles, there are three additional options when editing their settings. The additional options are:

Desired rate

Choose the desired rate for the different profiles. Note that the default setting for each profile is the profile chosen. For example, for 32k Streaming, the default rate is 32k.

Minimum rate

Choose the minimum rate for the different profiles. Note that the default setting for each profile is the profile chosen. For example, for 32k Streaming, the default rate is 32k.

Error correction

Contain options to enable or disable error correction. Default is disabled.

Secondary Profiles

The profiles listed are:

- FTP
- Quick Link
- Quick Time Media
- Real Media
- Stream Box
- Win Media

Adding/Editing profiles

You can press the Left selection or OK key from the option list to add new or edit existing profile settings.

Profile name

Specify the name of the profile.

TFT

Choose desired type of connection.

Desired rate

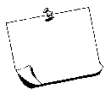
Choose the desired rate for the profile. Default settings for all secondary profiles are set as 32K.

Minimum rate

Choose the minimum rate for the profile. Default settings for all secondary profiles are set as 32K.

Error correction

Contain options to enable or disable error correction. Default is Disabled.



NOTE: You will be prompted to save the changed settings before exiting the sub menu. Press Left selection key or the OK key to save the changes.

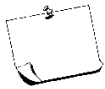
Icon  in the profile list indicates that the profile is not active.

Icon  indicates that the profile is currently active in use.

6.9.5.2.  Status

Allows you to check the status of the data connection.

You can also activate / deactivate specific profile in the status display list.



NOTE: You will not be able to enter this sub menu if the BDU has not been registered for PS data service.

The status list shows you the current active data connection. Depending on whether there is an active connection, you can press the Left selection key for the following options:

Activate primary

This option is available when there is no active data connection. Select this to choose from the profile list for activation.

To activate a primary data connection when there is no active connection:

1. From the data status list, select Options using the Left selection key.
2. Select **Activate primary** using Left selection key or the OK key.
3. Select from a list of configured primary profile for activation. Press Left selection key or the OK key to confirm.
4. You are prompted to confirm activation. Confirm activation by selecting **Yes** using the Left selection key or the OK key.



NOTE: It may take a while to activate a data connection.

Deactivate

This option allows you to de-active an active data connection.

To de-activate a primary data connection when there is an active connection:

1. From the data status list, select Options using the **Left** selection key.
2. Select Deactivate using **Left** selection key or the **OK** key.
3. You are prompted to confirm de-activation. Confirm de-activation by selecting Yes using the **Left** selection key or the **I** key.



6.9.6. Messaging Menu

<p>The Messaging menu allows the user to write a new messages, view stored messages from Inbox, Drafts and/or Sent folders and configure settings related to SMS with the following sub menus:</p>	
--	--

6.9.6.1. New Message

Select this to create and send a new message. To **create** new message:

1. Select New Message by pressing the **OK** key. A **SMS** editor will be displayed on the Primary Handset screen for writing new message.
2. Type in your **SMS** message using the alphanumeric **keypad**.
3. To send the message, press the **OK** key and select **Send**.
4. Enter the recipient's phone number, and press the **OK** key. Alternatively you can select Search by pressing the **Left** selection key to select the **phone number** from the contacts.

Options:

You can press the **Left** selection key to select options available when writing the message.

Send

Select this when you are ready to send your message.

Save


Select this to save the message into the draft folder.

Clear screen

Select this to clear all the written text.

Tips for writing the text:

Press the **0** key to add a space.

To quickly change the text input mode when writing text, press  key repeatedly and check the indicator at the top of the display:

<ABC>: Capital letters

<123>: Numbers

<abc>: Small letters

<Abc>: Initial Capital letter followed by small letters

To add a number in alphabet mode, press and hold the desired number key.

Inserting symbols to your message:

To get a list of special symbols, press the  + key.

Using the 4-way navigation ring, navigate to the desired symbol.

Press OK to confirm the selection.

Clearing text:

To clear text, press C once to clear one character at a time.

To clear the whole text entry, press and hold C.

6.9.6.2 Inbox

Contains new/opened text messages that you have received.

Use the 4-way navigation ring to browse through the list of messages.



