THURAYA
SPACE42

THURAYA MBH

USER MANUAL

BBH-01 / V1.0

Note: BBH-01 is the product model number and the product name is Thuraya MBH (Mobile Broadband Hotspot).

TABLE OF CONTENTS

REGULATORY INFORMATION

EC Declaration of Conformity

Asia Pacific Satellite Inc., hereafter referred as APSI, be seated on Floor 9, 2-Dong 98, Gasandigital 2-ro, Guemcheon-gu, Seoul, 08506, South Korea declares under our sole responsibility that the Product model: BBH-01, is a broadband satellite terminal with a built in GNSS tracking system, to which this declaration relates, is in conformity with the following standards and/or other normative documents:

IEC 60945 and IEC 62368

WARNING

This equipment shall not operate when mains power is lost.

Safety Summary

For the sake of safety and protection, please read the user guide before you attempt to use the Thuraya BBH-01 system. In particular, read this safety section carefully. Keep this safety information where you can refer to it if necessary.

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 user guide violates safety standards of design, manufacture and intended use of the equipment.

APSI assumes no liability for the customer's failure to comply with these requirements.

Antenna Radiation Warning

During transmission, the antenna in the system radiates high power levels of radio frequency. This radiation is considered as a health hazard to any personnel that come very close to the antenna.

It is important to maintain a separation distance of at least 40 cm from the transmitting antenna.

Service

User access to the interior of the terminal is not allowed. Only qualified personnel authorized by the manufacturer may perform service. Failure to comply with this will result in the warranty being void.

PoE Lan Cables

The PoE Lan cable is shielded and they should not be affected by any magnetic field. It is recommended to avoid the cables being installed in parallel with any AC wiring as it may possibly cause malfunction of the equipment.

PoE Injector DC Cables

The POE Injector DC cable includes a fuse. A 250V 10A fuse is included to prevent overcurrent, please replace it with an equivalent fuse if the fuse is blown.

Power Supply Requirements

The Thuraya BBH-01 standby power including the Terminal and the PoE Injector is less than 20 W, and the standard operation average power consumption is around 25 W. When low signal strength is observed by the terminal, the burst power may beyond 40 W. For the steady operation, the input voltage for MBH System needs a 60 W power supply (may be 12 V DC@5 A or 24 V DC@2.5 A). It is recommended to use a 24 V DC power line.

Equipment Ventilation

To ensure adequate cooling of the PoE Injector, 5 cm of unobstructed space must be maintained around all sides of the unit except the bottom side. The ambient temperature ranges of the PoE Injector is: -10 °C to + 55 °C.

The equipment should not be operated in the presence of flammable gases or fumes as well as any explosive atmosphere. Operation of any electrical equipment in such an environment constitutes a safety hazard.

Obtaining License/Approval for using Thuraya BBH-01

Under rights given under ITU Radio Regulations, local telecommunications administrations establish and enforce national rules and regulations governing types of emissions, power levels, and other parameters that affect the purity of signal, which may be radiated in the various frequency bands of the radio spectrum.

To legally operate the Thuraya BBH-01 system, it is necessary to obtain permission from the local telecommunications regulatory authorities of the country you are operating from. Using your equipment in any country without permission causes you to run the risk of confiscation of the equipment by the local authorities. The normal procedure to bring such equipment into another country is to apply for a license before travel. If a license has not been obtained before travel, the equipment may be put in to storage by local authorities until such time license is obtained.

Information in this document is subject to change without notice and does not represent a commitment on the part of Thuraya Telecommunications Company.

Copyright

Trademarks

INTRODUCTION

Features

- Data service: Standard IP – 300/100kbps (Download/Upload)
- Built-in satellite modem with Wi-Fi
- Built-in tracking and geofencing functionality*
- Distress alert reporting*
- Remote programming capabilities*
- Quick and easy to install and setup
- Multilingual MMI - Supports English, Arabic, Farsi, French, German, Urdu, Hindi, Italian, Portuguese, Russian, Spanish, Turkish, Simplified Chinese, Bahasa, Thai and Tagalog.
- Interfaces:
  - RJ45: For the POE cable connection to the POE power supply
  - Wi-Fi: For the wireless connectivity

NOTE

** This functionality is fully enabled through 3rd party remote server integrations. Kindly request your service provider for more information.*

What's in The Box

BBH-01 Main Unit

PoE Adapter Unit

PoE DC Power Cable with Fuse

Sold Separately

Maritime Pack

PoE Cable 25m

Pole mount kit

Land Pack

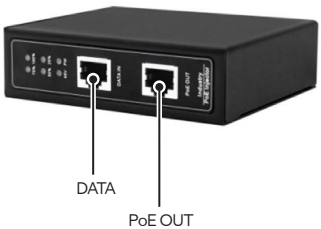
PoE Cable 6m

Magnet mount kit

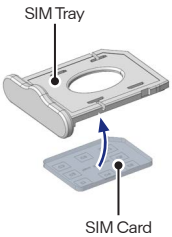
General interfaces and indicators

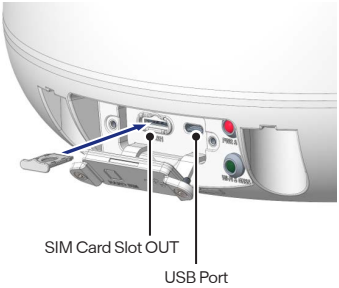
PoE cable connection

Wi-Fi symbol



DATA	As an Ethernet port, it can be connected to a PC or laptop using a separate LAN cable to use satellite data from BBH-01.
PoE OUT	This port combines Ethernet and power into one output. Connect the PoE Injector and BBH-01 with the PoE LAN cable provided in the separately sold maritime or land package. The power from the injector is supplied to the terminal and its range is 48 ~ 57V.
DC Input	Power input connector is used for connecting the external power source (12 – 36 V) to the PoE Injector.





SIM Card Slot	SIM tray support only nano SIM. The SIM card can be inserted into the bottom of the SIM tray. Insert the SIM tray with the combined SIM card into the terminal.
USB Port	It is for terminal debugging. For more information, please contact your distributor and will be used by the manufacturer.

Upper LED	Upper LED indicates the status of power and network.
Lower LED	Lower LED indicates the status of Wi-Fi and GNSS

LED indicator operation

Upper LED – Power and Network indication

LED operation	Conditions
Red blinking	PoE Injector is incompatible.[1)]
Orange blinking	NO SIM card[2)]
Green blinking	Searching network
Red and Green blinking alternatively	Registration rejected[3)]
Green	In service

NOTE

1) Refer to the action of Code number 1011 in Error codes in Troubleshooting section.

2) Refer to the action of Code number 10 in Error codes in Troubleshooting section.

3) contact your Service Provider

Lower LED – Wi-Fi and GNSS indication

LED operation	Conditions
Green blinking	Wi-Fi is on and GNSS is not fixed
Green	Wi-Fi is on and GNSS is fixed
Orange blinking	Wi-Fi is off and GNSS is not fixed.
Off[1)]	PoE Injector is incompatible[1)] or Wi-Fi is off and GNSS is fixed[2)]

NOTE

1) In the condition that Upper LED is Red blinking.

2) In the condition that Upper LED is not Red blinking.

GNSS specifications

concurrent reception	GPS, Galileo, GLONASS, Beidou	
GNSS Position Accuracy	<1.5 m	
Time to First Fix	Hot start[1)]	< 1 seconds
	Cold start[2)]	< 29 seconds

NOTE

1) Time until GNSS reception is received again when the last GNSS receiver usage period is 2 to 4 hours

2) Time until GNSS reception is received again when the last GNSS receiver usage period is 3 days or more

Mechanical specifications

Size	
Base Terminal (L x W x H)	301 × 301 × 181 mm
PoE Injector (L x W x H)	115 × 90 x 30 mm
PoE DC Power Cable	5 meters
MBH Terminal weight	
MBH Pack	4.95kg & (350 x 345 x 260 mm)
MBH Terminal	3.30kg
PoE Injector	0.47kg
PoE DC Power Cable 5M	0.08kg
Accessories	1.1kg
Maritime Pack weight	
Maritime Pack	3.25kg & (260 x 180 x 220 mm)
PoE LAN Cable 25M	1.25kg
L Mounting Bracket	1.33kg
L Mounting Rubber	0.08kg
Accessories	0.59kg
Land Pack weight	
Land Pack	1.25kg & (325 x 75 x 320 mm)
PoE LAN Cable 6M	0.35kg
Magnetic Mount	0.62kg
Accessories	0.28kg
Active antenna specifications	
EIRP	13 dBW (typ.)
Frequency	1525 – 1559 MHz, 1626.5 – 1660.5 MHz
Polarization	LHCP (Left Hand Circular Polarization)
Axial ratio	< 3 dB
Gain-to-noise Temperature ratio	-16 dB/K (Typ.), -18 dB/K (Min.)

Operating Environment

BBH-01	
Operating Temperature	-25 °C to +55 °C
Storage Temperature	-40 °C to +80 °C
PoE Injector	
Operating Temperature	-10 °C to +55 °C
Storage Temperature	-20 °C to +70 °C
System	
Power Supply	12.0 to 36.0 V
Standby / Working Average Power Consumption	16 W / 25 W
Operating Humidity	5 to 95 % RH at 40 °C
Vibration	2 ~ 13.2 ~ 100 Hz , 1mm, 0.7gn, 3axis
	5~500Hz, 3axis

Compliance Information

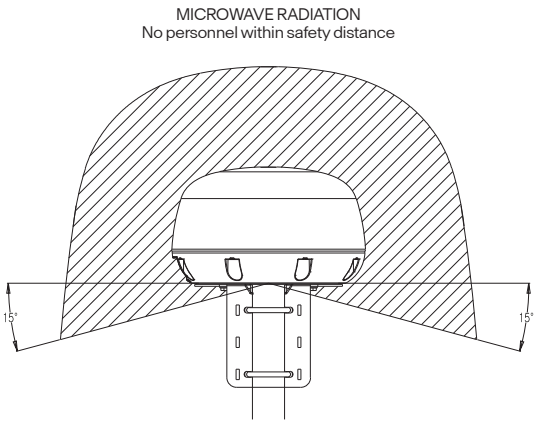
- Compliant to CE, UKCA, RoHS, REACH, ITU GMPCS-MoU.

