



Strigo

User Guide

Strigo Hughes 4201



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HUGHES[®]

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Understanding safety alert messages

Safety alert messages call attention to potential safety hazards and tell you how to avoid them. These messages are identified by the signal words DANGER, WARNING, CAUTION, or NOTICE, as illustrated below. To avoid possible property damage, personal injury, or in some cases possible death, read and comply with all safety alert messages.

Messages concerning personal injury

The signal words DANGER, WARNING, and CAUTION indicate hazards that could result in personal injury or in some cases death, as explained below. Each of these signal words indicates the severity of the potential hazard.



CAUTION indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

Messages concerning property damage

A NOTICE concerns property damage only.



NOTICE is used for advisory messages concerning possible property damage, product damage or malfunction, data loss, or other unwanted results—but *not* personal injury.

Safety symbols

The generic safety alert symbol



calls attention to a potential personal injury hazard. It appears next to the DANGER, WARNING, and CAUTION signal words as part of the signal word label. Other symbols may appear next to DANGER, WARNING, or CAUTION to indicate a specific type of hazard (for example, fire or electric shock). If other hazard symbols are used in this document they are identified in this section.

Additional symbols

This document uses the following hazard symbols:



Warning: Potential Radio Frequency (RF) hazard. Where you see this alert symbol and WARNING heading, strictly follow the warning instructions to avoid injury to eyes or other personal injury.



Warning: Where you see this alert symbol and WARNING heading, strictly follow the warning instructions to avoid personal injury.



Danger: Electric shock hazard: Where you see this alert symbol and DANGER heading, strictly follow the warning instructions to avoid electric shock injury or death.

Warnings for satellite terminal



Do Not Stand in Front of the Antenna: This device emits radio frequency energy. To avoid injury, do not place head or other body parts in front of the satellite antenna when system is operational. Maintain a distance of one meter or more from the front of the Satellite Terminal antenna.



General: Handle your Satellite Terminal with care. The unit is weather resistant per IEC 60529 IP54; however, do not submerge the unit. Avoid exposing your Satellite Terminal to extreme hot or cold temperatures outside the range -25° C to +55° C.

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

Changes or modifications to the Terminal not expressly approved by Hughes Network Systems could void your authority to operate this equipment.

Only use a soft damp cloth to clean the Terminal.

To avoid impaired Terminal performance, please ensure the unit's antenna is not damaged or covered with foreign material like paint or labeling

When inserting the SIM, do not bend it or damage the contacts in any way. When connecting the interface cables, do not use excessive force.



In the Vicinity of Blasting Work and in Explosive Environments:

Never use the Satellite Terminal where blasting work is in progress. Observe all restrictions and follow any regulations or rules. Areas with a potentially explosive environment are often, but not always, clearly marked. Do not use the Terminal while at a petrol filling station. Do not use near fuel or chemicals.



Qualified Service: Do not attempt to disassemble your Satellite Terminal. The unit does not contain consumer-serviceable components. Only qualified service personnel may install or repair equipment.



Accessories: Use Hughes approved accessories only. Use of non-approved accessories may result in loss of performance, damage to the Satellite Terminal, fire, electric shock or injury.



Battery: Use only a battery approved by Hughes. Risk of explosion if battery is replaced by an incorrect type. Recycle or dispose of this battery in accordance with local regulations.



Connecting Devices: Never connect incompatible devices to the Satellite Terminal. When connecting the Satellite Terminal to any other device, read the device's User Manual for detailed safety instructions.

 **CAUTION**



Pacemakers: The various brands and models of cardiac pacemakers available exhibit a wide range of immunity levels to radio signals. Therefore, people who wear a cardiac pacemaker and who want to use a Satellite Terminal should seek the advice

of their cardiologist. If, as a pacemaker user, you are still concerned about interaction with the Satellite Terminal, we suggest you follow these guidelines:

- Maintain a distance of one meter from the main antenna front and sides and your pacemaker
- Refer to your pacemaker product literature for information on your particular device

If you have any reason to suspect that interference is taking place, turn off your Satellite Terminal immediately.

CAUTION



Hearing Aids: Most new models of hearing aids are immune to radio frequency interference from Satellite Terminals that are more than 2 meters away. Many types of older hearing aids may be susceptible to interference, making it very difficult to use them near a Terminal. Should interference be experienced, maintain additional separation between you and the Satellite Terminal.

CAUTION



Electrical Storms: Operation of the Satellite Terminal during electrical storms may result in severe personal injury or death.

Equipment users

User must be a skilled person. Designated users should not be exposed to conditions that could cause pain or injury, nor intentionally caused said conditions.

Overview

The Hughes 4201 Mobile Satellite terminal provides reliable satellite connectivity over the Strigo GMR-1 3G mobile satellite network. IP data services are accessible through Ethernet and Wi-Fi interfaces. The small form factor of the Hughes 4201 Mobile Satellite terminal greatly enables mobility of the end user.



Figure 1: Hughes 4201 Mobile Satellite terminal

About this user guide

This user guide contains the most up-to-date information available on this product on the date it was generated. It is focused on the specific information needed to operate the Hughes 4201 Mobile Satellite terminal and to connect to the Strigo mobile satellite network. If you are a first-time user, you will be guided through the procedure for powering up your terminal, obtaining a GPS fix, connecting your computer to the terminal and registering with the network. You are then ready to start using broadband data services.

Package contents

When you unpack the Hughes 4201 Mobile Satellite terminal kit package, you will find the following:

- Hughes 4201 Mobile Satellite terminal
- AC/DC power adapter

- Ethernet cable
- Lithium Ion battery
- Quick Start User Guide

Your Service Provider will supply you with a UMTS Subscriber Identification Module (USIM) and its PIN, and Satellite Terminal configuration instructions – you will need these to access the satellite network.