Indicates an unread (new) message and



Indicates read (opened) text messages.

The following are available options when pressing the Left selection key while browsing through or viewing the messages in this folder:

Open

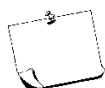
Open selected message. You can also press OK while browsing through the message list to open the selected message.

Reply

Select this to reply to the selected message sender.

Delete

Delete selected message.



NOTE: You can also delete the selected message by pressing the Clear  key.

Forward

Forward this message to another recipient.

Call

Make a voice call to the selected message sender.

Save


Save the selected message into the Draft folder.

Details

Display the details of the selected message.

Add to contact


Select this to add the phone number of the selected message into the contact list.

NOTE: You can also make a voice call to the selected message contact when browsing through the messages list by pressing the Call  key.

6.9.6.3.  Sent

Contain text messages that you have sent. The following are available options when pressing the Left selection key while browsing through or viewing the messages in this folder:


Open

Open selected message. You can also press  while browsing through the message list to open the selected message.

Delete

Delete selected message.



NOTE: You can also delete the selected message by pressing the Clear  key.

Send

Send the selected message to another recipient.


Save

Save the selected message into the Draft folder.

Add to contact

Select this to add the phone number of the selected message into the contact list.



NOTE: You can also make a voice call to the selected message contact when browsing through the message list by pressing the Call  key.

6.9.6.4.  Draft

Contain text messages that you have saved. The following are available options when pressing the Left selection key while browsing through or viewing the messages in this folder:


Open

Open selected message. You can also press OK while browsing through the message list to open the selected message.

Delete

Delete selected message.



NOTE: You can also delete the selected message by pressing the Clear  key.

Send

Send this message to another recipient.


Save

Save the selected message into the Draft folder

Add to contact

Select this to add the phone number of the selected message into the contact list.



NOTE: You can also make a voice call to the selected message contact when browsing through the message list by pressing the Call  key.

6.9.6.5.  Options

The following settings are available in this sub menu:

Message Center

Select this to set the number of the SMS service center.

Save sent message

Select this to enable or disable the saving of sent messages. When this option is enabled, all successfully sent messages are saved in the Sent folder.

Memory status

Select this to view the memory status of the messages.

Reload Messages

Select this to reload messages from the BDU into the local memory of the Primary Handset.

6.9.6.6.  Delete all

Select this to clear the messages in a particular folder. Available folder options are:

All messages

Delete messages in all folders including Inbox, Sent and Draft.

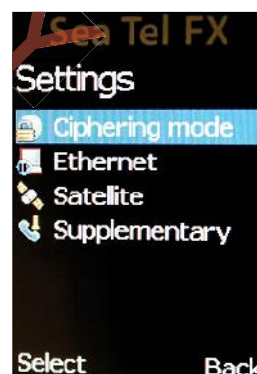
Inbox

Sent

Draft

6.9.7.  Settings Menu

The **Settings** menu provides the following sub menus to configure the BDU:



6.9.7.1. Ciphering mode

Contain options to enable/disable the use of ciphering mode between the network and BDU.



NOTE: Status icon  is displayed in the Main Display screen when ciphering is enabled.

6.9.7.2. Ethernet

Allows you to configure settings related to Ethernet connection.

Transceiver IP Address

Specify the IP address of the BDU. The default IP address of the BDU is 192.168.1.35

Subnet Mask

Specify the subnet mask of the BDU. The default subnet mask of the BDU is 255.255.255.0

DHCP services

Display the status and settings of the DHCP server.

DHCP server

Display the status of the DHCP server.

Start IP address

Display the start IP address of the DHCP server. Default start IP address is 192.168.1.40.

End IP address

Display the end IP address of the DHCP server. Default end IP address is 192.168.1.59.

Primary DNS

Display primary DNS server address. Default primary server is 172.30.66.7.

Secondary DNS

Display secondary DNS server address. Default secondary server is 172.30.34.7.

Lease time

Display the lease time. Default lease time is 60.

Except for DHCP server, the rest of the display settings can be edited by pressing the Left selection key or the OK key.



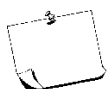
NOTE: Make sure that the format is correct when entering an IP address. Press the Star *+ key multiple times to insert the "." sign.