INSTALLATION

This section describes how to install the Thuraya BBH-01 terminal and connect all the cables.

Radiation hazard

The BBH-01 antenna radiates 13 dBW EIRP. This translates to a minimum safety distance of 0.4 m from the antenna while it is transmitting, based on a radiation level of 10 mW/cm^2.



Interference

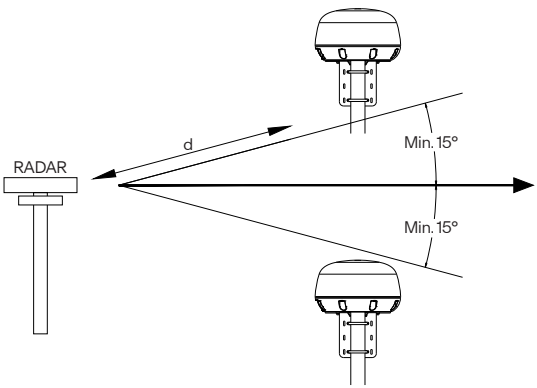
For maritime installations, the main unit must be mounted as far away as possible from the ship's radar and high power radio transmitters, because they may compromise the antenna performance. RF emission from radars might actually damage the antenna. The BBH-01 antenna itself may also interfere with other radio systems.

It is difficult to give exact guidelines for the minimum distance between a radar and high power radio transmitters because radar and high power radio transmitter power, radiation pattern, frequency and pulse length/shape vary. Further, the antenna is typically placed in the near field of the radar antenna and reflections from masts, decks and other items in the vicinity of the radar are different from ship to ship.

However, it is possible to give a few guidelines:

Since a radar and high power radio transmitters radiates a fan beam with a horizontal beam width of a few degrees and a vertical beam width of up to +/- 15°, the worst interference can be avoided by mounting the antenna at a different level – meaning that the antenna is installed minimum 15° above or below the radar antenna.

And due to near field effects recommend to separate at distances about 10m (d) between radar antenna and the BBH-01 antenna. Therefore, it is recommended to ensure as much vertical separation as possible when the BBH-01 antenna has to be placed close to a radar antenna.

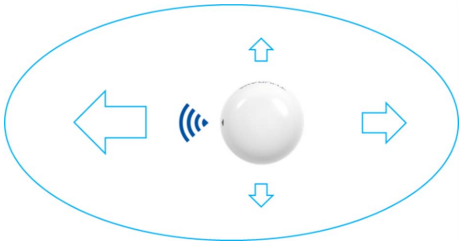


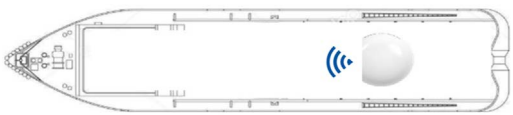
For Land vehicular installations, avoid placing the antenna near sources of interference or other receivers. It is recommended to keep other antennas at least three meters away from BBH-01. If additional equipment is installed near the BBH-01, test all devices simultaneously to confirm there is no co-interference.

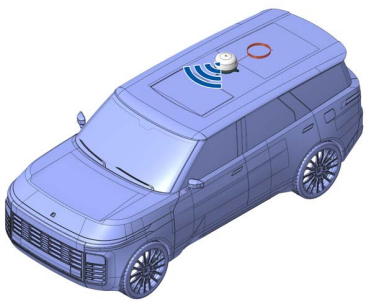
Signal range and direction for an optimum WI-FI

The signal strength of the Wi-Fi varies depending on the direction, so it is important to pay attention to the direction when installing the BBH-01.

As shown in the following figure, the signal quality is best in the direction of the Wi-Fi mark and worst at +/-90 degrees. Install the product with the Wi-Fi mark facing in the direction where the user will be located.

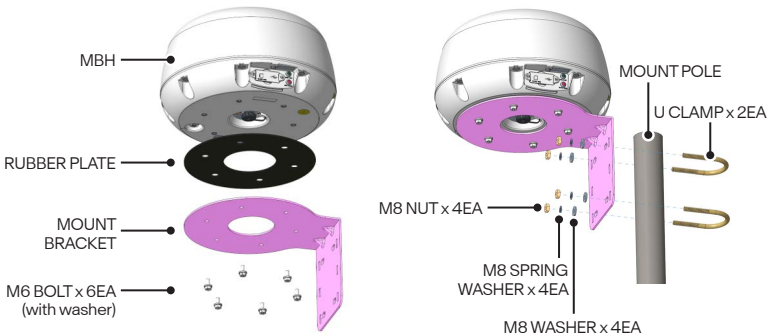






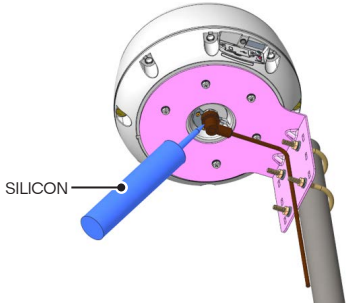
Option 1: Maritime installation of Main Unit with Pole Mount

1. Select an ideal location above the deck where you desire to place your main unit. It is recommended to install it at a point where no surrounding obstacles should obstruct the open sky view to the antenna and make sure there is no other radio equipment or vessel funnel. It is designed to operate within a temperature range from -25 °C to +55 °C. Maximum transmission speed is possible within 50M when the line of sight is based on the direction of the Wi-Fi antenna symbol .
2. Find a proper pole which can withstand 1.4 kg and fix Antenna unit using U-clamp as shown below. It is recommended that the Antenna unit to be installed on a pole with a diameter of between 38 mm and 45 mm (1.5 inches and 1.7 inches).
3. Ensure to have good and clean grounding for the antenna installation.
4. Tighten the ground cable to one of the M6 screws.

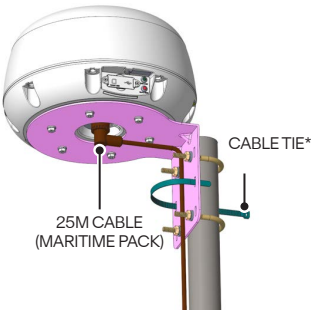


5. Connect the cables between Main Unit and PoE adapter using the 25m PoE cable provided in the Maritime Pack (ordered separately).

6 After tightening the connectors, apply silicon sealant* to make them waterproof.



7 Fix the cables to the pole with cable tie.

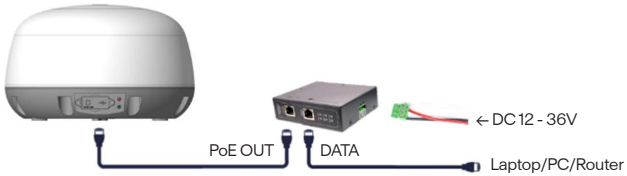


NOTE

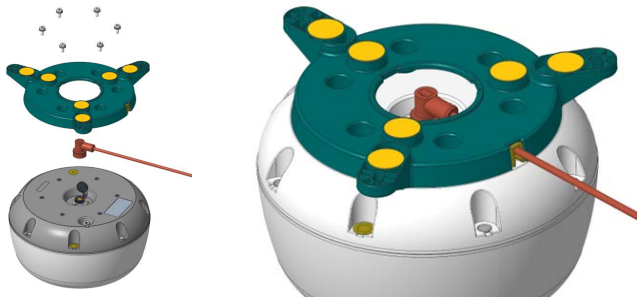
User must use PoE cable which is purchased from Thuraya or its authorized service partners. Also, user is not allowed to deform or modify PoE cable. Failure to comply with this will result in the warranty being void.

** Not provided in the package*

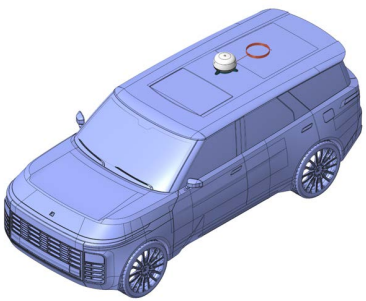
Option 2: Land vehicular installation of Main Unit with Magnet Mount



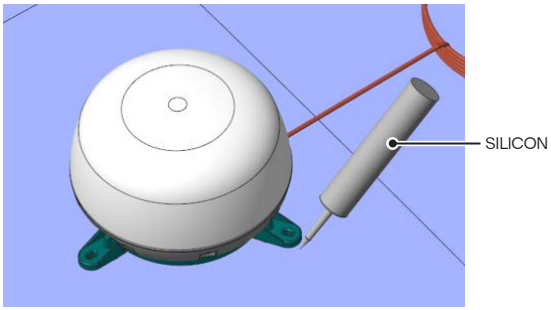
1 Assemble the main unit, PoE cable and the magnetic mount as above picture.



2 Select an ideal location where you desire to place your main unit such as vehicle roof. It is designed to operate within a temperature range from -25 °C to +55 °C. In order to use magnet, the attached surface shall be iron or steel plate which has magnetic attraction. Please use gloves not to be injured because the magnets are strong. Maximum transmission speed is possible within 50M when the clear line of sight is based on the direction of the Wi-Fi antenna symbol .



3 **While the magnetic mounts provide strong support, securing the unit with an external harness or custom fitting is recommended in challenging conditions and ensures that the main unit remains firmly in place.** For optimal performance, mount the main unit as shown in the pictures to your preferred location and required orientation. To enhance stability, consider applying silicone adhesive* (e.g. shown, silicon) to the mounting area.



4 Connect the cables between Main Unit and PoE adapter Using the 6m PoE cable provided in the Land Pack (ordered separately).