Minimum system requirements for laptop/PC

These are the minimum computer system requirements for successful interface with the Satellite Terminal:

- Internet Browser: Microsoft Internet Explorer (IE11 or later), Mozilla Firefox, Chrome, or Safari.
- PC Support for Wi-Fi (802.11b/g/n) or Ethernet

Using the Hughes 4201

Before getting started

NOTICE

Install the USIM and battery into the terminal unit and then fully charge the battery using the supplied AC/DC converter before powering up the unit.



Figure 2: Inserting the USIM card

Quick start

Press the power button for at least 2 seconds to power on the unit.

The Hughes 4201 Mobile Satellite terminal must first obtain a GPS fix by setting it up in a location with an open view of the sky.

GPS icon

GPS

The GPS icon on the LCD indicates the state of the GPS information in the terminal.

The icon **flashes** after power up until a fresh GPS fix is obtained.

The icon is **on steady** when the terminal has a new GPS fix.

Satellite icons



The satellite icons, located next to the GPS icon, indicate the **status of the GPS receiver** in the terminal and the **number of visible satellites**.

The icons are **off** when the **GPS receiver is off**.

The icons are **active** when the **GPS receiver is on**, either flashing or steady state. The number of icons in steady state indicates the number of GPS satellites in view. You will need all three on solid to acquire a new GPS fix. Note that once an

adequate GPS fix is obtained, both the GPS receiver and all of the satellite icons are turned off and the word “GPS” should go on steady.

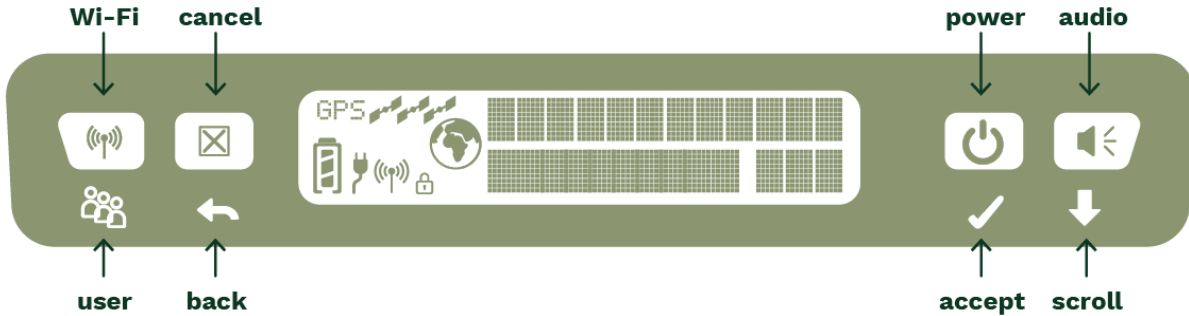


Figure 3: Terminal iUI (LCD)

The top line gives the compass bearing and elevation angle of the Echostar T1 satellite.



Figure 4: Compass bearing and elevation angle of the Echostar T1 satellite

Use the signal quality bar and numeric display on the lower line to help point the terminal to the satellite. While in pointing mode, you may also activate the audio pointing aid by a long press of the **Audio/Scroll** button on the right.

For best performance of the terminal it is recommended to maximize the signal received by the terminal by adjustment of elevation and compass direction. Once you have optimized pointing of the terminal to the satellite, exit pointing by a long press of the **Cancel/Back** button. The unit will now attempt to register with the satellite network.

Once the unit has registered and is Packet Switched (PS) attached, it will automatically create a data connection.

Web UI quick start

Alternatively, you can connect a computer and use the Hughes 4201's internal Web server. From your terminal equipment (e.g., PC), enter **192.168.128.100** as the URL to access the Hughes 4201's home page.

The Terminal Status page gives you all the information you need to point and register with the network. Once you have a GPS fix and are pointed to the satellite

as best you can, click the **Register with Network** button to start the registration process.

Once you are registered and attached, the terminal automatically establishes a data connection.

Strigo

Home Settings Usage Support

Terminal Status

STATUS

Connection

Attached
Data Connected

Signal: [Progress Bar]

Position

3D Fix
Location: 52.1472° N
117.4417° W
Altitude: 3747 m
Last Fix: 16-Mar-2020,
20:18:50 UTC
MGRS: 11UMT6977877504

Terminal Properties

Wi-Fi On (WPA2)
Mains Connected

Battery: Charging (75%)

Data Connection

Connection Status	Global IP	Action
Connected	10.15.0.11	Disconnect

Connected Devices

Local Devices Using the Shared Connection

Local IP

192.168.128.101
192.168.128.102
192.168.128.103
192.168.128.104
192.168.128.106

Connecting the terminal to the computer

You can connect your computer to the Hughes 4201 with one or more of the following interfaces:

- WiFi
- Ethernet

NOTICE

During initial setup, the terminal can only be configured using an Ethernet connection. Once the terminal has been configured, both interfaces (WiFi and Ethernet) can be used for data transfer depending on the service required.

Your computer must be configured to support your chosen connection method. Refer to the documentation supplied with your computer for details.

Connecting by Ethernet

To connect the Hughes 4201 Mobile Satellite terminal to a device using Ethernet:

- Connect a standard Ethernet cable to your device's Ethernet port, and insert the other end of the connector into the Ethernet port on the Hughes 4201.

Connecting by Wi-Fi

To enable the Wi-Fi, long press (> 2 seconds) the **Wi-Fi** button on the front of the terminal.

- The default SSID is "Strigo-last 7 digits of IMEI"
- The default channel number is 11
- Up to 4 users can connect by W-Fi

NOTICE

You cannot enable WPA or WPA2 encryption from the LCD/keypad interface. The Wi-Fi encryption must be configured in the Web UI.

Wi-Fi security

- WPA and WPA2 Protection Status: Check the box to "Enable" either the WPA or WPA2 for added security.
- WPA or WPA2 Key: It is strongly recommended to replace the default password with your own unique password.

