

EXPLORER 510

User manual



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Safety summary

The following general safety precautions must be observed during all phases of operation, service and repair of this equipment. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture and intended use of the equipment. Cobham Satcom assumes no liability for the customer's failure to comply with these requirements.



WARNING! This equipment is not suitable for use in locations where children are likely to be present.

Do not operate in an explosive atmosphere

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

Keep away from live circuits

Operating personnel must not remove equipment covers. Component replacement and internal adjustment must be made by qualified maintenance personnel. Do not replace components with the power cable connected. Under certain conditions, dangerous voltages may exist even with the power cable removed. To avoid injuries, always disconnect power and discharge circuits before touching them.

Do not service alone

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

Do not substitute parts or modify equipment

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

Keep away from antenna front

This device emits radio frequency energy when switched on. To avoid injury, keep a minimum safety distance of 1 m from the antenna front when the EXPLORER 510 is on.

Garder à l'écart de l'avant de l'antenne

Le présent appareil émet des radiofréquences lors de son utilisation. Afin d'éviter tout risque pour la santé, une distance minimale de 1m est nécessaire entre l'utilisateur et l'avant de l'EXPLORER 510.

Only use approved batteries from Cobham Satcom

Use of non approved batteries may result in explosion, fire, electrical shock or injury.

Observe marked areas

Under extreme heat conditions do not touch areas of the EXPLORER 510 that are marked with this symbol, as it may result in injury.



Antenna safety instructions

Use only manufacturer supplied antennas.

Antenna minimum safe distance: 1 m

Antenna gain

Directional, with maximum gain of 11 dBi (with reference to isotropic).

The Federal Communications Commission has adopted a safety standard for human exposure to RF (Radio Frequency) energy which is below the OSHA (Occupational Safety and Health Act) limits.

Antenna mounting

The antenna supplied by the manufacturer must be located such that during radio transmission, no person or persons can come closer than the above indicated minimum safe distance to the front face of the antenna, i.e. 1 m.

L'antenne fournie par le fabricant doit être placée de telle sorte que, durant les transmissions radio, personne ni aucun groupe de personnes ne puisse s'approcher à une distance inférieure à la distance de sécurité minimal indiquée ci-dessus, c.-à-d., 1 m.

To comply with current FCC RF Exposure limits, the antenna must be installed at or exceeding the minimum safe distance shown above, and in accordance with the requirements of the antenna manufacturer or supplier.

Radiation warning



WARNING! Maintain a separation distance of at least 1 m from the front face of the antenna to a person.

You, as the qualified end-user of this radio device, must control the exposure conditions of bystanders to ensure the minimum separation distance (above) is maintained between the antenna and nearby persons, for satisfying RF Exposure compliance. The operation of this transmitter must satisfy the requirements of General Population/ Uncontrolled Environment. Only use the terminal when persons are at least the minimum distance from the front face of the antenna.

Safety note from battery supplier

Battery



WARNING! Hazards such as high temperature, fire or explosion can happen. To avoid such hazards, observe the following directions and recommendations

- Keep away from fire
- Do not drop, crush, puncture or disassemble the battery.
- Do not touch the terminals of the battery with conductive materials such as coins, keys, watches etc.
- Do not expose the battery to temperatures above 60°C / 140°F.
- Do not replace by a battery other than specified by the manufacturer.

About this manual

Intended readers

This manual is a user manual for the EXPLORER 510. The manual is intended for anyone who is using or intends to use the EXPLORER 510. No specific skills are required to operate the EXPLORER 510. However, it is important that you observe all safety requirements listed in the **Safety summary** in the beginning of this manual, and operate the EXPLORER 510 according to the guidelines in this manual.

Related documents

The following documents are related to this manual and to the EXPLORER 510 system.

Title and description	Document number
EXPLORER 510 Getting Started, English	98-143071
EXPLORER 510 Getting Started, Deutsch (German)	98-143073
EXPLORER 510 Getting Started, Français (French)	98-143074
EXPLORER 510 Getting Started, Español (Spanish)	98-143075
EXPLORER 510 Getting Started, Русский (Russian)	98-143076
EXPLORER 510 Getting Started, 中文 (Chinese)	98-143077
EXPLORER 510 Getting Started, 日本語 (Japanese)	98-143078

Typography

In this manual, typography is used as indicated below:

Bold is used for the following purposes:

- To emphasize words.
Example: “Do **not** touch the antenna front during pointing”.
- To indicate what the user should select in the user interface.
Example: “Select **Control panel** > **WLAN** and click **Enable**”.

Italic is used to emphasize the paragraph title in cross-references.

Example: “For further information, see *Connecting Cables* on page...”.

Contents

Chapter 1	Introduction to EXPLORER 510	
	1.1 General description	1-1
	1.2 Features and interfaces of the EXPLORER 510	1-2
	1.3 Your EXPLORER 510 terminal	1-3
Chapter 2	To get started	
	2.1 To unpack and assemble the EXPLORER 510	2-1
	2.2 To switch the EXPLORER 510 on or off	2-4
	2.3 To connect your WLAN-enabled device	2-4
	2.4 To connect to LAN	2-5
	2.5 To access the web interface	2-5
	2.6 To access the external network	2-6
	2.7 To start and stop data connections	2-9
	2.8 To make phone calls over BGAN	2-11
	2.9 External power	2-14
	2.10 Semi-fixed installation	2-15
Chapter 3	Operation	
	3.1 BGAN or cellular network	3-1
	3.2 Connection to the EXPLORER 510	3-1
	3.3 Data connection	3-2
	3.4 To access the terminal from a remote location (BGAN only)	3-5
	3.5 Phone calls	3-9
	3.6 Alerts	3-11
	3.7 Status of the EXPLORER 510	3-11
	3.8 Tracking and location reporting	3-11
	3.9 To charge your smartphone	3-11
Chapter 4	Configuration	
	4.1 Configuration with EXPLORER Connect app	4-2
	4.2 The web interface	4-3
	4.3 To point the antenna (BGAN)	4-6
	4.4 To enter the SIM PIN in the web interface	4-7
	4.5 To control data connections from web interface (BGAN)	4-8
	4.6 Status information	4-10

4.7	The Control panel	4-12
4.8	To use the logs	4-13
4.9	Battery status information	4-14
4.10	To set up the interfaces	4-15
4.11	To manage connected devices (Traffic control)	4-17
4.12	To manage smartphones (IP handsets)	4-20
4.13	Support features	4-21
4.14	Terminal settings	4-24
4.15	To set up your data connection packages	4-29
4.16	To set up tracking and location reporting	4-33
4.17	Advanced LAN	4-35
4.18	Advanced settings	4-37
4.19	Optional: To set up cellular network for data	4-50
Chapter 5	Maintenance and troubleshooting	
5.1	Support	5-1
5.2	Software update	5-2
5.3	Restore the settings of the EXPLORER 510	5-5
5.4	Maintenance	5-6
5.5	Troubleshooting	5-7
5.6	Log files	5-18
5.7	List of reserved IP subnets	5-19
Appendix A	Technical specifications	
A.1	General specifications	A-1
A.2	Battery specifications (internal battery)	A-2
A.3	Interfaces specifications	A-2
A.4	Built-in BGAN antenna	A-4
A.5	AC/DC adapter	A-4
A.6	Outline drawing	A-5
A.7	Satellite coverage	A-7
Appendix B	Command reference	
B.1	Overview of M2M AT and SMS commands	B-2
B.2	SMS remote commands	B-3
B.3	AT commands	B-8

Appendix C Conformity

C.1 CE C-1

C.2 IC C-1

C.3 FCC C-1

C.4 Japanese Radio Law and Japanese Telecommunications Business Law Compliance. C-2

Glossary Glossary-1

Index Index-1

Introduction to EXPLORER 510

1.1 General description

The EXPLORER 510 is a very small EXPLORER BGAN terminal and is the ideal combination of performance and portability. It provides simultaneous high quality voice and broadband access at speeds up to 464 kbps.

The durable magnesium casing and a dust and water resistant design makes the EXPLORER 510 the perfect choice when working off the beaten track but still dependent on a reliable connection.



Your equipment connects to the EXPLORER 510 with wireless LAN (WLAN).

WLAN is the primary connection between your equipment and the EXPLORER 510. However, a USB interface is also available, with possible connection of LAN using a USB to LAN Converter Cable (included).

The EXPLORER 510 provides access to up to 464 kbps Standard data and 32, 64 and 128 kbps Streaming data and may be used for:

- Broadcasting
- Internet browsing
- E-mail
- Phone services (using WLAN or LAN with Voice over IP)
- File transfers
- Video conference and Streaming
- VPN (Virtual Private Network) access to corporate servers

The EXPLORER 510 can withstand severe environmental conditions such as humidity, dust, extreme weather and changing temperatures. It is small in size and fits easily into a backpack or similar.

1.2 Features and interfaces of the EXPLORER 510

1.2.1 Features

- Full duplex, single or multi-user, standard data up to 464 kbps
- Support for streaming data at 32, 64 and 128 kbps
- Standard WLAN and USB Host interface
- LAN connection using USB to LAN Converter Cable
- Support for EXPLORER Cellular Modem for connection to cellular network
- Built-in battery
- Built-in DHCP/NAT wireless router
- Solar panel direct interface
- 10.5-32 VDC input
- 100-240 VAC power adapter
- IP66 protection
- Support for GPS, GLONASS and BeiDou navigation systems
- Support for the EXPLORER Connect app, which makes it easy to use your smart device to make calls over BGAN, and to set up the EXPLORER 510.
- Built-in web interface allowing you to manage your calls and customize the terminal to your specific needs, using a smartphone, computer or tablet.
- Point-to-Point Protocol over Ethernet (PPPoE)
- Built-in PBX and SIP server managing voice communication
- Multilingual user interface (English, French, German, Russian, Spanish, Chinese, Japanese)
- CE, FCC, GMPCS and IC certified

1.3 Your EXPLORER 510 terminal

1.3.1 EXPLORER 510 overview

The EXPLORER 510 is a compact unit comprising transceiver and antenna in one unit.



1.3.2 User interfaces

The **web interface** is a built-in web interface for easy configuration and daily use. The web interface is accessed from a computer, smartphone or tablet connected to the EXPLORER 510, using an Internet browser. No installation of software is needed. For further information on the web interface, see *The web interface* on page 4-3.

A **smartphone app, EXPLORER Connect**, is also available for iPhone and for Android phones. The app includes a **Satellite phone** function that enables you to make calls to and from your smartphone over the satellite network using the EXPLORER 510 terminal. It also includes the complete feature set from the built-in web interface of the terminal, allowing you to set up and use the terminal with your smartphone.

With **AT commands** you can configure and control the EXPLORER 510 from a computer using a Telnet session. For further details see *To access the terminal using AT commands* on page 3-5.

With **SMS commands** you can configure and control the EXPLORER 510 remotely. For details, see *Remote access with SMS* on page 3-5.

1.3.3 Antenna

The light-colored part of the EXPLORER 510 is the antenna part comprising:

- GNSS (Global Navigation Satellite System) antenna supporting GPS, GLONASS and BeiDou.
- BGAN antenna.
- Wireless LAN antenna.

1.3.4 Battery

The EXPLORER 510 comes with a built-in rechargeable battery. The battery is automatically recharged when power is applied to the EXPLORER 510. The Status indicator shows that the battery is charging. See *Light indicators* on page 5-11.

Time between recharging depends on the use. The web interface shows estimated time left for the battery. Recharge the battery regularly.

For battery specifications, see *Battery specifications (internal battery)* on page A-2.

1.3.5 SIM card

The EXPLORER 510 requires a SIM card to go online. Without a SIM card you can still configure the terminal and you may be able to make emergency calls if the network allows it, but you cannot make normal calls nor access the Internet.

SIM lock: The supplier may have locked the SIM card to a specific provider. For further information, contact your supplier.

To get started

This chapter describes:

- *To unpack and assemble the EXPLORER 510*
- *To switch the EXPLORER 510 on or off*
- *To connect your WLAN-enabled device*
- *To connect to LAN*
- *To access the web interface*
- *To access the external network*
- *To start and stop data connections*
- *To make phone calls over BGAN*
- *External power*

2.1 To unpack and assemble the EXPLORER 510

2.1.1 Initial inspection

Inspect the shipping carton immediately upon receipt for evidence of damage during transport. If the shipping carton is severely damaged or water stained, request that the carrier's agent be present when opening the carton. Save the carton packing material for future use.



WARNING!

To avoid electric shock, do not apply power to the system if there is any sign of shipping damage to any part of the front or rear panel or the outer cover. Read the safety summary at the front of this manual before installing or operating the system.

After unpacking the system, inspect it thoroughly for hidden damage and loose components or fittings. If the contents are incomplete, if there is mechanical damage or defect, or if the system does not work properly, notify your dealer.

2.1.2 What's in the delivery

The following items are included in the delivery:

- EXPLORER 510 terminal
- AC/DC adapter and power cable
- USB to LAN Converter Cable
- EXPLORER softbag
- Getting started booklet

2.1.3 The EXPLORER Connect app

If you want to use your smartphone with the EXPLORER 510, install the **EXPLORER Connect** app, which is available for iPhone at the App Store and for Android phones at Google Play. The EXPLORER Connect app provides the following options:

Tile	Function
Satellite Phone	Use your phone as a satellite phone when connected to the EXPLORER 510. For details, see <i>To connect your smartphone for making calls</i> on page 2-11.
Terminal Access	Start and stop data connections and access all settings of the EXPLORER 510. See <i>Configuration</i> on page 4-1.
Pointing	Activate the pointing process for the EXPLORER 510 towards the BGAN satellite. For details, see <i>To point the antenna</i> on page 2-7.
Dashboard	See terminal and connection status. For details, see <i>Status of the EXPLORER 510</i> on page 3-11.

To check the version of the EXPLORER Connect app

Check the version of your EXPLORER Connect app as follows (minimum IOS app ver 1.1/ Android app ver 1.9):

IOS:

1. On your iPhone or iPad select **Settings** (iPhone settings, **not** settings in EXPLORER Connect app).
2. Scroll down to **EXPL connect**.
3. Select **EXPL connect**. The version is shown.

Android:

1. In the **EXPLORER Connect** app, from the main menu, select  (Settings) in the bottom right corner.
2. Scroll down to **Version**.

2.1.4 To insert the SIM card

The SIM card is provided by your Airtime Provider. Insert the SIM card as follows:

1. Loosen the two screws holding the SIM cover.
2. Lift the cover.
3. Insert the SIM card in the SIM slot with the chip side facing down.
4. Press gently until it clicks.
5. Close the cover and tighten the two screws gently.



2.1.5 To remove the SIM card

Note

When the SIM card is removed you cannot make calls or data sessions, but you can still use the built-in web interface to set up the terminal.

To remove the SIM card, do as follows:

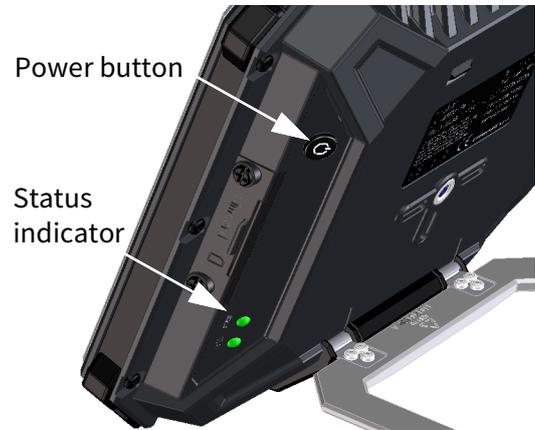
1. Loosen the two screws holding the SIM cover.
2. Lift the cover.
3. Push the SIM card gently and let it pop out.
4. Remove the SIM card.
5. Close the cover and tighten the two screws gently.



2.2 To switch the EXPLORER 510 on or off

Do as follows:

1. Push and hold the power button until the **Status** indicator lights up. This may take some seconds.
2. When the **Status** indicator flashes slowly or is constant green, the terminal is ready for use.



Note

At this point you may hear a sound from the EXPLORER 510, indicating that it is ready to be pointed towards the satellite (see *To access the external network* on page 2-6). If you do not want to point the antenna now, just push the power button briefly to accept the current signal strength.

3. To switch off, hold the power button until the **Status** indicator flashes yellow. This may take some seconds.

To recharge the battery of the EXPLORER 510, connect external power to the DC input, see *External power* on page 2-14.

2.3 To connect your WLAN-enabled device

Do as follows:

1. Check that the WLAN LED is on (green or yellow), meaning that WLAN is ready in your EXPLORER 510.
2. Place your WLAN-enabled device (computer, tablet or smartphone) close to the EXPLORER 510, but **not** in front of the BGAN antenna.
3. On your device, search for available WLAN networks.
4. Select the EXPLORER 510 WLAN access point when it appears in your list of available wireless networks.



The default name is **EXPLORER510**.

Note

You may have to enter a password. By default the password is the **serial number**¹ of your EXPLORER 510 and the encoding type is **WPA2**.

1. You find the serial number on the label on the EXPLORER 510

Your device is now connected to the EXPLORER 510. In the web interface, the WLAN icon shows the number of devices connected to the EXPLORER 510 via WLAN. Example:



Note | You can have maximum 10 clients connected to the WLAN.

For information on how to configure the WLAN interface in the EXPLORER 510, see *WLAN interface setup* on page 4-15.

For information on how to set up the LAN network, see *Terminal settings* on page 4-24.

2.4 To connect to LAN

The EXPLORER 510 does not have a LAN connector, but you can use the USB to LAN Converter Cable supplied with your EXPLORER 510 to connect your computer.

Note | The USB charge current must be set to 1.0 A. This is the default setting. See *USB interface setup* on page 4-16.

Do as follows:

1. Connect the USB to LAN Converter Cable to the USB interface.
2. Connect your LAN cable between the USB to LAN Converter Cable and your computer.

Your computer should now be connected to the EXPLORER 510 and you should be able to access the web interface as described in the next section.

2.5 To access the web interface

If you are not using the EXPLORER Connect app, you can use the built-in web interface for configuration and operation of the EXPLORER 510. To access the web interface, do as follows:

1. Start up the terminal.
For details, see *To switch the EXPLORER 510 on or off* on page 2-4.
2. Connect your computer or smartphone to the terminal, e.g. using WLAN as described in the previous section.
3. Open your browser and enter the IP address of the terminal in the address bar. The default IP address of the terminal is **192.168.0.1**

If the terminal is in pointing mode or waiting for a PIN, the web interface will start up on the relevant page. Otherwise it will start up on the dashboard. For more information on the web interface, see *The web interface* on page 4-3.

2.6 To access the external network

2.6.1 BGAN or cellular network

The EXPLORER 510 is a BGAN terminal. However, you have the option of connecting an EXPLORER Cellular Modem to the USB interface of the EXPLORER 510, making it possible to use the cellular network when it is available. See *Optional: To set up cellular network for data* on page 4-50.

If you are going to use the BGAN network, you must first point the antenna in the direction of the satellite and find the best possible signal strength. See the next sections for details.

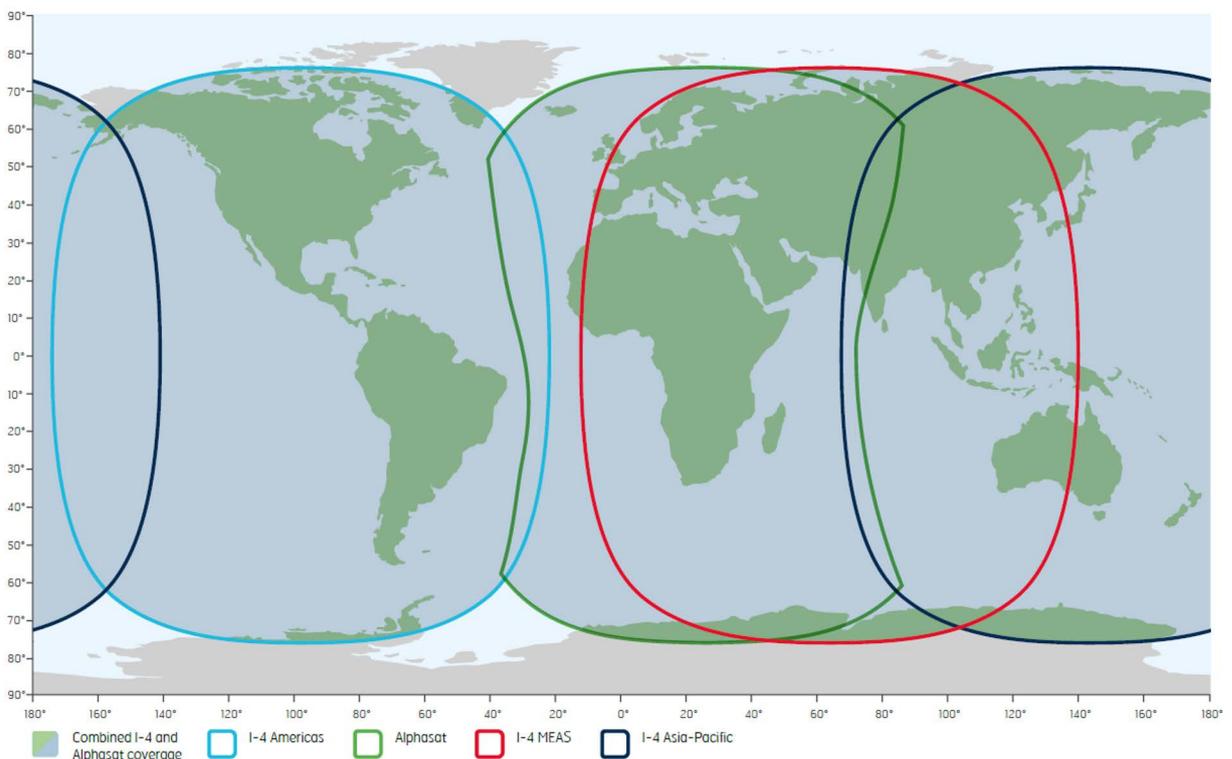
2.6.2 To point the antenna (BGAN)

Note You can choose to cancel pointing from the pointing page in the EXPLORER Connect app or the web interface. In this case you cannot communicate on the BGAN network, but you can access all terminal settings.

Before pointing

Before pointing the antenna you can use the coverage map below to find your approximate location in relation to the satellites.

The Inmarsat BGAN services are based on the BGAN I4 geostationary satellites and the Alphasat satellite, all positioned above the equator, at the center of each “footprint”.



To point the antenna

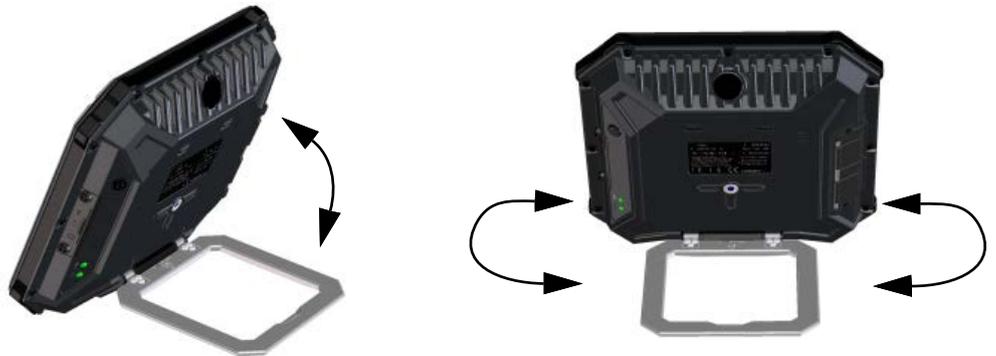
To obtain optimum bandwidth and operating time on the BGAN network, adjust the position of the EXPLORER 510 with great precision.

Do as follows:

1. Find the approximate direction of the satellite. See *Before pointing* on page 2-6 for a map with the location of the satellites.
2. If the EXPLORER 510 is not already in pointing mode, start the EXPLORER Connect app and select **Pointing**, or access the web interface as described in *To access the web interface* on page 2-5 and select  (Control panel) > **Point now**.

Alternatively you can switch the EXPLORER 510 off and on again.

3. Use the pointing sound and/or the **Pointing** page to find the highest possible signal strength, while slowly rotating and tilting the EXPLORER 510 in the direction of the satellite.



4. Push the power button briefly to accept when you have obtained the highest possible signal strength (or, if you are using the web interface, click **Accept**).

The EXPLORER 510 now starts to establish a connection to the BGAN network.



CAUTION!

After accepting the signal strength, keep the minimum safety distance of **1 m from the antenna front face**. The antenna may radiate microwave power as soon as the signal strength is accepted.

Audio assisted pointing

You can set up whether or not you want a sound to indicate the signal level during pointing (Audio assisted pointing). The sound pattern is as follows:

- Poor signal strength:
- Good signal strength:
- Optimum signal strength:  (continuous sound instead of single “beeps”)

For details on how to enable or disable the pointing sound, see *To enable or disable the pointing sound* on page 4-28.

To repoint the antenna

You may need to point the antenna again later, e.g. if the terminal has been moved or the signal is blocked.

To start the pointing process again, do as follows:

1. From the EXPLORER Connect app, select **Pointing**.
2. Go through the pointing process as described in the previous section *To point the antenna (BGAN)* on page 2-6.

2.6.3 The registration procedure (BGAN)

If you have connected a computer and accessed the web interface, you can see the progress in the status field as follows:

- **Searching:**
The EXPLORER 510 searches for the network operator. Note that the search procedure can be very short, so you may not see this text.
- **Registering:**
The EXPLORER 510 is registering itself on the network.
If the position has not yet been acquired at this point, the status field may show **No position**.
- **Ready** (or other status information):
Ready means the EXPLORER 510 is registered on the network and is ready to go online. If there is any other status information to show, e.g. if a call or data session is active or there is a warning, the status field will show that instead.

Note

To be able to make a data connection you must first activate the connection. See *To start and stop data connections* on page 2-9.

2.6.4 Do you need a PIN?

Note

You may need a SIM PIN for your terminal to access the network. If you are asked for a PIN and you select **Cancel**, you cannot communicate on the network, but you can access all settings.

To be able to enter a SIM PIN you must enter the **Terminal Access** page in the **EXPLORER Connect** app or access the built-in web interface. For details, see *To enter the SIM PIN in the web interface* on page 4-7.

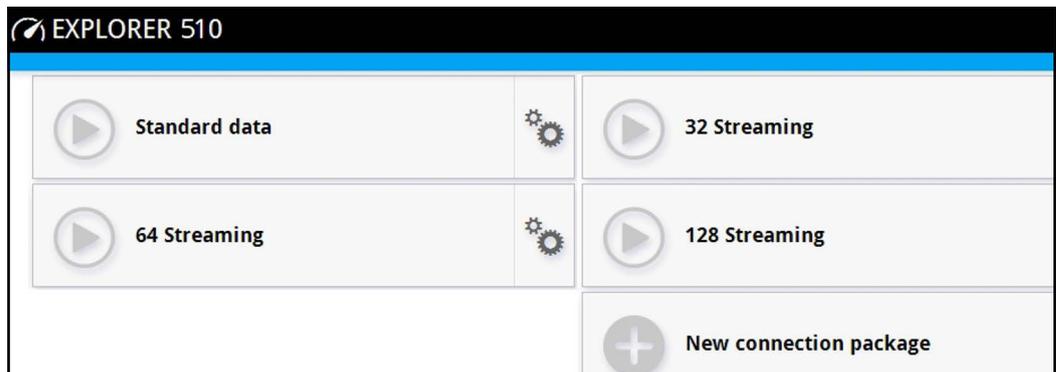
2.7 To start and stop data connections

By default, you must activate your data connection from the EXPLORER Connect app or from the web interface before you can access the Internet. However, you can enable automatic activation of a data connection. See *Internet and LAN connection modes* on page 4-26.