NOTE

User must use PoE cable which is purchased from Thuraya or its authorized service partners. Also, user is not allowed to deform or modify PoE cable. Failure to comply with this will result in the warranty being void.

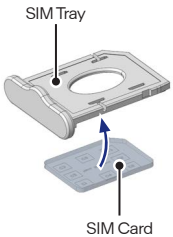
** Not provided in the package*

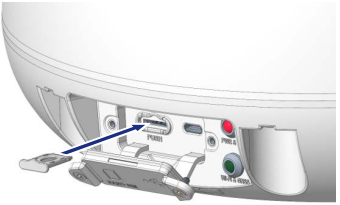
Installation of SIM card

The Thuraya BBH-01 system requires a valid and active nano SIM card to access the satellite network and configure the settings of the Terminal.

Follow these steps to install the SIM card:

1. Unscrew the SIM card cover and flip it down.
2. Press the SIM slot tray to remove the tray.
3. Insert the SIM card into the bottom of the SIM tray.
4. With the SIM card's gold contact facing down, Insert the SIM Tray into the SIM Slot.
5. Close and fasten the screw of the SIM card cover.

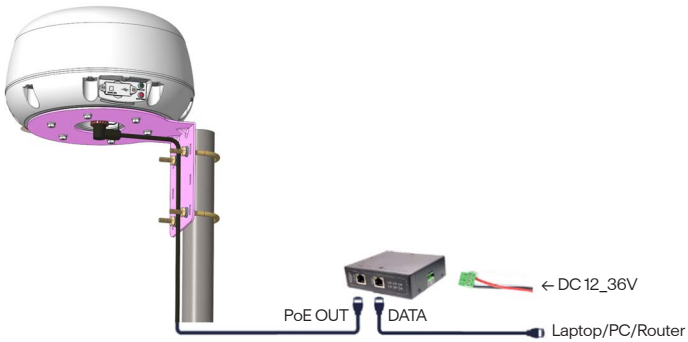




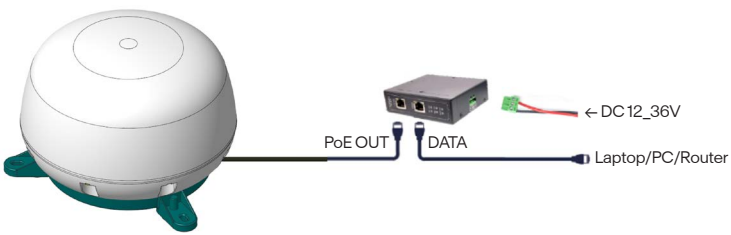
QUICK START GUIDE

Getting started

Maritime



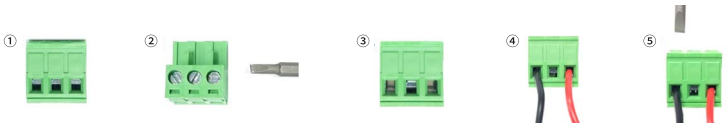
Land vehicular



Powering Up the BBH-01

Follow these steps to power up the BBH-01

- Connect the power cable to the green connector included in the PoE adapter box as shown below.



① The metal rail at the opening where the wire enters is closed upwards

② Loosen the screws on the top left and right sides by turning them with a flathead screwdriver

③ The left and right metal rails are down.

④ Insert the wire over the open metal rail as shown in the illustration

⑤ Tighten the screws firmly with a flathead screwdriver

- Connect the other end of the power cable to the main power supply.
- The input power must be between 12Vdc and 36Vdc and capable of delivering at least 50W of power.
- Make sure the PoE adapter LED is lit.
- Connect the power connector to the PoE adapter as shown.

- Connect the LAN cable to the PoE adapter and BBH-01.
- Upper LED indicator of BBH-01 to show green for successful input power.

Getting connected

Connect to Web Interface

Connect your computer to the BBH-01 using a LAN cable or Wi-Fi [SSID format: BBH-IMEI last 7 digits, Default password: TH-BBH-01]. The BBH-01 can be accessed through a standard web browser interface. When the connection has been established, open the web browser.

- MS edge, Google Chrome, Safari, Opera, Firefox
  Type **http://192.168.64.1/** in the **Address** field and press Enter. When the Login screen appears, type in **admin** in the **Username** field and **admin** in the **password** field. Click **"Login"** button.

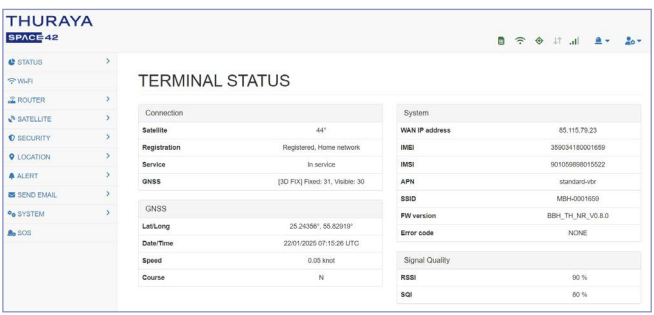
NOTE

The factory default accounts and passwords are set as admin/admin, operator/operator, and user/user.

Registration to the network

Click on the **banner** to go to the home screen.

The home screen shows the **banner**, **status indicator**, **submenu**, and **terminal status**.

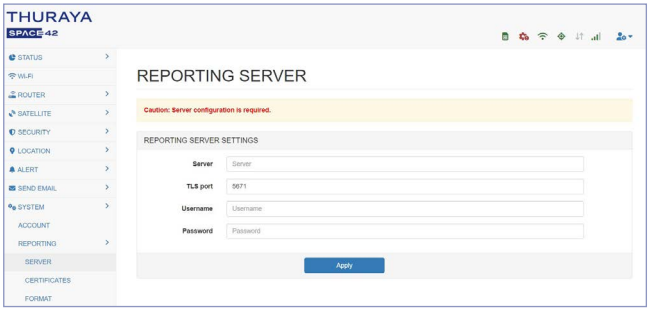


The terminal will automatically register to the network. This process will include GNSS acquisition, satellite tracking and registration with the network, which will take 2 to 3 minutes.

- On the home screen's terminal status, if the Registration field displays **"Registered, Home network"** and the Service field displays **"In service"**, it indicates that the terminal has successfully registered with the Thuraya network and is ready for service.

Reporting Server Configuration

For customers who have a tracking platform and need BBH-01 integration for tracking, geofencing, SOS etc.,, the BBH-01 Web UI will appear on your screen. Configure server settings for tracking, geo-fence, and SOS messages, and set up certificates and message transmission formats.



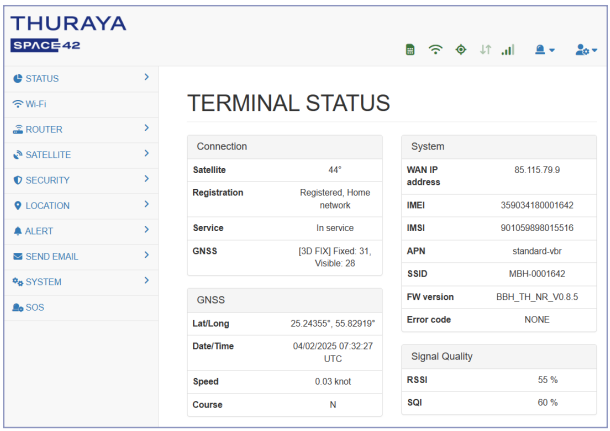
WARNING

If the server configuration details are not entered correctly, reporting messages, including SOS, will not be sent.

USER INTERFACE

Home Screen

Click on the banner to go to the home screen.
The home screen shows the banner, status indicator, submenu, and terminal status.



Connection	This section shows the satellite connection status, service availability, and GNSS acquisition status of the BBH-01 terminal.
System	This section shows general system information for the BBH-01 terminal, such as the IP address assigned by the network, unique identifiers like IMEI, IMSI, and SSID, as well as configuration details and error codes. Refer to the Troubleshooting section for system error codes
GNSS	This section displays the current position, UTC time, speed, and direction of movement acquired by GNSS.
Signal Quality	This section shows the current signal strength (RSSI) and signal quality (SQI) of the Thuraya Network.

Connection

Satellite

It displays the longitude of Thuraya's satellite camped on.

Registration

It indicates the registration status to Thuraya network.

Service

"In service" is displayed when IP address of BBH-01's Satellite link has been assigned by the network; otherwise, **"Out of service"** is displayed.

GNSS

It displays the **visibility** and **validity** status of GNSS satellites.

System

WAN IP address

It shows the IP address of the Satellite network interface.

IMEI

It shows the IMEI of Satellite Modem.

IMSI

It shows the IMSI of Satellite Modem.

APN

The name of APN (Access Point Name).

SSID

It shows the current WLAN network ID (SSID).

FW version

It shows terminal's FW version

Error code

It shows the error code if BBH-01 has an error; otherwise it is show **"None"**.

The error codes display the time of occurrence, error code, and description.

NOTE

RSSI vs SQI: The Signal Quality is a different measure of the received satellite signal than the Signal Strength. Seeing differences between these two levels is normal and not an indication of a problem with your Thuraya BBH-01 terminal.

Status Indicators

Tables below explain the meaning of each status indicator displayed in the Home screen.