NOTICE

- SSID Broadcast: For added security you can choose not to broadcast your SSID.
 - MAC Filtering: For added security, check the box to "Enable" MAC Filtering. You can define up to 10 MAC addresses that are allowed to connect to your Wi-Fi.
-

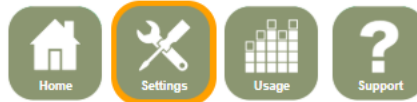
NOTICE

To determine the MAC address of a PC, go to a DOS prompt and type **ipconfig/all**.

For Mac OS X, under the Apple Menu go to **System Preferences > Network** and **Show Airport**. The Airport Id is the MAC address. Alternatively, go to **About this Mac > More Info > network**, and select **Airport**.

NOTICE

When Wi-Fi is enabled, unauthorized users may be able to access your Strigo service. If WPA/WPA2 is enabled, you must provide other Wi-Fi users with the password in order for them to connect to the terminal. You can go to the **Manage Connections** page on the Web UI to see what computers are actually using the terminal's Strigo service.



Wi-Fi Settings

Settings	
	General Setup
	IP Address / DHCP
	Ethernet Security
	Wi-Fi
	Security
	Outbound Filters
	Port Forwarding

Wi-Fi Settings	
Enable Wi-Fi	<input checked="" type="checkbox"/> Enable Wi-Fi Interface
Network Name (SSID)	STRIGO-000390-9
Network Channel	11
Wi-Fi Protection	WPA2 Protection
Wi-Fi MAC Address Filtering	<input type="checkbox"/> Enable Wi-Fi MAC Address Filtering

WPA2	
WPA2 Passphrase	svt12345 Hide Key
AES Update Interval	3600 secs

Apply Changes

Using the LCD and keypad

LCD display and keypad

The Hughes 4201 Mobile Satellite terminal has an LCD display that provides status information about the terminal. It has a four-button keypad that allows you to control the operational features of the terminal without the need of a PC or a browser. It also includes control of an audible pointing aid integrated into the terminal.



Figure 5: Layout of the LCD and keypad

Terminal buttons

The Hughes 4201 Mobile Satellite terminal provides four buttons for the user. Each button has two primary functions, one invoked with a short press and the other invoked with a long press. The top icon (icon on button) associated with a button is the long press function. The bottom icon is the short press function.

Table 1: Terminal buttons

Button name	Short press	Long press
User	Selects the user to display	Wi-Fi on/off
Back	Up one level in menu	Cancel menu/Exits pointing
Accept	Enters menu and confirms selection	Power on/off
Scroll	Scrolls through a menu	Turns Audio on/off

A “short press” is pressing a key for less than two seconds.

A “long press” is pressing a key for two seconds or longer.

LCD status display

Pointing mode display

By default, at power up the LCD shows the pointing display. The top line alternates between "Pointing" and the compass bearing and elevation angle of the closest satellite. In Figure 6, the satellite bearing is South-South-East (SSE), the elevation angle to the satellite is 31 degrees and the signal strength is 51 dB.



Figure 6: Pointing Mode Display

The compass bearing is indicated with abbreviated compass directions as shown in Figure 7:

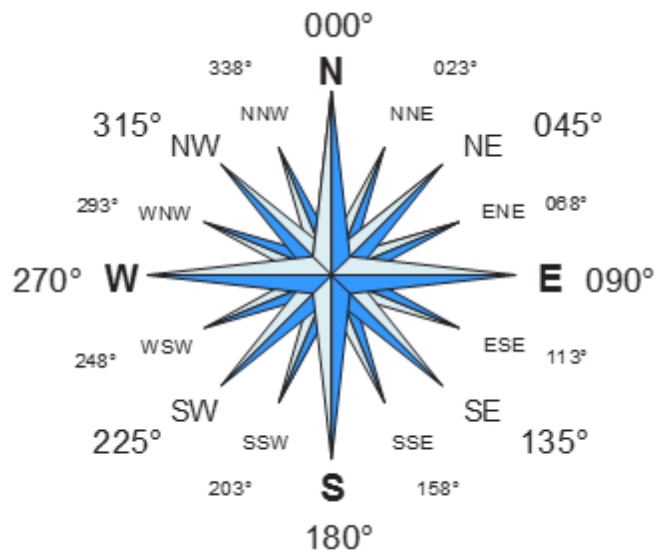


Figure 7: Compass Bearings

Audible pointing indicator

A buzzer provides an audible representation of the signal quality during antenna pointing. When turned on, the indicator emits pointing tones that increase in tempo and pitch as the signal strength increases. If the satellite is not found, one tone is followed by a pause.

Use a long press of the Audio button to toggle the audio pointing indicator on and off.

Exit pointing and registering with the network

Once you have accurately pointed the terminal to the satellite, exit pointing by a long press of the Back button. This will cause the unit to attempt to register with the Strigo network (Note: if audible pointing tones were enabled during pointing, they will automatically turn off once you attempt to register).

Idle mode display

Once the terminal exits pointing, it will automatically attempt to attach to the network and establish a data connection. During this operation it displays “Attaching” on the upper line of the LCD.

Once it attaches and establishes a data context, the LCD displays “Data Ready” on the upper line and the globe icon.

In idle mode, the strength of the received satellite signal is displayed by a 5-bar indicator located in the lower right hand corner of the LCD.



Figure 8: Idle Mode Display

If user equipment is connected (via Ethernet or Wireless LAN), the lower line will display “ADDR:” followed by the last octet of the IP address of the currently selected user terminal. If multiple devices are attached, you can show the other user’s local IP address by repeatedly pressing the user button.

Status messages

The upper level of the LCD is used for status messages and menu items. Status messages are listed in Table 2 on page 18:

Table 2: Status messages

Display	Description
HUGHES 4201	On screen during power up.
Boot Failure	The terminal failed to boot.
Insert SIM	No SIM is detected. Insert the SIM to continue.
Reading SIM...	Terminal is reading information from SIM.
Enter PIN	A SIM PIN code is needed. (This can be entered using the front panel buttons.)
Enter PUK	A SIM PUK code is needed. (This must be entered using the Web UI.)
SIM Blocked	The SIM is blocked due to too many SIM PIN/PUK attempts.
SIM Error	There is a SIM communication error.
Unlock SIM	The terminal is locked to another SIM and the SIM Lock PIN is needed. (This must be entered using the Web UI.)