To start and stop data connections on your EXPLORER 510, do as follows:

1. On your smartphone, start the **EXPLORER Connect** app and select **Terminal access**, or on the connected device, open your browser and type the IP address of the terminal (default IP address: **192.168.0.1**) in the address bar to access the web interface.
2. Locate the connection package you want to start.

Note The icons for starting  and stopping  connections are only active if the terminal is ready and registered on the network. Otherwise you cannot start data connections.



3. Click  to start the connection.

Note Once a Streaming connection is started, the connection will run until you stop it. You will be charged for the time you are connected.

4. Click  to stop the connection.

If there is an error with the connection, the connection tile shows an exclamation mark  and an error message. You can see details in the data log, see *Data log* on page 4-13.

When a connection is active, the icon changes to  and the tile for the active connection shows:

- IP address: The IP address that has been assigned by the service provider to this session.
- Transferred data: For Standard data, the tile shows the total amount of transmitted and received data since the connection was established.
- Connection duration: For Streaming data, the tile shows the total time the connection has been active.
- Bit rate: For Streaming connections, the tile shows the fixed bit rate for the connection.

2.7.1 Default data connection types

By default, the following connections are available:

Name	Type of connection
<p>Standard data</p>	<p>Several users can share the data connection. This type of connection is ideal for TCP/IP traffic such as e-mail, file transfer, and Internet/intranet access.</p> <p>The user pays for the amount of data sent and received.</p>
<p>Streaming data</p> <p>The following Streaming classes are available:</p> <p>32, 64 or 128 kbps Streaming</p>	<p>An exclusive, high-priority connection, ensuring seamless transfer of data. This type of connection is ideal for time critical applications like live video over IP.</p> <p>The user pays for the duration of the connection.</p>

You can use these connections as they are or build your own connection packages. For set up of the connection packages, see the section *To set up your data connection packages* on page 4-29.

2.8 To make phone calls over BGAN

2.8.1 To connect a phone

Your smartphone or IP handset can be set up to make and receive calls over the BGAN network, using the terminal's phone number.

Note

Make sure your phone has an integrated SIP client. Cobham Satcom offers the **EXPLORER Connect** app with a built-in SIP client that is ready to use with the EXPLORER 510. You can also find other SIP applications on the Internet.

To connect your smartphone for making calls

To use your phone to make calls through the EXPLORER 510 using WLAN, do as follows:

1. Start up the EXPLORER 510 terminal.
2. Connect your smartphone to the wireless access point of the EXPLORER 510.
See *To connect your WLAN-enabled device* on page 2-4.
3. Start the EXPLORER Connect app and select **Satellite Phone** (or start another SIP application).
If it is the first time you use the EXPLORER Connect app, you must select **Register** when prompted.

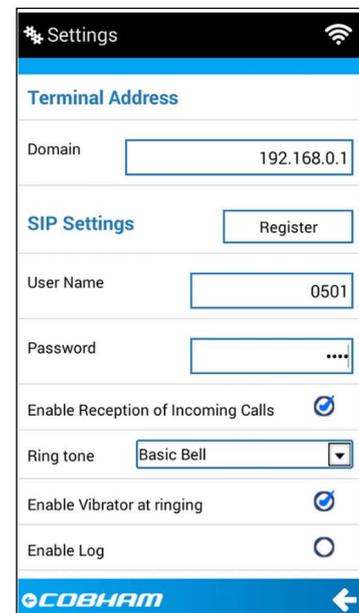


Note

If you are using the EXPLORER Connect app for the first time, make sure that **Enable Reception of Incoming Calls** is selected in the settings page of the EXPLORER Connect app. This is to prevent your smartphone from closing the WLAN connection when not in use. This is necessary in order to be able to receive calls on your smartphone.

You should now be ready to make and receive calls over BGAN. For details on **initial setup** of your smartphone and the EXPLORER 510, see:

- The documentation for your handset
- *First time SIP setup* on page 2-12
- *To manage smartphones (IP handsets)* on page 4-20



To connect a wired IP handset for making calls

The EXPLORER 510 does not have a physical LAN interface, so if you want to connect a wired IP handset, e.g. the Thrane IP Handset, you must use the included USB to LAN converter and connect to the USB interface. Also, if you are using the Thrane IP Handset, you must add a PoE injector to supply power to the handset.

Note | If you are using a Thrane IP Handset and have enabled support for it, no initial configuration is necessary.

For details on **initial setup** of your IP handset and the EXPLORER 510, see

- The documentation for your handset
- *First time SIP setup* below
- *To manage smartphones (IP handsets)* on page 4-20

To connect a wired IP handset, do as follows:

1. Start up the EXPLORER 510 terminal.
2. Connect the USB to LAN converter to the USB interface on the EXPLORER 510.
3. If PoE is required (e.g. on the Thrane IP Handset) connect a PoE injector or other equipment that can supply Power over Ethernet to the IP handset.
4. Connect the LAN cable between the IP handset and the PoE equipment connected to the EXPLORER 510.

When the IP handset is powered and ready, you should now be able to make and receive calls over BGAN.

First time SIP setup

If you do not have the EXPLORER Connect app and it is the first time you connect your phone to the EXPLORER 510 for making calls, you must first set up the SIP server details in your phone. For information how, see the user documentation for your phone and for the SIP application. You may be asked to enter some of the following details:

- SIP server address and port: Default address: 192.168.0.1, Port: 5060
- User name: Local number in EXPLORER 510 (0501 to 0516)
- Password: Default same as user name
- Codec priority: Highest priority codec type: G.711

Note | The user name and password must match the IP handset settings in the EXPLORER 510. See *To manage smartphones (IP handsets)* on page 4-20.

2.8.2 To make a call

If you are using the EXPLORER Connect app, first start the app from your smartphone and select **Satellite phone**.

To make a call, dial

00 <country code> <phone number> followed by off-hook key.

Example: To call Cobham Satcom in Denmark (+45 39558800), dial **00 45 39558800**

Contacts: With the EXPLORER Connect app you can also make calls from the Contacts list. Tap the contacts icon in the bottom right corner on the Satellite Phone page and select the contact you want to call. Note that these are the contacts you have on your phone, not in the EXPLORER 510.

If there was an error establishing the connection, the web interface of the EXPLORER 510 shows an error message.

For details about phone calls with the EXPLORER 510, see *Phone calls* on page 3-9.

2.9 External power

When you connect external power to the DC input, the battery is charged while maintaining normal operation.

Refer to *Power input* on page A-2 for specifications and pin-out for the DC Power input.

To power the terminal or to charge the battery, connect one of the following external power sources to the DC input:

- 10.5-32 VDC
- The supplied AC/DC adapter connected to 100-240 V Mains
- A solar panel (min. 65 W, 10.5-32 VDC)



DC input

Automatic power up

The default behavior of the EXPLORER 510 is to power up automatically when you connect external power. If you wish, you can change this power up mode, so that the EXPLORER 510 is only powered if the Power button is pressed.

For further information on power up mode, see *Power-up mode with external power* on page 4-25.

2.10 Semi-fixed installation

You can mount the EXPLORER 510 on a standard camera tripod. For this purpose, the EXPLORER 510 has a 1/4 - 20 UNC thread that should fit most standard camera tripods.



Do as follows:

1. Mount the EXPLORER 510 on a tripod using a 1/4 - 20 UNC bolt or thumb screw.

Note

The bolt or thumb screw must penetrate **maximum 7 mm** into the thread in the EXPLORER 510.

2. Start up the EXPLORER 510 and point the antenna as described in *To point the antenna (BGAN)* on page 2-6.
3. When you have accepted the signal strength, fasten the EXPLORER 510 in the pointed position.

Note

Once the EXPLORER 510 is pointed, you can set it up to automatically register on the BGAN network at power-up. This way you can avoid going through the pointing procedure every time you start up. See *Pointing at start-up* on page 4-25.

Operation

This chapter describes daily use and basic setup. For information on configuration, see *Configuration* on page 4-1.

This chapter describes:

- *BGAN or cellular network*
- *Connection to the EXPLORER 510*
- *Data connection*
- *To access the terminal from a remote location (BGAN only)*
- *Phone calls*
- *Alerts*
- *Status of the EXPLORER 510*
- *Tracking and location reporting*
- *To charge your smartphone*

3.1 BGAN or cellular network

The EXPLORER 510 is a BGAN terminal. However, you have the option of connecting an EXPLORER Cellular Modem to the USB interface of the EXPLORER 510, making it possible to use the cellular network when it is available. See *Optional: To set up cellular network for data* on page 4-50.

3.2 Connection to the EXPLORER 510

WLAN is the primary interface on the EXPLORER 510 for connecting computers, smartphones or tablets: For information on how to connect, see *To connect your WLAN-enabled device* on page 2-4.

If you need to connect your device with a LAN cable, you can use the USB to LAN Converter Cable delivered with the EXPLORER 510 and connect that to the USB interface of the EXPLORER 510.

3.3 Data connection

3.3.1 Router function

The terminal has a router function which routes traffic between the local network connected to the terminal and the BGAN network connection.

The router contains NAT (Network Address Translation) which allows sharing of a public IP address between a number of local network users.

3.3.2 Standard or Streaming data

The BGAN network supports different classes of data connection to the Internet. The main classes are **Standard data** and **Streaming data**.

- Using a **Standard data** connection, several users can share the data connection simultaneously. This type of connection is ideal for TCP/IP traffic such as e-mail, file transfer, and Internet and intranet access.
The user pays for the amount of data sent and received.
- Using a **Streaming data** connection, you get an exclusive, high-priority connection, ensuring seamless transfer of data. This type of connection is ideal for time critical applications like live video over IP.
The user pays for the duration of the connection (per minute charge).

3.3.3 To start and stop data connections (BGAN)

By default, you must activate your data connection from the EXPLORER Connect app or from the web interface before you can access the Internet. However, you can enable automatic activation of a data connection. See *To set up the connection mode* on page 4-25.

To start and stop data connections on your EXPLORER 510, do as follows:

1. On your smartphone, start the **EXPLORER Connect** app and select **Terminal access**, or on the connected device, open your browser and type the IP address of the terminal (default IP address: **192.168.0.1**) in the address bar to access the web interface.
2. Click  on the connection you want to start. For details, see *To control data connections from web interface (BGAN)* on page 4-8.

Cellular connection: If you are using the optional cellular connection with the EXPLORER Cellular Modem, the data connection is started automatically when the cellular connection is established. For details, see *Optional: To set up cellular network for data* on page 4-50.

3.3.4 PPPoE (Point-to-Point Protocol over Ethernet)

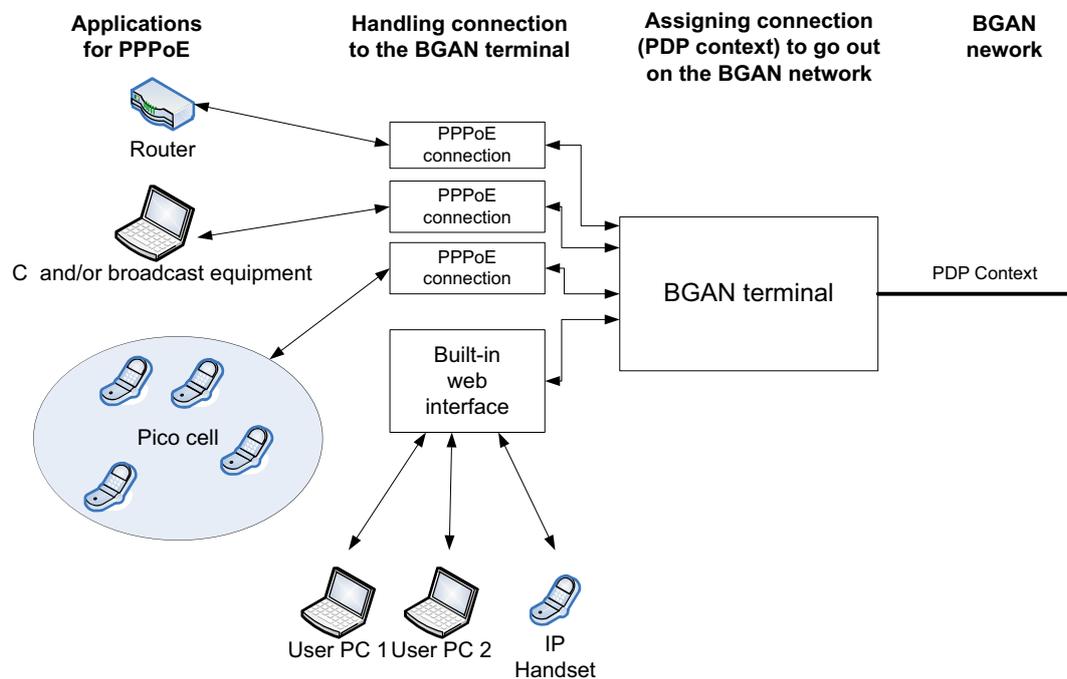
Overview

You can establish a PPPoE connection to the BGAN network using the EXPLORER 510 system. Use PPPoE if you want to control your connection independently of the web interface.

Possible applications are:

- Connecting a router
- Connecting broadcast equipment, optionally through a PC
- Establishing a Picocell for the use of cell phones

The following drawing shows connections managed through PPPoE and web interface respectively.



To configure the connected equipment for PPPoE

How to configure your equipment depends on the type of equipment. Refer to the user documentation of the equipment. As a minimum, you need to configure the following parameters in your equipment in order to make PPPoE work with the terminal:

- User name and password.

The user name and password can be left blank (or insert user name: void and password: void). Then the registration on the Access Point is most commonly done in such a way that the data connection is established with a dynamic IP address from the airtime provider.

To request a static IP (if subscribed to) from the Access Point you must type in the user name and password from your airtime subscription.

Note for MAC OS: User name and password are required. Use user name void and password void. This works for some ISPs. Contact your airtime provider for further information.

- For setups that have a check box for “Enable LCP extensions”, deselect this.

No further configuration is needed to make a Standard IP data connection to the Internet.

See the table below for information on how to configure specific services for your PPPoE connection.

If you need a certain service, for example a Streaming class, you must type in a specified text string when asked for a service name. The following table shows the service names supported by the terminal.

Text to type in the Service Name field	Function
(Blank)	Initiates a Primary Standard Data connection (default)
XBB:BACKGROUND	Initiates a Primary Standard Data connection (same as blank)
XBB:STREAM32K	Initiates a Primary Streaming 32 kbps connection
XBB:STREAM64K	Initiates a Primary Streaming 64 kbps connection
XBB:STREAM128K	Initiates a Primary Streaming 128 kbps connection

3.3.5 To access the terminal using AT commands

1. Connect your computer to the EXPLORER 510 terminal.
You may connect directly to the terminal or use a remote connection as described in the next sections.
2. On the connected computer, start a Telnet session.
3. Select TCP/IP and type in the IP address and port number.
 - For **local connection**, use the local IP address of the EXPLORER 510 (default 192.168.0.1) and port number 5454.
 - For **remote connection**, use the external IP address of the terminal (step 4 in the section *To get remote access from a trusted IP address (preconfigured)* on page 3-7). The port number for AT commands is normally 5454 but is defined in the Remote management page under AT commands (see *Prepare the terminal for remote management* on page 4-44).

Note

You can also use SMS to obtain a remote connection, see the next sections.

4. When the connection is established, type in your AT commands.

3.4 To access the terminal from a remote location (BGAN only)

3.4.1 Remote access with SMS

You can perform a number of actions and some configuration on the EXPLORER 510 using SMS commands.

Note

The SMS commands require a BGAN connection. They cannot use a cellular connection.

1. Prepare the terminal for SMS commands as described in *Prepare the terminal for remote access with SMS* on page 4-46.
2. **Send an SMS** from a trusted phone number to the mobile number of the terminal. The text in the SMS must start with the SMS command and follow the syntax for the SMS commands. Note that the remote SMS password (default: **remote**) must be included with every command.

The following SMS commands are supported.

For an explanation of syntax and parameters, see *SMS remote commands* on page B-3.

SMS command	Function
ACTIVATE	Activates BGAN data connections for the device(s) connected to the EXPLORER 510.
DEACTIVATE	Deactivates some or all the BGAN data connections for devices connected to the EXPLORER 510.
CLEAR	Deletes SMS messages in the EXPLORER 510.
GETINFO	Gets current information from the EXPLORER 510 such as call time, data usage, GPS position and global IP address.
RESTART	Restarts the EXPLORER 510.
WATCHDOG	Gets or allows you to set the current Connection watchdog parameters (Link monitoring).
ADWATCHDOG	Gets or allows you to set the current Terminal watchdog parameters.
ATCO	Allows you to send AT commands in an SMS to the EXPLORER 510 which returns the response in an SMS. Note: The ATCO command only supports a subset of the AT commands, see <i>ATCO commands</i> on page B-9.
ADPWRST	Resets the EXPLORER 510 administrator password to admin .
WANMODE	Gets or allows you to set the WAN connection mode (BGAN or Cellular)

3.4.2 Remote access with the web interface

Note When using remote access, the web interface may take a long time to load the pages, because the Internet connection may be slow.

There are two methods of getting remote access to the web interface:

- Using the AT command `_IREMWEB`, e.g. sent in an SMS (ATCO command).
- Accessing an EXPLORER 510 that is preconfigured with trusted IP addresses.

The following sections describe these two methods.

Note Only one PDP context at a time can be used for remote web interface access.

To use AT commands to get remote access to the web interface

You can send the AT commands encapsulated in an SMS (ATCO commands). For details, see *Prepare the terminal for remote access with SMS* on page 4-46.

Note

If remote SMS command access has been disabled, you can enable it either using the web interface (*Prepare the terminal for remote access with SMS* on page 4-46) or using the AT command `_ISMSRMT` (see *Other M2M related AT commands* on page B-13). Note that you must have configured **at least one trusted phone number** that can send and receive SMS to and from the terminal.

Relevant command:

`_IREMWEB`

See *ATCO commands* on page B-9 for syntax and parameters.

1. To use an SMS to allow access to the web interface for specific IP addresses, send the following command:

```
ATCO <resp_mode> <rsmc_pwd> _IREMWEB=1,<ip address>[,<ip address>]
```

Example: ATCO 2 remote _IREMWEB=1, 214.123.189.119

In this example the command specifies no immediate response, only when the global IP address is sent along (2). The remote SMS password is **remote** and the IP address 214.123.189.119 can get remote access to the web interface (if two IP addresses are listed, it is interpreted as a range of IP addresses).

2. The EXPLORER 510 should now return an SMS response with the external IP address of the terminal.

Example: _IREMWEB:81, GlobalIP:161.30.181.31

81 is the response code for a remote web connection that was set up successfully. It is followed by the global IP address, which is the IP address to enter in your browser to access the web interface from the remote device with the IP address you specified in the command.

3. On the remote computer, open your web browser.
4. In the address bar of your browser, enter the global IP address of the EXPLORER 510 (received in the response above).

You should now be connected to the built-in web interface of the terminal.

To get remote access from a trusted IP address (preconfigured)

Note

This method requires that you initially have local access to the EXPLORER 510. If not, use the `_IREMWEB` command described in the previous section.

Initial local configuration:

1. Connect a computer to the EXPLORER 510 and access the web interface locally.
2. Prepare the terminal as described in *Prepare the terminal for remote access with IP* on page 4-45.
3. Activate a data connection in one of the following ways:
 - Automatic activation of a Standard data connection, see *Automatic Context Activation (ACA)* on page 4-30.

- Manual activation of a data connection, see *To start and stop data connections (BGAN)* on page 3-2.
4. Note the terminal's external IP address as follows:
Connect a computer locally to the terminal and start the web interface. The external IP address of the terminal is shown in the startup page in the tile with the connection you started in the previous step.
This is the IP address you must use afterwards to access the terminal from your remote computer.

Note

If Static IP is included in your airtime subscription, we recommend using this static public IP address for the terminal in order to provide easy access to the terminal. To use the static IP address, you must set the APN source to SIM default. For details, see *To change the APN for a connection package* on page 4-29.

Remote access to web interface:

1. Make sure your remote computer has access to the Internet.
2. On the remote computer, open your web browser.
3. In the address bar of your browser, enter the IP address of the terminal followed by a colon and the port number
http://<ip address>:<incoming port>.
 - <ip address> is the external IP address of the EXPLORER 510. The external IP address can only be obtained when a data connection (PDP context) is established. If a data connection is started, you can get the external IP address with the GETINFO SMS command, see *Remote access with SMS* on page 3-5.
 - <incoming port> is the port you defined in *Prepare the terminal for remote management* on page 4-44 (Incoming port for web application, default port 80).

Example: If the IP address of the terminal is 161.30.180.12 and the incoming port number defined in the Remote management page in the web interface is 80, enter
http://161.30.180.12:80.

You should now be connected to the built-in web interface of the terminal.

Remote access with AT commands

1. Prepare the terminal for remote management as described in the previous section *Initial local configuration*.
2. Access the terminal as described in *To access the terminal using AT commands* on page 3-5.

3.5 Phone calls

3.5.1 Call types

Definition

The phone connection can be either a **Standard voice** connection or a **3.1 kHz audio** connection.

- For **outgoing calls**, the call type is **Standard voice** by default. You can change the call type for your call to 3.1 kHz audio by dialing **2*** before the number.

Example: 2*004539558800

- For incoming calls, you can set up in the web interface (IP handset page) which call types you want to receive on your smartphone or IP handset. Only the call types selected for a smartphone/IP handset are received. By default all, call types are accepted.

When receiving calls, the mobile number determines which call type is used. In your airtime subscription you have one number for 3.1 kHz audio and one number for Standard voice. Remember that the call is only received on your phone if the call type used is selected for that phone (called IP handset in the web interface).

For information on how to set up the call types in the web interface, see *To manage smartphones in your EXPLORER 510* on page 4-20.

3.5.2 To make or receive a phone call with EXPLORER 510

Connect your smartphone or IP handset as described in *To connect a phone* on page 2-11.

To make a call from the EXPLORER 510

- To make a call, dial **00 <country code> <phone number>** followed by off-hook key.

Example: To call Cobham Satcom in Denmark (+45 39558800), dial **00 45 39558800**

If there was an error establishing the connection, the web interface of the EXPLORER 510 shows an error message.

To receive a call

By default, all phones connected to the EXPLORER 510 will ring when one of the mobile numbers is called. Note however, that this depends on the call type settings. See *Call types* on page 3-9.

Information on missed calls is stored in the call log. You can see the call log in the **Terminal Access** part of the EXPLORER Connect app or in the web interface (**Control panel**  **> Logs > Call log**).

To make a call to the EXPLORER 510

To make a call to a phone connected to the EXPLORER 510, dial + <**Mobile number**>

- + is the prefix used in front of the country code for international calls. This is **00** when calling from countries in Europe and from many other countries.
- **Mobile number**. The first part of the mobile number is always 870, which is the “country code” for the BGAN system. For information on the mobile numbers, refer to your airtime subscription.



There are two mobile numbers, one for **3.1 kHz audio** and one for **Standard voice**.

3.5.3 Local numbers and special functions

Overview

There are a number of local numbers and dialing functions available in the EXPLORER 510.

The following list shows the allocated local numbers and special-purpose numbers for the EXPLORER 510.

Number	Function
0 followed by one of the numbers 501-516 and off-hook key	Local call to one smartphone or IP handset.
0900 followed by off-hook key	Local call broadcast to all connected phones.

Apart from the numbers above, the EXPLORER 510 uses the following dialing prefixes:

- **1*** before the phone number will force the connection to use **Standard voice**.
- **2*** before the phone number will force the connection to use **3.1 kHz audio**.
- **#31#** before the phone number will hide the callers phone number to the recipient.
- ***31#** before the phone number will show the callers phone number to the recipient where it would otherwise be hidden, e.g. because the number is an ex-directory number.

3.6 Alerts

When an alert is registered, the Terminal Access part of the EXPLORER Connect app and the web interface show a warning icon  in the icon bar as long as the alert is active. The **Alerts** list only shows alerts that are currently active.

To view the Alerts list, click  from the icon bar at the top of the page, or select **Alerts** from the **Support** page.

For more information on the event messages, refer to *List of messages* on page 5-12.

3.7 Status of the EXPLORER 510

- **EXPLORER Connect app:** Select **Dashboard** to see status information
- **Web interface:** If the screen for the web interface is large enough, it shows a status field at the bottom of the page or in the right side of the page. If not, click  to show the status page. Click  again to return to the previous page.

The Status page shows information such as terminal status, network status, position status and ongoing communication.

3.8 Tracking and location reporting

The EXPLORER 510 can be used for tracking purposes. You can set up the terminal to report its position to a server at certain time intervals.

To use the tracking feature you must either set up a tracking server or get a tracking solution from your service provider. The EXPLORER 510 must be set up to match this server. For information how to set up the EXPLORER 510, see *To set up tracking and location reporting* on page 4-33. Once set up on both sides, the EXPLORER 510 will send position reports to the server as specified.

3.9 To charge your smartphone

To charge your smartphone, connect it to the USB interface on the EXPLORER 510. The connector is a standard USB A connector.



Note

There are two levels of charge current, 0.5 A or 1.0 A. Use the EXPLORER Connect app or the web interface to select the charge current for your device. See *USB interface setup*. The default charge current is 1.0 A.

Configuration

This chapter describes how to use the **web interface** to operate, set up and configure your system. It has the following sections:

- *Configuration with EXPLORER Connect app*
- *The web interface*
- *To point the antenna (BGAN)*
- *To enter the SIM PIN in the web interface*
- *To control data connections from web interface (BGAN)*
- *Status information*
- *The Control panel*
- *To use the logs*
- *Battery status information*
- *To set up the interfaces*
- *To manage connected devices (Traffic control)*
- *To manage smartphones (IP handsets)*
- *Support features*
- *Terminal settings*
- *To set up your data connection packages*
- *To set up tracking and location reporting*
- *Advanced LAN*
- *Advanced settings*
- *Optional: To set up cellular network for data*

4.1 Configuration with EXPLORER Connect app

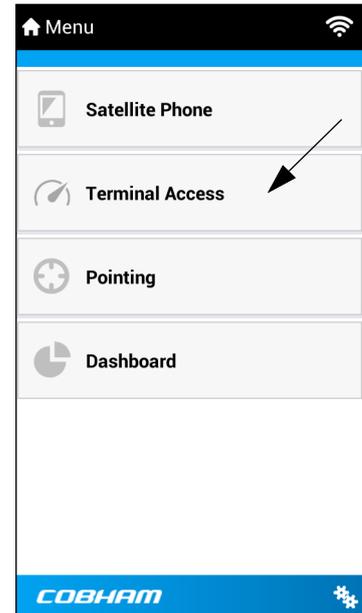
If you want to use your smartphone to configure your EXPLORER 510, get the EXPLORER Connect app, which is available for iPhone or iPad (from the Apple Store) and for Android phones (from Google Play).

For an overview of the functions of the EXPLORER Connect app, see *The EXPLORER Connect app* on page 2-2.

To access the configuration settings, connect to the WLAN of the EXPLORER 510, start the **EXPLORER Connect** app and select **Terminal Access**. From this point you have access to the same settings as from the web interface.