Status Indicators	Description
	System logout
	Reboot
	Admin account
	Operator account
	User account
	Wi-Fi ON
	Wi-Fi OFF
	SOS
	SOS Start
	SOS Stop
	SOS ON
	Configuration required
	GNSS 3D Fix
	GNSS No Fix

Status Indicators	Description
	Restricted Zone
	Radio Silence Zone
	SIM Present
	SIM not present
	SIM Blocked
	SIM Pairing Lock
	SIM PIN required
	Incompatible PoE
	SAT Up/Downlink Traffic
	No Signal
	Weak Signal
	Fair Signal
	Good Signal
	Best Signal

Sub Menu

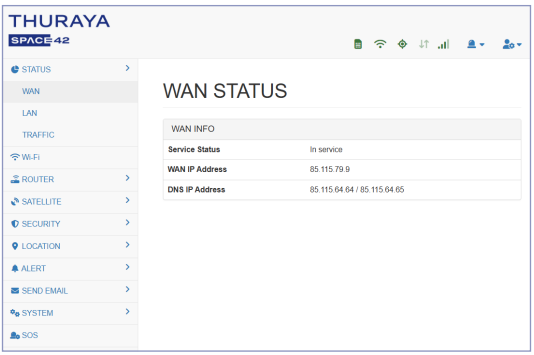
STATUS

It shows the system status, local network and the estimated satellite data traffic .

WAN

WAN INFO

It shows the connection information of Satellite interface.



Service Status

"In service" is displayed when IP address of BBH-01's Satellite link has been assigned by the network; otherwise, "Out of service" is displayed.

WAN IP Address

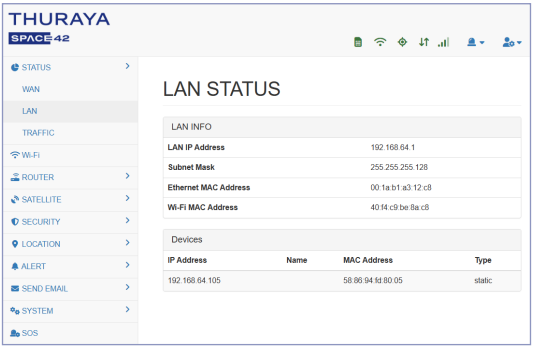
It shows IP address of the interface of satellite network.

DNS IP Address

It shows DNS IP address of the interface of satellite network.

LAN

It shows the LAN status and the connected host.



LAN INFO

It shows the LAN status and the connected host.

LAN IP Address
This shows the terminal's local gateway address.

Subnet Mask
This shows the terminal's local Ethernet subnet mask.

Ethernet MAC Address
This shows the terminal's Ethernet MAC address.

Wi-Fi MAC Address
This shows the terminal's Wi-Fi MAC address.

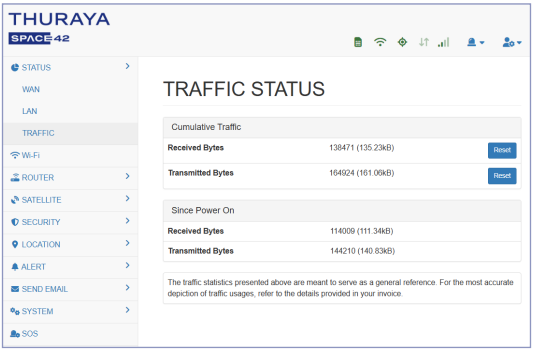
Devices

It shows the list of the devices attached via the LAN or Wi-Fi.

TRAFFIC

It shows the statistics of IP packet for the interfaces.

The Traffic Status Screen displays estimated data usage. Data usage represents the counting of IP packets sent and received by the terminal, measured in bytes. You can view both **"Cumulative Traffic"** and **"Since Power On"** data usage. To reset the data counter, simply click the **Reset** button.



Cumulative Traffic

It displays the cumulative traffic that BBH-01 has sent or received ever.

Reset

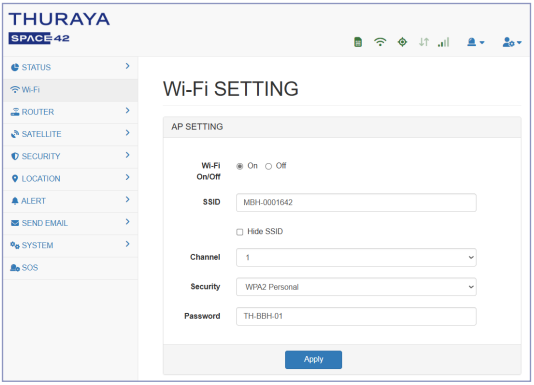
It reset the cumulative traffic. The traffic will be accumulated from 0.

Since Power On

It displays the cumulative traffic from power on.

Wi-Fi

It shows the configuration of Wi-Fi and has a configuration that can be set up for Wi-Fi.



AP SETTING

You can configure a wireless access point (AP) to connect to a Wireless Local Area Network (WLAN) using Wi-Fi.

Wi-Fi On/Off

This allows you to select Wi-Fi On/Off.

If you select **"On"** and click the Apply button, Wi-Fi will be enabled.

If you select **"Off"** and click the Apply button, Wi-Fi will be disabled.

SSID

This displays the current SSID and allows you to change it.

If you check the **"Hide SSID"** option and click the Apply button, the SSID will no longer be visible in the Wi-Fi list.

Channel

You can set a channel to use by Wi-Fi.

The channel can be selected from 1 to 11.

Security

You can select the security mode for Wi-Fi.

The security mode can be selected from Open, WPA/WPA2 Personal, WPA2 Personal, WPA2/WPA3 Personal, and WPA3 Personal.

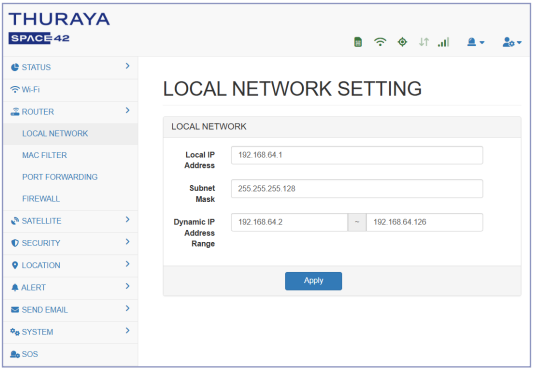
Password

Except for the "Open" mode, a password can be set.

The default password is **TH-BBH-01**.

ROUTER

It has the items about IP network and handling IP and MAC data.



LOCAL NETWORK

It has the items to configure Local IP network.

Local IP Address

This displays the terminal's local IP address and allows you to change it.
The default IP address is **192.168.64.1**.

Subnet Mask

This displays the terminal's local Ethernet subnet mask and allows you to change it.
The default Subnet Mask is **255.255.255.128**.

Dynamic IP Address Range

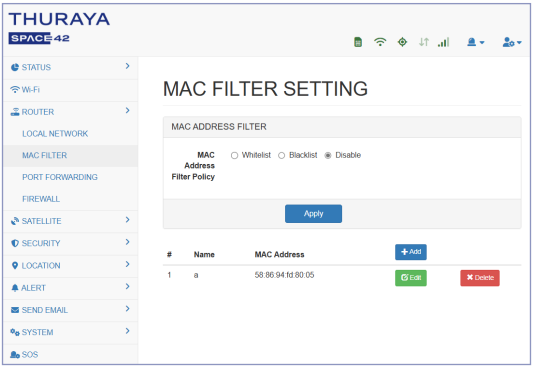
This displays the terminal's dynamic IP address range and allows you to change it.
The default range is from **192.168.64.2** to **192.168.64.126**.

MAC FILTER

MAC filtering allows you to restrict terminal access for devices specified in the Whitelist or Blacklist by their MAC addresses.

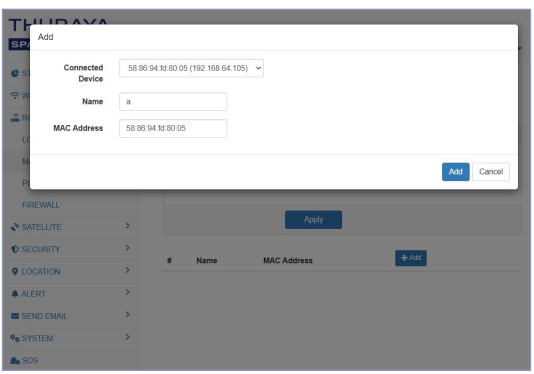
NOTE

*MAC filtering is **not applied to the local network**. It is **only** applied to the **satellite** network.*



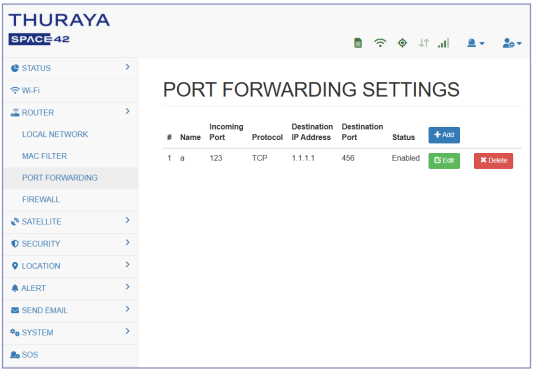
To enable MAC filtering, select a filter policy and click the **Apply** button.

Then, click the **Add/Edit** button to proceed to the following screen where you can configure the device list.

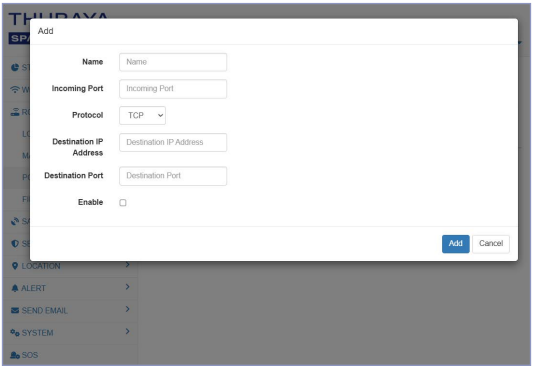


PORT FORWARDING

Port Forwarding is a feature that allows a specified port to connect to a designated device. This feature can forward incoming IP traffic received on the specified port to the designated device's IP address.