Display	Description
Wrong SIM	Incorrect SIM found in this unit. The SIM inserted is not the SIM that was originally locked to the terminal.
Bad SIM	SIM card is invalid.
Getting POS...	Terminal is getting a GPS position.
Searching...	Terminal is searching for the satellite signal. This message alternates with satellite bearing and elevation angle on a 3 second cycle.
Point ANT	Terminal is in antenna pointing mode. This message alternates with satellite bearing and elevation angle on a 3 second cycle
Attaching...	Terminal is attaching to the network.
Ready	Terminal is attached to the network but no data connections are currently opened.
Data Ready	The satellite data connection is active and ready for use.
SAT Blocked	The satellite signal has been temporarily obstructed, blocking the connection.
Charged	Battery is fully Charged
Charging	Battery is Charging
Battery Low	Battery charge level is low
Batt Empty	Battery charge is near empty
Too Hot	Unit is too hot; if not corrected, a temporary thermal shutdown may occur
Battery Hot	Battery is too hot; reduce temperature or turn off unit to avoid damage to the battery
Reboot Req	UT Reboot is required
Critical Err	A hardware error has caused a forced shutdown of the terminal.
Powering Off	Displayed while the Hughes 4201 is powering down
Rebooting...	The terminal is currently rebooting.
Resetting...	The terminal is currently resetting to default parameters.
Upgrading...	The terminal software is currently being upgraded.
Factory Mode	The terminal is in a test mode and cannot be used.
Attach Fail	The terminal failed to attach to the network.
GPS Comm Err	The terminal was unable to communicate with GPS receiver.
HW Failure	The terminal has encountered a hardware fault and cannot continue.

Menu navigation

From the status display, a short press of the Accept button takes the display to menu mode and displays the first of a circular list of menu items. The keypad menu structure is shown under Table 4 on page 22.

Use the scroll button to scroll between options and the accept button to select options. A short press of the Back button takes the user up one level in the menu and a long press exits the menu system and returns to the status display.

The status display is the default display, so after 30 seconds of inactivity while in the menu system the unit reverts to the status display.

Pressing the Accept button in the menu takes the display to the submenu for that option, or, at the lowest level, it selects the menu option, if applicable. When entering a submenu containing a list of parameter values/choices, such as connection types, the currently set choice is displayed.

Alternative parameters values can then be accessed by pressing the Scroll button; these flash until selected, and then remain on and steady to confirm they have been selected.

Table 3: Terminal button operations

Short press	UT state	Result
Scroll button	On, menu item	Scroll to next option of displayed menu item
Back button	On, menu item	Goes up one level in menu
Accept button	On, status display	Enter menu
	On, menu item	Confirm selected menu item
User button	On	Show the local IP address of the user terminal equipment connected to the UT (.101, .102, ...)

Long press	UT state	Result
Audio button	On, status display	Toggle audio tone on/off (save state in NVRAM)
Cancel button	On, menu item	Cancel menu action, return to status display
	On, pointing	Exit pointing, start normal operation
Power button	Off	Turn on, LCD lamp test confirms button action
	On	Turn off, UT ignores additional power button input until power down sequence is complete
Wi-Fi button	On	Toggle Wi-Fi on/off

Special press	UT state	Result
Power and Audio buttons, simultaneous long press	Off	Go to minimum boot mode
	On	Force Factory Defaults and power down

Table 4: LCD menu structure

Level 1	Level 2	Level 3	Level 4	Comment	
Connection	Connect			Menu dynamically changes from Connect to Disconnect depending on Connection status	
	Disconnect				
Information	GPS	{Latitude}		52.14722° N format	
		{Longitude}		117.4416666° W format	
	IP Status	Global IP	{IP Address}		IP address of user data connection
		APN	{APN string 1}		First 12 characters
			{APN string 2}		Remaining, if needed
	Gateway Addr	{192.168.128.100}			
	Terminal	Version	{Software version}		
		IMEI	{IMEI 1}		First half
			{IMEI 2}		Second half
		IMSI	{IMSI 1}		First half
{IMSI 2}			Second half		
Configure	Pointing Mode	Enabled		Start display with current setting	
		Bypass			
	Backlight	30 seconds		Controls backlight setting	
		120 seconds			
		On			
		Off			
	Wi-Fi	Enabled			
		Disabled			
	LCD	Level 1		Adjust LCD contrast. Start with current level, Accept button confirms	
		Level 2			
		Level 3			
		Level 4			
		Level 5			
	Language	English		English	
Français			French		

Display icons

Battery icon



The battery icon displays the estimated life of the battery while under battery power. The battery icon displays the charging state while under external power.

Under battery power:

- Three segments: 75% to full
- Two segments: 50% to 74%
- One segment: 25% to 49%
- Zero segments: 10% to 24%
- Zero segments, flashing: 0% to 9%

If the icon is off, no battery has been detected or the AC/DC converter is not connected.

Under external power (UT “on” or “off”)

Icon will flash zero, then one, then two and then three segments, one second each, while charging to display level of charge state while charging.

Three segments steady when fully charged and the LCD will show “Charged.”

No battery present

Blank battery icon

Power icon



The power icon displays the state of the **external power input**.

- On if external power is connected.
- Off if external power is disconnected.

GPS icon



The GPS icon indicates the state of the GPS information in the terminal.

The icon **flashes** after power up until a fresh GPS fix is obtained.

The icon is **on steady** when the terminal has a new fix.

Satellite icons



The satellite icons, located next to the GPS icon, indicate the **status of the GPS receiver** in the terminal and the **number of visible satellites**.

The icons are **off** when the **GPS receiver is off**.