6.9.7.3. Satellite

Manage settings related to Inmarsat satellites.

Satellite selection

Allow you to select the preferred satellite to lock on to. Default is AUTO where the BDU automatically searches for the best satellite in view to lock on to.



NOTE: Satellites visible to the BDU are marked with *. The BDU will de-register from the network with all the CS (voice) and PS (data) services terminated whenever a new satellite is manually selected from the list. The BDU can only re-register with the network once it has successfully locked onto the newly selected satellite.

Satellite status

Display current satellite status. The following information is displayed:

Status

Display status of the BDU. The BDU can be either searching or locked on to a particular satellite.

Satellite ID

Satellite ID that the BDU is currently searching for or locked on.

Satellite Name

Satellite Name that the BDU is currently searching for or tracking.

6.9.7.4.  Supplementary

Configure settings related to supplementary services. These settings are applicable to standard CS voice services.



NOTE: Depending on the network, some settings may not be available or may prevent some settings from being activated.

The following sub menus are available:

Call forwarding

Allow you to configure for call forwarding services depending on various conditions. The following forwarding conditions are available for configurations:

All Call

All calls are unconditionally forwarded.

Busy

Calls are forwarded when the BDU is busy.

No answer

Calls are forwarded when no answer from the BDU for a specific time.

Not reachable

Calls are forwarded when BDU is not reachable.

You can press the **Left** selection key for options available when browsing through the list of forwarding conditions. The list of options is:

Retrieve all

Retrieve network settings of all the listed conditions.

Update all

Update configured settings of all the listed conditions to the network.

Cancel all

Deactivate all condition settings.



NOTE: Operations on this level affect all forwarding conditions and hence it may take some time to process.

Pressing the **OK** key configures a particular forwarding condition. The following settings can be configured:

Status: Display active or inactive status of the selected forwarding condition. Press the **OK** key to change the status.

Number: Display number to forward calls to when selected forwarding condition is active. Press the **OK** key to change the number.

Time: Only applicable to **No answer** forwarding condition. To forward calls to selected number if call no answer for a specific period of time. Press the **OK** key to change the time.

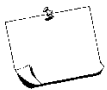
You can press the **Left** selection key for options available when configuring a particular forwarding condition. The list of options is:

Retrieve

Retrieve network settings of the selected condition.

Update

Update configured settings to the network for the selected condition.



NOTE: Always use **Retrieve all** or **Retrieve** options to retrieve the latest settings from the network. Use **Update all** or **Update** options to update the network settings after configurations.

Call barring

Allow you to configure for call barring services depending on various barring conditions. The following conditions are available for activations/deactivations by pressing the **OK** key:

Outgoing calls

Barring of all outgoing calls.

Incoming calls

Barring of all incoming calls.

Int. except home

Barring of all outgoing international calls except to home country.

Incoming if abroad

Barring of all incoming when roaming.

You can press the **Left** selection key for options available when browsing through the list of barring conditions. The list of options is:

Retrieve

Retrieve network settings of the highlighted condition.

Retrieve all

Retrieve network settings of all the listed conditions.

Update

Update configured settings to the network for the highlighted condition.

Update all

Update configured settings of all the listed conditions to the network.

Cancel all

Deactivate all condition settings.

You will be asked to enter the call barring password when updating the settings to the network. Consult your equipment distributor if necessary.

Call waiting

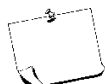
Contain options to enable/disable call waiting services. You can also press the Left selection key for the following options:

Retrieve

Retrieve network settings of the call waiting service

Update

Update configured settings to the network



NOTE: Always use Retrieve option to retrieve the latest settings from the network. Use Update option to update the network settings after configurations.

Caller ID

Allow you to configure settings that are related to caller identifications.

Setting

Contain options to configure for USA or Europe caller ID type.

Send Caller ID

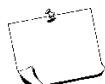
Allow you to enable/disable sending of your caller ID to the recipient when making a call. Default is AUTO when the default network settings are used. You can also press the Left selection key for the following options:

Retrieve

Retrieve network settings of the call waiting service

Update

Update configured settings to the network



NOTE: Always use Retrieve option to retrieve the latest settings from the network. Use Update option to update the network settings after configurations.

