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Document Number	BQW_02_0031.002
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Pico Next Gateway

User Guide





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Revision History

Revision	Date	Description
.001	Aug. 19, 2021	Brownan first release
.002	Feb. 15, 2022	Add Regulatory and change LED function



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Regulatory

Federal Communication Commission Statement (FCC, U.S.)

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 an 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.

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.

Radiation Exposure Statement

This device complies with RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This device must operate with a minimum distance of 20 cm between the radiator and user body.

FCC Caution:

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



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IC WARNING

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

3. L'appareil ne doit pas produire de brouillage;
4. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Radiation Exposure Statement:

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme Canada limites d'exposition aux radiations dans un environnement non contrôlé. Cet équipement doit être installé et utilisé à distance minimum de 20cm entre le radiateur et votre corps.



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1 Product Overview

1.1 Product Features

The Pico Next Gateway is a LoRa gateway with GPS, using numerous ways of connection: ethernet, LTE, and Wi-Fi. Depending upon the SKU, some functions might not be available. Pico Next is specifically designed for wide-area IoT applications. Applications include, but are not limited to, home security, automatic meter-reading, monitoring fault-indicators, and monitoring streetlights. This gateway is very suitable for small businesses or private area uses like at parking lots, exhibition centers, and campuses.

1.2 LED Functions

LED Functions	Constant	Flashing	Off
Power	Power On	Booting /OTA	OFF
Internet	Internet Available	Checking Internet	RFU
Service	LNS Connected	RFU	LNS Not Connected
LoRa	LoRa Working	Initializing	LoRa Not Working

1.3 Reset Button

Reboot:

By pressing and holding the RESET Button, the Power LED will start flashing. The “reboot” procedure will be triggered when the RESET Button is released while the Power LED light is flashing.

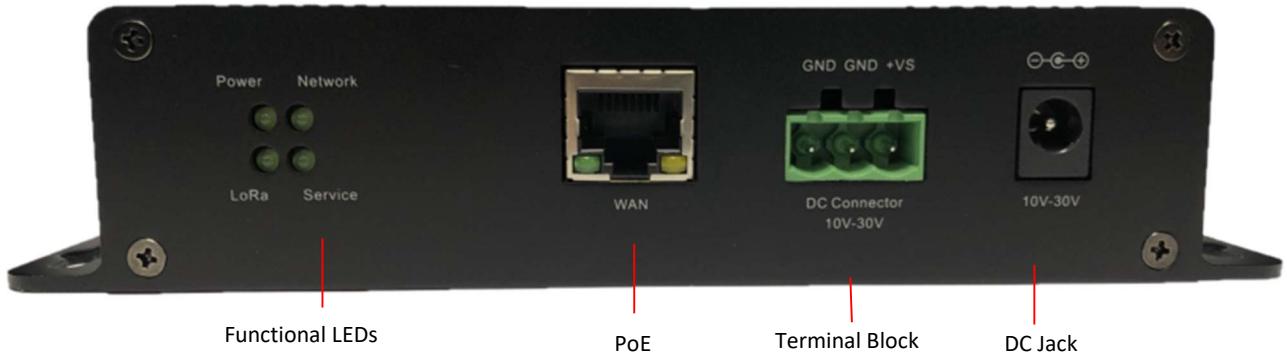
Restore to Default:

By pressing and holding the RESET Button, the Power LED will start flashing. The “restore to default” procedure will be triggered when the RESET Button released after the Power LED light becomes constant.

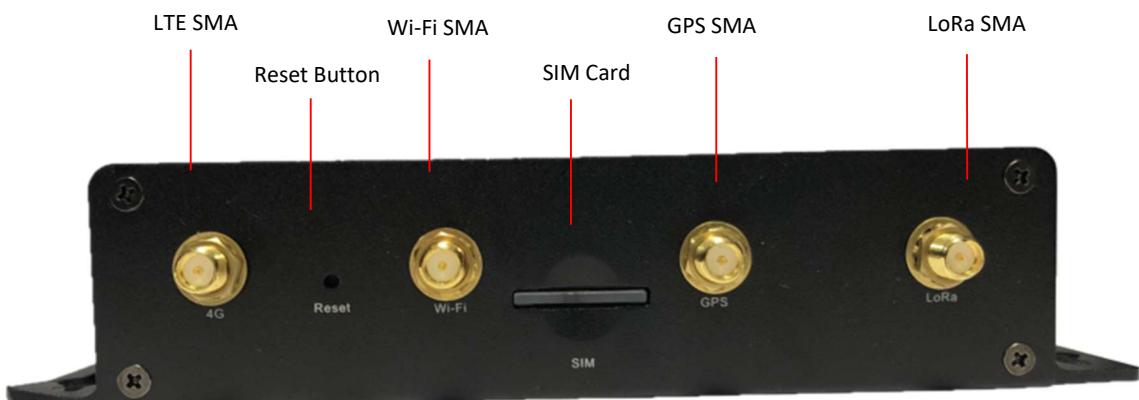


1.4 I/O Ports

Front Panel



Back Panel -





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1.5 Accessories

Different SKUs would provide accessories pertaining to that country or SKU, such as the adapter plug model and GPS antenna. LTE and Wireless antennas are interchangeable; they have the same specifications.