The icons are **active** when the **GPS receiver is on**, either flashing or steady state. The number of icons in steady state indicates the number of GPS satellites acquired and tracked. You will need all three on solid to acquire a new GPS fix. Note that once an adequate GPS fix is obtained, both the GPS receiver and all of the satellite icons are turned off and the word “GPS” should go on steady.

Wireless LAN icon



The wireless LAN icon displays the state of the Wi-Fi feature.

- Off if Wi-Fi operation is turned off.
- On if Wi-Fi is on.

Wireless LAN lock icon



The lock icon displays the state of encryption for the Wi-Fi feature. It is displayed only if Wi-Fi is enabled and Wi-Fi encryption is turned on.

Globe icon



The globe icon displays the user data connection status of the terminal.

- Off if the user data connection is inactive.
- On if the user data connection is active.

SIM PIN entry

If the SIM PIN is enabled, the PIN must be entered before the UT can be used. This can be entered via the Web UI.

The upper row of the LCD displays “Enter PIN” while the lower row is used for PIN entry.

The cursor flashes under the current digit location.

A short press of the Scroll button cycles the current digit 0 – 9.

A short press of the Accept button advances to the next digit. When the fourth digit is entered, pressing **Accept** enters the PIN.

A short press of the Back button moves the cursor back to the previous digit.

When PIN entry is complete, the UT confirms the correct PIN has been entered. If it is correct, it proceeds with the normal display. If it is incorrect, it displays “SIM RetryErr” on the display.

Multiple users

Multiple TEs can be connected to the Hughes 4201, e.g., via the Wi-Fi interface or if an external Ethernet hub or switch is used. To display the local IP address of all the TEs, press the User button and the display will cycle through the IP addresses of the connected TEs.

Information messages

Table 5 shows possible error and status messages with explanations and suggested actions. Most of these messages will self-clear after 15 seconds, or can be cleared immediately by pressing any button on the front panel.

Table 5: Quick-text status message descriptions

When activating the data connection from the menu, these messages are possible:	
Opening...	The mobile terminal is currently opening the data connection.
Already Open	The data connection is already open.
Not Attached	The mobile terminal is not attached to the network.
No TE Found	There is no TE currently connected/identified by the UT as available for data traffic.
Conn Busy	The data connection is currently busy.
Conn Failed	The attempt to open the data connection has failed.
Conn Opened	The data connection was opened successfully.
When deactivating the data connection from the menu, these messages are possible:	
Closing...	The mobile terminal is currently closing the data connection.
Conn Busy	The data connection is currently busy.
Conn Error	An error occurred while closing the data connection.
Conn Closed	The data connection was closed successfully.
If in pointing mode, these messages are possible on the LCD:	
Insert SIM	There was no SIM detected; pointing can still continue, but once complete, "No SIM" will appear permanently.
Wrong SIM	The SIM detected is not the SIM that was locked to the mobile terminal
At any time during operation, this message is possible on the LCD:	
Battery Low!	The battery is extremely low. Plug in the DC cord to avoid automatic power off when the battery level becomes critical. This message persists until the condition has been corrected or a button is pressed.

Chapter 4

Using the Web UI

Accessing the Web UI

The Hughes 4201 includes an internal Web User Interface (Web UI). To access the Web UI, open your favourite web browser and type in the internal IP address of the terminal, e.g., **http://192.168.128.100**. The Web UI opens up to the **Home** or **Terminal Status** page.

Along the top of all Web UI pages are icons representing the categories of available subpages; **Home**, **Connections**, **Telephony**, **Settings** and **Support**.

Home page

The Home page shows the current terminal status and allows you to set up your initial data connection.

On the left side of the page is the **STATUS** bar. These items are updated automatically when the status of any item changes.

1. **Connection:** This field indicates whether you are registered with the Strigo network. It also shows the receive signal strength.
2. **Position:** This field displays the current position status. If the terminal acquired a GPS fix, it will display the Latitude, Longitude, Fix Quality, and the last time the GPS position was updated. Time displayed is UTC time.
3. **Terminal Properties:** This field indicates if Wi-Fi is on, whether security is enabled or not, it shows the battery status and whether mains power is connected.

Once connected to the network, the Terminal Status page will show that the UT is registered with the network. In the middle of the **Home** page it will show that the Data Connection is established along with the TE's local IP address and the global IP address.

A list of all the connected devices on LAN and Wi-Fi is displayed.

Note: If the WebUI is accessed while the terminal is in antenna pointing mode or in the process of establishing the satellite link, then this will be indicated on the home screen as well.

While in pointing mode the terminal displays signal strength only in the antenna pointing status window. The signal strength bar in the left status window becomes active after exiting antenna pointing.

Usage statistics

This page shows the statistics of transmitted and received data. The Trip statistics can be reset, but the Lifetime statistics cannot be reset.

NOTICE

The usage statistics are only an estimate and do not reflect actual billing system details.

Settings page

The Settings page provides a set of subpages for the configuration of various parameters of the mobile terminal:

- General Setup
- IP Address/DHCP
- Ethernet Security
- Wi-Fi
- Security
- Outbound Filters
- Port Forwarding

General setup

This subpage allows the user to configure general parameters of the Hughes 4201. A description of each item is as follows:

Mobile Satellite Terminal Startup:

- **Auto Power On:** When enabled, the terminal will automatically power on when connected to the AC/DC adapter.
- **Antenna Pointing:** This parameter is used if the terminal is permanently mounted and you want to bypass antenna pointing on subsequent power ups. For permanent installations it is also recommended to enable “Auto Power On” to avoid having to use the power button.

Access Point Name: Allows you to configure the APN if needed.

Language: Allows the user to select between English and French by clicking the drop-down arrow, select the language and then click the **Apply Changes** button.

IP Address/DHCP Settings

Mobile Satellite Terminal Local IP Address: This section allows the user to change the local IP address of the terminal from the default **192.168.128.100** IP address. All four octets are available to change. Once the local IP address is changed on this page and applied, the first 3 octets of the DHCP address range will also change automatically.