Note

If you get a message saying Network Unavailable or Connection error it means you are not connected to the WLAN of the EXPLORER 510. For how to connect, see *To connect your WLAN-enabled device* on page 2-4.



4.2 The web interface

4.2.1 What is the web interface?

The web interface is built into the terminal and is used for operating, setting up and configuring the system.

You can access the web interface from a computer with a standard Internet browser.

4.2.2 To access and navigate the web interface

To access the web interface

To access the web interface, do as follows:

1. Start up the terminal.
For details, see *To switch the EXPLORER 510 on or off* on page 2-4.
2. Connect your computer to the terminal.
3. Open your browser and enter the IP address of the terminal in the address bar.
The default IP address of the terminal is **192.168.0.1**.

Note

Some parts of the web interface may not be accessible if the user permissions are limited. For information on how to set up user permissions, see *To set up user permissions* on page 4-38.

To change the language

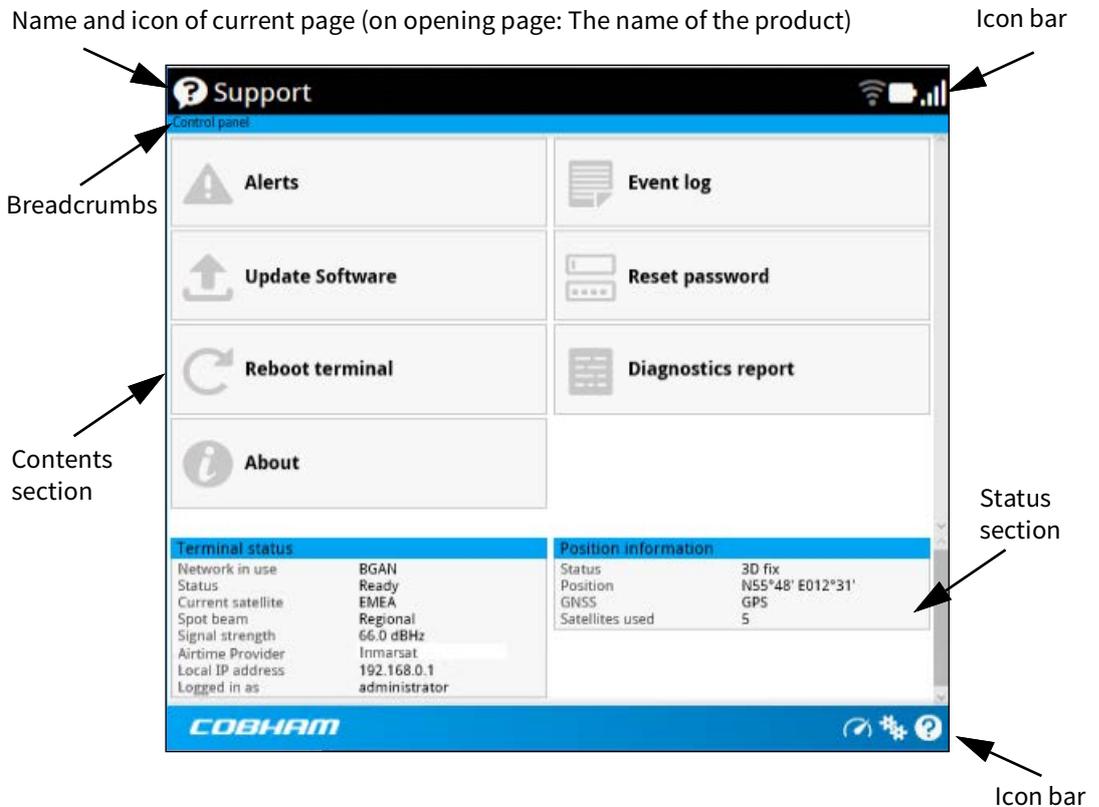
When you have access to the web interface, if you want to display a different language than English, do as follows:

1. Select the Control panel  in the bottom right corner.
2. Select **Terminal settings**.
3. At **Language**, select a language from the drop-down list and click **Save**.

You can change the language to **French, German, Russian, Spanish, Chinese, Japanese** or **Portuguese**.

Overview of the web interface

When the web interface opens, the title bar shows the name of the product. The example below shows the **Support** page.



The web interface consists of the following sections.

- **Name** of current page. Tap or click to refresh the page.
- **Icon bars** at the top and bottom are present on all pages and hold icons that give access to status such as battery level and signal level as well as active alerts when relevant. It also holds the icon for the Control panel. For explanations of the icons, see the next section, *Icons in the icon bars*.
- **Breadcrumbs** right below the icon bar show the current location in the menu system and gives access to the higher levels in the menu.
- **Contents section** shows the contents of the selected page. This section is used for viewing or changing settings, or for performing actions. On the opening page, this section is used to start and stop data connections.
- **Status section** shows the status of the terminal and the network connection, position information, ongoing calls and data sessions etc. The Status section is not shown on small screens. If the screen is small (e.g. on a smartphone), you can show/hide the status by clicking  at the bottom of the page.

Icons in the icon bars

The icon bars are always available at the top and bottom of the web interface. Some of the icons are permanent while others are temporary.

Icon	Explanation
	Power status. The icon changes according to status. Click to see detailed battery status.
	Battery level
	Battery charging
	Signal level of the external network (BGAN or cellular).
	If Connection Mode is set to User selection in the terminal settings, click to select the network to use (BGAN or EXPLORER Cellular Modem).
	M at the signal bars shows that cellular network is active with the shown signal level.
	WLAN interface. Bright when WLAN is enabled, grayed when it is disabled. Click to access WLAN settings.
	The WLAN icon shows the number of connected devices.
	Help. Click to get context-sensitive help for the current page.
	Control panel. Click to access the settings.
	Startup page where you can start and stop data connections. Click to go to the startup page.
	The “1” at the icon shows that a BGAN data connection package is running.
	Status. If the screen is not large enough to show the status field, this icon appears at the bottom of the page. Click the icon to see status of the terminal and satellite connection. Click again to exit the status page.
	An alert is active. Click the icon to see a list of active alerts. Note that this icon will remain in the icon bar as long as the alert is still active.

To navigate the web interface

- **To access status and settings**, tap or click the relevant icon in the icon bar or select  to access the **Control panel**. The status or settings are displayed in the contents section.
- **To see your current location and to move back through the Control Panel menu**, use the breadcrumbs just below the icon bar.
- **To scroll through longer pages**, use the scroll bar or swipe.
- **To refresh the current page**, press Ctrl+F5 (PC) or Apple+R (Apple) or Cmd+R (Apple).

4.3 To point the antenna (BGAN)

Before you can use the BGAN network, you must point the antenna in the direction of the satellite and find the best possible signal strength. For detailed information on the pointing procedure, see *To point the antenna (BGAN)* on page 2-6.

You can use the web interface to help you with the pointing process.

4.3.1 Pointing in web interface

To start the pointing process from the web interface, do as follows:

1. If the pointing process is not automatically started, select  (Control panel) and then **Point now**.
The signal strength is shown on the screen.
2. Turn and tilt the antenna slowly until you have obtained the highest possible signal strength.
3. Click **OK**.

The terminal will now try to register on the BGAN network.

4.3.2 Pointing in EXPLORER Connect app

To start the pointing procedure from the EXPLORER Connect app, do as follows:

1. Select **Pointing** from the EXPLORER Connect app.
2. If the pointing process is not already started, tap **Start**.
The signal strength is shown on the screen.
3. Turn and tilt the antenna slowly until you have obtained the highest possible signal strength.
4. Tap **Accept**.

The terminal will now try to register on the BGAN network.

If your SIM card uses a PIN you will now be prompted to enter the PIN. See the next section for details.

4.4 To enter the SIM PIN in the web interface

Note

Whether you are using the BGAN network or a cellular network, you need a SIM card to access the network. If you are using BGAN, the SIM is inserted in the terminal and if you are using the EXPLORER Cellular Modem the SIM card is inserted in the modem.

The method for entering the PIN is the same for both types of network.

4.4.1 Do you need a SIM PIN?

Note

You may not have to enter a SIM PIN to access the terminal. This depends on whether or not the use of a SIM PIN is enabled on your SIM card.

The administrator can enable and disable the use of a SIM PIN. For details, see *To enable or disable the use of a SIM PIN* on page 4-39.

If a smartphone or computer is connected when you start up the terminal, you can access the web interface and enter the SIM PIN here.

4.4.2 To enter the SIM PIN

If your SIM card requires a PIN and the PIN has not yet been entered, you must enter it before you can make calls or access the Internet. Until you have entered the PIN you cannot access the network, but you can still configure your terminal.

To enter the PIN, do as follows:

1. Access the web interface.
If the terminal needs a PIN, a popup window tells you to enter PIN.
2. Type in your PIN and click **OK**.

When pointing is completed and the correct PIN is entered, you are ready to make calls or access the Internet.

4.4.3 To cancel the SIM PIN

If you select **Cancel** when you are asked for a PIN, you can use the web interface as normal, but you will not be able to access the network to make calls or data sessions. Only emergency calls will be possible, and only if the network allows it.

To enter the PIN later, after canceling the first time, do as follows:

1. From the icon bar at the top, click .
The **Alerts** list opens.
2. Click **Resolve** next to **Enter PIN for BGAN** or **Enter PIN for cellular modem**.
3. Type in your PIN and click **OK**.

4.5 To control data connections from web interface (BGAN)

The startup page of the web interface is used to start and stop data connections and to set up the data connections.

Note If you are using the EXPLORER Cellular Modem instead of the BGAN network, see *Optional: To set up cellular network for data* on page 4-50.

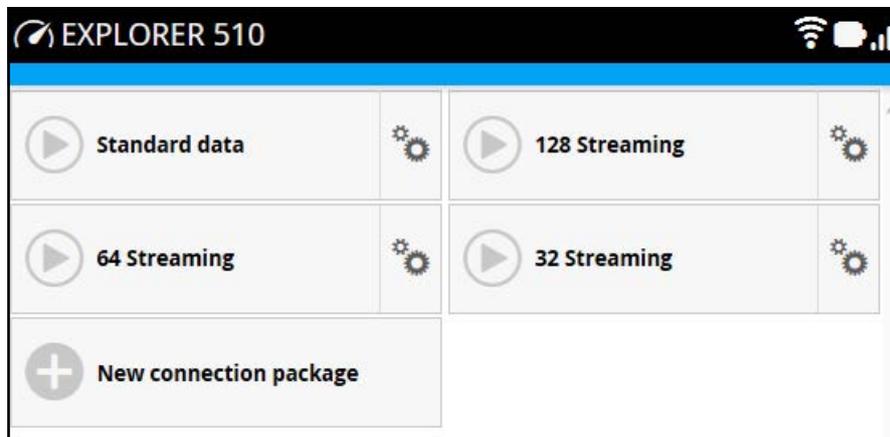
4.5.1 To start and stop data connections

Note By default, if you want to use a data connection, you must manually start it from the EXPLORER Connect app or from the web interface. However, you can set up the EXPLORER 510 to automatically connect to the Internet when you connect equipment to the WLAN interface. See *Automatic Context Activation (ACA)*.

To start and stop data connections on your EXPLORER 510, do as follows:

1. In the opening page, locate the connection package you want to start.

Note The icons for starting  and stopping  connections are only active if the terminal is ready and registered on the BGAN network. Otherwise you cannot start data connections.



2. Click  to start the connection. The connections icon at the bottom of the page shows  when a BGAN data connection package is running.

Note Once a Streaming connection is started, the connection will run until you stop it. You will be charged for the time you are connected.

3. Click  to stop the connection.

If data is temporarily suspended, e.g. due to a blockage, the icon on the active connection turns yellow instead of green, and the Status field shows Data suspended.

If the connection fails, the connection tile shows an exclamation mark  and an error message. The error message is also shown in the data log, see *Data log* on page 4-13.

When a connection is active, the icon changes to  and the tile for the active connection shows:

- IP address: The IP address that has been assigned by the service provider to this session.
- Transferred data: For Standard data, the tile shows the total amount of transmitted and received data since the connection was established.
- Connection duration: For Streaming data, the tile shows the total time the connection has been active.
- Bit rate: For Streaming connections, the tile shows the fixed bit rate.

4.5.2 Default data connection types

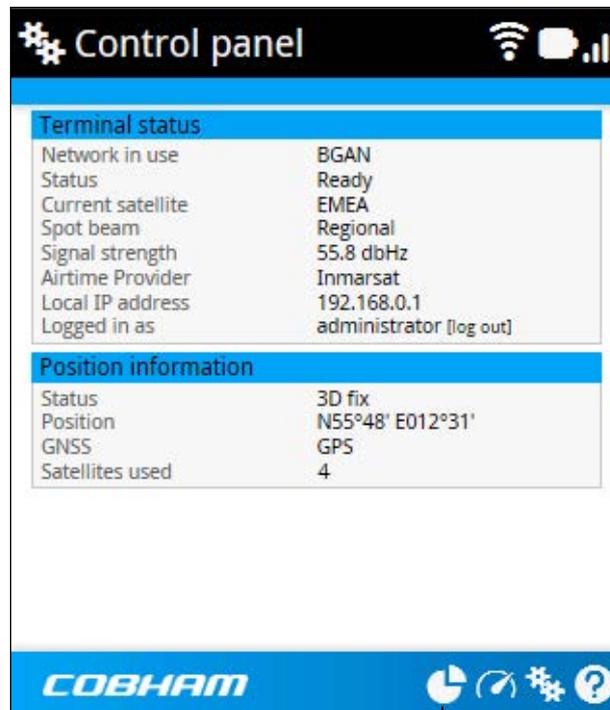
By default, the following connections are available:

Name	Type of connection
<p>Standard data</p>	<p>Several users can share the data connection. This type of connection is ideal for TCP/IP traffic such as e-mail, file transfer, and Internet/intranet access.</p> <p>The user pays for the amount of data sent and received.</p>
<p>Streaming data</p> <p>The following Streaming classes are available:</p> <p>32, 64 or 128 Streaming</p>	<p>An exclusive, high-priority connection, ensuring seamless transfer of data. This type of connection is ideal for time critical applications like live video over IP. The user pays for the duration of the connection.</p>

You can use these connections as they are or build your own connection packages. For set up of the connection packages, see the section *To set up your data connection packages* on page 4-29.

4.6 Status information

If the window is large enough, it shows a status field at the bottom of the page or in the right side of the page. If not, click  at the bottom of the page to show the status page. Click  again to return to the previous page.



Toggle between status and contents page

The following status is available:

Note | Shown fields depend on the mode of the terminal (BGAN or Cellular)

Terminal status:

- Network in use: The network currently used (BGAN or Cellular).
- Status: The status of the BGAN network (or cellular network, if used). “Data” means a data connection is running. The status could also be e.g. “Registering” or “Ready”.
- Current satellite: The BGAN satellite to which the EXPLORER 510 is currently registered.
- Spot beam: The type of BGAN spot beam currently used, e.g. “Regional” or “Narrow”.
- Signal strength: The signal strength of the BGAN connection.
- Airtime Provider: The provider of the BGAN services.
- Network operator: The operator (or provider) of the Cellular network, if used.
- Local IP address: The local IP address of the EXPLORER 510. E.g. used to connect to the web interface.

- Logged in as: You can log in as Administrator. This field shows if you have administrator rights.

Position information:

- Status: Shows the status of the GNSS connection, e.g. if there is 2D fix, 3D fix or no fix.
- Position: The geographic position of the EXPLORER 510.
- GNSS: Shows which GNSS system is currently used to obtain the position.
- Satellites used: Shows how many GNSS satellites are used to obtain the position.

Data information (only shown if a data connection is running)

- EXPLORER Cellular Modem: Shows which type of data is running on the cellular connection.
- Standard data (or other connection package name): Shows which type of data is running within the connection package. For details on connection packages, see *To set up your data connection packages* on page 4-29.

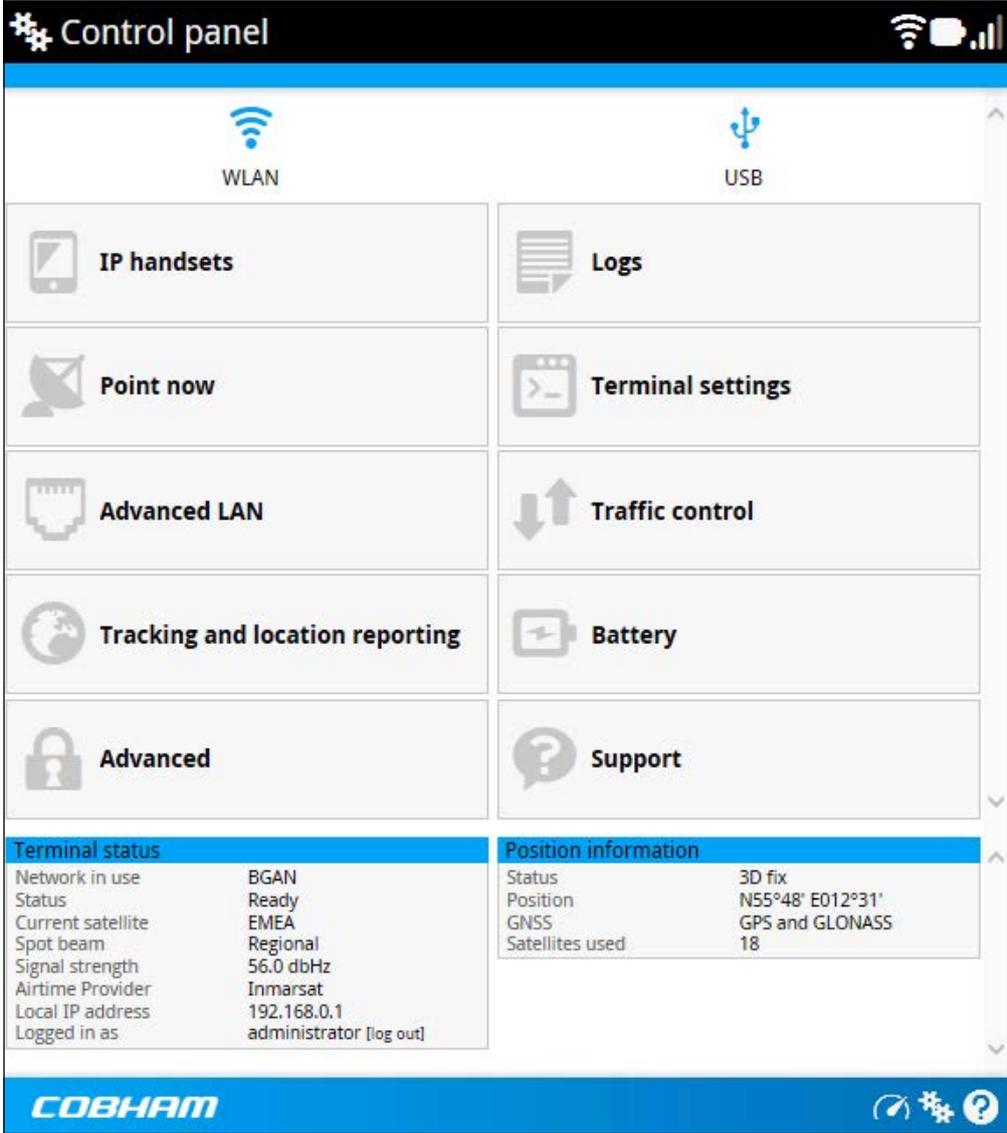
Call information (only shown if a voice call is ongoing)

- Status: The status of the call, e.g. “Connected” or “Ringing...”.
- Call type: Shows whether the call type is Standard voice or Premium voice (3.1 kHz Audio).
- Call duration: The duration of the call.
- Originator: The phone number from which the call was made.
- Receiver: The phone number that receives the call.

4.7 The Control panel

The **Control panel** is used for accessing the settings and functions of your EXPLORER 510.

To open the **Control panel**, click  from the bottom right corner of the web interface.



The screenshot shows the Control panel interface with a blue header and a grid of settings tiles. At the top, there are icons for WLAN and USB. The tiles include IP handsets, Logs, Point now, Terminal settings, Advanced LAN, Traffic control, Tracking and location reporting, Battery, and Advanced. At the bottom, there are two status sections: Terminal status and Position information.

Terminal status		Position information	
Network in use	BGAN	Status	3D fix
Status	Ready	Position	N55°48' E012°31'
Current satellite	EMEA	GNSS	GPS and GLONASS
Spot beam	Regional	Satellites used	18
Signal strength	56.0 dbHz		
Airtime Provider	Inmarsat		
Local IP address	192.168.0.1		
Logged in as	administrator [log out]		

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4.8 To use the logs

4.8.1 To access the logs

To access the Logs, select  and select **Logs** from the menu. The Logs page contains:

- **Call log:** A list of all incoming, outgoing and missed calls since the log was last cleared.
- **Data log:** A list of all data sessions since the log was last cleared.
- **Total counters:** Totals for each type of service since the log was last cleared.

Date and time is the international UTC time, received from the satellite.

4.8.2 Call log

The Call log shows:

- **Outgoing calls** shows the start time, receiving end phone number, duration, type (Standard voice or 3.1 kHz audio) and, if Call charges have been entered, estimated charge of each outgoing call.
- **Received calls** shows the start time, calling phone number, duration and type (Standard voice or 3.1 kHz audio) of each incoming call.
- **Missed calls** shows the start time, calling phone number and type (Standard voice or 3.1 kHz audio) of each incoming call that was not received.

The Call log also shows the termination cause of each call.

To clear the Call log, click the **Clear call log** button at the top.

4.8.3 Data log

The Data log shows:

- Data usage (bytes), date and time and estimated charge of each Standard data session (if Call charges have been entered).
- Duration and type (such as 64 kbps, 128 kbps), date and time and estimated charge of each Streaming data session (if Call charges have been entered).
- Data usage, date and time of each cellular data connection.

The Data log also shows the termination cause of each data session.

To clear the Data log, click the **Clear data log** button at the top.

4.8.4 Total counters

The total counters show:

- **Call session totals** shows the total duration (hh:mm:ss) for each call type since the log was last cleared. It also shows the estimated call charge for each call type (if Call charges have been entered).
- **Data session totals** shows totals for each data connection type since the log was last cleared. For Standard data the totals are shown as amount of data transferred (kB) and for Streaming connections the totals are shown in duration (hh:mm:ss). It also shows the estimated charge for each data type (if Call charges have been entered).
- **Cellular session totals** (only present if the optional cellular modem is used) shows totals for each cellular data connection since the log was last cleared.

To reset the Total counters, click the **Reset total counters** button at the top.

4.9 Battery status information

To view the status of the battery, do one of the following:

- Click the battery symbol from the icon bar at the top of the page, or
- from the **Control panel** , select **Battery**.

The Battery page shows the **Status** (E.g. Charging, Discharging, Fully charged or Idle¹), the **Charge level** in percent, the **Estimated remaining usage time** (not shown when external power is connected) and the **Temperature**.

Note

The estimated remaining usage time can vary significantly, depending on usage. The remaining time will be shorter if the terminal is used heavily (more interfaces in use and more calls and data sessions active).

The estimated remaining usage time stated while the battery is Idle is the time that the terminal will run when the battery is active (discharging).

For more information on the EXPLORER 510 batteries, see

- *Normal use of the battery* on page 5-6
- *To recharge the battery* on page 5-6
- *Accurate display of the battery capacity* on page 5-6
- *Battery specifications (internal battery)* on page A-2

1. “Idle” in this case means the battery is not in use, e.g. because external power is applied while the battery is full.

4.10 To set up the interfaces

4.10.1 WLAN interface setup

Note | The Internet settings entered in the Terminal settings page also apply for the WLAN interface. See *Internet and LAN connection modes* on page 4-26.

To configure the WLAN interface, do as follows:

1. In the **Control panel** , click the **WLAN** icon  at the top of the page.
2. To enable the WLAN interface, select **Enable**.

Important | If you disable WLAN you may not be able to access the EXPLORER 510. Before disabling the WLAN interface, make sure you have a working LAN connection with the USB to LAN Converter Cable.

You can restore the WLAN settings with the Reset button, see *Restore the settings of the EXPLORER 510* on page 5-5.

Note | It may take some seconds to enable the interface.

3. Next to **Region**, select the region you are located in.

Note | In some countries, the use of WLAN is not allowed. Before continuing, make sure WLAN is allowed and licensed in the country where you intend to use it.

4. Select the **Channel** number used for communication on the WLAN interface.
5. Select **Broadcast SSID** to show your WLAN access point to other users.
If you **clear** the box, your WLAN access point is hidden.
6. Type in the **SSID**.
The SSID is a max. 32 character text identifying the wireless local area network. All wireless devices on a WLAN must use the same SSID in order to communicate with each other. The default SSID is **EXPLORER510**.
7. Select the **Security** standard. You may select one of the following encryption standards:
 - None (no encryption is applied)
 - WEP-40/64
 - WEP-104/128
 - WPA-TKIP
 - WPA-2-AES (selected by default)
8. Next to **Key type**, select **Hexadecimal** or **Text**.
The encryption key must normally be a hexadecimal code. However, if you are using WPA-TKIP or WPA2-AES encryption (default) you can choose to use a text string, which may be easier to memorize.
9. Type in the **Encryption key** for the selected Security standard (not applicable if security mode = None). The default encryption key is the **serial number** of the

EXPLORER 510. You can find the serial number under **Control panel > Support > About** or on the label on the EXPLORER 510.

Important

Change the encryption key to a personal code in order to keep your WLAN connection secure and protected!

10. Click **Save**.

-  A line through a grayed-out **WLAN** icon means the interface is **disabled**.
-  A blue **WLAN** icon means the interface is **enabled**.

For a description of how to set up the **local network parameters**, see *Internet and LAN connection modes* on page 4-26 and *Advanced LAN* on page 4-35.

4.10.2 USB interface setup

Note that the USB interface is a Host interface, primarily used for charging smartphones, for recovery software upload or for connecting an EXPLORER cellular modem.

To configure the USB interface, do as follows:

1. In the **Control panel** , click the **USB** icon  at the top of the page.
2. To enable the USB interface, select **Enable** (USB is enabled by default from the factory).

Note

It may take some seconds to enable and disable the interface.

3. Select the **Charge current**.
Select **0.5 A** or **1.0 A**, depending on the specifications for the device you are going to connect.
4. Click **Save**.
 -  A line through a grayed-out **USB** icon means the interface is **disabled**.
 -  A blue **USB** icon means the interface is **enabled**.

4.11 To manage connected devices (Traffic control)

By default, traffic control is disabled, which means that all traffic is allowed.

With the Traffic control function you can get an overview of devices connected to your EXPLORER 510 and control which devices you want to connect. You can also select whether or not they should be allowed to use BGAN or cellular network. Note that the available settings depend on whether or not you are logged in as administrator.

Note | The cellular modem setting is only available if an EXPLORER Cellular Modem is inserted in the EXPLORER 510.

4.11.1 Traffic control (Non-administrator user)

To set up traffic control, do as follows:

1. In the **Control panel** , click **Traffic control**.
A list of connected and added devices appears.



2. Click your connected device to see MAC address and IP address and to change the name or block/allow the use of BGAN or Cellular network. See the next section.

To block BGAN or cellular traffic or edit the name for your device

Note | You can only change these settings if traffic control is enabled. If the administrator has disabled traffic control, all traffic is allowed.

1. In the **Traffic control** page, click your connected device.
The page shows the name, MAC address, IP address and traffic rule for the device.
2. Select **Block BGAN traffic** or **Block Cellular traffic** (if available), if you want to deny access to BGAN or cellular network for your device.

Note | If it is already blocked by the administrator, this setting is not editable.