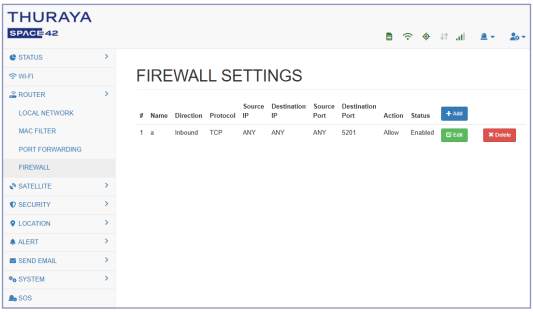


To enable or disable Port Forwarding, click the **Add** button to proceed to the following screen. If the IP is set to **0.0.0.0**, it applies to all IP addresses. If the Port is set to **0**, it applies to all ports.

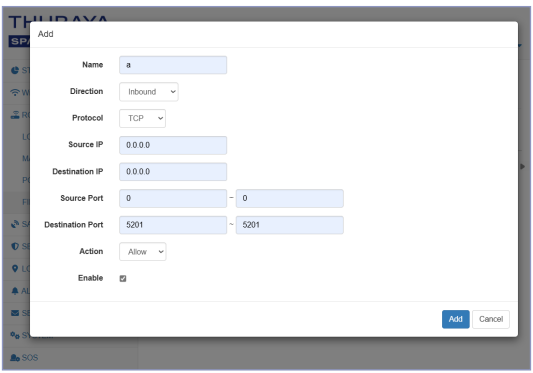


FIREWALL

The firewall settings configured applies to the data traffic from and to the **satellite network**. It does not apply the local area network (POE data port and Wi-Fi connections).



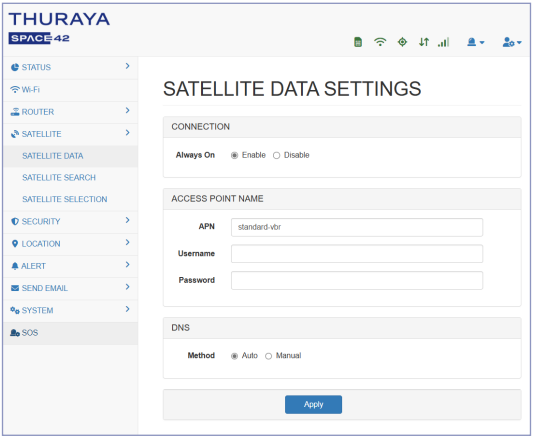
To enable or disable Port Forwarding, click the **Add** button to proceed to the following screen. If the IP is set to **0.0.0.0**, it applies to all IP addresses. If the Port is set to **0**, it applies to all ports.



SATELLITE

This sets the satellite network connection settings, manual satellite search, and satellite selection methods.

SATELLITE DATA



CONNECTION

Enabling **"Always On"** automatically connects to the satellite network service.
If it is disabled, you will need to manually connect to and disconnect from the satellite network service using **"Start Data Service"** and **"Stop Data Service"**.

ACCESS POINT NAME

APN
This sets the Access Point Name (APN) for the satellite network.
The default APN is **standard-vbr**.

Username
This sets the username for the satellite network APN.

Password
This sets the password for the satellite network APN.

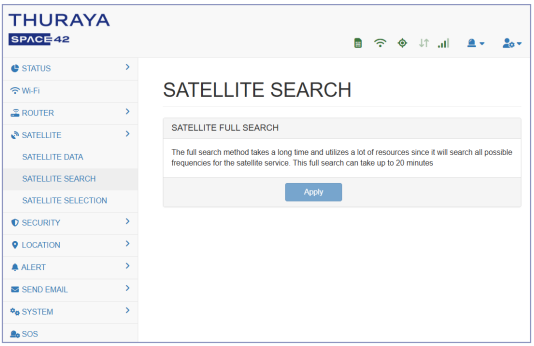
DNS

This is used to automatically get a DNS address from the Thuraya network or to set it manually.

SATELLITE SEARCH

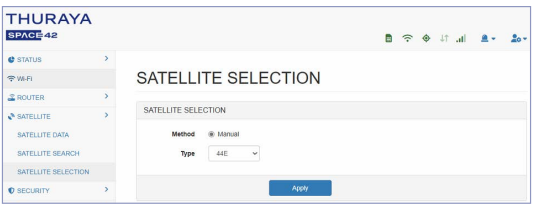
You can click the **Full Search** button to make the terminal perform the full search operation to get the satellite signal.

When this function cannot be performed, the button is disabled.



SATELLITE SELECTION

Select the satellite you want to communicate with. You can select the satellite coordinates.



SECURITY

In order to access this menu, you will need to login using **admin** account credentials.

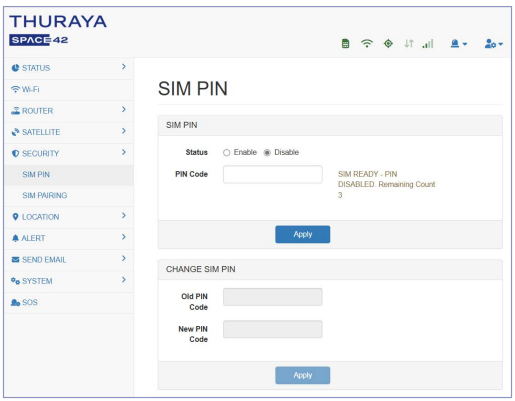
WARNING

Do not lose the new codes if changed from the default. You may contact the service provider if you lose the codes. It may result in an out-of-warranty service and is chargeable.

SIM PIN

SIM PIN

If you enable **Status**, a SIM PIN entry request icon will appear when the terminal is powered on, and you will be redirected to the SIM PIN page upon login.
Entering the correct SIM PIN code allows you to access satellite services.



WARNING

*If the wrong SIM PIN code is entered more than **3** times, you will be directed to the SIM PUK entry screen.*

*To unlock the SIM PIN Code, you need to enter the SIM PUK code. If the wrong SIM PUK code is entered more than **10** times, the **SIM** will be **blocked**.*

Once the SIM is in a blocked state, it can no longer be used.

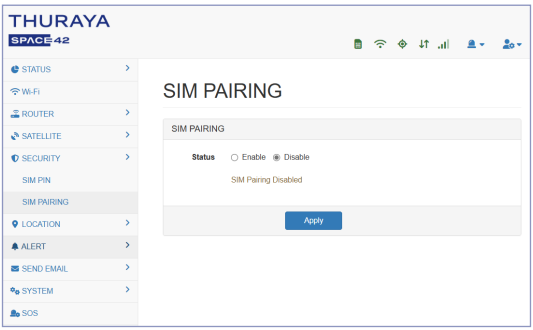
CHANGE SIM PIN

If the SIM PIN is enabled and you wish to change the existing PIN, enter the Old SIM PIN code and then enter the new SIM PIN code.

SIM PAIRING

This feature allows the device to be functionally locked with a specific SIM-card in admin account. If you insert another SIM card that is not paired with the terminal, then you shall need to enter **the special PIN security code** to use the terminal. Please contact your service provider for details of the special PIN security code. When the PIN security code is lost, please contact your service provider.

If the code is changed from the default value, kindly ensure to memorize or save the code in a register. If this is not done or the code is forgotten, the terminal will need to be sent back to your provider for repairs and it will be an out of warranty procedure.



LOCATION

TRACKING

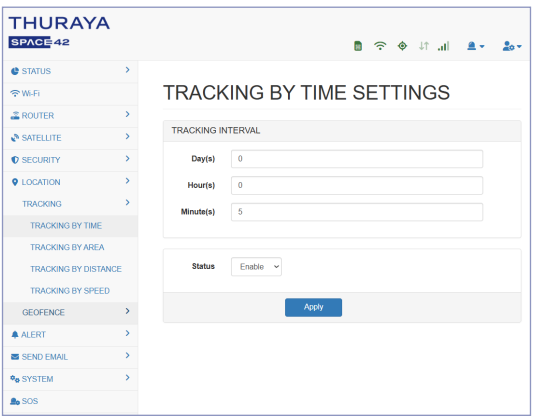
There are four types of tracking available – By time, area, distance, and speed.
In order to access this menu, you will need to login using **admin** account credentials.

NOTE

Time interval setting choice in each tracking type is minimum 5 minutes to maximum 30 days.

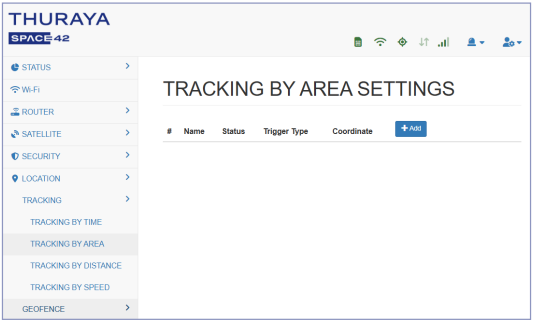
TRACKING BY TIME

For Time type, you can input from **5 min up to 30 days** for the frequency of outgoing messages.



TRACKING BY AREA

For Area type, you can input **10 polygons of 3 to 50 geo-coordinates** in **"DD.ddddd"** format. Each area can be renamed and each polygon needs to be sequential and completed.



NOTE

*The coordinates for the polygon configuration must be entered in **"DD.ddddd"** format.*

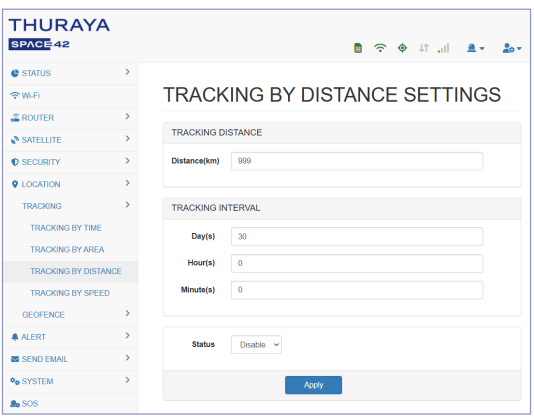
TRACKING BY DISTANCE

TRACKING DISTANCE

You can input from **0.01 km up to 999.99 km**.