DHCP Server: Allows the DHCP server in the UT to be turned on or off by checking the Enable box.

DHCP Address Range: This allows the user to set the range of DHCP addresses that are given out by the UT to connected TEs.

NOTICE

Updates to the Local IP address and DHCP server will **not** take effect until the UT is **rebooted**.

DHCP Reservations: This section allows the user to add an IP address that will permanently be assigned to a particular DHCP address based upon the detected device's MAC address.

Ethernet security

The Ethernet Security page allows the user to enable **Ethernet MAC Filtering**.

- **Ethernet MAC Filtering:** User can select any detected device and add the MAC address to the Allowed MAC Addresses field to the left. The user can also manually add a MAC address in the box at the bottom of the page, then add it to the Allowed MAC Address field.

NOTICE

Enabling Ethernet MAC Address Filtering will also block any Wi-Fi connected devices unless they are included in the Wi-Fi MAC Address Filter list.

Wi-Fi

The Wi-Fi settings page allows the user to enable, disable, and configure the Wi-Fi functionality of the terminal. Once Wi-Fi is enabled and configured, TEs can connect to the terminal wirelessly.

Fields on this page include:

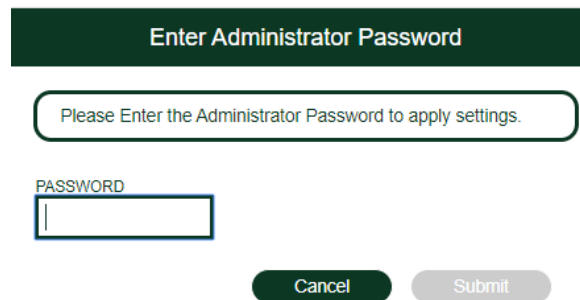
- **Enable Wi-Fi:** Turns the Wireless LAN interface on/off. The default is off (unchecked).
- **Network Name (SSID):** The default is "Strigo- and the last 7 digits of the terminal's IMEI number)", but you can change it to your preferred setting.
- **Broadcast SSID:** You can enable/disable the broadcast of your terminal's SSID.
- **Network Channel:** This controls the radio channel number (1 through 13) used by the access point.
- **Wi-Fi Protection:** The user can select between WPA or WPA2 encryption of the Wi-Fi data.
- **Wi-Fi MAC Address Filtering:** Allows the user to enable MAC Address Filtering for devices connected over Wi-Fi.
The user can select any detected device and add the MAC address to the "Allowed MAC Addresses" field to the left. The user can also manually add a MAC address in the box at the bottom of the page, then add it to the "Allowed MAC Addresses" field.

Note: If performance issues occur over the Wi-Fi interface it may help changing the Wi-Fi channel.

Security

This page allows the user to setup and enable/disable various passwords for the terminal.

- **SIM PIN:** This is a four digit field that can be enabled and configured by the user to secure the SIM against unwanted use. The SIM PIN is stored on the SIM itself. Once enabled, the terminal will require the SIM PIN at startup.
Note: After 3 incorrect attempts to enter the PIN, the user will have to use the PUK number to reset the PIN of the SIM card.
- **SIM Lock PIN:** Use up to 8 digits to lock the terminal to the current SIM card. The SIM Lock PIN code will have to be entered any time a different SIM card is used with the terminal.
- **Administration Password:** This password allows to prevent terminal settings from being changed by unauthorized users once the terminal is configured properly. Once enabled, this password will have to be entered before any settings can be changed. The pop-up shown in Figure 9 will come up if the Administration Password is enabled and the user attempts to change a protected configuration parameter.



Enter Administrator Password

Please Enter the Administrator Password to apply settings.

PASSWORD

Cancel Submit

Figure 9: Enter Administrator Password screen

Outbound filters

Outbound Filters are used to control access to the network. The filter rules provide the flexibility to either block or allow specific access. The rules can be based on address and port numbers of source or destination based on the protocol. The Outbound Filters page allows the user to enable or disable this feature by checking the box and clicking on Apply Changes button.

The user can configure the rule details and name the rule. You can configure up to five rules. The following rule parameters are configurable:

- Rule precedence
- Rule Action
 - Block
 - Allow
- Rule Enabled

At least one of the following optional parameters must be provided:

- Source Address
- Destination Address
- Destination port low
- Destination port high
- Rule Protocol
 - UDP
 - TCP

The screenshot shows the Strigo web interface for configuring Outbound Filter Settings. At the top, there are navigation icons for Home, Settings, Usage, and Support. The main heading is "Outbound Filter Settings".

On the left is a settings sidebar with options: General Setup, IP Address / DHCP, Ethernet Security, Wi-Fi, Security, **Outbound Filters** (highlighted), and Port Forwarding.

The main content area is divided into two sections:

- Outbound Filters:** Contains a checkbox for "Enable Outbound Filters" and an "Apply Changes" button.
- Outbound Filter Rules:** Includes a note: "Outbound traffic is executed against rules from higher to lower Precedence until a match is found. Place exception rules before general Block/Allow rules." Below this is a "Rules in Order of Execution" list (currently empty) with a "Remove Rule" button, and a "Rule Details" form.

The "Rule Details" form includes the following fields:

- Rule Name: [Text input]
- Rule Precedence: [5 - Execute Rule First ▼]
- Rule Action: [Block ▼]
- Rule Enabled: Enable Rule for Outbound Traffic
- At least one of the following optional criteria must be provided:
 - Source Address (Optional): [192.168.128.]
 - Destination Address (Optional): [. . .]
 - Destination Port Low (Optional): []
 - Destination Port High (Optional): []
 - Rule Protocol (Optional): [-- ▼]

At the bottom of the form are buttons for "Clear Form", "Add Rule", and "Save Changes".