3. At **Name**, type in the name you want for your device.
4. Click **Save**.

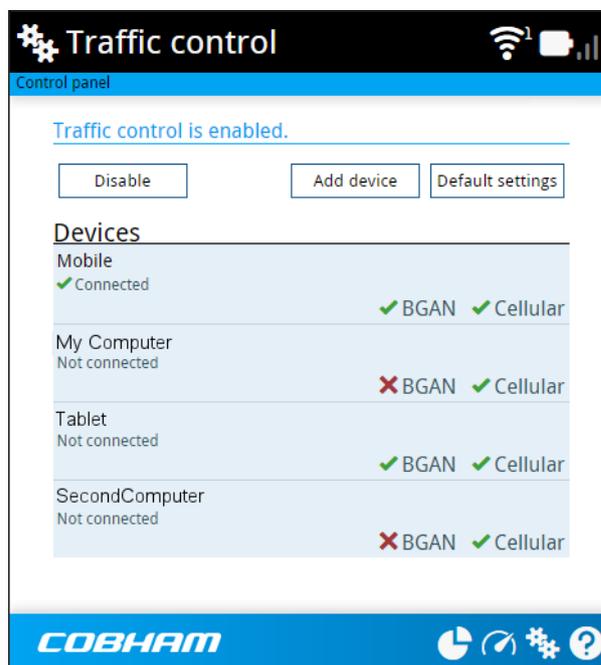
4.11.2 Traffic control (Administrator)

When you are logged in as administrator (or administrator password is disabled), the Traffic control setup offers more options. To set up traffic control as administrator, do as follows:

1. Log in as administrator (or make sure administrator password is disabled).
2. In the **Control panel** , click **Traffic control**.
A list of connected and added devices appears.
3. Click the **Enable** button to enable Traffic control.
By default Traffic control is disabled, which means all devices are allowed access.

Note

When you enable traffic control, BGAN is blocked by default for all new devices. To change the default settings, see the next section.



To change the default settings for all devices

Important

All devices in the list are updated with the default settings when you click Save.

1. Click the button **Default settings**.
2. Select **Block BGAN traffic** or **Block Cellular traffic** (if available) if you want to deny access to BGAN or cellular network for all devices. With this option selected, only the administrator will be able to allow access for selected or all devices.
3. Click **Save**.
All devices in the list will now have the new default settings.

To block or allow BGAN or cellular traffic or edit the name for a device

1. In the **Traffic control** page, click the device you want to set up.
The page shows the name, MAC address, IP address and traffic rule for the device.
2. Select **Block BGAN traffic** or **Block Cellular traffic**, if you want to deny access to BGAN or cellular network for the selected device.
If you want to **allow** access, clear the box. The selected device will then be able to access the network, even if it is blocked in the default settings (see previous section).
3. At **Name**, type in the name you want for your device.
4. Click **Save**.

Reset to default: You can reset the settings for the device to the default settings (see previous section).

- If the device is connected and you click the button **Reset to default**, the traffic rules will be reset to the default values set in *To change the default settings for all devices* on page 4-18, but the name remains the same.
- If the device is not connected and you click the button **Reset to default**, the device is removed from the list.

To Add a device

When you connect a device, it is automatically added to the list using the default settings. If you want to add a device for later use, do as follows:

1. In the **Devices** page, click the **Add device** button.
2. Type in the **Name** and the **MAC address** for the device.
3. Select **Block BGAN traffic** or **Block Cellular traffic**, if you want to deny access to BGAN or cellular network for the selected device.
If you want to allow access, clear the box. The selected device will then be able to access the network, even if it is blocked in the default settings (see previous section).
4. Click **Save**.

When the device with this MAC address is connected, it will appear with the entered name in the list, and access will be allowed or denied depending on the setting in this page.

4.12 To manage smartphones (IP handsets)

4.12.1 Overview

This section describes how to manage smartphones connected to the EXPLORER 510.

The WLAN interface supports connection of up to 10 units. Each phone must have a local number in the range 0501 to 0516 as well as a unique password. For details, see the next section.

For details on SIP settings and how to connect your phone to the WLAN interface, see *To connect a phone* on page 2-11.

4.12.2 To manage smartphones in your EXPLORER 510

Do as follows:

1. Connect your smartphone to the WLAN interface of the terminal. For details, see *To connect a phone* on page 2-11.
2. In the web interface, select  (Control panel) > **IP handsets**.
3. Click the tile for the handset number you want to manage.
4. Select **Enable** to enable the handset.

Note | It may take some seconds to enable the handset.

-  on the tile for your handset means the handset is **disabled**.
 -  on the tile for your handset means the handset is **enabled**.
5. To change the **Password**, simply type in the new number.
 6. Set the call type for incoming calls.
You can select **Standard voice** or **3.1 kHz audio** or both.
 - If you select both, the handset will react (ring) on incoming calls.
 - If you select e.g. Standard voice, the handset will only react on calls made to the Standard voice phone number of your EXPLORER 510.
 7. Select the **Preferred outgoing call type**.
The selected type will be used by default, if possible, for any outgoing call from this handset.
 8. Click **Save**.
 9. In the smartphone, enter the local number and the password you just entered in the EXPLORER 510. See the documentation for your handset for details.

Note | The user name is also the local number for the handset.

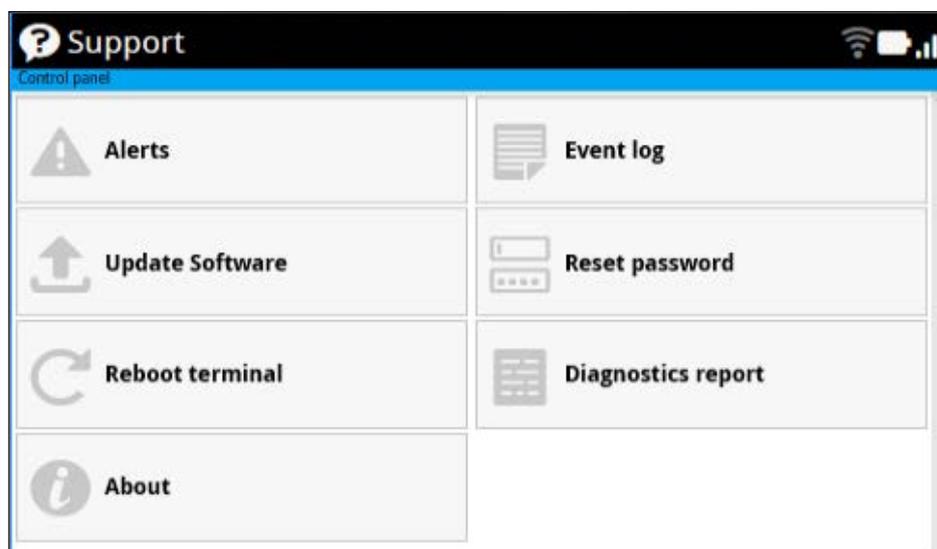
The handset remains in the list after disconnecting. When the handset is connected again, it is automatically recognized and ready for use, if enabled.

Thrane IP Handset and access to BGAN profile and menu

If you want the terminal to support BGAN profile and menu in Thrane IP handsets, you must set this in the **Advanced** > **Security** page. Refer to *Security* on page 4-48.

4.13 Support features

To open the Support page, select  (Control panel) > **Support**.



4.13.1 To view the Alerts

When an alert is registered, the web interface shows a warning icon  in the icon bar as long as the alert is active. The **Alerts** list only shows alerts that are currently active.

1. To view the alerts, click  from the icon bar at the top of the web interface, or select **Alerts** from the **Support** page.

The **Alerts** page shows a detailed list of active events including the time of the first occurrence, ID and severity of the event message, and a short text describing the error. For more information on the event messages, refer to *List of messages* on page 5-12.

4.13.2 To view the Event log

The Event log shows events that occurred in the past and are no longer active. It includes events of informational character describing normal phases of operation for the terminal, and also alerts that have appeared in the Alerts list.

To view the event log, select **Event log** from the **Support** page.

4.13.3 To create a diagnostics report

The diagnostic report contains relevant information for troubleshooting. When contacting your supplier for support, please enclose this file. To generate a diagnostic report, do as follows:

1. From the **Support** page, click **Diagnostics report**.
2. Click **Generate report**.

Note | It may take a few minutes to generate the report.

3. Select **Download report**.
4. Choose a location for the file and save it.

4.13.4 To update software

Important | If the battery power is 25% or less you must connect DC power to the terminal before starting the software update. Once connected, do not remove DC power until the software update is completed.

To update the software in the EXPLORER 510, do as follows:

1. Download the new software¹ or acquire the software from Cobham Satcom and save it on your computer.
2. Open the web interface and enter the Control panel .
3. Click **Support > Update software**.
4. Click **Update software...**
5. Browse to the new software version and click **Open**. The software file has the extension “.tiff”.
6. The terminal restarts and completes the software update.

Note | The update procedure takes some minutes to complete. During the software update, the Status LED is flashing blue.

You can check the software version under **Control panel > Support > About**.

If, for some reason, you cannot upload software using the web interface, you can also use the USB interface. For details, see *To update software with USB* on page 5-3.

1. You can download the software from the Cobham Satcom Partner Portal at partnerportal.cobhamsatcom.com. Search for EXPLORER 510, select **Downloads** and locate the EXPLORER 510 software.

4.13.5 To reset the administrator password

If you have forgotten the administrator password, do as follows:

1. Contact your supplier for a reset code.
Report the serial number and IMEI number of the terminal.
You can find the serial number and IMEI number under **Control panel > Support > About**.
2. After receiving the reset code from your supplier, select **Reset password** from the **Support** page.
3. Type in the reset code obtained from your supplier and click **Reset**.
4. The password is disabled.

You now have access to all settings. If you want to use a password, enable the password as described in *To disable the administrator password* on page 4-37.

4.13.6 To restart the terminal

If you want to restart the terminal, do as follows:

1. From the **Support** page, select **Reboot terminal**.
2. Click to confirm the reboot.

The terminal restarts. Note that this is the equivalent to switching the terminal off and on again.

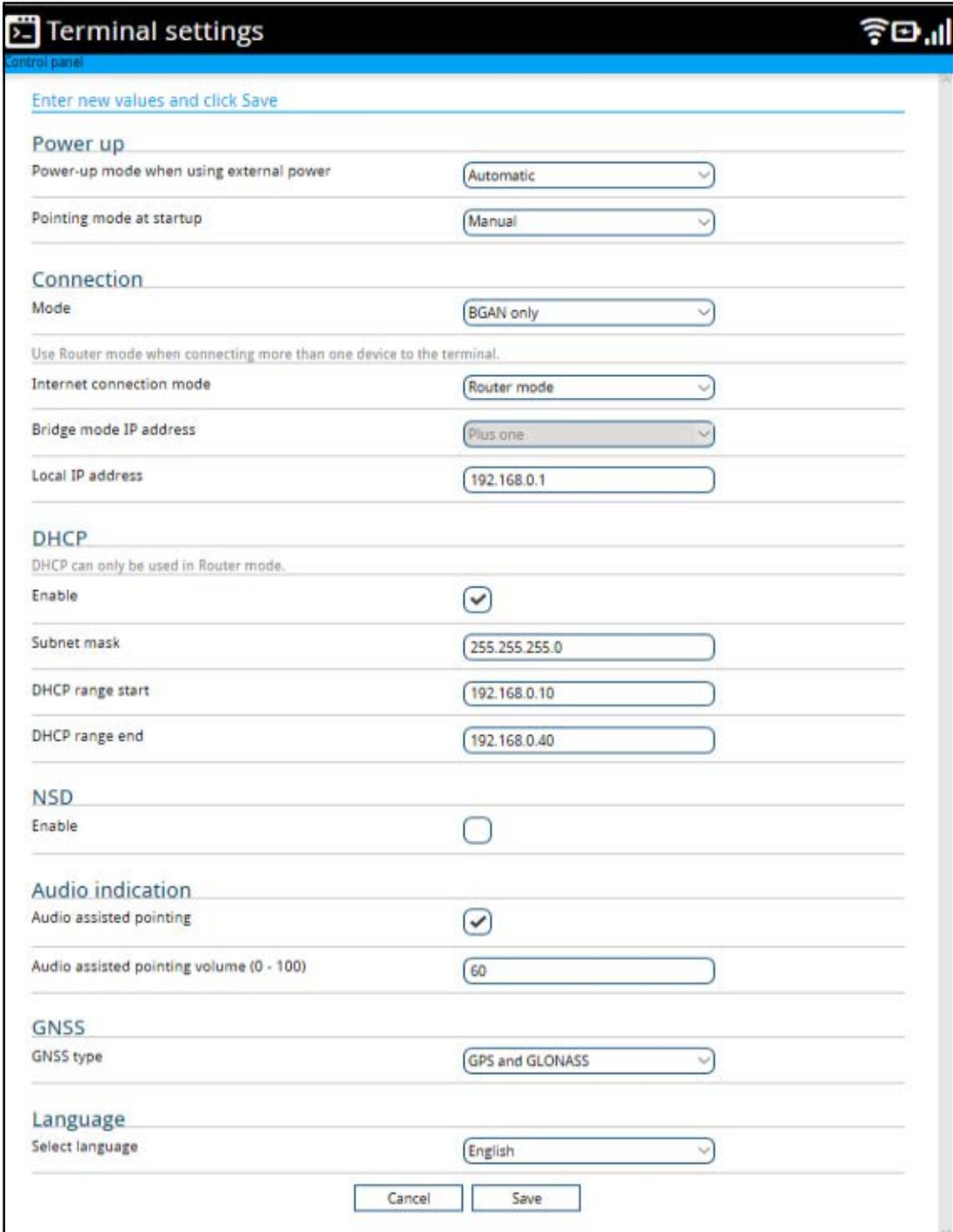
4.13.7 About

The **About** page shows the **Serial number**, **IMSI number**, **IMEI number** and **software version** of your EXPLORER 510. It also shows your **Help desk** information, if it has been entered under **Advanced > Help desk**.

To access the About page, select **Support > About**.

4.14 Terminal settings

To configure the terminal settings, select  (Control panel) > **Terminal settings**.



Terminal settings

Control panel

Enter new values and click Save

Power up

Power-up mode when using external power

Pointing mode at startup

Connection

Mode

Use Router mode when connecting more than one device to the terminal.

Internet connection mode

Bridge mode IP address

Local IP address

DHCP

DHCP can only be used in Router mode.

Enable

Subnet mask

DHCP range start

DHCP range end

NSD

Enable

Audio indication

Audio assisted pointing

Audio assisted pointing volume (0 - 100)

GNSS

GNSS type

Language

Select language

4.14.1 Power-up mode with external power

You can set the terminal to automatically power up when external power is applied.

1. In the **Terminal settings** page, locate **Power up**.
2. Under **Power-up mode when using external power**, select **Automatic** or **Manual**.
 - Automatic means the terminal powers up automatically when external power is applied.
 - Manual means you must use the power switch to power the terminal.
3. Click **Save**.

4.14.2 Pointing at start-up

You can set up the EXPLORER 510 to automatically register on the BGAN network at start-up. This is useful e.g. for semi-fixed or fixed installation, where the EXPLORER 510 is not moved around between start-ups. See *Semi-fixed installation* on page 2-15.

1. In the **Terminal settings** page, locate **Power up**.
2. Under **Pointing mode at start-up**, select **Automatic** or **Manual**.
 - If the EXPLORER 510 is moved around between each power up, select **Manual** from the drop-down list. With this setting, the terminal will go through the pointing procedure every time the terminal is powered.
 - If the EXPLORER 510 antenna is placed in a fixed position and the signal strength is sufficient, select **Automatic** to make the EXPLORER 510 automatically register on the satellite network when the terminal is powered.
3. Click **Save**.

4.14.3 To set up the connection mode

Mode (select network)

The EXPLORER 510 can use a cellular network as an alternative to the BGAN network. For details, see *Optional: To set up cellular network for data* on page 4-50.

To set up which network you want to use when starting up the EXPLORER 510, do as follows:

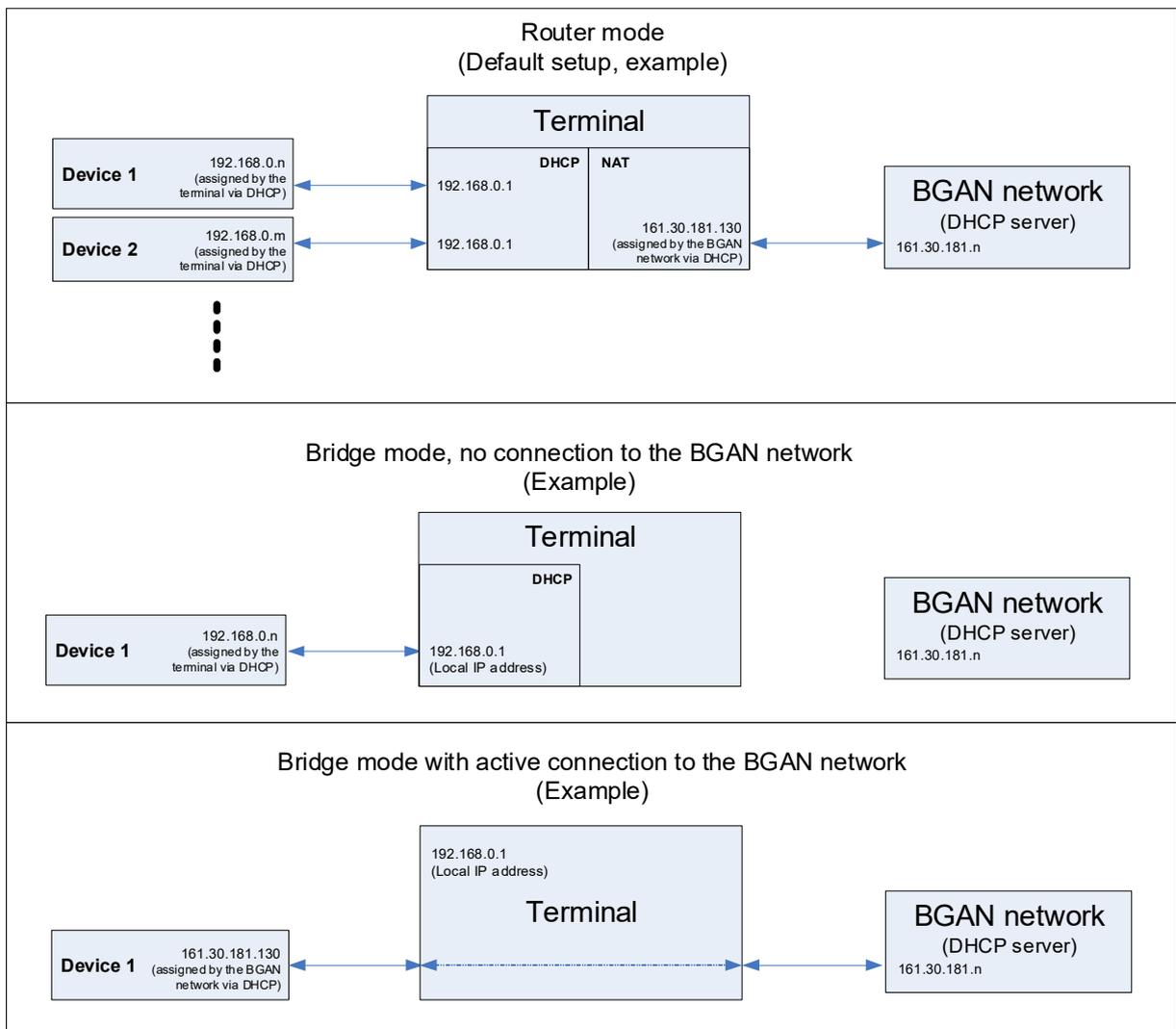
1. In the **Terminal settings** page, locate **Connection**.
2. At **Mode**, select from the drop-down list which mode you want the EXPLORER 510 to start up in. You have the following options:
 - **BGAN only** (default): The EXPLORER 510 uses BGAN only. You cannot use a cellular connection.
 - **Cellular modem if available at power-up**: The EXPLORER 510 uses cellular network if it is available at startup (that is if the EXPLORER Cellular Modem is inserted and the cellular network is found)
 - **Cellular modem only**: The EXPLORER 510 only uses the cellular network, not BGAN. If an EXPLORER Cellular Modem is not connected, or if the cellular network does not work for some reason, you cannot access any network.
 - **User selection**: Every time the EXPLORER 510 starts up you must select which network you want to use. You cannot access any network until you have made the selection.

Internet and LAN connection modes

In the web interface you can set up the Internet connection mode and the IP addressing between the EXPLORER 510 and devices connected to the EXPLORER 510. The EXPLORER 510 has a built-in DHCP server which can be used to dynamically assign IP addresses to devices connected to the EXPLORER 510.

The drawing below shows examples of the IP addressing in router mode (default setup) and Bridge mode.

Note Bridge mode is not supported for connections to cellular network.



To set up the Internet connection mode of the EXPLORER 510, do as follows:

1. From the **Terminal settings** page, locate **Connection**.
2. At **Internet connection mode**, select **Bridge mode** or **Router mode**. Router mode is the default setting and is recommended for most purposes.
 - Select **Router mode** if one or more computers are connected and the EXPLORER 510 should act as a router. When Router mode is selected, the EXPLORER 510 uses the built-in NAT module for making the necessary address translations.
 - Select **Bridge mode** if only one computer is connected, and the EXPLORER 510 should act as a modem, or more than one computer is connected using an external router.

Note

Do **not** connect more than one computer in Bridge mode, unless you have an external router.

3. If you selected **Bridge mode**, select under **Bridge mode IP address** how the terminal's IP address should be assigned.
 - **Dynamic** example: If the IP address assigned by the DHCP server to the locally connected equipment is 10.30.27.130, the terminal will get the IP address 10.40.27.130. (in most cases it will be 10 added to the second octet of the assigned IP address).
 - **Plus one** example: If the IP address assigned by the DHCP server to the locally connected equipment is 161.30.181.130, the terminal will get the IP address 161.30.181.131 (the assigned IP address plus one).
4. Under **Local IP address**, type in a new IP address if you want to change the Local IP address of the terminal. This is the address used to access the web interface. The default IP address is **192.168.0.1**.

Important

A number of IP addresses are reserved for internal use. Do not assign any of the IP addresses listed in *List of reserved IP subnets* on page 5-19.

5. Under **DHCP**, select **Enable** (recommended for most purposes).
 - If you select **Enable**, the terminal assigns dynamic IP addresses to devices connected to the terminal.
 - If you **disable DHCP** you need to set up a static IP address in the connected device.
6. If you want to change the **Subnet mask** for the local network of the terminal, type in the new network mask. The default network mask is **255.255.255.0**.
7. Under **DHCP range start** and **DHCP range end**, type in the range of IP addresses that should be assigned to locally connected equipment.
8. Click **Save**.

4.14.4 To enable or disable Network Service Device (NSD)

If you have an Inmarsat GX system together with your EXPLORER 510 and you want to use the EXPLORER 510 as backup when the GX service is not available, you can acquire a Network Service Device from Inmarsat. The NSD will use a PPPoE connection to allow your system to use the BGAN service when your system is out of GX spot beam coverage. To enable NSD, do as follows:

1. In the **Terminal settings** page, locate the **NSD** section.
2. Select **Enable** if you want to use an NSD with your EXPLORER 510.

For information on PPPoE, see *To change the APN for PPPoE* on page 4-36.

4.14.5 To enable or disable the pointing sound

The EXPLORER 510 can make a sound to guide you through the pointing procedure (default enabled). To enable or disable the pointing sound, do as follows:

1. In the **Terminal settings** page, locate the **Audio indication** section.
2. Select **Audio assisted pointing** if you want to use a pointing sound to assist your pointing process.
3. At **Audio assisted pointing volume (0 - 100)** type the volume level you want for the pointing sound.
4. Click **Save**.

4.14.6 To select the type of navigation system (GNSS)

To select which navigation system to use with your EXPLORER 510, do as follows:

1. In the **Terminal settings** page, locate the **GNSS** section (Global Navigation Satellite System).
2. Select **GPS, GLONASS, GPS and GLONASS** or **BeiDou**.¹
3. Click **Save**.

Note

It may take some minutes for the EXPLORER 510 to change the navigation system.

4.14.7 To select the language

The default language of the web interface is **English**. You can change the language to **French, German, Russian, Spanish, Chinese, Japanese** or **Portuguese**.

To change the language, do as follows:

1. In the **Terminal settings** page, locate the **Language** section.
2. Select a language from the list and click **Save**.

1. Older versions of the EXPLORER 510 only support GPS or GLONASS.

4.15 To set up your data connection packages

Note You must be logged in as administrator in order to change, delete or create connection packages.

There are different types of connection packages for different purposes:

- **Shared connection**, see *To create a shared connection package* on page 4-31.
This is a shared data connection package. For the predefined Standard connection package, ACA is disabled, but can be enabled. For new connection packages, ACA is disabled and cannot be enabled for shared connections.
- **Dedicated connection**, see *To set up dedicated connections* on page 4-32.
This is a connection dedicated specifically to each unit connected to the EXPLORER 510.

4.15.1 To change a connection package

You access the connection packages from the Dashboard.

- To access the Dashboard click  at the bottom of the page.
- To change a connection package, click  in the right side of the tile with the connection package.

If you want to	Do as follows
Change the name of the connection package	Click Properties , type in the new name and click Save . The new name is shown on the tile on the startup page.
Delete a connection package	Click Delete package ¹ Note: You cannot delete Standard data .

1. If you accidentally delete a connection package, you can either create a new manually, or restore factory settings. Note, however, that all changes to the configuration will be lost if you restore factory settings.

4.15.2 To change the APN for a connection package

By default a connection package is set to use no IP Header compression and to use the APN (Access Point Name) from the SIM card. This is suitable for most applications.

Note It is recommended to leave **IP Header compression** disabled. This means that the data packets are transmitted more reliably with less data loss. However, you can select IP Header compression with the risk of less stability.

If you want to use a different APN, do as follows:

1. Click  in the right side of the tile with the connection package that you want to change.
2. Select **Parameters**.
3. Next to **APN**, select the source of the APN.

- **SIM default** (default and recommended setting): The APN is taken from the SIM card.
 - **Network assigned**: The APN is assigned from the network.
 - **User defined**: APNs are provided from the Airtime Provider. Type in the APN next to **User defined name**.
4. If your APN uses a password, type in the **User name** and **Password** provided from the Airtime Provider.
 5. Click **Save**.

4.15.3 Automatic Context Activation (ACA)

With ACA enabled, the terminal automatically establishes a data connection when it is registered on the satellite network.

Note

Different types of connection packages have different setup for ACA:

- For the predefined Standard (shared) connection package, ACA is disabled by default but can be enabled.
- For a new shared connection package, ACA is disabled and cannot be enabled.
- For a dedicated DHCP connection, ACA is enabled by default and cannot be disabled.
- For a dedicated static IP connection, ACA can be enabled or disabled.

To set up automatic activation of your data connection, do as follows:

1. Click  in the right side of the tile with the connection package that you want to change.
2. Select **Parameters**.
3. Select **Automatic Context Activation (ACA)**.
 - When you select **Automatic Context Activation (ACA)** and connect to the LAN or WLAN interface, the data connection is automatically established as soon as the EXPLORER 510 and its BGAN connection are ready.