6.9.8.






Terminal Menu

<p>The Terminal menu provides the following sub menus to check for information and perform resets on the BDU:</p>	
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6.9.8.1.  Signal strength

Shows graphical representation of current signal strength and GPS type.

The table below describes the available GPS type icons used in this sub menu:

	This icon shows that the BDU is in the process of acquiring a GPS fix when there is no previously stored GPS fix.
	This icon shows that the BDU is using New GPS coordinates.
	This icon shows that the BDU is using previously stored GPS coordinates.

6.9.8.2.  GPS status

Show current Latitude and Longitude coordinates, the GPS type and Time of acquisition on the BDU.

6.9.8.3.  Terminal info

Display a list of information of the BDU

Manufacturer

Manufacturer name of the BDU

IMSI number

IMSI number of the SIM card

Software version

Software version of the BDU

Subscriber number

Subscriber's telephone number

Model

Model name of the BDU

Serial number

Serial number of the BDU

IMEI number

IMEI number of the BDU

6.9.8.4.  Antenna Unit Info

Display a list of information of the Antenna.

Serial number

Serial number of the Antenna

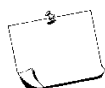
6.9.8.5.  Terminal restart

Soft restarting the BDU

6.9.8.6.  Limited reset

Perform limited reset on the BDU. Unlike the full factory reset, which is not available in Primary Handset, limited reset only resets a small portion of the BDU settings. Stored GPS status, contacts, call logs and event logs are not cleared during limited reset.


You are also required to key in the password when performing the reset. The default password is 0000.



NOTE: This password is the same as Terminal PIN.



6.9.9. **Security settings Menu**

<p>The Security Settings menu provides the following sub menus to configure the security settings of the BDU using different PIN:</p>	
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6.9.9.1.  **Terminal PIN**

6.9.9.2.  **SIM PIN**

There are three options available for selection under each sub menus to manage the PIN and security settings for the BDU:

Enable

Enable the selected PIN. The table below summarizes the default PIN codes for each security setting:

Terminal PIN	<p>0000</p> <p>Terminal PIN is the same PIN that has to be entered when performing Limited Reset on the BDU.</p>
SIM PIN	<p>Depends on your SIM card. Consult your equipment distributor if necessary.</p> <p>You have to enter the PUK (PIN Unblocking Key) to access the SIM card if a wrong PIN for SIM PIN has been entered for three times. You will be asked to enter the new PIN code once you have entered the correct PUK. However, the SIM card is no longer usable if you have entered wrong PUK for 10 times.</p>

You will be asked to key in the existing PIN (or default PIN, if it has not been changed) before the PIN can be enabled.


Disable


Disable the selected PIN. You will be asked to key in the existing PIN (or default PIN if it has not been changed) before the PIN can be disabled.

Change

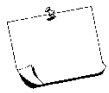
Change the PIN to a new one. You will be asked to key in the existing PIN (or default PIN if it has not been changed) before the PIN can be changed.

6.9.9.3.  **Phone manager Menu**


<p>The Phone manager menu provides the following sub menus to configure settings that are local to the Primary Handset:</p>	
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6.9.9.4.  **Display**
 Configure settings that are related to Primary Handset display.

Backlight
 Used to set the duration of the display backlight to remain on. Settings range from Always On (Backlight permanently on), 15 seconds to 1 minute.



NOTE: The backlight will be slightly dimmer and finally off when there is no keypad activity after sometime. However, this feature is not available when the setting is set to Always On.

6.9.9.5.  **Tone**
 Configure tone setting for the standard and ring tones.

Standard tone

Key tone

Contain options to enable/disable the key tone.

Message tone

Contain options to enable/disable the message tone.

Volume

Configure the volume for the standard tones (both key and message tones). Using the 4-way navigation ring OK, press up/right to increase and down/left to decrease the volume.

Ring tone

Tone

Select desired ring tone pattern.

Volume

Configure the volume of the ring tone. Using the 4-way navigation ring around **OK**, press up/right to increase and down/left to decrease the volume.