TRACKING INTERVAL

You can input from **5 min up to 30 days**.



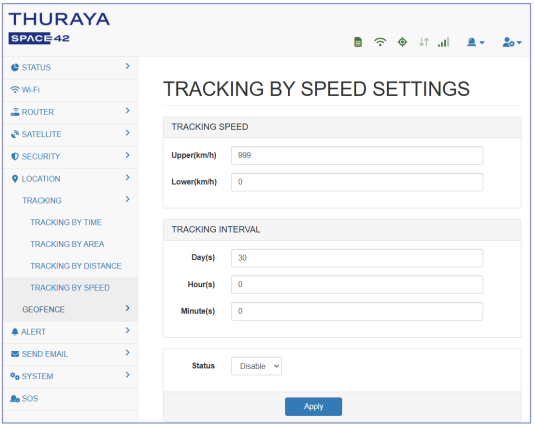
TRACKING BY SPEED

TRACKING SPEED

You can input a **lower (from 0 km/h up to 99 km/h)** and **upper (from 0 km/h up to 999 km/h) speed limit**.

TRACKING INTERVAL

You can input from **5 min up to 30 days**.



GEOFENCE

There are two types of geo fencing available – Restricted zone and radio silence. You can configure up to 10 polygons for the restricted zone with **3 to 50 geo-coordinates** and for radio silence with **3 to 100 geo-coordinates**.

In order to access this menu, you will need to login using **admin** account credentials.

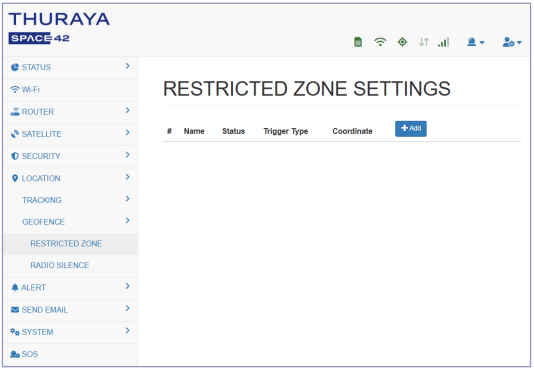
NOTE

*Time interval for background checks is done every **2 minutes**.*

RESTRICTED ZONE

This feature displays a **restricted zone** icon when entering a predefined restricted area. A restricted zone message is sent when the terminal enters or exits the predefined area.

You can input **10 polygons of 3 to 50 geo-coordinates** in **"DD.ddddd"** format. Each area can be renamed and each polygon needs to be sequential and completed.



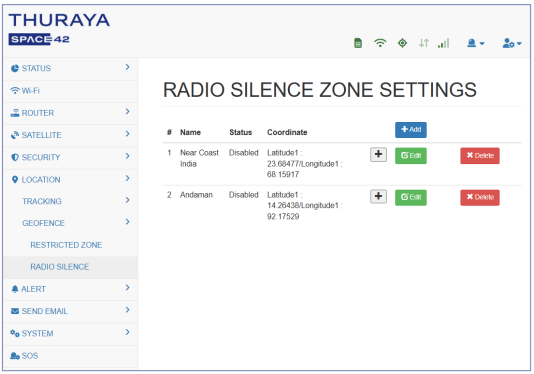
NOTE

*The coordinates for the polygon configuration must be entered in **"DD.ddddd"** format.*

RADIO SILENCE

This function shuts off the terminal's transmission when it enters a predefined **radio silence zone**. Transmission becomes available again when the terminal returns to an allowed zone. Additionally, the terminal sends a radio silence message when it moves into or out of the predefined zone.

You can input **10 polygons of 3 to 100 geo-coordinates** in **"DD.ddddd"** format. Each area can be renamed and each polygon needs to be sequential and completed.

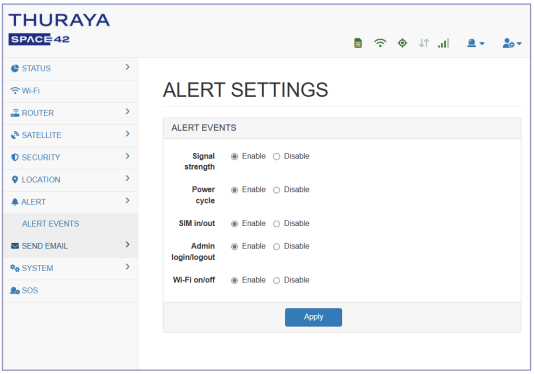


NOTE

*The coordinates for the polygon configuration must be entered in **"DD.ddddd"** format.*

ALERT

You can enable/disable some useful trigger levels to be sent as a **notification alert** from the device to the message using **admin** account.



Alert Events

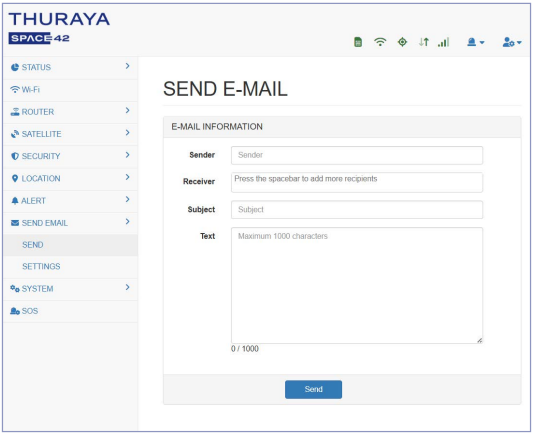
Changes in the status of Signal strength, Power cycle, SIM IN/OUT, Admin login/logout and Wi-Fi On/Off are configured as events on the terminal and the status can be reported to the server from any of its previous states.

SEND EMAIL

This feature is available as a backup to only send text emails to an email server. For this feature to work, it is important to program the email settings correctly. Ensure to seek advice from your IT department to use this functionality.

SEND

Enter the Sender, Receiver, Subject, and Text, then click the **"Send"** button to send the email.

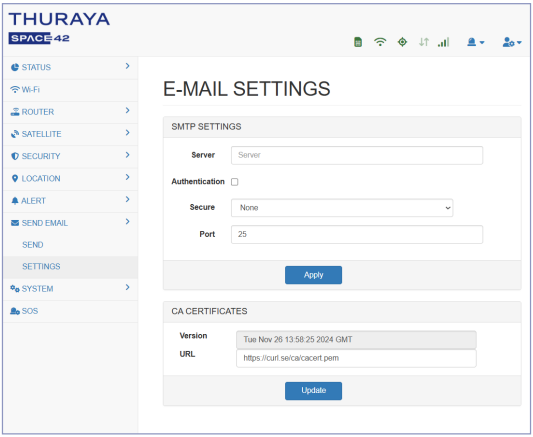


NOTE

The terminal's unique IMEI is automatically inserted at the beginning of the Subject line and sent.

SETTINGS

This is the settings page for sending emails.



SMTP SETTINGS

You can enter the required information for mail relay settings requested by the relay server in the **SMTP SETTINGS** menu and send emails.

CA CERTIFICATES

You may need a certificate depending on the relay server used for email.

You can update and use the latest Mozilla CA certificate or other compatible certificates through the certificate update menu.

NOTE

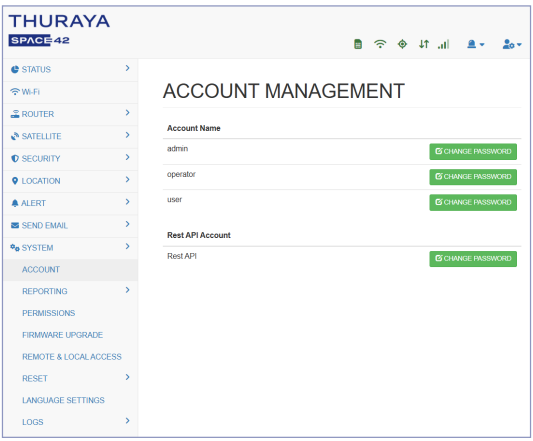
SMTP relay refers to sending emails to other mail servers via a mail server from an external source. The server that relays the emails is called the mail relay server.

SYSTEM

ACCOUNT

This is the page for changing the **password** of each account. The change screen may appear differently depending on the account permissions.

The **Rest API Account password** for remote access control can only be changed from the **admin account**.

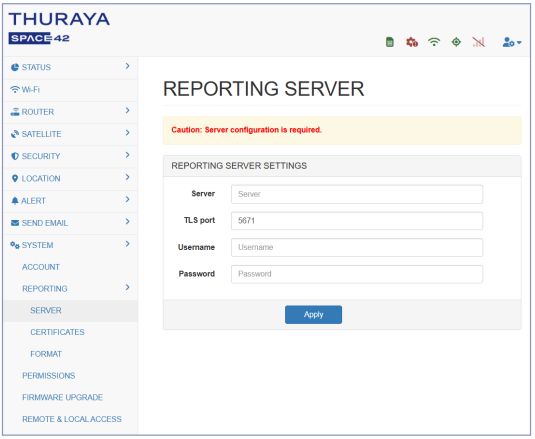


REPORTING

This is the page for configuring server settings for Tracking, Geo Fence, and SOS messages, as well as setting up certificates and message transmission formats.

SERVER

You can configure server settings such as the server IP or Domain Name, TLS port number, username, and password for sending Reporting messages.