Note

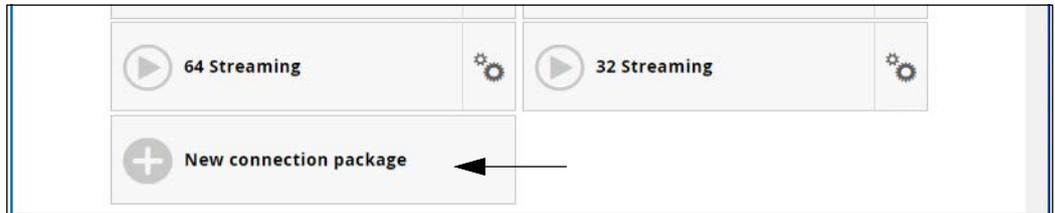
You are charged for the data transferred. You may want to disable automatic updates in your LAN or WLAN device to avoid unnecessary charges.

- When you **disable** automatic activation (default), you can control the data connection manually from the startup page.

4.15.4 To create a shared connection package

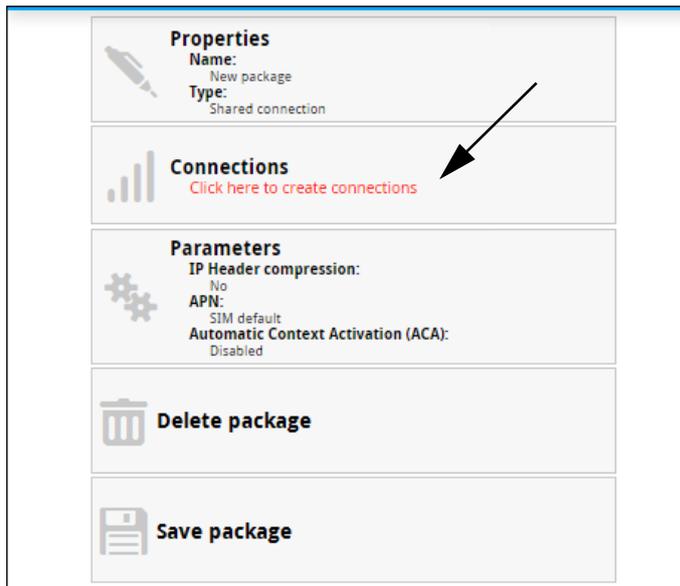
Do as follows:

1. Click **New connection package**.



The **Properties** page opens.

2. Type a name for the new package.
3. Under **Type**, select **Shared connection**.
For details on dedicated connections, see *To set up dedicated connections on page 4-32*.
4. Click **Save**.
5. Click **Click here to create connections**.



6. Click **Add connection**.
7. Select the connection type you want for your new connection package (Standard or one of the Streaming options).
8. Click **Save package**.

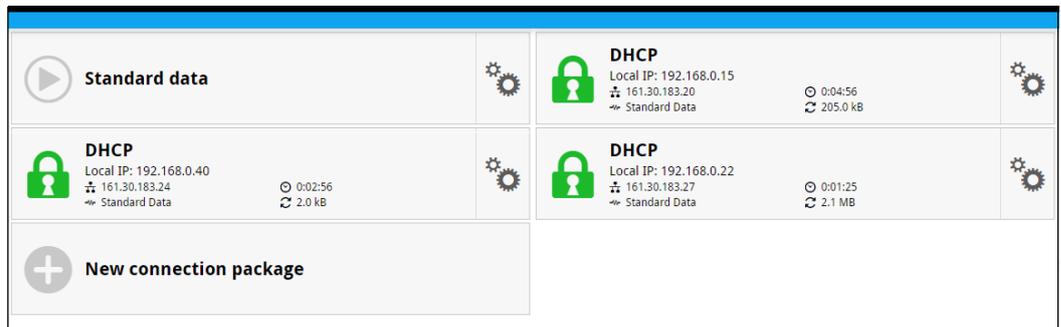
The new package should now appear as a new tile on the startup page.

4.15.5 To set up dedicated connections

You can set up dedicated connections for the EXPLORER 510.

Note | The terminal must be in BGAN mode in order to use dedicated connections. Under **Terminal settings > Connection > Mode** select **BGAN only**.

- From the **Dashboard**, click **New connection package** to create a new connection package, or click  in the right side of the tile with the connection package that you want to change and click **Properties**.
- Under **Type**, select one of the dedicated connection types.
 - Dedicated DHCP.** This is a dedicated connection using DHCP. With this type, any DHCP-enabled unit you connect to the EXPLORER 510 will get a new dedicated connection used only for that unit. When you disconnect the unit, the connection is removed after a few minutes. Each new connection gets its own tile on the Dashboard as long as it is running. In the example below, three units are connected using Dedicated DHCP. ACA is enabled for all Dedicated DHCP connections and cannot be disabled, unless you delete the connection package.



- Dedicated static IP.** This is a dedicated connection using a static IP address. Set up the connected unit to use a static IP address and type in this IP address under **Static IP address**.

Enter new values and click Save

Name	<input type="text" value="static"/>
Type	<input type="text" value="Dedicated static IP"/>
Static IP address	<input type="text" value="192.168.0.55"/>

 **Cancel**  **Save**

If Automatic Context Activation (ACA) is enabled, the connection is established automatically. Only the unit with the configured static IP address can use this connection.

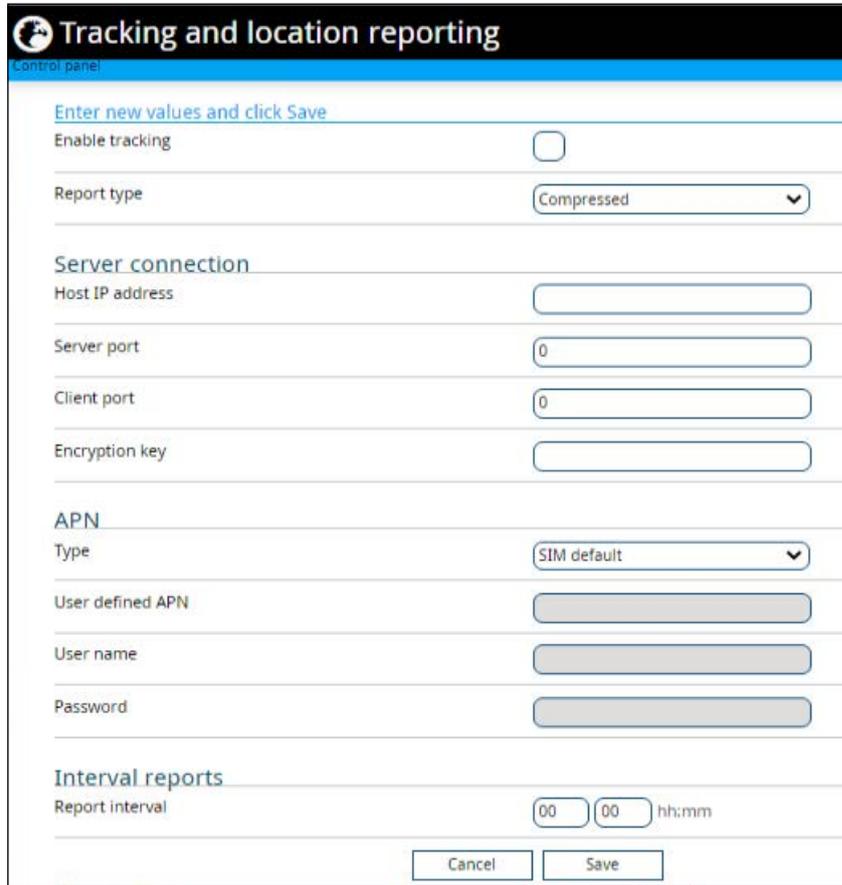
Note | You can only start and stop a dedicated static IP connection by enabling and disabling ACA under **Parameters** or using SMS commands, see *Remote access with SMS* on page 3-37.

- Click **Save**.

4.16 To set up tracking and location reporting

You can set up the EXPLORER 510 to report to a server at certain time intervals. To set up tracking, do as follows:

1. From the Control panel , select **Tracking and location reporting**.



2. To enable tracking of the EXPLORER 510, select **Enable tracking**.
3. Select the **Report type**.
 - **Compressed**. Only latitude and longitude are reported.
 - **Extended**. Apart from latitude and longitude, heading and altitude are also included.
 - **ECEF**. The same information as Extended, but position and speed data are 3D (ECEF coordinates).
4. Under **Server connection**, type in the following details:
 - **Host IP address**: The IP address of the server that the EXPLORER 510 will report to.
 - **Server port**: Port number on the server. Default number is 7474.
 - **Client port**: Port number on the EXPLORER 510. Default number is 7475.
 - **Encryption key**: A supplied 128 bit key which must match on both the client and server side.
5. Under **APN**, select the source of the APN.
 - **SIM default** (recommended): The APN is taken from the SIM card.
 - **Network assigned**: The APN is assigned from the network.

- **User defined:** APNs are provided from the Airtime Provider. Type in the APN next to **User defined name**.
6. If required, type in the user name and password of the APN.
 7. Type in the **Report interval** in hours (h) and minutes (m).
Example: If you type in 1 h 30 m, the EXPLORER 510 will send a report for every 1½ hour.
 8. Click **Save**.

You can see the status of the tracking link in the status area of the web interface. If the status area is not shown, click  to see it.

Note

You can set up whether or not you want to allow the tracking server to control these settings. See *Remote control of tracking* on page 4-47.

4.17 Advanced LAN

4.17.1 Port forwarding

Note | Make the port forwarding configuration before starting the data session.

Port forwarding enables you to set up a server connected to the terminal while the terminal is in Router mode. Without port forwarding it would not be possible to contact the server from the Internet. We recommend using a static public IP address for the terminal in order to provide easy access to the terminal. To use the static IP address, it must be included in your subscription and you must set the APN source to SIM default. For details, see *To change the APN for a connection package* on page 4-29.

The following example shows how to allow Internet access to a mail server (smtp) connected to the terminal.

The mail server in this example has the IP address 192.168.0.100.

1. From the **Control panel** , select **Advanced LAN > Port forwarding**.
2. Select **Forward port** to add a new port forwarding.
3. Select **Active** to activate the port forwarding.
4. Type in the **Incoming port start** and the **Incoming port end**.
This is the range of port numbers on the EXPLORER 510 for which incoming traffic to the EXPLORER 510 will be forwarded.
5. Type in the **Destination IP address**, which in this example is the IP address of the mail server: 192.168.0.100.
This is the IP address to which the incoming traffic is forwarded.
6. Type in the **Destination port start** and the **Destination port end**.
This is the range of port numbers, in this example on the mail server, to which the incoming traffic will be forwarded.
7. Click **Save**.

When you have activated a data connection, you can now access the mail server from the Internet, using the external IP address of the terminal. You can see the external IP address in the tile with the data connection you have started. For information on how to activate your data connection, see *To start and stop data connections* on page 4-8.

4.17.2 Static routing

When you have an external gateway connected to your terminal, the terminal is not automatically able to “see” the network on the other side of the gateway. However, you can set up your terminal to communicate with a device on the other side of a gateway, by using Static routing. To set up a new device for static routing, do as follows:

1. From the **Control panel** , select **Advanced LAN > Static routing**.
2. Click **Add route**.
3. Enter the values for your device.
 - **Destination:** The IP address you want to route to.
 - **Subnet mask:** The subnet mask you want to route to.
 - **Gateway:** The gateway, e.g. the address of a wireless access point or router to which the destination device is connected.
4. Click **Save**.
The values for the new entry are now in the list. This means that the terminal can communicate with the destination IP address on the other side of the gateway.

4.17.3 To change the APN for PPPoE

What is PPPoE

By using PPPoE, users can virtually “dial” from one machine to another over an Ethernet network, establish a point to point connection between them and then securely transport data packets over the connection.

On the equipment connected to the EXPLORER 510 you must enter a few settings for your PPPoE connection. For example you need to set up which service to use (e.g. 64 kbps Streaming) and possibly a user name and password. For details, refer to the documentation for your connected equipment.

On the EXPLORER 510 you must set up the APN to use before you can establish a PPPoE connection.

1. From the **Control panel** , select **Advanced LAN > PPPoE APN**.
2. Select the **APN** to use for PPPoE. You have the following options:
 - **SIM default.** The APN is taken from the SIM card. This is the recommended option, unless you have special requirements.
 - **Network assigned.** The APN is assigned from the network.
 - **User defined.** Type in the APN at **User defined name**. APNs are provided from the Airtime Provider.
3. Click **Save**.

4.18 Advanced settings

4.18.1 First time use

The first time you access the EXPLORER 510 web interface the administrator password is disabled, so you have access to all settings. If you want to use an administrator password, you can enable it as described in the next section.

4.18.2 Administrator password

To enable the administrator password

If the administrator password is disabled and you want to protect the advanced settings with a password, do as follows:

1. From the Control panel , select **Advanced**.
2. Select **Passwords > Enable administrator password**.
3. Type in the administrator password you want to use.
4. Repeat the new password on the next line.
5. Click **Save**.

To disable the administrator password

If you want to disable the administrator password, do as follows:

1. From the Control panel , select **Advanced**.
2. If you are not already logged in, enter the administrator password and click **Login**. The default password is **admin**.
3. Select **Passwords > Disable administrator password**. All settings are now available without password protection.

To log in

If the administrator password is enabled, the Advanced settings require an administrator password. To log in as administrator, do as follows:

1. From the Control panel , select **Advanced**.
If you are not logged in as administrator you are now prompted to log in.
2. Enter the Administrator password. If you have forgotten the administrator password, you can reset the password. For details, see *To reset the administrator password* on page 4-23. The old user name and password will apply until you have finished the reset procedure.
3. Click **Login**.

To change the administrator password

To change the administrator password, do as follows:

1. Log in as administrator
2. Under **Advanced**, select **Passwords > Change administrator password**.
3. Type in the **Old password**.
4. Type in the **New password** and retype it on the next line.
5. Click **Save**.

At the next login the new password is required.

To log out as administrator

If you have not entered anything for 30 minutes under Advanced, you are logged out automatically. To log out manually, click **Logout administrator** in the **Advanced** page or click [log out] next to administrator in the **Terminal status** field.

4.18.3 To set up user permissions

You can allow or deny users access to certain functions and make these pages read-only. This is useful if you want to protect the system against unintended changes. Study this screen thoroughly and decide to which areas of the system you want to give non-administrator users access. To set up the user permissions, do as follows:

1. Under **Advanced**, select **User permissions**.
2. Under **Allow users to:**, select the settings you want to **allow** users to access.
3. Under **Allow user accounts:**, select **Service user account** if you want to enable the use of a service user account.
4. Click **Save**.

The settings without a check mark can only be viewed but not changed by the non-administrator user.

4.18.4 To restore factory settings

To restore the factory settings of the EXPLORER 510, do as follows:

1. Under **Advanced**, select **Factory reset**.

Important

All configuration will be lost and the EXPLORER 510 will return to the default configuration.

2. Click **OK**.
The terminal will now restart and start up with the factory settings.

4.18.5 SIM PIN for BGAN

To enable or disable the use of a SIM PIN

To enable or disable the use of a PIN to access the BGAN network, do as follows:

1. Under **Advanced**, select **SIM**.
2. Select **Enable/disable SIM PIN**.
3. Under **Enable/Disable PIN** select or clear the box next to **Require PIN on startup**.
 - If you clear the box, you can access and use the terminal without entering a PIN
 - If you select the box, you must enter a PIN on startup before you can make calls or data sessions
4. If you selected Require PIN on startup, type in the PIN next to **Enter current PIN**.
5. Click **Save**.
The new PIN settings will take effect at next power on.

To change the SIM PIN

To change the PIN used to access the BGAN network, do as follows:

1. Under **Advanced**, select **SIM**.
2. Select **Change SIM PIN**.
3. Under **Change PIN** type in the **Current PIN**.
4. Type in the **New PIN** and retype it on the next line.
5. Click **Save**. The new PIN settings will take effect at next power on.

SIM lock

The SIM lock feature can be used by suppliers to lock your SIM card to a specific provider or distribution partner. For further information, contact your supplier.

4.18.6 SIM PIN for cellular network (optional)



The SIM settings for cellular network are only available when the EXPLORER Cellular Modem is inserted.

To enable or disable the use of a cellular SIM PIN

To enable or disable the use of a PIN to access the cellular network, do as follows:

1. Under **Advanced**, select **EXPLORER Cellular Modem**.
2. Select **Enable/disable SIM PIN**.
3. Under **Enable/Disable PIN** select or clear the box next to **Require PIN on startup**.
 - If you clear the box, you can access and use the terminal without entering a PIN
 - If you select the box, you must enter a PIN on startup before you can make calls or data sessions
4. If you selected Require PIN on startup, type in the PIN next to **Enter current PIN**.
5. Click **Save**.
The new PIN settings will take effect at next power on.

To change the cellular SIM PIN

To change the PIN used to access the cellular network, do as follows:

1. Under **Advanced**, select **EXPLORER Cellular Modem**.
2. Select **Change SIM PIN**.
3. Under **Change PIN** type in the **Current PIN**.
4. Type in the **New PIN** and retype it on the next line.
5. Click **Save**. The new PIN settings will take effect at next power on.

4.18.7 To save or load a configuration

If you need to reuse a configuration in another terminal of the same type and software version, you can save your current configuration to a file, which can then be loaded into the other terminal.



Configuration files can only be exchanged between terminals with the same software version!

To save a configuration to a file

To save the current configuration of your terminal to a file on your computer, do as follows:

1. In the **Advanced** page, click **Load/save configuration**.
2. Click **Save configuration**. The configuration file is saved in the EXPLORER 510.
3. Click **Download configuration...**
The configuration is downloaded from the EXPLORER 510 to the downloads section of your computer.

To load a configuration from a file

To load a configuration from a file into your EXPLORER 510, do as follows:

1. In the **Advanced** page, click **Load/save configuration**.
2. Click **Load configuration**.
3. Browse to the configuration file and click **Open...**

The configuration is now loaded into your EXPLORER 510. When the configuration is loaded successfully, the EXPLORER 510 restarts with the new configuration.

4.18.8 Connection watchdog (Link monitoring)

If you are **not** using the Terminal watchdog function (see *Terminal watchdog* on page 4-42), you can monitor the external IP connection of the EXPLORER 510 system using the Connection watchdog. With this feature activated, the terminal will send out ping commands (ICMP Echo Requests) to up to three servers of your choice.

Function of Connection watchdog

With the connection watchdog activated, the terminal will send out ping commands to up to three servers of your choice. When a data session is started, the terminal will start sending ping commands to the Primary IP address the number of times specified. If no response is received, it will send the same number of ping commands to the Secondary and then the Tertiary IP address, if available. If no response is received from any of the IP addresses, the terminal will first try to reconnect. If it fails again the terminal will eventually restart.

Note Ping commands are sent on all active data connections. For the Connection watchdog to work, the data connection must be (re)started after enabling the Connection Watchdog. If ACA is enabled, the data connection is restarted automatically. See *Automatic Context Activation (ACA)* on page 4-30.

To set up the Connection watchdog

To set up the Connection watchdog, do as follows:

1. Under **Advanced**, select **Connection watchdog**.
2. Select **Enable Connection watchdog**.
3. At **Ping interval (minutes)** select the Interval in minutes between the ping commands.
4. Select the **Number of retries** before the terminal restarts.
5. Type in the Primary and optionally the Secondary and Tertiary IP address. This is the IP address of the server(s) to which the terminal will send ping commands.

Note Use a server that is reliable and that responds to ICMP Echo Requests.

6. Click **Save**.

4.18.9 Terminal watchdog

The Terminal watchdog continuously monitors the operational status of the terminal and allows you to perform the following actions at regular intervals (set by the user):

- Start a data connection (PDP context)
- Verify your data connection (ping - similar to Connection watchdog)

The terminal continuously monitors:

- The time (monitors that UTC time is received from GPS at startup)



The EXPLORER 510 operates with UTC time, local time is not available.

- CS-attach (the status of the circuit-switched connection)

If any of the actions fail, the terminal restarts.

Set up Terminal watchdog

To set up the Terminal watchdog, do as follows:

1. Under **Advanced**, select **Terminal watchdog**.

Terminal watchdog

Control panel > Advanced

Enter new values and click Save

The Terminal watchdog monitors terminal health and satellite connection at regular intervals. The Terminal watchdog can ping up to 3 global IP addresses to verify end to end communication.

Terminal watchdog

Enable watchdog (requires reboot)

Watchdog interval 0 days 1 hours

Primary IP address

Secondary IP address

Tertiary IP address

APN SIM default

User defined name

User name

Password

Enable position SMS

Send position SMS to phone number

Enable loopback SMS

Terminal SMS number

Next run time Not scheduled

Cancel Save

2. Select **Enable watchdog**.
3. Select the **Watchdog interval**.
The interval can be from one hour up to 21 days.
4. Type in the **Primary** and optionally the **Secondary** and **Tertiary IP address**.
This is the IP address(es) of the server(s) to which the terminal will send ping commands.
The terminal will start sending ping commands to the Primary IP address. If there is no response after 10 attempts, the terminal will send up to 10 ping commands to

the Secondary and then the Tertiary IP address, if available. If no response is received from any of the IP addresses, the terminal will eventually restart.

Note | If no IP addresses are entered, pinging is skipped but the other actions still apply.

5. Enter the **APN** (and user name and password if required) to use for the data connection.
6. Select **Enable position SMS** and enter the phone number, if you want the terminal to send SMSes with the position of the terminal to a phone number. The SMSes will be sent with the Watchdog interval from step 3.
7. Select **Enable loopback SMS** and enter the phone number of the terminal, if you want the terminal to send SMSes to itself in order to check the SMS function. The SMSes will be sent with the Watchdog interval from step 3.
8. Click **Save**.

Note | When the Terminal watchdog is enabled, you must reboot the terminal before the Watchdog settings are activated.

Next run time: This field at the bottom of the page shows what time the Terminal watchdog will run next (UTC time).

4.18.10 Data limits

You can set a limit for the use of BGAN data services with the EXPLORER 510 system. If you have entered the BGAN call charges in the menu **Call charges**, the system automatically calculates and displays the maximum charges for your BGAN data sessions.

Note | Thrane & Thrane A/S does not take responsibility for the correctness of the estimated charges. This calculation is only a rough estimate of the charge, based on the tariff entered by the user. Also, the airtime provider may have different methods of calculating the charge.

Once the entered limit is reached, the connection is automatically stopped. This is recorded in the data log. To continue using the data service you must start a new connection by clicking on the desired connection on the startup page.

Note | If you have enabled automatic activation of the Standard data connection and you set a data limit for the Standard data connection, automatic activation is disabled.

To set data limits, do as follows:

1. Under **Advanced**, select **Data limits**.
2. Select the type of connection you want to limit.
3. Type in the amount of data or time allowed and select the appropriate units.
4. Select **Enable**.
5. Click **Save** to save the settings.

4.18.11 Call charges

Note Thrane & Thrane A/S does not take responsibility for the correctness of the estimated charges. This calculation is only a rough estimate of the charge, based on the tariff entered by the user. Also, the Airtime Provider may have different methods of measuring the airtime used.

If you know the tariff for your subscribed BGAN services, you can enter these tariffs in the web interface and automatically calculate the estimated charges for your BGAN calls and data sessions. To enter the call tariffs, do as follows:

1. Under **Advanced**, select **Call Charges**.
2. Select the currency from the **Displayed currency** drop-down list.
3. Enter the tariff for each of the BGAN services.
4. Click **Save**.

The entered tariffs are used for estimating the charges for calls and data sessions over the BGAN network. For further information, see *Call log* on page 4-13.

4.18.12 Prepare the terminal for remote management

You can set up the terminal so that it can be controlled from a remote location.

To set up the terminal for remote management, select **Advanced** > **Remote management** from the **Control panel**.

Remote management
Control panel > Advanced

Enter new values and click Save

Remote access with IP

Enable access to web application

Incoming port for web application

Enable access to AT commands

Incoming port for AT commands

Trusted IP addresses

Enable ping response

Remote access with SMS

Enable remote SMS commands

Password

Trust all phone numbers

Trusted phone numbers

Prepare the terminal for remote access with IP

Note

The settings for Remote access with IP are **not** relevant if you are using the SMS ATCO command **_IREMWEB** to get access to the web interface from a remote location, or you only need remote access by SMS commands.

For details on SMS commands, see the next section and *Remote access with SMS* on page 3-5. For details on how to use the **_IREMWEB** command, see *To use AT commands to get remote access to the web interface* on page 3-7.

1. From the **Remote management** page, locate the section **Remote access with IP**.
2. Select **Enable access to web application** and/or **Enable access to AT commands**.
3. Type in the **Incoming port** numbers to use for the web server and for AT commands.

The default port numbers are:

- web server: 80
- AT commands: 5454

Note

If you type another port number, the port number must be available at your service provider.

4. Under **Trusted IP addresses**, click **Add IP address** and type in the IP address of the device you want to give access to the terminal.
5. To add more IP addresses, click **Add IP address** again.
6. Select **Enable ping response** if you want to enable the terminal to respond to ping commands.

Note

To be able to access the terminal you must have an active data connection.

After preparing the terminal and activating the connection you can access the terminal from one of the trusted IP addresses, using the incoming port defined in the Incoming port field.

For information on how to access the terminal, see *To get remote access from a trusted IP address (preconfigured)* on page 3-7.

If Static IP is included in your airtime subscription, we recommend using this static public IP address for the terminal in order to provide easy access to the terminal. To use the static IP address, it must be included in your airtime subscription and you must set the APN source to SIM default. For details, see *To change the APN for a connection package* on page 4-29.

Prepare the terminal for remote access with SMS

Note The terminal must be logged on to the BGAN satellite services to receive and accept an SMS.

1. From the **Remote management** page, locate the section **Remote access with SMS**.
2. Select whether you want to **Enable remote SMS commands**.
3. Enter the password for remote SMS. It can be 5 to 15 characters long. The characters 0-9, a-z and A-Z are allowed. **The password is mandatory**. This password must be entered every time you send an SMS command. Default password is **remote**.
See *Remote access with SMS* on page 3-5.
4. Select **Trust all phone numbers** or, at **Trusted phone numbers**, enter at least one trusted mobile number from which the terminal accepts an SMS. Use the wild card * to accept a range of trusted numbers.

Entered mobile number with wild card	Mobile numbers accepted
+453955880*	+4539558800 to +4539558809
+45395588*	+4539558800 to +4539558899

Important If you select **Trust all phone numbers** you should take security measures such as changing the SMS remote password in order to avoid unintended use.

5. To add more phone numbers, click **Add phone number** again.
6. Click **Save**.

For information on how to send SMS commands, see *Remote access with SMS* on page 3-5.

4.18.13 Remote control of tracking

When you are using the tracking function of the EXPLORER 510, you can set up the terminal so that the tracking server can access the EXPLORER 510 e.g. to start or stop tracking or to change reporting intervals.

To allow the tracking server to control the tracking settings, do as follows:

1. Under **Advanced**, select **Tracking settings**.
2. Select **Allow remote control of tracking**.
3. Click **Save**.

The EXPLORER terminal will now accept commands from the specified tracking server, for example to change reporting intervals or start/stop reporting.

4.18.14 Help desk

Under Help desk you can enter the contact information you want for your EXPLORER 510. The Help desk contact information is empty by default. You must provide the contact information, e.g. the phone number for your Airtime Provider. Do as follows:

1. In the **Advanced** page, select **Help desk**.
2. Type in the contact information you want.
3. select **Save**.

The Help desk information is now available from the About page ( (Control panel) > **Support > About**).