Port forwarding

The Port Forwarding page allows the user to enable and setup a DMZ IP address and specific Port Forwarding rules. If both DMZ and Port Forwarding rules are enabled, then the Port Forwarding rules take precedence and all other traffic is forwarded to the DMZ IP address.

DMZ Settings – This section allows the user to enable and configure the DMZ IP address. When enabled, all incoming traffic is forwarded to that address.

Port Forwarding – This section allows the user to configure the Rule details for five separate rules.

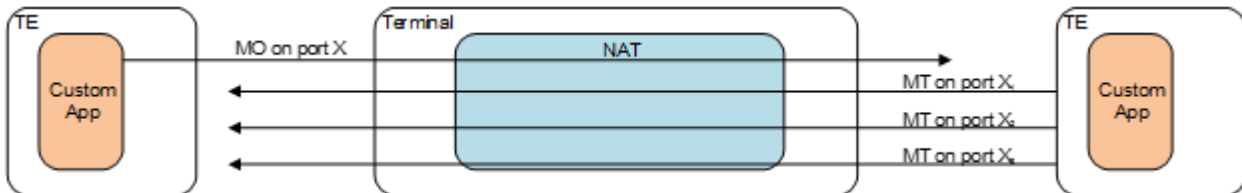
The Port Forwarding parameters to be configured are:

- Rule name
- Local Address
- Incoming Port
- Incoming Protocol
 - TCP
 - UDP
 - TCP and UDP
- Rule Enabled

Port Triggering – This allows for outgoing traffic to automatically configure port forwarding to the originating device. The port forwarding rule is active for 120 seconds after the trigger event occurred.

When the TE custom application opens “Trigger Port” X, then

- NAT sets up a translation rule for port X
- NAT adds translation rules for network-initiated connections to “Incoming Ports” X1, X2, and X3 for a period of 120 seconds



Support page

This Web page allows the user to obtain technical and support information about the mobile terminal. It also facilitates Reboot of the terminal, Reset to Factory Defaults, Enable Full Search and update of the terminal software.

Strigo

Home Settings Usage Support

Support and Information

Reboot Terminal

Click this button to reboot the terminal software.

Reboot Terminal

Reset Terminal to Factory Defaults

Click this button to restore all terminal settings to their original default values.

Restore to Defaults

Enable Full Band Search Mode

Click this button to reboot into Full Band Search Mode. Only use Full Band Search Method when instructed by the Service Provider.

Enable Full Search

Update Terminal Software

Terminal Software Packages (.hif) can be used to update the software running on the Terminal. The Software Package must be uploaded to the terminal and verified before the new software can be installed.

Select The Terminal Software Package you wish to install:

No Software File Selected

STATUS

Connection

Attached
Data Connected

Signal:

Position

3D Fix

Location: 52.1472° N
117.4417° W

Altitude: 3747 m

Last Fix: 16-Mar-2020,
20:18:50 UTC

MGRS: 11UMT6977877504

Terminal Properties

Wi-Fi On (WPA2)
Mains Connected

Battery: Charging (75%)

Update mobile terminal software

This feature provides a convenient method to upgrade the Terminal Software. Before starting the process please make sure to obtain the latest Terminal Software Package, which is a file with the name “hughes_4201_X.X.X.X.hif”, where the X’s correspond to the Software release number. The Hughes 4201 Terminal Software Package contains all necessary images for the Hughes 4201 product. The terminal automatically detects the Software images which apply to the product after loading the Software Package into the terminal.

NOTICE

It is not recommended to downgrade the terminal software to an older release. Doing so will automatically reset all configuration settings to factory default and delete all user data stored on the terminal.

To upgrade the mobile terminal software follow these steps:

1. Store the Terminal Software Package on the local drive of a computer attached to the terminal.
2. Select the “Browse” button.
3. Navigate to the storage location of the Software Package, select the file and click “Open.”
4. Click the “Start Update” button.

Note: The file selection can be cleared by clicking the “Clear” button.

The terminal will copy the Software Package from the computer to the terminal and prepare the terminal for the SW upgrade.

After the Software Package is uploaded and verified the Web UI will present the components which are ready to be installed.

Click the “**Install**” button to start the installation process. This will deactivate all active connections and calls and place the terminal into service mode. After the software installation is complete the terminal will automatically reboot.

Progress of the installation process is indicated to the user with a series of updates on the Web UI.

After the reboot the software version can be verified on the **Support** page.

Terminal Information	
Terminal Model	4201
IMEI	353846-07-000390-9
Software Version	5.2.0.9
Hardware Version	1
Baseband Software	5.2.0.9
Baseband Firmware	FW 12.12 20190321 FPGA48
Wi-Fi Software	ID811d19 26.9.2016 (SBCM)
Ethernet MAC Address	00:80:AE:DA:00:6B
Wi-Fi MAC Address	00:03:94:20:1B:AC

SIM Information	
IMSI	262070123456418
ICCID	

Modem Diagnostics

Click this button to view the Modem Diagnostics page. This page contains diagnostic information that can be used to troubleshoot connection issues.

[View Modem Diagnostics](#)

Terminal information

This section provides detailed information about the terminal hardware and the installed software. Provide this information when requested by support technicians.

SIM information

This section provides detailed information about the SIM card installed in the terminal. Provide this information when requested by support technicians.

Modem diagnostics

Modem Diagnostics provides access to information that may be useful to aid in troubleshooting. Follow instructions of technical support personnel to obtain diagnostics information if needed.