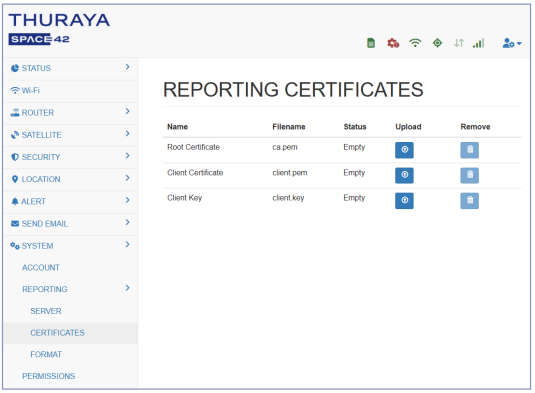


WARNING

- *If the server configuration information is missing, an icon displaying **"Server configuration is required"** will appear in the status bar.*
- *If the server configuration information is missing, you will be redirected to the **server settings page** or **certificates page** upon login.*
- *If the server configuration details are not entered correctly, reporting messages, including SOS, will not be sent.*

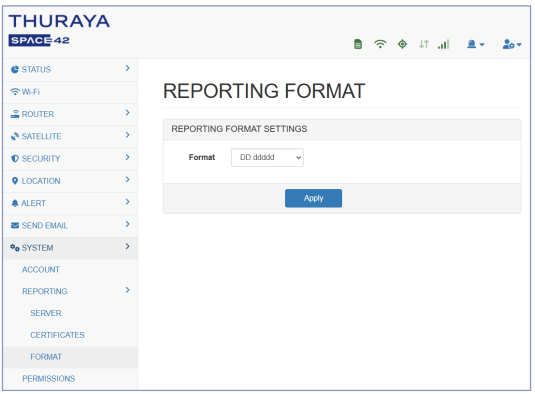
CERTIFICATES

Reporting messages are transmitted in an encrypted format and require server and client certificate files.
The required certificates are the **Root Certificate**, **Client Certificate**, and **Client Key** issued by the server. If any of these files are not uploaded, the message cannot be sent.
Certificate files can be uploaded or deleted.



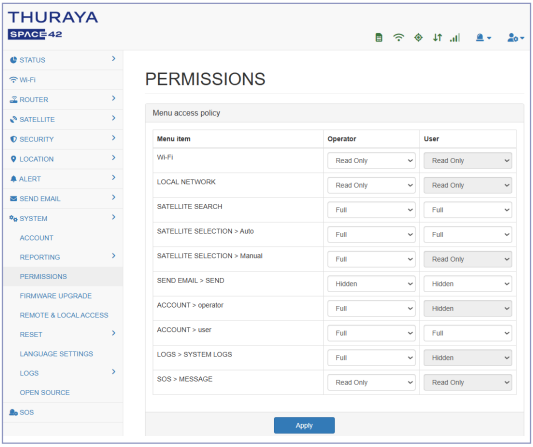
FORMAT

You can change the location information format of the reporting message to one of **8 types**.



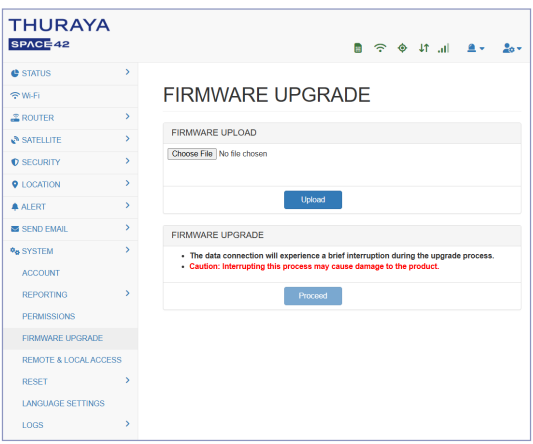
PERMISSIONS

With the **admin account**, you can change the default access permissions for operator and user for each page menu.



FIRMWARE UPGRADE

To upgrade the firmware, select and upload the firmware file. Then, click the **"Proceed"** button. A progress bar will appear, indicating the status of the firmware upgrade.

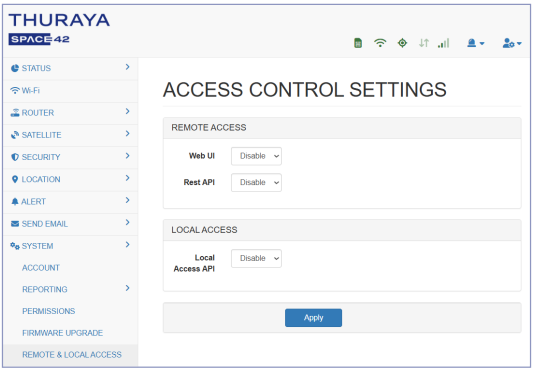


WARNING

- *Interrupting this process may cause damage to the product.*
- *If the upgrade fails, proceed according to the **caution comment**. If it continues to fail, please contact the service center.*

REMOTE & LOCAL ACCESS

You can configure **remote access control** and **local access control**.



Remote Access

Remote access is possible via the Web UI and REST API.
When the Web UI is enabled, you can use a web browser to access remotely.
On the Home screen, enter the displayed **WAN IP address** as shown below.

Type **https://"WAN IP address":55380/** in the **Address** field and press Enter.

NOTE

Using the Web UI, you can configure all the features.

When the Rest (Representational State Transfer) API is enabled, you can use the Rest API protocol for remote access.

NOTE

- *The REST API allows for Location Service configuration, checking the current location, rebooting the BBH-01, and sending notification messages.*
- *For detailed information about REST API interfaces and related documentation, please contact the service provider separately.*

Local Access

Local access to the BBH-01 is available via TCP communication using an Ethernet or Wi-Fi interface.

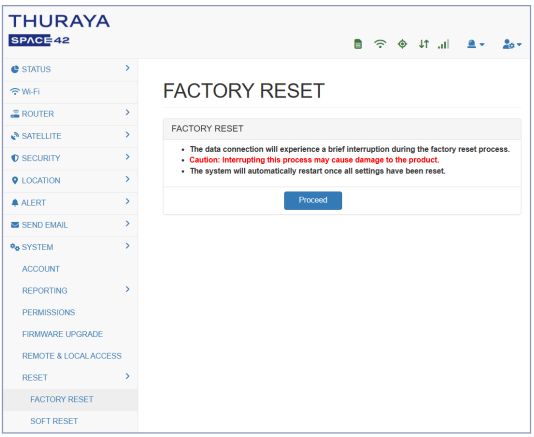
NOTE

- *When Local Access API is enabled, access can be made through the **AT Command** interface on the local network.*
- *The terminal operates as a TCP server, and the **3rd party operates as a TCP client**.*
- *The connection **TCP ports** are **20000 for AT Command** and **21000 for NMEA data**.*

RESET

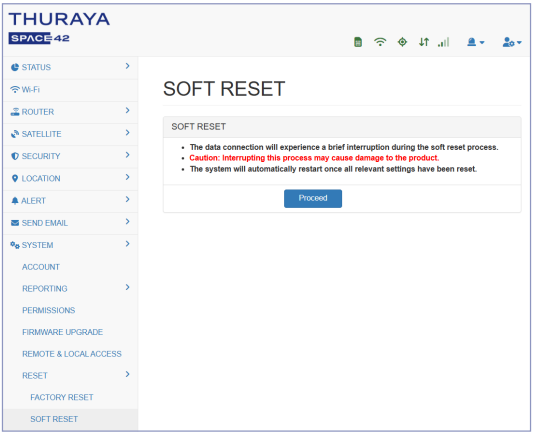
FACTORY RESET

The **factory reset** restores the settings as they were when the terminal was delivered. You will lose your custom settings like **certificates**, **configurations** and **logs** saved on the terminal.



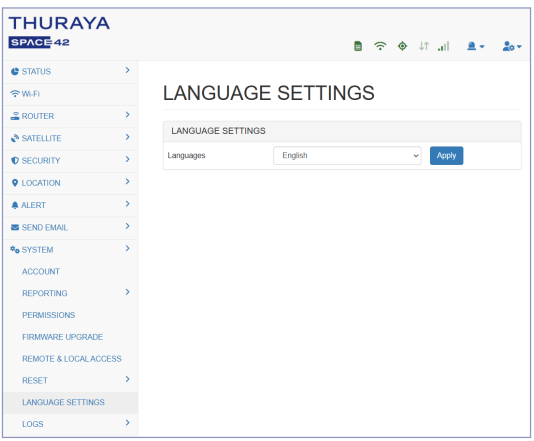
SOFT RESET

A soft reset allows you to restore the terminal without losing certain settings, such as certificates. You will lose your custom settings like **configurations** and **logs** saved on the terminal.



LANGUAGE SETTINGS

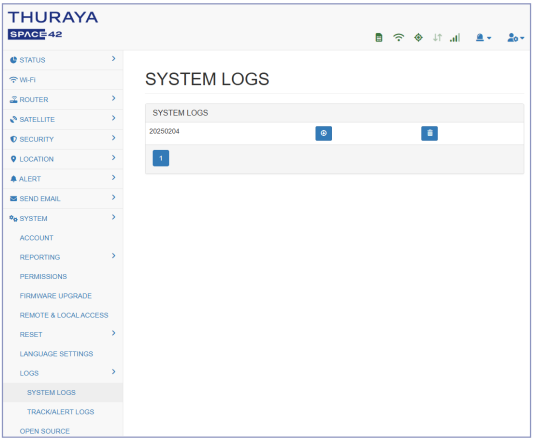
You can manage multilingual options for the system and text input language across all accounts.



LOGS

SYSTEM LOGS

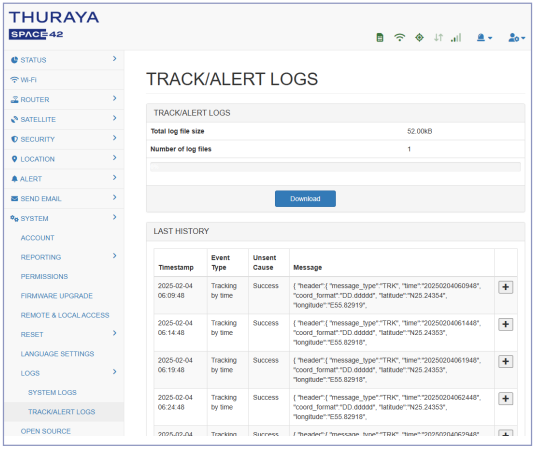
The system logs are used for troubleshooting purposes. It allows you to check the terminal's operational status, can be downloaded and deleted by **date**. The system logs are stored for **up to 90 days**, and any logs older than 90 days are automatically deleted.