4.18.15 Reset button

You can change the function of the Reset button. Do as follows:

1. From the **Advanced** page, select **Reset button**.
2. Select the behavior you want for the Reset button.
 - **Enabled:** Short push: Reset WLAN settings, Long push: Reset to factory default.
 - **Long press disabled:** A push on the Reset button will only reset the WLAN settings, regardless of how long you push the button.
 - **Disabled:** The Reset button will not have any function, except when you push and hold it while the terminal is starting up (Safe mode, see *Restore the settings of the EXPLORER 510* on page 5-5).
3. Click **Save**.

4.18.16 Security

To enable the use of Thrane IP Handset

1. From the **Advanced** page select **Security**.

2. Locate the field **Thrane IP Handset support**.
3. If you want the terminal to support BGAN profile and menu in Thrane IP Handsets, select **Support BGAN profile and menu in Thrane IP Handsets**. This means that, in addition to making calls with the Thrane IP handset over the BGAN network, you can use the handset display and keypad to:
 - Enter PIN/PUK for the terminal.
 - View pending alarms.
 - View event log.
 - View current satellite status and signal strength.
 - Start/stop connection packages.

For details, see the user manual for the Thrane IP Handset.

To allow or block the use of AT commands on WLAN interface

AT commands are low-level commands used to control modems, in this case the EXPLORER 510. They are typically used during service and maintenance or when troubleshooting the terminal.

1. Under **Advanced > Security**, locate the field **AT commands**.
2. If you want to block the use of AT commands, remove the check mark at **Allow on WLAN interface** (default allowed).
3. If you want users to enter a password to be able to use AT commands on the WLAN interface, select **Require password**. This means that users must enter a password using the `_ICLCK` command before they can send AT commands on the WLAN interface.
By default, no password is required in order to send AT commands on the WLAN interface.

Important

Before you select this option, make sure you know the administrator password of the EXPLORER 510! The default password is **admin**.

4. Click **Save**.

HTTPS settings

The EXPLORER 510 internal web server supports HTTPS, which includes encryption of the exchanged web traffic when accessing the EXPLORER 510 web interface.

By default, the system uses a self-signed certificate, but it also allows you to upload your own certificate signed by a trusted Certificate Authority.

Note

If you redirect traffic to HTTPS, you **cannot connect** to the EXPLORER 510 with the **EXPLORER Connect app**.

Do as follows:

1. Under **Advanced > Security**, locate the field **HTTPS**.
2. Select **Redirect HTTP to HTTPS** if you want the EXPLORER 510 to automatically redirect your HTTP traffic to HTTPS.
3. Select **Use uploaded TLS/SSL** certificate and click **Upload certificate** if you want to upload your own generated SSL certificate for the system to use. Please note that the uploaded certificate file (.pem file format) must include the RSA private key used to generate the certificate:

```
-----BEGIN CERTIFICATE-----
...
... <your certificate here> ...
...
-----END CERTIFICATE-----
-----BEGIN RSA PRIVATE KEY-----
...
... <your key here> ...
...
-----END RSA PRIVATE KEY-----
```
4. Click **Save**.

4.19 Optional: To set up cellular network for data

The EXPLORER 510 is a BGAN terminal by default. However, if you are within coverage of a cellular network, you may want to acquire an EXPLORER Cellular Modem as an alternative to the BGAN network. Note that you need a separate SIM card for the cellular network, the EXPLORER 510 SIM card can only be used for the BGAN network.

Note The EXPLORER 510 does not provide automatic switch-over between BGAN and cellular network, so you have to select the network you want to use.

To enable the EXPLORER 510 to use the cellular network, do as follows:

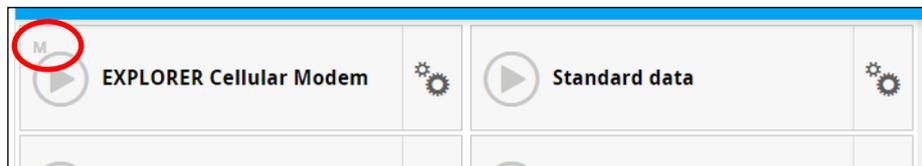
1. Acquire an EXPLORER Cellular Modem from Cobham Satcom.
2. Connect your computer to the EXPLORER 510 using the WLAN interface.
3. Access the web interface.

Note The USB interface must be enabled. See *USB interface setup* on page 4-16.

4. Under **Control panel > Terminal settings**, select one of the following at **Mode**:
 - **Cellular modem if available at power-up**
 - **Cellular modem only**, or
 - **User selection**.

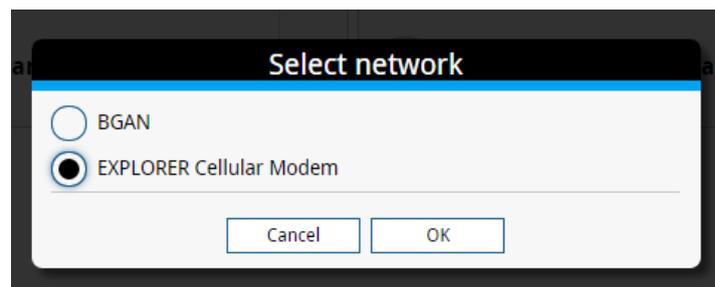
For details on Cellular/BGAN network selection, see *Mode (select network)* on page 4-25.

5. When the modem is connected to the USB interface, the Dashboard of the web interface shows a new tile with the cellular connection. The “M” on the tile for the cellular modem indicates that it is a cellular modem and not a BGAN connection.



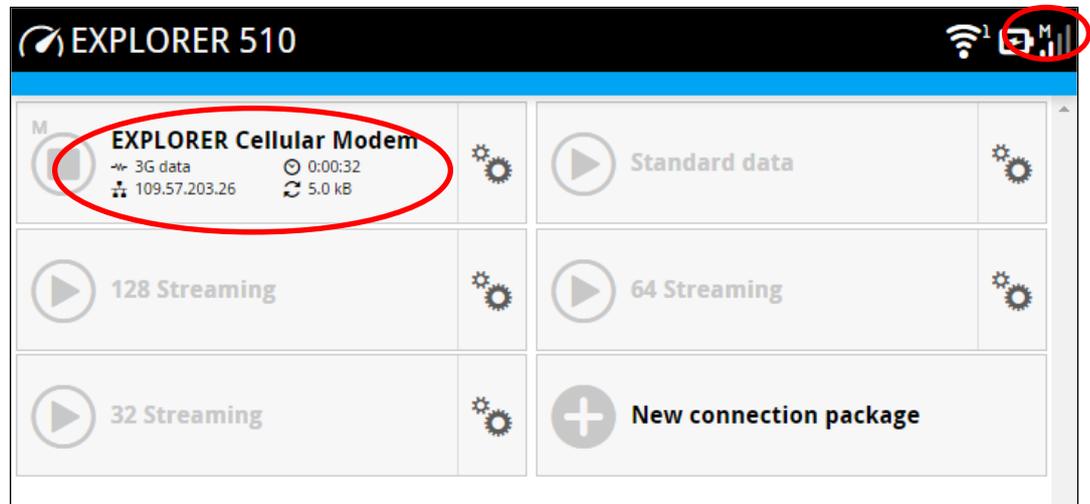
Note If you have selected **Cellular modem if available at power-up**, you have to restart the terminal before the cellular connection can be activated.

6. If you have selected **User selection** in step 4 above, you must first select the cellular network. Click the tile with the cellular modem, or click the signal strength icon  in the top right corner of the web interface. Then select EXPLORER Cellular Modem and click **OK**.



7. If required, select  on the tile to set or change the name or the APN of your cellular connection. For details, see the next section.

When the connection is established, an “M” on the signal bar in the top right corner indicates that it is a cellular (Modem) connection, and the tile shows details about the connection.



The data connection is automatically established when set up correctly, so you cannot start and stop the cellular connection from the tile as you can with the BGAN connections.

Note You may have to enter a PIN before you can use the cellular network, see *To enter the SIM PIN in the web interface* on page 4-7.

You can now access the Internet through the cellular network from a device connected to the EXPLORER 510. Note that you cannot use the BGAN network as long as EXPLORER Cellular Modem is selected.

Note You cannot make calls nor send SMS messages on the cellular network through the EXPLORER 510. Only data connection is possible over the cellular network. You can still send and receive SMS messages using the BGAN mobile number of the terminal (if the terminal is pointed and connected to the CS domain in the BGAN network).

4.19.1 To change the name or the APN for your cellular connection

Do as follows:

1. Select  on the tile with the cellular connection.
2. Type in the new name for your connection.
3. Type in the name of the APN you are going to use for your cellular connection.
4. Click **Save**.

Maintenance and troubleshooting

5.1 Support

5.1.1 Contact information

Should your Cobham Satcom product fail, contact your dealer or installer, or the nearest Cobham Satcom partner. You will find the partner details on www.cobhamsatcom.com/where-to-buy. You can also access the partner portal at partnerportal.cobhamsatcom.com, which may help you solve the problem. Your dealer, installer or Cobham Satcom partner will assist you whether the need is user training, technical support, arranging on-site repair or sending the product for repair. Your dealer, installer or Cobham Satcom partner will also take care of any warranty issue.

5.1.2 To repack for shipment

Should you need to send the product for repair, please read the below information before packing the product.

The shipping carton has been carefully designed to protect the EXPLORER 510 and its accessories during shipment. This carton and its associated packing material should be used when repacking for shipment. Attach a tag indicating the type of service required, return address, part number and full serial number. Mark the carton FRAGILE to ensure careful handling.

Note

Correct shipment is the customer's own responsibility.

If the original shipping carton is not available, the following general instructions should be used for repacking with commercially available material.

1. Wrap the defective unit in heavy paper or plastic. Attach a tag indicating the type of service required, return address, part number and full serial number.
 2. Use a strong shipping container, e.g. a double walled carton.
 3. Protect the front- and rear panel with cardboard and insert a layer of shock-absorbing material between all surfaces of the equipment and the sides of the container.
 4. Seal the shipping container securely.
 5. Mark the shipping container FRAGILE to ensure careful handling.
- Failure to do so may invalidate the warranty.

5.2 Software update

Important

Connect DC power to the terminal before starting the software update.

5.2.1 To update software with the web interface

To update the software in the EXPLORER 510, do as follows:

1. Download the new software¹ or acquire the software from Cobham Satcom and save it to your computer.
2. Connect your computer to the EXPLORER 510.
3. Open the web interface in your browser and enter the Control panel .
4. Click **Support > Update software**.
5. Click **Update software...**
6. Browse to the new software version and click **Open**. The file has the extension “.tiff”.
7. The EXPLORER 510 now restarts and completes the software update.

Note

The update procedure takes a couple of minutes.

You can check the software version under **Control panel > Support > About**.

If, for some reason, you cannot upload software using the web interface, you can also use the USB interface. For details, see *To update software with USB* on page 5-3.

5.2.2 To update software from a remote location

You can initiate a remote software upgrade with an AT command, either from the command interface or encapsulated in an SMS (ATCO command).

_IGETFW tells the terminal to get software from an FTP server and either upgrade the terminal software or download the software file to the terminal for later upgrade.

_IUPDFW tells the terminal to upgrade its software to the downloaded file.

For syntax and parameters, see *ATCO commands* on page B-9.

Do as follows:

1. Download the new software¹ or acquire the software from Cobham Satcom and place it on your FTP server.
2. To access the EXPLORER 510, use one of the following:
 - a computer connected to the Internet, see *To get remote access from a trusted IP address (preconfigured)* on page 3-7, or
 - equipment capable of sending and receiving SMS messages, see *Remote access with SMS* on page 3-5.

Note that you need a password for both access methods. For AT commands, use the AT_ICLCK command with the admin password, for SMS, use the remote SMS password.

-
1. You can download the software from the Cobham Satcom Partner Portal at partnerportal.cobhamsatcom.com. Search for EXPLORER 510, select **Downloads** and locate the EXPLORER 510 software.

3. Use the command **_IGETFW** to initiate the software download (and maybe upgrade) from the specified FTP server. If you are using the default APN this can be left out.

Example: `AT_IGETFW=1, "ftp.myftpserver.com", "ftp-username", "ftp-password"`

In this example, the terminal will get the software from the FTP server named **ftp.myftpserver.com** via the default APN and download and then upgrade the software in the terminal.

4. The terminal prepares for software update, connects to the specified FTP server and downloads the software image.
If you have selected **Deferred update** (`_IGETFW=0`), you have to use the command **_IUPDFW** followed by the software file name when you want the terminal to upgrade the software.
5. If you have selected **Immediate update** (`_IGETFW=1`), the terminal updates the system, reboots, installs the update and verifies the online connection.
6. When the software upgrade is successfully completed you get an AT or SMS command response with the message **Complete**.

Example: `_IUPDFW: 0, Complete`

5.2.3 To update software with USB

If the web interface is not available, you may also use the USB interface to update the software from a USB memory stick.

To prepare the USB stick

Do as follows:

1. Download the EXPLORER 510 software to your computer¹.
2. Insert the USB memory stick into your computer and copy the EXPLORER 510 software image file to the drive.
3. Rename the file name to "tt3711a.tiif".
4. Remove the USB memory stick from the computer.

To upload the software to the EXPLORER 510

Note

The USB interface must be enabled in the EXPLORER 510 (default enabled). See *USB interface setup* on page 4-16 for details on how to enable the USB interface.

1. Insert the USB memory stick with the new software into the EXPLORER 510 USB connector.
The EXPLORER 510 reads the software image from the USB memory stick and starts the software update process. The EXPLORER 510 restarts and completes the software update. The Status LED flashes blue to indicate that the software update process is ongoing.
2. Wait for the status LED to become green to indicate the software update process is completed.
3. Remove the USB memory stick.

5.2.4 Recovery software update

If the EXPLORER 510 becomes inoperative, a recovery software update may bring it back into an operational state.

Important

The recovery software update will reset your EXPLORER 510 configuration to factory default!

To make a recovery software update, do as follows:

1. Prepare the USB stick as described in *To prepare the USB stick* on page 5-3.
2. While powering on the EXPLORER 510, push and hold the Reset button until the two LEDs are flashing blue. See *Restore the settings of the EXPLORER 510* on page 5-5.
3. Insert the USB memory stick with the new software into the EXPLORER 510 USB connector on the front.
The EXPLORER 510 reads the software image from the USB memory stick and starts the software update process.
4. Wait for the status LED to become steady green to indicate the software update process is completed.
5. Remove the USB memory stick.
6. Switch the EXPLORER 510 off and on again.

5.3 Restore the settings of the EXPLORER 510

The EXPLORER 510 has a Reset button that has three functions: To restore all settings to factory settings, to restore WLAN settings only and to put the EXPLORER 510 into safe mode for recovery software upload.

Note

You can set up in the web interface which functions should apply to the Reset button. See *Reset button* on page 4-47.

Action	Function
Push and hold the Reset button for 2-10 seconds	<p>WLAN settings are restored to default. The WLAN LED lights yellow.</p> <p>Default WLAN settings:</p> <ul style="list-style-type: none"> • Broadcast SSID: EXPLORER510 • Encryption standard: WPA2-AES • Encryption key: serial number of the EXPLORER 510 • Region: Other, i.e. the most restrictive setting
Push and hold the Reset button for > 10 seconds	The EXPLORER 510 restores factory settings and restarts the system. All changes to the configuration are lost.
While the EXPLORER 510 is booting, push and hold the Reset button	<p>The EXPLORER 510 enters safe mode. Both LEDs are flashing blue.</p> <p>In safe mode the EXPLORER 510 is ready for a recovery software upload (see <i>Recovery software update</i> on page 5-4).</p>

The Reset button is located inside the small hole next to the SIM slot.



Reset button

Do as follows:

1. Loosen the two screws holding the SIM cover.
2. Lift the cover.
3. Use a pointed device to push the Reset button.
4. Close the cover and tighten the two screws carefully.
This is important in order to maintain the IP grade of the EXPLORER 510.

5.4 Maintenance

5.4.1 Normal use of the battery

It is recommended not to partially charge/discharge the battery several times in a row. Partial charging/discharging affects the accuracy of the capacity measurement.

Never leave the EXPLORER 510 fully discharged for a longer period of time. If the EXPLORER 510 is not to be used for a shorter period of time (1 month), charge the battery to minimum 20 to 30%. If the EXPLORER 510 is stored for more than a month, charge the battery to 50%. For battery specifications, see *Battery specifications (internal battery)* on page A-2.

5.4.2 To recharge the battery

To recharge the battery, connect external power to the DC input of the EXPLORER 510. For details on how to apply external power, see *External power* on page 2-14.

5.4.3 Accurate display of the battery capacity

To ensure accurate display of the battery capacity, you can run a learning cycle at first time use. The learning cycle must be performed between 20°C and 30°C.

Do as follows:

1. Fully charge the battery.
2. Remove external power and fully discharge the battery:
Use the EXPLORER 510 and/or leave it on until it turns off automatically. This way the EXPLORER 510 learns the complete capacity of the battery. Note that it may take several hours to discharge the battery if it is not in use.
3. Recharge the battery.

5.4.4 Disposal of the EXPLORER 510

Old electrical and electronic equipment marked with this symbol can contain substances hazardous to human beings and the environment. Never dispose these items together with unsorted municipal waste (household waste).



In order to protect the environment and ensure the correct recycling of old equipment as well as the re-utilization of individual components, use either public collection or private collection by the local distributor of old electrical and electronic equipment marked with this symbol.

Contact the local distributor for information about what type of return system to use.

5.5 Troubleshooting

5.5.1 Troubleshooting guide

Problem	Possible cause	Remedy
The EXPLORER 510 cannot be switched on, or does not stay on when powered by the battery.	The battery needs recharging.	Recharge the battery. Check the battery indicator in the web interface.
The EXPLORER 510 cannot be switched off.	The Power button was not held long enough.	When you switch off the EXPLORER 510, hold the power button until the light indicator flashes rapidly yellow. In rare cases, it may take up to 10 seconds to switch off the EXPLORER 510.
Charging error	The temperature is below 0°C or above 40°C.	Only charge the battery when the temperature is within the range 0°C to 40°C.
	The charging voltage is lower than the specified minimum voltage.	Wait until charging begins (the Status indicator flashes yellow). If the battery is completely discharged, and it has been out of use for a long time, the charging process may take a long time to start. If charging does not begin within 2-3 hours, contact your local distributor.
The EXPLORER 510 is not operational.	Software error	Restart the terminal. If the problem persists, you can make a recovery software upload as described in <i>Recovery software update</i> on page 5-4. Note: This will reset the configuration of your terminal to factory default!

Problem	Possible cause	Remedy
<p>The web interface shows Insert SIM.</p>	<p>The SIM card is not present.</p>	<p>Insert the SIM card in the SIM slot according to the instructions in the section <i>To insert the SIM card</i> on page 2-2.</p>
	<p>The SIM card is not inserted properly.</p>	<p>Remove the SIM card and re-insert it according to the instructions in the section <i>To insert the SIM card</i> on page 2-2.</p>
<p>The web interface shows No position fix.</p>	<p>The EXPLORER 510 is unable to register on the network, because the GNSS position is unknown.</p>	<p>Make sure the view to the GNSS satellites is not blocked.</p> <p>To obtain position fix, the EXPLORER 510 should be placed flat on an even surface pointing straight upwards, with a clear view to as much of the sky as possible. When the EXPLORER 510 has obtained position fix, you can point the antenna towards the BGAN satellite.</p> <p>You can see position status in the status section in the web interface.</p>
<p>The web interface shows Emergency calls only.</p>	<p>The BGAN network is only available for emergency calls.</p> <p>The reason may be one of the following:</p> <ol style="list-style-type: none"> 1) Your Airtime subscription has expired. 2) You are using the wrong SIM card. 3) No SIM card is inserted. 4) You have canceled the PIN 	<ol style="list-style-type: none"> 1) Check your subscription with the Airtime Provider. 2) Check that your SIM card is valid for communication on the BGAN network. 3) Insert the SIM card 4) Enter the PIN
<p>The web interface shows Not registered.</p>	<p>The EXPLORER 510 cannot register on the BGAN network.</p>	<p>Check that your SIM card is valid for communication on the BGAN network.</p> <p>Check your subscription with the Airtime Provider.</p>

Problem	Possible cause	Remedy
<p>The web interface shows External control.</p>	<p>The EXPLORER 510 is currently controlled by an external application, e.g. LaunchPad or an AT command interface.</p>	<p>If you want to use the built-in web interface, stop the external application and restart the EXPLORER 510. Then open your browser and access the web interface.</p>
<p>The EXPLORER 510 cannot obtain its position using GNSS.</p>	<p>There is no GNSS signal, or the signal is weak. If the EXPLORER 510 has not been used recently within the same location, it can take up to 10 minutes to obtain the position.</p>	<p>Check the position status in the web interface. To help the EXPLORER 510 obtain position fix, it should be placed flat on an even surface pointing straight upwards, with a clear view to as much of the sky as possible. When the EXPLORER 510 has obtained position fix, you can point the antenna towards the BGAN satellite.</p>
<p>No signal or weak signal from the BGAN satellite.</p>	<p>The view to the satellite is blocked.</p>	<p>Make sure the EXPLORER 510 has a clear view to the satellite. Be aware that window glass may reduce the signal level.</p>
	<p>The antenna is pointed in the wrong direction.</p>	<p>Check that the antenna is pointed according to the position data. Adjust the position to the highest possible signal strength.</p>
<p>Connection to the Internet cannot be established.</p>	<p>The signal strength is too low.</p>	<p>Check that the antenna is pointed according to the position data. Adjust the position to the highest signal strength you can obtain. As a rule of thumb, you should have a signal strength of 45 dBHz or more to be able to make a call or data session.</p>

Problem	Possible cause	Remedy
The web interface cannot be accessed.	The browser is configured to use a proxy server.	For Microsoft Internet Explorer, select Tools > Internet Options > Connections > LAN Settings and uncheck Use a proxy server for your LAN .
	You have entered a wrong IP address.	Check the IP address and re-enter it. The default IP address is 192.168.0.1
A LAN connection cannot be established.	The cables are not properly connected.	Connect the cables. Note that you must use the USB to LAN Converter Cable from Cobham Satcom.
	The cable type(s) or connector type(s) are not correct.	Note that you must use the USB to LAN Converter Cable from Cobham Satcom.
A WLAN connection cannot be established.	The WLAN interface is disabled in the EXPLORER 510	Enable the interface by accessing the web interface and selecting Control panel > WLAN > Enable .
	Your computer or smartphone is placed too far away from the EXPLORER 510.	Bring the computer closer to the EXPLORER 510. Note that the specified maximum distance is only valid under ideal conditions.
Cellular network: The web interface shows PUK required for cellular modem	3 wrong PIN codes have been entered and the EXPLORER Cellular Modem now requires a PUK code to unlock the SIM. However, the PUK code cannot be entered using the EXPLORER 510.	Remove the EXPLORER cellular modem and insert it into another device (e.g. your computer). Then enter the PUK code from this other device. When the SIM is unlocked you can put it back into the EXPLORER 510.

5.5.2 Status signaling

Means of signaling

The EXPLORER 510 system provides two methods for signaling the status of the system.

- **Light indicators** next to the SIM slot
- **Messages** shown in the web interface.

Light indicators

The EXPLORER 510 has two light indicators showing status and WLAN.



Status indicator

Note Errors (red constant) and Warnings (yellow constant) override other indications.

Indicator pattern	Meaning
● Green flashing rapidly	Starting up
● Green flashing slowly	Power on (ready)
● Green constant	Power on with DC input
● Yellow flashing slowly	Battery charging
● Yellow flashing rapidly	Closing down
● Yellow constant	Warning (user recoverable)
● Red constant	Error. See the web interface.
● Blue flashing (alone) ● Blue flashing (with WLAN LED)	Uploading software to the terminal Safe mode - see <i>Restore the settings of the EXPLORER 510</i> on page 5-5.
○ Off	Power off

WLAN indicator

Indicator pattern	Meaning
 Green flashing	Rx/Tx traffic
 Green flashing slowly	In use - has WLAN registration(s)
 Green constant	Ready - customized configuration
 Yellow constant	Ready - factory default configuration
 Blue flashing (together with Status LED)	Safe mode - see <i>Restore the settings of the EXPLORER 510</i> on page 5-5.
 Off	Not active – power off / starting up / closing down

Event messages and status messages

In the web interface of the EXPLORER 510 you can see status messages and alerts that are currently active.

When a warning or error event is active, the web interface shows a warning symbol . Select it to see a list of currently active alerts.

5.5.3 List of messages

The following list explains some of the messages that may show in the web interface of the EXPLORER 510.

Event ID (Hex)	Displayed text	Explanation	Remedy
1010	Temperature too low (critical)	Low ambient temperature is causing the performance of the terminal to be degraded or halted.	Move the terminal to a warmer location. For information on ambient temperature limits, see the Specifications appendix.
1020	Too low temperature warning	Low ambient temperature is causing the performance of the terminal to be degraded or halted.	Move the terminal to a warmer location. For information on ambient temperature limits, see the Specifications appendix.
1110	Temperature too high (critical)	Terminal: Critically high temperature is causing the terminal to shut down. Antenna: Critically high temperature is causing the antenna to stop transmission.	If possible, move the failing unit to a cooler location. For information on ambient temperature, see the Specifications appendix. Contact your distributor if the problem persists.

Event ID (Hex)	Displayed text	Explanation	Remedy
1120	Too high temperature warning	High ambient temperature is causing the performance of the system to be degraded or halted. The bit rate is reduced.	Move the terminal to a cooler location. For information on ambient temperature limits, see the Specifications appendix.
1200	Battery level low	The battery level is low.	Charge the battery. See <i>To recharge the battery</i> on page 5-6.
1400	Satellite signal lost	The system no longer receives a signal from the satellite.	Make sure the antenna has a clear view to the satellite.
1600	SIM blocked	The SIM card is not accepted by the network, e.g. because you have entered too many wrong PINs and PUKs. Only emergency calls are allowed.	Enter the PIN and wait for network approval. If the problem persists, contact your airtime Provider.
1700	Registration for voice failed	The system has not yet been allowed to register for voice services (Circuit Switched).	If the problem persists, contact your airtime provider.
1800	Registration for data failed	The system has not yet been allowed to register for data services (Packet Switched).	If the problem persists, contact your airtime provider.
2900	Network failed authentication	The system does not accept the network as a valid BGAN network.	Restart the system. If the problem persists, contact your distributor.
3900	Air link error	Error condition in DSP which modulates and demodulates BGAN signal.	Reboot the terminal. Contact your distributor if the problem persists.
8049	Data rate reduction due to high temperature	The bit rate of the data channel is reduced because the temperature is too high.	Move the terminal to a cooler location.

Event ID (Hex)	Displayed text	Explanation	Remedy
8056	SIM rejected	The type of USIM card inserted in the terminal is not correct for your terminal.	Make sure you have the correct type of USIM card. For example, an USIM card for a land mobile system will not work for a maritime system and vice versa.
80AA	A low LTE blocker level is detected - this might affect terminal performance	A cellular network signal has been detected. It may impact the performance of the terminal	If possible, move the terminal to another location with lower LTE blocker level.
80AB	A high LTE blocker level is detected - this will affect terminal performance	High cellular network interference detected, high risk of impairing terminal performance	If possible, move the terminal to another location with lower LTE blocker level.
80AD	The terminal has re-registered due to a high LTE blocker level	The terminal has re-registered to the network in attempt to regain functionality after an interfering cellular network signal.	The event is cleared after 5 minutes, but the terminal has limited the frequencies used. To restore original behavior, reboot the terminal.
9220	Antenna temperature above critical limit	Antenna temperature too high, might affect performance.	If possible, move the antenna to a cooler location.
10117	PIN for cellular modem required	The SIM card for your cellular connection requires a PIN code	You can enter the SIM PIN for the cellular modem from the web interface.
10118	PUK for cellular modem required	The SIM card for your cellular connection requires a PUK code, because too many wrong PINs were entered.	Enter the PUK for the cellular SIM card in the web interface.
1011B	Cellular modem SIM card error	There is an error with the SIM card in the cellular modem	Check that you have inserted the correct SIM card, and that it is inserted properly.