Chapter 5

Troubleshooting

Table 6: Troubleshooting

Problem	Possible cause	Possible solution
Mobile terminal will not turn on	Battery not connected properly Battery not charged	Check battery is correctly installed. Connect AC/DC converter to charge the battery.
Cannot get USIM card to lock into position	USIM is not correctly oriented for insertion	Ensure the USIM is oriented as shown in the “Before Getting Started” Section. Ensure the USIM is pressed firmly into the SIM slot.
The Web UI will not connect to the mobile terminal	No interface connection between the terminal and computer Your computer is configured with a static IP address in the wrong subnet.	Ensure there is a Wi-Fi or Ethernet connection between the terminal and computer. Check the IP configuration settings on your computer. Enable DHCP or use a static IP address in the same subnet as the terminal’s local IP address. The default terminal IP address is: <u>192.168.128.100</u> .
Mobile terminal is attached with the network, but cannot activate the data connection.	Network temporarily not available.	Retry again. If problem persists, contact your service provider.
Mobile terminal does not obtain a GPS fix	Terminal’s location limits visibility of 3 or more GPS satellites.	Move the terminal to a location where there are few obstructions such as trees or tall buildings, so that as much as possible of the sky is visible. Point the antenna towards the most open area of sky (normally straight up).
None of the above solutions resolve the problem	Terminal may have a hardware or software fault, and needs to be re-booted.	Remove power. Wait 30 seconds. Reconnect the DC power and turn on the terminal.

Technical specifications

Item	Specifications
Weight	2 kg
Dimensions	233 mm x 293 mm x 51 mm
Humidity	95% RH at 40 °C
Power, Max	57 W (when transmitting)
Water/Dust	IP-54
Operating Temperature	-5 °C to +40 °C with battery -25 °C to +55 °C excluding battery
Storage Temperature	-40 °C to +60 °C with battery -40 °C to +80 °C excluding battery
Battery Charging Temp	0 °C to 40° C
External Power Supply	Hughes AC/DC Adapter
Wind Loading	40 km/h with stand secured
Other Features	Rechargeable lithium ion battery USIM/ISIM slot behind battery Mounting point on terminal Compass to assist pointing

Note: The Hughes 4201 mobile satellite terminal operates on DC power which can be supplied by an AC or DC power source. To comply with safety requirements, the terminal must be powered with an AC/DC adapter or DC power adapter supplied or approved by Hughes.

Safety information

5. Replace battery with 3500800-0007 or 3500800-0008 battery only. Use of another battery may present a risk of fire or explosion.
6. The battery used in this device may present a risk of fire or chemical burn if mistreated. Risk of Fire and Burns. Do Not Open, Crush, Heat (above 50 °C) or Incinerate. Follow the instructions in this user manual.
7. Do not dismantle, open or shred the battery.
8. Do not short circuit the battery. Do not store batteries haphazardly in a box or drawer where they may short circuit each other or be short circuited by conductive materials.
9. Do not remove a battery from its original packaging until required for use.
10. Do not expose batteries to heat or fire. Avoid storage in direct sunlight.
11. Do not subject the batteries to mechanical shock.
12. In the event of a cell leaking, do not allow the liquid to come into contact with the skin or eyes. If contact has been made, wash the affected area with copious amounts of water and seek medical advice.
13. Store the batteries in a dry place at a temperature between 0 °C and +40 °C.
14. Secondary (rechargeable) batteries give their best performance when they are operated at room temperature (20 °C +/- 5 °C).

Charging

15. Only charge batteries with a Hughes 4201.
16. The Hughes 4201 charges with a constant-voltage, constant current battery charger circuit with the following parameters:
 - a. Nominal charge voltages: 8.40 VDC
(Maximum charge voltage: 8.50 VDC)
 - b. Nominal charge current: 3200 mA
(Maximum charge current: 3250 mA)
 - c. Charge temperature range: 0 °C to +40 °C

Disposal

1. Dispose of used battery promptly. Keep away from children. Do not disassemble and do not dispose of in fire.
2. When disposing of batteries, keep cells or batteries of different electrochemical systems separate from each other.
3. Recycle or dispose of this battery in accordance with local regulations.

Regulatory Compliance Statements

ISED Compliance Statement

This device complies with CAN ICES-3 (B)/NMB-3(B) (Canada)

Le présent appareil est conforme aux CAN ICES-3 (B)/NMB-3(B) (Canada)

This device complies with Industry Canada's licence-exempt RSSs. 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) 1) l'appareil ne doit pas produire de brouillage ;
- (2) 2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

In order to comply with FCC/ISED RF Exposure requirements, this device must be installed to provide at least 100 cm separation from the human body at all times.

Pour satisfaire aux exigences de la FCC/ISED en matière d'exposition aux radiofréquences, le dispositif doit être placé à une distance d'au moins 100 cm à partir de toutes les personnes au cours de son fonctionnement normal.

IC: 1232B-HUGHESPDT1

Contains/Contiens IC: 8516A-SMG2SMT

FCC Compliance Statement

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

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

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

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.

Contains FCC ID: XM5-SMG2SMT

Definitions and acronyms

Acronym	Definition
AI	Air Interface
Strigo	Strigo™, a trademark of TerreStar Solutions Inc.
GPS	Global Positioning System
HW	Hardware
ICCID	Integrated Circuit Card ID
ID	Identifier
IGMP	Internet Group Management Protocol
IMEI	International Mobile Equipment Identity
IMPI	IP Multimedia Private Identity
IMPU	IP Multimedia Public Identity
IMS	IP Multimedia Subsystem
IMSI	International Mobile Subscriber Identity
ISIM	IMS Subscriber Identity Module
LCD	Liquid Crystal Display
PDT	Packet Data Terminal
PIN	Personal Identification Number
URI	Uniform Resource Identifier
USIM PIN	USIM Personal Identification Number (located on the USIM card)
POTS	Plain Old Telephone Service
PUK	PIN Unlock Key (Password provided by the USIM card provider to unlock a lost/forgotten PIN code)
RJ	Registered Jack
RX	Receive
SIP	Session Initiation Protocol
SIP Server	Server used for VoIP calls
SOW	Statement of Work
TCP	Transmission Control Protocol
TE	Terminal Equipment
TX	Transmit
UDP	User Datagram Protocol
UI	User Interface
UT	User Terminal
UMTS	Universal Mobile Telecommunications System
USIM	UMTS Subscriber Identity Module
VoIP	Voice over IP
Web UI	Web based User Interface