6.9.9.6.  Language

Allows you to change the menu display language.

6.9.9.7.  Factory settings

This allows you to configure the default factory settings of the Primary Handset. It contains the following settings:

Factory reset

Perform factory reset on the Primary Handset.

6.9.9.8.  About

Displays a list of information of the Primary Handset.

Model

Model name of the Primary Handset.

Software version

Software version of the Primary Handset.

Hardware version

Hardware version of the Primary Handset

Technical support

Web address for technical support

Copyright

Contain Copyright message

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7. GLOSSARY

ADU	Above Deck Unit
AMBE+2	Advanced Multiband Excitation +2. AMBE is used by the Inmarsat and Iridium satellite telephony systems and certain channels on XM Satellite Radio and is the speech coder for OpenSky Trunked radio systems..
APN assigned	Access Point Name (APN) is a configurable network identifier used by a mobile device when connecting to a GSM carrier. The carrier will then examine this identifier to determine what type of network connection should be created, for example: what IP addresses should be to the wireless device, what security methods should be used, and how or if, it should be connected to some private customer network.
BDU	Below Deck Unit
BGAN Services	The Broadband Global Area Network (BGAN) is a global Satellite Internet Network using portable terminals.
CS and PS	<p>Circuit switching is a methodology of implementing a telecommunications network in which two network nodes establish a dedicated communications channel (circuit) through the network before the nodes may communicate. The circuit guarantees the full bandwidth of the channel and remains connected for the duration of the communication session. The circuit functions as if the nodes were physically connected as with an electrical circuit.</p> <p>Circuit switching contrasts with packet switching which divides the data to be transmitted into packets transmitted through the network independently. In packet switching, instead of being dedicated to one communication session at a time, network links are shared by packets from multiple competing communication sessions, resulting in the loss of the quality of service guarantees that are provided by circuit switching.</p>
DC	Direct Current
DHCP	The Dynamic Host Configuration Protocol (DHCP) is a network configuration protocol for hosts on Internet Protocol (IP) networks. Computers that are connected to IP networks must be configured before they can communicate with other hosts. The most essential information needed is an IP address, and a default route and routing prefix. DHCP eliminates the manual task by a network administrator. It also provides a central database of devices that are connected to the network and eliminates duplicate resource assignments.
DP	Distribution Partner
FBB	FleetBroadband
GPS	Global Positioning System
GPIO	General Purpose Input / Output

Header Compression	Data moves around networks in packets. A packet contains data in the body and then has a series of headers that describes the data and also includes addresses for the source and destination of the packet. These headers generate a large overhead on the data and can slow down networks. The size of the header dictates an optimum packet size requiring large chunks of data in each packet to mitigate the header overhead. One solution to the problem of packet header overhead is to compress the header.
IMEI Number	The International Mobile Equipment Identity or IMEI is a number, usually unique, to identify GSM, WCDMA, and iDEN mobile phones, as well as some satellite phones.
IMSI Number	An International Mobile Subscriber Identity or IMSI is a unique identification associated with all GSM and UMTS network mobile phone users. It is stored as a 64 bit field in the SIM inside the phone and is sent by the phone to the network. It is also used for acquiring other details of the mobile in the Home Location Register (HLR) or as locally copied in the Visitor Location Register.
PDP Profiles	The power delay profile (PDP) gives the intensity of a signal received through a multipath channel as a function of time delay. The time delay is the difference in travel time between multipath arrivals. The abscissa is in units of time and the ordinate is usually in decibels. It is easily measured empirically and can be used to extract certain channel's parameters such as the delay spread.
PS	See "CS and PS".
PUK	PIN Unblocking Key
SIM Card	A SIM card or Subscriber Identity Module is a portable memory chip. The SIM holds personal identity information, cell phone number, phone book, text messages and other data. It can be thought of as a mini hard disk that automatically activates the phone into which it is inserted.
SMS	Short Message Service (SMS) is a text messaging service component of phone, web, or mobile communication systems, using standardized communication protocols.
System	User Equipment
TFT	Thin film transistor liquid crystal display (TFT-LCD) is a variant of LCD.
TU	Terminal Unit