Event ID (Hex)	Displayed text	Explanation	Remedy
1011C	Cellular modem error	There is an error with the cellular modem. The text in the web interface will normally show more details on the type of error, e.g. unknown APN.	Check that the APN for the cellular connection is set up correctly. You can set up the APN in the web interface: In the Dashboard click in the right side of the tile with the Cellular Modem.
1011D	Cellular modem not supported	The connected cellular modem is not supported by the terminal.	Connect a cellular modem that is supported.
10203	USB power limited to 0.5A due to high temperature	The current is limited to 0.5 A in the USB interface, even if it is set to 1.0 A in the web interface, because the temperature is too high.	If 0.5 A is not enough for the device connected to the USB interface, move the terminal to a cooler location.
10204	Standard data speed limited due to high temperature	The bit rate of the data channel is reduced because the temperature is too high. All Streaming contexts are closed.	Move the terminal to a cooler location.
10205	Closing all connections due to high temperature	All data connections, background and streaming are closed.	Move the terminal to a cooler location.
10206	Closing terminal due to high temperature	Terminal has reached a critically high temperature, and will reboot by itself.	Move the terminal to a cooler location.
10300	Updating software...	Software update has begun.	Wait for the software update to complete.
10301	Do not remove DC power from terminal during software update	Software update is ongoing and the battery is low. Do not remove DC power from the terminal while software update is ongoing.	If DC power is not connected, connect it as soon as possible and leave it connected until software update is completed.
10302	Preparing for software update	Initial preparations for software upload are started.	Wait until preparations are over, either the terminal is rebooted or an error is shown.

Event ID (Hex)	Displayed text	Explanation	Remedy
10303	Error opening software file	The file requested to use for the update procedure cannot be opened or found.	Make sure the update file is correct and the file exists. Use the command _IUPDFW? to show the correct file name before updating.
10304	Battery level too low for software update	The battery level is too low to perform software update.	Charge the battery (connect to DC power) before updating the software.
10305	Software downgrade prevented. Use a newer software version.	Not possible to perform a software downgrade, use a newer version.	Use a newer version of software for the update, or contact your distributor.
10306	File does not support this product	The file used for software update does not support this product.	Use the correct tiif file
10307	File is corrupt. Download the file again.	The file used for software update appears to be corrupt and the content cannot be validated.	Download the file again
10308	Software update failed. Try running the update again.	Software upload failed to initialize, can be a sporadic issue.	Try running the update again. If the problem persists, contact your distributor.
10309	Software update failed. Update to the latest software version.	The software has been rolled back to the previous version prior to starting the software upload. The new image was not validated correctly.	Try running the update again, if the problem persists, contact your distributor.
1030A	Software failed. Update to the latest software version from Safe Mode.	Not all subunits have been properly verified with the new image.	Attempt software update procedure again, alternatively from Safe Mode if the problem persists.
1030C	Software update is already started	Another software update cycle is currently running.	Wait until the current software upload has finished.

Event ID (Hex)	Displayed text	Explanation	Remedy
1030D	Software version is already installed	The software image you are trying to install is already active on the terminal.	Update with a different image as it is prohibited (and nonsensical) to start a sw update process with the same image.
1030E	Software update forced roll-back	Software update failed and the terminal forced a roll-back to the previous version.	Check that you have the correct file for software update and try again. If the problem persists, contact your distributor.
11001	Calibration error	Invalid calibration values found.	Contact your distributor.
11002	Battery level low	The battery level is low	Charge the battery. See <i>To recharge the battery</i> on page 5-6.
11003	Temperature too low for charging	The temperature is lower than the minimum charge temperature.	Only charge the battery when the temperature is within the specified range. See <i>Charge temperature</i> on page A-2.
11004	Temperature too high for charging	The temperature is higher than the maximum charge temperature.	Only charge the battery when the temperature is within the specified range. See <i>Charge temperature</i> on page A-2.
38404	WLAN control	WLAN failed to start up normally.	Restart the terminal. Contact your distributor if the problem persists.

5.6 Log files

5.6.1 To create a diagnostics report

The diagnostic report contains relevant information for troubleshooting. When contacting your distributor for support, please enclose this file. To generate a diagnostic report, do as follows:

1. Select **Terminal access** from the **EXPLORER Connect** app, or access the web interface.
2. Select  (Control panel) at the bottom of the page.
3. Select **Support**.
4. From the **Support** page, select **Diagnostics report**.
5. Select **Generate report**.

Note

It may take a few minutes to generate the report.

6. Select **Download report**.
7. Choose a location for the file and save it.

5.6.2 Call log and data log

The log holds detailed information on each call or data session to and from the EXPLORER 510, including date and time, phone numbers, duration, amount of data transferred etc.

Date and time is UTC time, received from the satellite.

To see the log in the web interface, select  (Control panel) > **Logs**. See *To use the logs* on page 4-13.

5.6.3 Event log

The Event log shows events that occurred in the past and are no longer active. It includes events of informational character describing normal phases of operation for the terminal, and also alerts that have appeared in the Alerts list.

To view the event log in the web interface, select **Event log** from the **Support** page.

5.7 List of reserved IP subnets

Some IP subnets are reserved for internal use in the terminal. If any of these addresses are assigned to external equipment connected to the terminal, the terminal and connected equipment will not be able to communicate.

1. The following local IP subnets are **reserved for internal use** in the terminal and cannot be assigned to connected equipment:
192.168.1.x and **192.168.2.x** -where x can be any number from 0 to 255.
The netmask for these subnets is 255.255.255.0.
2. **Do not use 0 nor 255** at the last (rightmost) position in the IP address for connected equipment.
3. Furthermore the following local IP addresses are **reserved** and cannot be assigned to connected equipment:

192.168.50.1

192.168.51.1

192.168.52.1

192.168.53.1

192.168.54.1

192.168.55.1

192.168.56.1

192.168.57.1

192.168.58.1

192.168.59.1

192.168.60.1

192.168.61.1

192.168.61.2

192.168.61.3

192.168.61.4

192.168.61.5

192.168.61.6

192.168.61.7

192.168.61.8

192.168.61.9

192.168.61.10

192.168.61.11

Technical specifications

A.1 General specifications

Item	Specification
Type	EXPLORER 510, BGAN Class 2 terminal
Max. IP data rate, Rx/Tx ¹ Streaming data	464 kbps/464 kbps (simultaneously) 32, 64, and 128 kbps
Voice	Standard voice 4 kbps Premium voice 3.1 kHz audio, 64 kbps
Physical dimensions	202 x 202 x 51.8 mm 8.0 x 8.0 x 2.0 inches
Weight	1.4 kg / 3.1 lbs (incl. battery)
Operating temperature Powered by external DC (fully charged battery) DC operated and charging the battery Powered from battery (discharging) Storage temperature	-25 to 55°C 0 to 45°C (10 to 45°C in Japan) -20 to 55°C 9 months at -20 to 20°C 3 months at -20 to 45°C 1 month at -20 to 60°C
Water & Dust	IP66
Supported web browsers (Others may be supported, these have been tested.)	Safari 5.1.7 and above Internet Explorer 9.0 and above Google Chrome 23 and above Mozilla Firefox 16 and above
Approvals	CE, FCC, IC Inmarsat Class 2 Approval

1. Performance depends on a wide range of factors and actual usage.

A.2 Battery specifications (internal battery)

Item	Specification
Battery type	Lithium Ion, rechargeable
Nominal voltage	7.3 Volt
Nominal capacity	5700 mAh
Time between recharging	
Stand-by	24 h (0 to 55°C / 32 to 131°F)
Tx time, max	2 h 25 m @ 128 kbps (25°C / 77°F)
Rx time, max	4 h 40 m @ 128 kbps (25°C / 77°F)
Charge time without precharging	Less than 4 hours 12 to 24 hours
Charge time including precharging (battery completely discharged)	
Charge temperature	0 to 45°C, / 32 to 113°F (Japan: 10 to 45°C / 50 to 113°F)
Min. charge cycles	300 (typically up to 500)

A.3 Interfaces specifications

A.3.1 Power input

Item	Specification
DC input range	10.5 to 32 VDC
Power consumption	
Standby / transmit	2.8 W / 19 W (typical)
During charging	38 W (max.)
Connector type	2.5 mm EIAJ RC-5320-IV

A.3.2 WLAN access point

Item	Specification
Standard	IEEE 802.11 b/g
Antenna	Built-in
Frequencies	2.4 GHz ISM band

A.3.3 USB (Host) interface

Connector pin-out

Pin	Function
1	VBUS
2	D-
3	D+
4	GND

Specifications

Item	Specification
Version	USB v2.0 Host
Connector type	Type A
Charge current available	0.5 A or 1.0 A, user selectable
Max. cable length	5 m / 16.4 ft

A.4 Built-in BGAN antenna

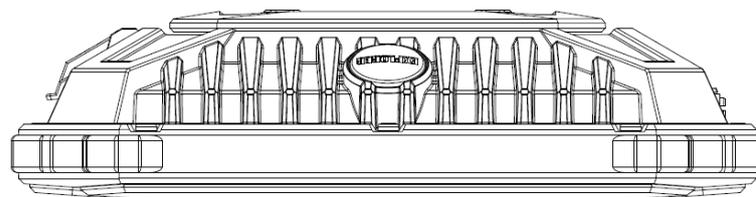
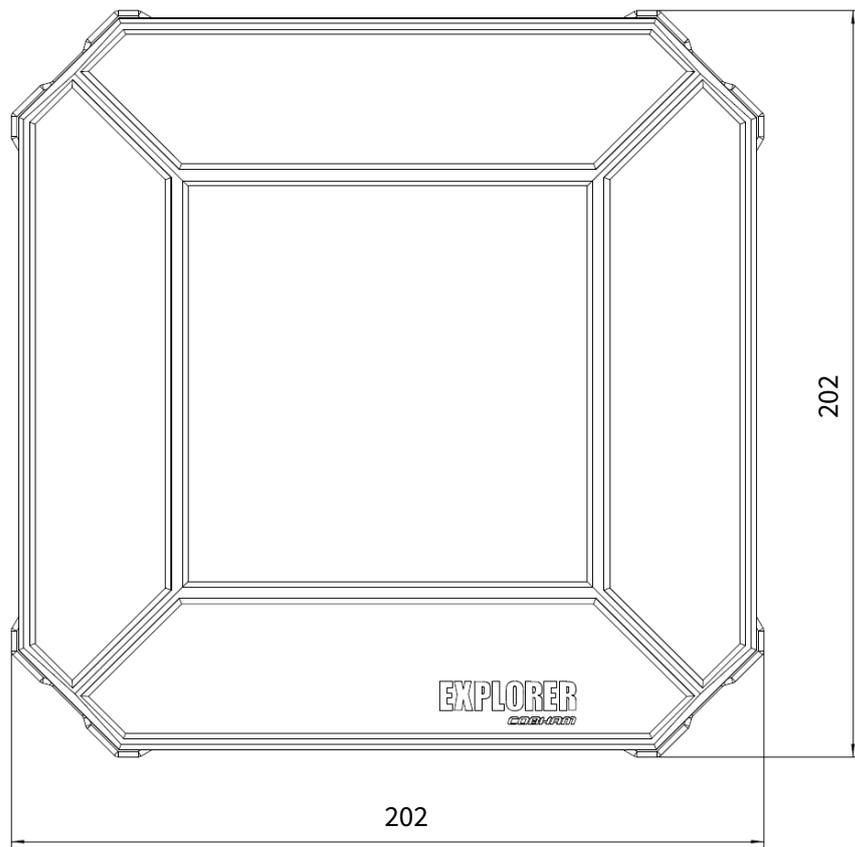
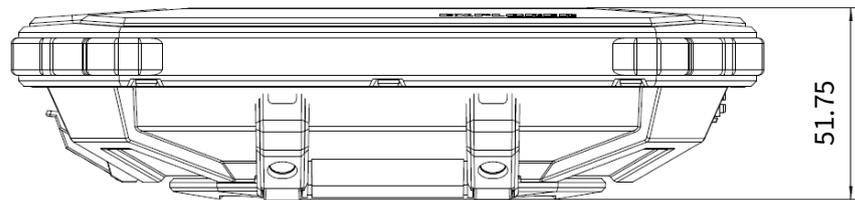
Item	Specification
Type	Directional patch array, manually adjustable
Polarization	RHCP, Right-hand circular polarization for both tx and rx
Frequencies	
Inmarsat I-4	
Transmit	1626,5 MHz - 1660,5 MHz
Receive	1525 MHz - 1559 MHz
Inmarsat Alphasat (EMEA)	Extended L-band (XL) ¹ :
Transmit	1626,5 MHz - 1660,5 MHz and 1668 MHz - 1675 MHz
Receive	1518 MHz - 1559 MHz
GNSS	GPS, GLONASS, Beidou
EIRP	Nominal: 15.1 dBW \pm 1dB, Class 2
Gain	11 dBi

1. Only available within Alphasat coverage (EMEA). See *Satellite coverage* on page A-7.

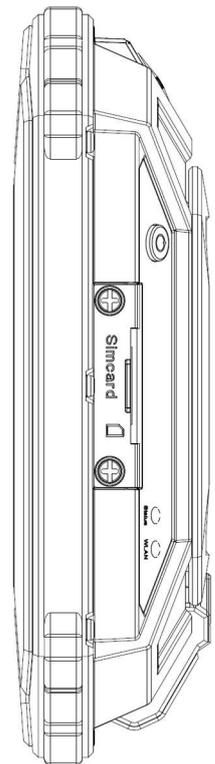
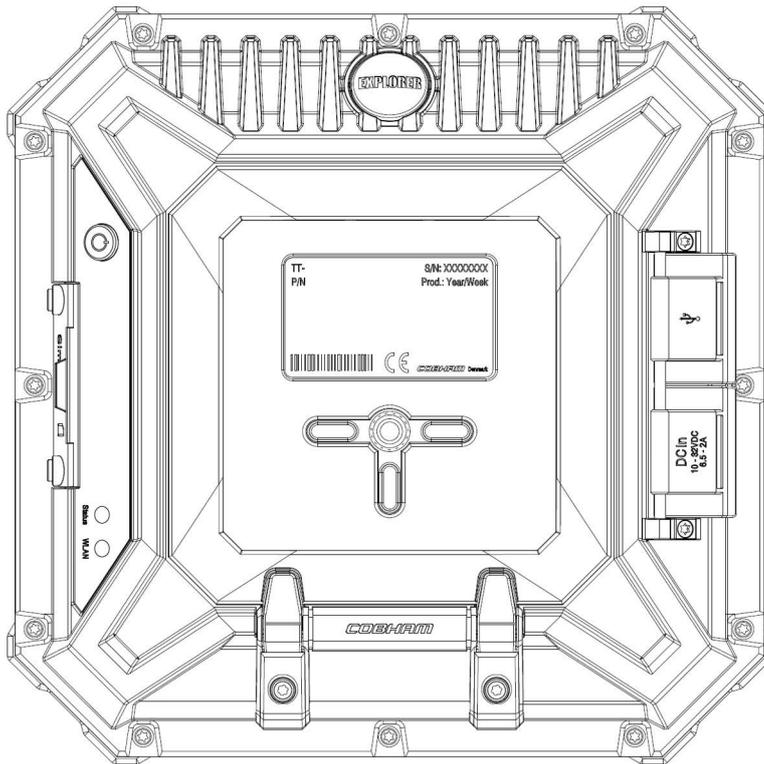
A.5 AC/DC adapter

Item	Specification
AC input range	100 to 240 VAC, 47 to 63 Hz, 50 W
DC output	19 VDC

A.6 Outline drawing

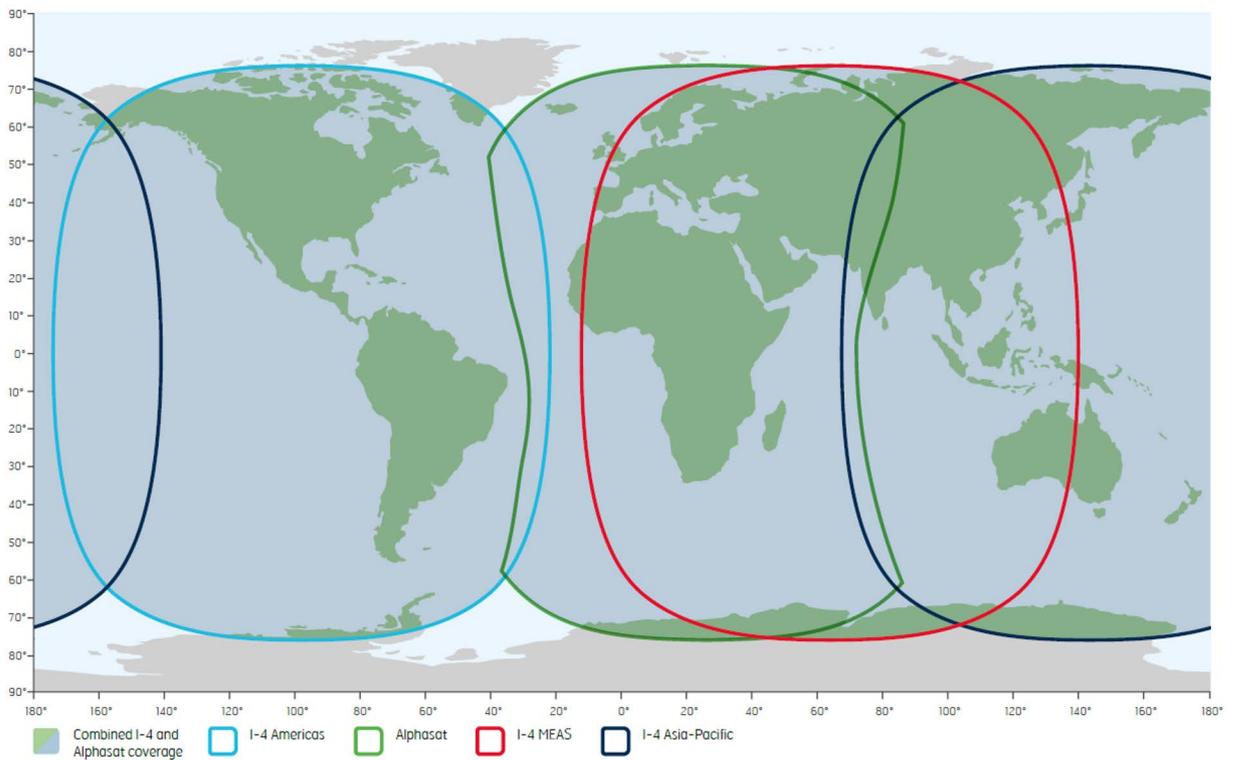


Dimensions are in millimeter



A.7 Satellite coverage

The EXPLORER 510 uses the Inmarsat I-4 satellites and the Alphasat satellite for satellite communication. The drawings below show the coverage areas for these satellites.



Command reference

This appendix lists the function, syntax and parameters for commands used with the EXPLORER 510. You can send commands to the EXPLORER 510 either with an SMS or via AT shell. SMS is very useful for remote operation, because you only need the terminal's mobile number to access the terminal. This appendix has the following sections:

- *Overview of M2M AT and SMS commands*
- *SMS remote commands*
- *AT commands*

B.1 Overview of M2M AT and SMS commands

Function	Command	Interface		
		AT shell	ATCO SMS	SMS
Lock and unlock AT shell	_ICLCK	X		
Control MAC address locking	_IMACLOC	X		
Configuration of MAC address list	_IMACLOCAD	X		
Control remote SMS commands	_ISMSRMT	X		
Reset passwords	_ICPWD	X	X	
Control remote access to web interface	_IREMWEB	X	X	
Download and update SW	_IGETFW	X	X	
Install new SW	_IUPDFW	X	X	
Send file from terminal to FTP server	_ISENDFILE	X	X	
Get file from FTP server to terminal	_IGETFILE	X	X	
Update configuration file	_IUPDCFG	X	X	
Get input voltage of the EXPLORER 510	_ITDCIV	X	X	
Administrator password control	ADPWRST			X
Activate PDP context	ACTIVATE			X
Deactivate PDP context	DEACTIVATE			X
Delete SMS messages	CLEAR			X
Get terminal information	GETINFO			X
Restart the terminal	RESTART			X
Configuration of Connection watchdog function	WATCHDOG			X
Configuration of Terminal watchdog function	ADVWATCHDOG			X
Configuration of WAN mode	WANMODE			X

B.2 SMS remote commands

This section describes syntax and parameters for the SMS commands. For examples of use, see *Remote access with SMS* on page 3-5

B.2.1 Syntax conventions

Syntax definitions use the following conventions:

- <parm> indicates that a parameter (without < and >) can be filled in by the user.
- { <opt1> | <opt2> | ... | NA } indicates that one of various options must be chosen by the user. Use **NA** when no value is defined.
- Keywords and parameters are separated by the space (ASCII 32) character.
- The command name and all keywords must be in upper case; most user-provided parameters are case sensitive but may be either case.
- **TE** means Terminal Equipment - the equipment connected locally to the EXPLORER 510.

B.2.2 SMS remote command summary

Commands

The table below summarizes the available SMS remote commands. The password comes just after the last parameter (except for the ATCO command, see below). For examples, see *Remote access with SMS* on page 3-4.

Command	Parameters	Password
ACTIVATE	<qos> <PC/TE type> <apn> <user> <pwd>	<rsms_pwd>
ADPWRST	1 <imei>	<rsms_pwd>
ADVWATCHDOG	<get/set> <wdog_enable> <wakeup> <interval> <ping1> <ping2> <ping3> <apn_type> <apn> <user> <pwd> <pos_response> <sms_number>	<rsms_pwd>
CLEAR	<category> SMS	<rsms_pwd>
DEACTIVATE	<qos> <PC/TE type>	<rsms_pwd>
GETINFO	<info_mode> <dataset>	<rsms_pwd>
RESTART	<reset_type> BGAN	<rsms_pwd>
WATCHDOG	<wdog_op> <ping1> <ping2> <ping3> <ping_always> <ping_interval> <wdog_enable>	<rsms_pwd>
WANMODE	<cmd_op> {<wanmode>}	<rsms_pwd>
SMS command for sending AT commands		
ATCO	<resp_mode> <rsms_pwd> <at_cmd>	

Parameters

The table below summarizes the available parameters for the SMS remote commands.

Parameter	Values	Meaning
<apn_type>	SIM default Network assigned User defined NA	Read the APN from the SIM card. Use the APN assigned by the network. Specify another APN to use. Placeholder when no value is specified. The existing setting applies.
<apn>	<APN> NA CLR	APN name, e.g. bgan.inmarsat.com . Placeholder when no APN is specified. Note that any previously entered APN is maintained. No APN is used.
<at_cmd>	<at_cmd>	AT command, without prefix AT. For supported AT commands, see <i>ATCO commands</i> on page B-9.
<category>	1 2 3 4	Delete only Read SMS messages. Delete Read and Sent. Delete All except Unread. Delete All SMS messages.
<cmd_op>	1 2	Get WANMODE setting Set WANMODE configuration
<dataset>	GPS USAGE ALL	GPS position. Cumulative call time and data usage. GPS position plus call time and data usage.
<get_set>	1 2	Get parameters. Set parameters.
<imei>	<14 digits>	IMEI of the EXPLORER 510, without dashes or check digit.
<info_mode>	1 2	For GPS query: position data only. For other queries: use verbose mode (with titles). For GPS query: position data plus SMS usage. For other queries: use terse mode (no titles).
<interval>	<integer> NA	The number of hours between the Terminal watchdog sessions (1-504). Placeholder when no value is specified. The existing setting applies.
<PC/TE type>	DHCP STATIC AWO <name> <IP addr> ANY	All TEs known via DHCP. All TEs known via Terminal settings. Always On, deactivate all PDP contexts including those established with ACA. Name of specific TE, as known by DHCP server. IP Address of specific TE (or Global IP for DEACTIVATE). Any/all TEs attached (DEACTIVATE: all except PDP context established with ACA).

Parameter	Values	Meaning
<ping_always>	0	Send ping only if no traffic.
	1	Always send ping, regardless of data traffic.
	NA	Placeholder when no value is specified. Note that the existing setting applies.
<ping_interval>	<integer>	Interval between pings (minutes).
	NA	Placeholder when no value is specified. Note that the existing setting applies.
<ping[1/2/3]>	<IP addr>	Three ping destination IP addresses. Note: You must fill in all three places. 0.0.0.0 means any previously entered IP address in this position is deleted.
	NA	Placeholder when no IP address is specified. Note that any previously entered IP address is maintained.
<pos_response>	0	Send an sms response ¹ .
	1	Do not send an sms response ^a .
	NA	Placeholder when no value is specified.
<pwd>	<APN password>	Password associated with APN username.
	NA	Placeholder when no APN password is specified. Note that any previously entered password is maintained.
	CLR	Password is not used.
<qos>	1	Standard/background data (currently the only qos available for M2M).
<reset_type>	1	Normal delay restart.
<resp_mode>	0	None – send no responses to AT commands.
	1	Immediate - immediate responses, but not unsolicited.
	2	Final – suppress immediate if OK, plus unsolicited.
	3	All – send both immediate and unsolicited responses.
<rsms_pwd>	<rsms_pwd>	Remote SMS password. The password must be 5 to 15 characters long and cannot contain spaces. Accepted characters are: A through Z (uppercase characters), a through z (lowercase characters) and 0 through 9 (numeric characters).
<sms_number>	<sms_number>	The phone number to be used for sms response
	NA	Placeholder when no value is specified.
<user>	<APN user name>	User name associated with APN.
	NA	Placeholder when no APN user name is specified. Note that any previously entered user name is maintained.
	CLR	User name is not used.

1. Position SMS response is only for future use, and should be set to NA

Parameter	Values	Meaning
<wakeup>	0 1 NA	Set to NA. This parameter must be present, but is ignored because the EXPLORER 510 does not support wake up functions.
<wanmode>	0 1 2 3 4 5 6 7 8	Cellular modem if available at power-up User selection BGAN only Cellular modem only Not valid for EXPLORER 510 Not valid for EXPLORER 510 Not valid for EXPLORER 510 Not valid for EXPLORER 510 Not valid for EXPLORER 510
<wdog_enable>	0 1 NA	Disabled. Enabled. Placeholder when no value is specified. The existing setting applies. Used if you want to change one of the other parameters without changing the enabled/disabled setting.
<wdog_op>	1 2	Get watchdog configuration. Set watchdog parameters.