TRACK/ALERT LOGS

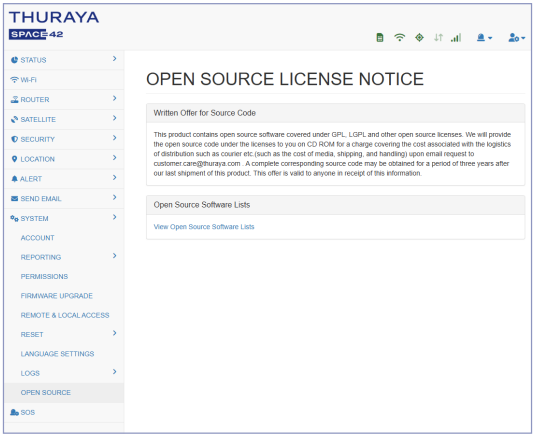
If the Reporting server is programmed and Location services are active, the Tracking and alert message logs can be downloaded by clicking the **"Download"** button. They are stored for **up to 90 days**, and logs older than 90 days are automatically deleted.

The latest **up to 20 logs** are displayed.



OPEN SOURCE

Displays the open source licenses used.

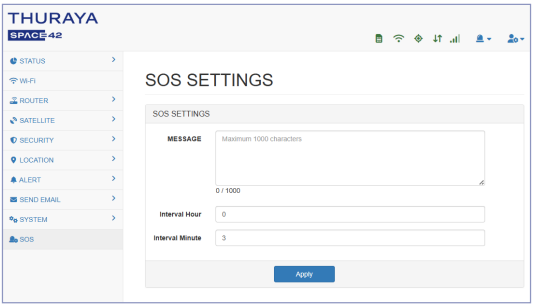


SOS

If the Reporting Server is programmed and in case of an emergency, you can send an SOS to pre-determined recipients by clicking the **SOS Start** button from the **SOS** icon in the status bar.

When SOS is activated, the **SOS ON** icon is displayed in the status bar.

To deactivate SOS, simply click the **SOS Stop** button from the **SOS** icon in the status bar.



SOS SETTINGS

MESSAGE

You can edit the text to be sent in an SOS message. You can write an SOS message of **up to 1,000 characters**.

Interval Hour/Minute

You can set the time interval of SOS transmission from device (**every 3 minutes up to every 24 hours**).

TROUBLESHOOTING

For troubleshooting purposes, the BBH-01 will display error code in the Terminal Status webpage.

It displays the error code and time stamp of occurrence. You can provide this information to you service provider along with the IMEI number of the terminal and IMSI number of the SIM to receive further support.

Error code	Description	Action
8	Operator determined barring	Check the SIM card balance. If the problem persists, contact your Service Provider.
10	SIM not inserted	The SIM card may be missing or inserted incorrectly. Please check if the SIM card. If the problem persists, return the unit to your Service Provider for service.
11	SIM PIN required	Enter the correct SIM PIN number.
12	SIM PUK required	Enter the correct SIM PUK number.
16	Incorrect password	Enter the correct SIM PIN/PUK number.
21	Invalid index	Restart the BBH-01. If the problem persists, contact your Service Provider.
30	No network service	Verify the BBH-01 has a clear sky view in the direction of the satellite. Restart the BBH-01. If the problem persists, contact your Service Provider.
31	Network timeout	If the problem continues, restart the BBH-01. If the problem persists, contact your Service Provider.
50	Alert Status	Verify the BBH-01 has a clear sky view in the direction of the satellite. If the problem persists, contact your Service Provider.

Error code	Description	Action
51	Invalid position SB	Registration service is now available due to invalid GNSS position. Verify the BBH-01 has a clear sky view in the direction of the satellite. If the problem persists, contact your Service Provider.
52	Invalid position for LAI	You should verify that the BBH-01 has an open view of the sky to get a current GNSS fix. If the problem persists, contact your Service Provider.
53	Invalid position	You should verify that the BBH-01 has an open view of the sky to get a GNSS fix. If the problem persists, contact your Service Provider.
54	Invalid position for SVPD	Verify that the BBH-01 has an open view of the sky to get a GNSS fix. If the problem persists, contact your Service Provider.
55	Position too old	You should verify that the BBH-01 has an open view of the sky to get a GNSS fix. If the problem persists, contact your Service Provider.
102	IMSI unknown in HLR	The subscriber information is not recognized by the network. Please contact your Service Provider.
103	Illegal MS	The subscriber information is rejected or the SIM card is not producing correct authentication information. Please contact your Service Provider.
106	Illegal ME	The terminal is not accepted by the network. Please contact your Service Provider.
107	Data services not allowed	Verify the correct settings in the web page. Restart the BBH-01. If the problem persists, contact your Service Provider.

Error code	Description	Action
108	Data services and Non Data services not allowed	Verify the correct settings in the web page. Restart the BBH-01. If the problem persists, contact your Service Provider.
111	PLMN not allowed	If the problem persists, contact your Service Provider.
112	Roaming not allowed in this location area	If the problem continues with an authorized SIM card, contact your Service Provider.
132	Service option not supported	Contact your Service Provider to regain authorized service. The Service Provider should check the subscription entries in the Home Location Registry.
133	Requested service option not subscribed	Verify settings and contact your Service Provider to regain authorized service. The Service Provider should check the subscription entries in the Home Location Registry
134	Service option temporarily out of order	If the problem persists, contact your Service Provider.
148	Unspecified Data error	If the problem persists, contact your Service Provider.
149	PDP authentication failure	Network registration failure. The BBH-01 will retry automatically. If the problem persists, contact your Service.
157	Congestion	Network registration failure. The BBH-01 will retry automatically. If the problem persists, contact your Service.
158	Network failure	If the problem persists, contact your Service. Provider.
211	Protocol error unspecified	Restart the BBH-01. If the problem persists, contact your Service Provider.
262	SIM blocked	Please contact your Service Provider.
311	Contention failure	The BBH-01 will retry automatically. If the problem persists, contact your Service Provider.

Error code	Description	Action
312	Authentication failure	Network registration failure. The BBH-01 will retry automatically. If the problem persists, contact your Service Provider.
318	RACH failure	The BBH-01 will retry automatically. If the problem persists, contact your Service Provider.
319	Cell re-reselection	The BBH-01 will retry automatically. If the problem persists, contact your Service Provider.
321	Not registered	The BBH-01 will retry automatically. If the problem persists, contact your Service Provider.
323	MS identity cannot be derived by network	The BBH-01 will retry automatically. If the problem persists, contact your Service Provider.
324	Implicitly detached	The BBH-01 will retry automatically. If the problem persists, contact your Service Provider.
325	MSC temporarily not reachable	The BBH-01 will retry automatically. If the problem persists, contact your Service Provider.
339	Not attached	Verify that the BBH-01 has an open view of the sky to get a GNSS fix. If the problem persists, contact your Service Provider.
340	Minimum QOS check failed	Verify the correct settings in the web page. If the problem persists, contact your Service Provider.
341	Invalid NSAPI	If the problem persists, contact your Service Provider.
344	Invalid parameters	Restart the BBH-01. If the problem persists, contact your Service Provider.

Error code	Description	Action
345	NSAPI not available	Restart the BBH-01. If the problem persists, contact your Service Provider.
346	Detach with re-attach	If terminal cannot reattach, restart the BBH-01. If the problem persists, contact your Service Provider.
348	LLC SNDCP failure	Network connection failure caused by LLC or SNDCP failure. Restart the BBH-01. If the problem persists, contact your Service Provider.
349	Invalid in current class	If the problem persists, contact your Service Provider.
350	Insufficient resources	If the problem persists, contact your Service Provider.
351	Missing or unknown APN	Network connection failure due to the missing or invalid of APN. Please contact your Service Provider to the correct network settings.
352	Unknown PDP address or PDP type	Network connection failure. Restart the BBH-01. If the problem persists, contact your Service Provider.
353	Re-activation required	Verify the correct settings in the web page and contact your Service Provider to activate authorized service.
354	Unknown PDP context	Verify the correct settings in the web page and wait network connection. If the problem persists, contact your Service Provider.
355	Limited service	If the problem persists, contact your Service Provider
356	Data services not possible	Verify the correct settings in the web page and contact your Service Provider to activate authorized service.
359	Resources unavailable, unspecified	If the problem persists, contact your Service Provider.

Error code	Description	Action
372	Invalid command parameter	Check the AT command parameters. Restart the BBH-01. If the problem persists, contact your Service Provider.
373	Unknown command	Check the AT command. Restart the BBH-01. If the problem persists, contact your Service Provider.
1000	None	No action required. The BBH-01 is functioning properly.
1011	PoE incompatible	Check the PoE connection. Disconnect the PoE cable and reconnect it. Verify that it is an approved PoE injector. If the problem continues, contact your Service Provider.
1012	AP init ialization in progress	Please try again after about 1-2 minutes. If the issue persists after retrying, restart the BBH-01. If the problem persists, contact your Service Provider.
1016	SIM locked	The SIM pairing mismatch status is detected. Enter the special PIN code or insert the correct SIM card. Please contact your service provider for details of the special PIN security code. When the PIN security code is lost, please contact your service provider.
1017	SAT no response	Restart the BBH-01. If the problem persists, contact your Service Provider.

NOTE

- *If the error code displayed is not listed in this document, restart the BBH-01.*
- *If the problem persists, contact your Service Provider.*

WARRANTY

This warranty table is only valid with all gaps fully filled by an authorized Thuraya Service Partner .

- **Date of Purchase:**

- **Customer's name, address, country and telephone number:**

- **Write the IMEI here:**

- **Dealer's stamp and signature:**