B.2.3 SMS reject responses

Reject Response SMS	Possible Cause
ACT/DEACT PARM PROBLEM	The <IP addr> provided for an ACTIVATE or DEACTIVATE command is incorrect (for ACTIVATE, it must be in same subnet as the EXPLORER 510 IP and not be the EXPLORER 510 IP; for DEACTIVATE, it must exist as a local or global IP address in the existing PDP table).
ATCO ERROR	Unable to send AT command to ATC handler.
COMMAND NOT SUPPORTED	Attempt to use an SMS command not supported by the EXPLORER 510.
ERROR: TERMINAL BUSY	An ACTIVATE or DEACTIVATE command is in progress.
INVALID RESTART REQUEST	Attempt to perform restart before EXPLORER 510 has been running for at least 15 minutes.
INVALID WANMODE REQUEST	The requested WAN mode is not supported by the EXPLORER 510, or invalid parameters are used.
INVALID WATCHDOG PING ADDRESS	Entered Ping address is out of range (0.0.0.0 – 255.255.255.254).
INVALID WATCHDOG PING FREQUENCY	Requested Ping Frequency is less than the minimum (5 minutes).
INVALID WATCHDOG REQUEST	"Ping required" or "wdog enabled" fields incorrect in remote SMS message, or watchdog request other than "get" attempted.
WRONG CONNECTION TYPE(NO DHCP TE)	No DHCP TEs connected to the Remote Unit.
WRONG CONNECTION TYPE(NO STATIC TE)	No Static TEs added in Terminal settings.
WRONG CONNECTION TYPE(NO TEs)	No TEs are connected to the Remote Unit.
WRONG PASSWORD	Authentication Failure.
WRONG QOS	Invalid QoS Requested (only a QoS of 1 is valid).

B.3 AT commands

The following most used AT commands are explained in this manual. Other AT commands not mentioned here may still be supported.

Note | AT commands related to data connections are only applicable to the BGAN connection, not to the optional cellular connection.

- *M2M related AT commands*
- *AT commands for message (SMS) configuration*
- *Context management AT commands*

B.3.1 Syntax conventions

Syntax definitions use the following conventions:

- `<parm>` indicates that a parameter (without `<` and `>`) can be filled in by the user.
- `{ <opt1> | <opt2> | ... }` indicates that one of various options must be chosen by the user.
- `[<options>]` indicates that `<options>` may or may not be included in the command.
- Keywords and parameters are separated by commas.
Note: If parameters in the middle are left out, the commas must still be there as placeholders, e.g. `<parm1>, , , <parm4>` - In this case parm 2 and parm 3 are left out, but `<parm4>` is used. If the last parameters are left out, the commas are not needed, e.g. `<parm1>, <parm2>`
- The command name and all keywords must be in upper case; most user-provided parameters are case sensitive but may be either case.
- **TE** means Terminal Equipment - the equipment connected locally to the EXPLORER 510.

B.3.2 M2M related AT commands

Note The EXPLORER 510 does not support BGAN M2M SIM cards nor over-the-air software upgrade from the Inmarsat FUP server.

The following tables summarize some of the most used AT commands for M2M operation. Parameters are explained in *Parameters for ATCO commands* on page B-9 and *Parameters for other M2M related AT commands* on page B-13.

ATCO commands

The table below summarizes the ATCO commands, i.e. AT commands that can be used in the SMS command **ATCO**.

Note You can only use SMS commands over the BGAN network, not with a cellular connection.

Command	Parameters
_IATCROBST ¹	<enable>
_ICPWD	<type>,<old passwd>,<new passwd>
_IGETFILE	<ftp dir>,<filename>,<local dir>,<ftp server>,<ftp uname>,<ftp passwd>[,<apn>[,<apn uname>[,<apn passwd>]]]
_IGETFW	<mode>[,<ftp server>[,<ftp uname>[,<ftp passwd>[,<apn>[,<apn uname>[,<apn passwd>]]]]]
_IREMWEB	<enable>,<ip_addr_lo>[,<ip_addr_hi>][,<apn>[,<apn uname>,<apn passwd>]]
_ISENDFILE	<local dir>,<filename>,<ftp dir>,<ftp server>,<ftp uname>,<ftp passwd>[,<apn>[,<apn uname>[,<apn passwd>]]]
_IUPDCFG	<filename>
_IUPDFW	<filename>

1. Robustness for 3GPP LTE signals, not ATC

Parameters for ATCO commands

Parameter	Values	Meaning
<apn passwd>	<apn passwd>	Password for the APN.
<apn uname>	<apn uname>	User name for the APN.
<apn>	<apn>	APN name.
<enable>	0 1	Disable. Enable.
<filename>	<filename>	The name of the file to use, including extension.

Parameter	Values	Meaning
<ftp dir>	<ftp dir>	The name of the directory on the ftp server to use for getting or saving a file.
<ftp passwd>	<ftp passwd>	Password for the ftp server.
<ftp server>	<ftp server>	Host name or IP address of the ftp server.
<ftp uname>	<ftp uname>	User name for the ftp server.
<ip_addr_hi>	<ip_addr_hi>	The upper IP address of a range of allowed IP addresses. This parameter is optional; if omitted, only the specified single IP address <ip_addr_lo> may access the EXPLORER 510.
<ip_addr_lo>	<ip_addr_lo>	IP address of the HTTP client that should be allowed remote access to the EXPLORER 510, or, the lowest address in a range of IP addresses, if a range of addresses is allowed.
<local dir>	<local dir>	The name of the local directory in the EXPLORER 510 to use for getting or saving a file.
<mode>	0 1	Deferred activation. Immediate activation.
<new passwd>	<new passwd>	The new password to be used after this command. The password must be 5 to 15 characters long and cannot contain spaces. Avoid special characters. Accepted characters: A through Z (uppercase characters), a through z (lowercase characters) and 0 through 9 (numeric characters).
<old passwd>	<old passwd>	The old password that is already in the system.
<type>	AD RS	The type of password is administrator password. The type of password is remote SMS password.

ATCO response codes

The following response codes apply to the AT commands supported by SMS.

Code	Text	Explanation
General codes		
0	Complete	Operation completed successfully.
1	Unexpected software error	Software error.
2	Local file open error	_IGETFILE: could not open local file after download. _ISENDFILE: could not open local file. _IUPDCFG: Loading configuration failed. Incompatible file format.
3	Directory not found	Could not find specified directory on local file system.
4	File not found	Could not find specified file name on local file system.
5	Error renaming file	Could not restore after failed upgrade.
Context Management codes		
13	Context activation error	Context activation failed. Could be problem with PS attach, SIM subscription, APN, network or connectivity.
FTP Management codes		
20	FTP hookup fail	Connection to FTP server failed. Problem could be server unreachable or specified IP address or server name invalid, or connectivity failure.
21	FTP login fail	FTP user name or password incorrect.
23	FTP 'cwd' fail	Could not change to working directory on FTP server.
24	FTP data connection fail	Could not establish an FTP data connection with the server.
26	FTP xfer command fail	Could not initiate data transfer on an established connection. May be caused if filename not found.
29	FTP socket fail	Error while reading or writing FTP data socket.
31	FTP xfer timed out	FTP client timed out waiting for socket ready (read or write), e.g. due to loss of connectivity during transfer.
_IGETFW command codes		
40	File in use, cannot download	The file to be downloaded is the same as the image currently in use.
41	Starting immediate upgrade...	Normal success. File downloaded successfully, now starting immediate update.

Code	Text	Explanation
_IUPDFW command codes		
50	New firmware file not found	Could not find specified filename.
51	New firmware file corrupt	New firmware file corrupt.
52	New firmware file failure	The new firmware failed to run or failed to acquire the network and the unit fell back to the old release.
54	Upgrade status file error	Previous update has not finished yet.
_IREMWEB command codes		
81	Global IP: <ip_addr>	Remote connection to web interface is set up successfully. Indicates global IP address assigned to the EXPLORER 510's own PDP context, to which an HTTP connection may be made.

Other M2M related AT commands

Command	Parameters
_ICLCK	<type>,<enable>,<passwd>
_IMACLOC	<enable>,<interface>[,<interface>]
_IMACLOCAD	<action>,<interface>,<MAC Address>[,<MAC Address>] ¹
_ISMSRMT	<enable>
_ITDCIV	No parameters ²

1. Up to 10 MAC addresses may be specified.
2. Type **_ITDCIV?** to get the input voltage (in mV) of the EXPLORER 510

Parameters for other M2M related AT commands

The table below summarizes the available parameters for the AT commands for M2M operation.

Parameter	Values	Meaning
<action>	0	Delete.
	1	Add.
<enable>	0	Disable.
	1	Enable.
<interface>	0	0 means Ethernet interface. This is the only option.
<MAC Address>	<MAC Address>	MAC address(es) for MAC locking. Up to 10 MAC addresses are permitted.
<passwd>	<passwd>	The existing administrator password.

B.3.3 AT commands for message (SMS) configuration

The following AT commands are used for configuration of SMS.

Note For details on parameters for the message configuration commands, see the 3GPP standard ETSI TS 127 005 V4.2.1.

Command	Parameters	Function
+CMGD	<index>	Delete Message.
+CMGF	<mode>	Message Format.
+CMGL	<stat>	List Messages.
+CMGR	<index>	Read Messages.
+CMGS	<da/mr>[,<toda/scts>]	Send Message.
+CNMI	[<mode>[,<mt>[,<bm>[,<ds>]]]]	New Message Indications to TE.
+CPMS	<mem1>[,<mem2>[,<mem3>]]	Preferred Message Storage.
+CSCA	<sca>[,<tosca>]	Service Center Address.
+CSMP	[<fo>[,<vp>[,<pid>[,<dc>]]]]	Set Text Mode Parameters.
+CSMS	<service>	Select Message Service.

B.3.4 Context management AT commands

The table below summarizes some of the most used AT commands for context management. Parameters are explained in the table in the next section. For details, refer to the 3GPP standard TS 27.007.

Note | The context management AT commands can only be used over a BGAN connection and will not work on a cellular connection.

Command	Parameters
+CGACT	[<state>[,<cid>[,<cid>[,...]]]
+CGDCONT	[<cid>[,IP[,<APN>[,<PDP_addr>[,<d_comp>[,<h_comp>[,<apn uname>[,<apn_passwd>]]]]]]]]]
+CGDSCONT	[<cid>[,<p_cid>[,<d_comp>[,<h_comp>]]]
+CGEQMIN	[<cid>[,<Traffic class>[,<Maximum bitrate UL>[,<Maximum bitrate DL>[,<Guaranteed bitrate UL>[,<Guaranteed bitrate DL>[,<Delivery order>[,<Maximum SDU size>[,<SDU error ratio>[,<Residual bit error ratio>[,<Delivery of erroneous SDUs>[,<Transfer delay>[,<Traffic handling priority>]]]]]]]]]]]]]]]]]]]]]
+CGEQREQ	[<cid>[,<Traffic class>[,<Maximum bitrate UL>[,<Maximum bitrate DL>[,<Guaranteed bitrate UL>[,<Guaranteed bitrate DL>[,<Delivery order>[,<Maximum SDU size>[,<SDU error ratio>[,<Residual bit error ratio>[,<Delivery of erroneous SDUs>[,<Transfer delay>[,<Traffic handling priority>]]]]]]]]]]]]]]]]]]]]]
+CGPADDR	[<cid>[,<cid>[,...]]]
+CGTFT	[<cid>[,<packet filter identifier>[,<evaluation precedence index>[,<source address and subnet mask>[,<protocol number (ipv4) / next header (ipv6)>[,<destination port range>[,<source port range>[,<ipsec security parameter index (spi)>[,<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>[,<flow label (ipv6)>]]]]]]]]]]]]]]]]]]]]]

Parameters for context management AT commands

The table below summarizes the main parameters for the AT commands for context management. For details, refer to the 3GPP standard TS 27.007.

Parameter	Values	Meaning
<apn passwd>	<apn passwd>	Password for the APN.
<apn uname>	<apn uname>	User name for the APN.
<apn>	<apn>	APN name.
<cid>	<cid>	The Context Identifier (1 – 11) for the PDP context. If no cid is entered, the command applies to all defined PDP contexts.
<d_comp>	0	Data compression off (default if value is omitted)
<destination port range>	<destination port range>	Destination port range in the form From.To To indicate only one port number, type in the same port number under From and To. Example: 65333.65338 indicates port numbers from 65333 to 65338, both included.
<evaluation precedence index>	<evaluation precedence index>	The evaluation precedence index defines the order in which the traffic flow filters are applied to packets. 0 is first, then 1, 2 etc.
<Guaranteed bitrate DL>	<Guaranteed bitrate DL> 0	The guaranteed bit rate down link (32, 64, 128). If the parameter is set to '0' the subscribed value will be requested.
<Guaranteed bitrate UL>	<Guaranteed bitrate UL> 0	The guaranteed bit rate up link (32, 64, 128). If the parameter is set to '0' the subscribed value will be requested.
<h_comp>	0 1	Header compression off (default if value is omitted) Header compression on (manufacturer preferred compression)
<Max bitrate DL>	<Max bitrate DL> 0	The maximum bit rate down link (32, 64, 128). If the parameter is set to '0' the subscribed value will be requested.
<Max bitrate UL>	<Max bitrate UL> 0	The maximum bit rate up link (32, 64, 128). If the parameter is set to '0' the subscribed value will be requested.
<p_cid>	<p_cid>	The primary context to which the secondary context is related.
<packet filter identifier>	<packet filter identifier>	The packet filter identifier (1 – 8).
<PDP_addr>	<PDP_addr>	Omit this parameter - note that the comma must still be there if other parameters come after this one.

Parameter	Values	Meaning
<protocol number>	<protocol number>	This number is uniquely assigned for the protocol being used. TCP is set to 6, and UDP is set to 17. The protocol number determines which protocol is used by the traffic flow filter (0-255).
<source address and subnet mask>	<source address and subnet mask>	This is an IPv4 IP address and subnet mask (0.0.0.0.0.0.0 to 255.255.255.255.255.255.255). The first four numbers are the IP address and the last four numbers are the subnet mask.
<source port range>	<source port range>	Source port range in the form From.To . See <destination port range> for example.
<state>	0 1	Deactivate. Activate.
<Traffic Class>	1 3	Streaming (not available for M2M subscription). Standard data (Background).
<Transfer delay>	0 500 4000	0 ms, error correction is determined by the network 500 ms, error correction is disabled 4000 ms, error correction is applied

Conformity

C.1 CE

The EXPLORER 510 is CE certified as stated in the simplified “EU Declaration of Conformity”, enclosed in electronic copy at the end of this appendix.

The WLAN interface is CE certified through the manufacturer of the WLAN card.

Use of WLAN:

The WLAN interface requires that the user enters the current country of operation. See *WLAN interface setup* on page 4-15.

C.2 IC

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This Class [B] digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe [B] est conforme à la norme NMB-003 du Canada.

C.3 FCC

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 or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

NOTICE:

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.

NOTICE:

Changes or modifications made to this equipment not expressly approved by Cobham Satcom may void the FCC authorization to operate this equipment.

C.4 Japanese Radio Law and Japanese Telecommunications Business Law Compliance.

This device is granted pursuant to the Japanese Radio Law (電波法) and the Japanese Telecommunications Business Law (電気通信事業法)

This device should not be modified (otherwise the granted designation number will become invalid)

EU Declaration of Conformity

Hereby **Thrane & Thrane A/S trading as Cobham SATCOM** declares that the following equipment complies with the specifications of:

RED directive 2014/53/EU concerning Radio Equipment

Equipment included in this declaration

Model	Description	Part no.
TT-3711A	EXPLORER 510 Terminal	403711A-505
TT-3711A	EXPLORER 510 Terminal	403711A-506

The full text of the EU declaration of conformity is available at the following internet address:

<https://partnerportal.cobhamsatcom.com>

RED

Document no.: 99-157452-D

A

APN Access Point Name. The Access Point Name is used by the terminal operator to establish the connection to the required destination network.

B

BGAN Broadband Global Area Network. A satellite network based on geostationary satellites, delivering broadband data and telephony to virtually any part of the earth, with full UMTS (3G) compatibility. BGAN enables users to access e-mail, corporate networks and the Internet, transfer files and make telephone calls.

C

CE Conformité Européenne. This term signifies that a CE certified product conforms to European health, environmental, and safety regulations. In short, it makes the product legal to be sold in the European Union.

CS Circuit Switched. Circuit-switched networks require dedicated point-to-point connections during calls.

D

DHCP Dynamic Host Configuration Protocol. A protocol for assigning dynamic IP addresses to devices on a network. With dynamic addressing, a device can have a different IP address every time it connects to the network.

F

FCC Federal Communications Commission. An independent agency of the United States government, created by Congressional statute to regulate interstate communications by radio, television, wire, satellite, and cable in all 50 states, the District of Columbia and U.S. territories. The FCC works towards six goals in the areas of broadband, competition, the spectrum, the media, public safety and homeland security.

G

GMPCS Global Mobile Personal Communications Services

GNSS Global Navigation Satellite System. A navigation satellite system using the GPS, GLONASS, Galileo or Beidou system.

H

HTTP HyperText Transfer Protocol. HTTP is the underlying protocol used by the World Wide Web. This protocol defines how messages are formatted and transmitted, and what actions Web servers and browsers should take in response to various commands.

HTTPS Hypertext Transfer Protocol Secure (HTTPS) is an extension of the Hypertext Transfer Protocol (HTTP). It is used for secure communication over a computer network, and is widely used on the Internet.

I

- IC Industry Canada (French: Industrie Canada) is the department of the Government of Canada with a mandate of fostering a growing, competitive, knowledge-based Canadian economy.
- ICMP Internet Control Message Protocol. An Internet protocol mostly used for diagnostics.
- IMSI International Mobile Subscriber Identity. A number used to identify the user of a cellular network. It is a unique identification associated with all cellular networks.
- IMSO International Maritime Satellite Organisation. An intergovernmental body established to ensure that Inmarsat continues to meet its public service obligations, including obligations relating to the GMDSS.
- IP Ingress Protection. An international classification system for the sealing effectiveness of enclosures of electrical equipment against the intrusion into the equipment of foreign bodies (i.e. tools, dust, fingers) and moisture. This classification system uses the letters "IP"

L

- LAN Local Area Network. A computer network covering a small physical area, like a home, office, school or airport. The defining characteristics of LANs, in contrast to wide-area networks (WANs), include their usually higher data-transfer rates, smaller geographic area, and lack of a need for leased telecommunication lines.
- LED Light Emitting Diode

M

- M2M Machine-to-machine. Direct communication between unmanned devices using any communications channel, including wired and wireless.

N

- NAT Network Address Translation. An Internet standard that enables a local-area network to use one set of IP addresses for internal traffic and a second set of addresses for external traffic. A NAT module makes all necessary address translations.
- NSD Network Service Device. An Inmarsat device for routing network traffic between GX and BGAN services

P

- PBX Private Branch Exchange, telephone exchange that serves a particular business or office.
- PIN Personal Identification Number. A code number used to provide access to a system that has restricted access.
- PPPoE Point-to-Point Protocol over Ethernet. A network protocol for encapsulating Point-to-Point Protocol (PPP) frames inside Ethernet frames. By using PPPoE, users can virtually "dial" from one machine to another over an Ethernet network, establish a point to point connection between them and then securely transport data packets over the connection.

R

RF Radio Frequency. Electromagnetic wave frequencies between about 3 kHz and about 300 GHz including the frequencies used for communications signals (radio, television, cell-phone and satellite transmissions) or radar signals.

S

SIM Subscriber Identity Module. The SIM provides secure storing of the key identifying a mobile phone service subscriber but also subscription information, preferences and storage of text messages.

SIP Session Initiation Protocol. An application-layer control (signaling) protocol for creating, modifying, and terminating sessions with one or more participants. Used e.g. for Internet telephony.

SSL Secure Sockets Layer. The standard technology for keeping an Internet connection secure and safeguarding any sensitive data that is being sent between two systems.

T

TE Terminal Equipment - the equipment connected locally to the terminal.

TLS Transport Layer Security. An updated, more secure, version of SSL.

U

USB Universal Serial Bus. A specification to establish communication between devices and a host controller (usually personal computers). USB is intended to replace many varieties of serial and parallel ports. USB can connect computer peripherals such as mice, keyboards, digital cameras, printers, personal media players, flash drives, and external hard drives.

UTC Coordinated Universal Time. The International Atomic Time (TAI) with leap seconds added at irregular intervals to compensate for the Earth's slowing rotation. Leap seconds are used to allow UTC to closely track UT1, which is mean solar time at the Royal Observatory, Greenwich.

V

VPN Virtual Private Network. A network that is constructed by using public wires to connect nodes. You can create networks using the Internet for transporting data, using security mechanisms so that only authorized users can access the network.

W

WAN Wide Area Network. A telecommunications network or computer network that extends over a large geographical distance. In this manual, WAN is the external network via BGAN or cellular connection, whereas LAN is used for the local connection of equipment to the terminal.

WLAN Wireless LAN. A wireless computer network that links two or more devices using a wireless distribution method (often spread-spectrum or OFDM radio) within a limited area such as a home, school, computer laboratory, or office building.

A

- AC/DC adapter specifications A-4
- access
 - remote 3-5
- access to settings
 - limit in web interface 4-38
- access using AT commands 3-5
- admin password
 - change 4-38
 - disable 4-37
 - enable 4-37
 - log in 4-37
 - log out 4-38
 - reset 4-23
- advanced settings 4-37
- alerts
 - view in web interface 3-11, 4-21
- Alphasat
 - frequencies A-4
- antenna
 - connector A-7
 - short description 1-4
- APN
 - set up for BGAN 4-29
- AT commands
 - access with IP 3-5
 - list of B-1
 - remote access with IP 3-8
- audio assisted pointing 2-7
- automatic activation 4-30
- automatic shut down
 - connection 4-43

B

- backup configuration 4-40
- battery
 - capacity display accuracy 5-6
 - charge 5-6
 - short description 1-4
 - specifications A-2
- BGAN network
 - startup mode 4-25
- BGAN profile 4-48
- bridge mode 4-27

C

- call charges
 - estimating in web interface 4-44
- call log 4-13
- calls
 - make 3-9
 - missed, received, outgoing 4-13
 - total usage 4-14
- CE compliance C-1
- cellular network
 - overview 2-6
 - set up 4-50
 - startup mode 4-25
- charge
 - EXPLORER 510 battery 5-6
 - smartphone or tablet 3-11
- charges for calls
 - estimating 4-44
- command reference B-1
- configuration
 - copy 4-40
 - save or load 4-40
 - USB 4-16
 - WLAN 4-15
- conformity C-1
- connect a phone
 - WLAN 2-11
- connected devices
 - manage 4-17
- connection
 - automatic shut down 4-43
 - connection watchdog 4-41
- connections
 - dedicated 4-32
- connectors
 - antenna A-7
 - DC input A-2
 - USB Host A-3
- Control panel 4-12

D

- data
 - limits, set 4-43
 - log 4-13
 - Standard, definition 3-2
 - Streaming definition 3-2
 - total usage 4-14

- data connections
 - dedicated 4-32
 - start and stop in web interface 4-8
- DC input
 - connector A-2
- dedicated connections 4-32
- default IP address 2-5, 4-3
- delivery contents 2-1
- devices
 - manage 4-17
- diagnostics report
 - create 4-22, 5-18
- disposal 5-6

E

- Event log 4-21
- EXPLORER Connect app
 - check software version 2-2
- extended L-band
 - frequencies A-4

F

- factory settings
 - restore 4-39
- FCC compliance C-1
- fixed position for terminal 2-15
- forward port 4-35
- frequencies
 - extended L-band A-4
 - I-4 A-4

G

- GNSS
 - select system 4-28
 - troubleshooting 5-9

H

- HTTP, redirect to HTTPS 4-49

I

- I-4
 - frequencies A-4
- IC compliance C-1
- included items 2-1
- indicator, Status LED 5-11
- indicator, WLAN 5-12
- initial inspection 2-1
- insert SIM card 2-2
- Internet connection mode
 - setting 4-27

- IP address
 - for web interface 2-5, 4-3
 - local, setting up 4-27
- IP connection
 - monitoring 4-41
- IP handset
 - SIP settings 2-12
- items included 2-1

L

- LAN
 - automatic activation of 4-30
 - connect an IP handset 2-12
- language
 - change in web interface 4-28
- LED on front panel 5-11
- light indicator 5-11
- limit
 - allowed kB 4-43
 - allowed time 4-43
 - data 4-43
- limiting user access 4-38
- link monitoring 4-41
- load configuration 4-40
- log
 - of calls 4-13
 - of data connections 4-13
 - of events 4-21
- log in as administrator 4-37
- log out as administrator 4-38

M

- MAC address
 - connected devices 4-17
- manage connected devices 4-17
- maximum for data 4-43
- monitoring the external IP connection 4-41
- monitoring the terminal 4-42

N

- navigation in web interface 4-5
- network
 - cellular or BGAN 2-6
 - select startup mode 4-25

P

- password
 - change 4-38
 - disable 4-37
 - enable 4-37
 - log in 4-37
 - log out 4-38
 - reset 4-23
- permissions
 - setting for users 4-38
- phone
 - connect to WLAN 2-11
 - SIP settings 2-12
- phone call 3-9
- PIN
 - changing for BGAN 4-39
 - changing for cellular network 4-40
 - enabling or disabling for BGAN 4-39
 - enabling or disabling for cellular network 4-40
 - enter in web interface 4-7
- ping command from the terminal 4-41
- point the antenna again 2-8
- pointing
 - audio assisted 2-7
- pointing process
 - restarting 2-8
- port forwarding 4-35
- position
 - troubleshooting 5-9
- Power connector A-2
- power supply
 - ACDC adapter A-4

R

- recovery
 - software 5-4
- remote management
 - access using AT commands 3-8
 - access using web interface 3-6
 - activation with SMS 3-5
 - preparation 3-7
 - set up in web interface 4-44
- remove SIM card 2-3
- repoint the antenna 2-8
- report
 - diagnostics 4-22, 5-18
- Reset button
 - change function 4-47
- restore factory settings 4-39

- rights for users
 - in web interface 4-38
- router mode 4-27

S

- safety summary 1-ii
 - save configuration 4-40
 - semi-fixed installation 2-15
 - settings
 - in web interface 4-12
 - limit access 4-38
 - restore 4-39
 - SIM card
 - insert 2-2
 - remove 2-3
 - short description 1-4
 - SIP settings 2-12
 - smartphone
 - charge via USB 3-11
 - connect for calls 2-11
 - SIP settings 2-12
 - SMS
 - activate data connection 3-5
 - SMS commands B-3
 - list of B-1
 - parameters summary B-4, B-16
 - summary B-3
 - software
 - recovery 5-4
 - update with USB 5-3
 - update with web interface 4-22, 5-2
 - view current EXPLORER Connect app version 2-2
 - sound during pointing 2-7
 - Standard data
 - definition 3-2
 - Status
 - view in web interface 4-10
 - Streaming data
 - definition 3-2
- T**
- tablet
 - charge via USB 3-11
 - Terminal watchdog
 - setup in web interface 4-42
 - Thrane IP Handset
 - enable or disable 4-48
 - total usage 4-14
 - tracking the terminal 3-11
 - setup in web interface 4-33

- Traffic control 4-17
- troubleshooting 5-7
- troubleshooting guide 5-7
- typography used in this manual 1-v

U

- update software 4-22, 5-2
 - USB 5-3
- usage
 - calls and data 4-14
- USB
 - charge smartphone or tablet 3-11
 - configure 4-16
 - connector A-3
 - update software 5-3
- user permissions
 - setting up in web interface 4-38

W

- warning messages 3-11, 4-21
- warranty 5-1
- watchdog
 - connection 4-41
 - terminal 4-42
- web interface
 - accessing 4-3
 - change language 4-28
 - definition 4-3
 - navigating 4-5
- what's in the delivery 2-1
- WLAN
 - automatic activation of 4-30
 - configure 4-15