Adapter



LoRa Antenna



LTE and Wi-Fi Antenna



GPS Antenna



2 Installation

2.1 Power up

Power up Pico Next through the following ways.

2.2 DC Adapter

Connect the power adapter provided to the DC jack In. Pico Next will automatically turn on after powering up.

2.3 Terminal Block

Connect a power supply to Pico Next with a 3-pin pluggable male terminal block.

2.4 Ethernet

Connect a RJ45 Ethernet cable to Power-over-Ethernet In (WAN port). Connect the other end of the ethernet cable to a passive PoE that ensures a power of 12V / 1.5A DC. Provide power to the passive PoE.



3 GUI Access

3.1 Open Admin GUI

Default mode of Pico Next Gateway is DHCP. Once Pico Next is turned on through plugging in the DC adapter, it will automatically link to available servers. Pico Next's IP address can be found from the DHCP server. Access Pico Next WebUI via the DHCP IP on Chrome. The default username is “admin” and the password can be found on the back label.

Figure 3.1-A Admin GUI

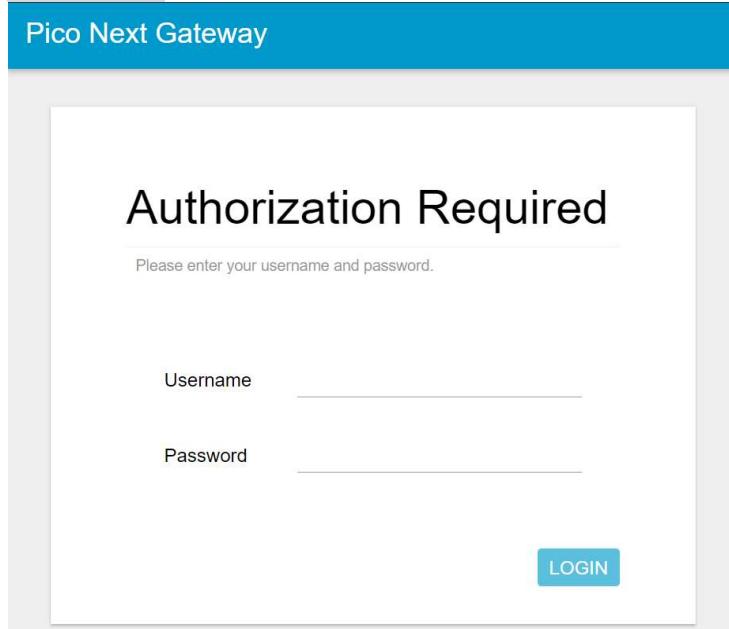
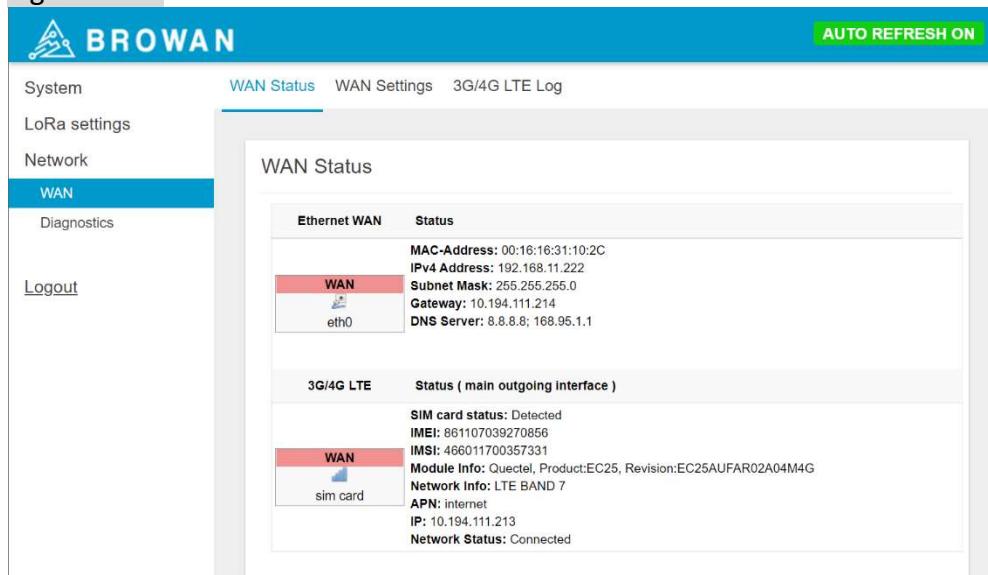


Figure 3.1-B Admin GUI





3.2 System

The System menu consists of the following categories: **Administration**, **Restore** and **System Firmware**. An introduction of each category will be distinctly stated in individual paragraphs.

4 Administration

Pico Next login password can be configured on this page.

Figure 4-A Router Password

This screenshot shows a configuration interface for changing the router password. The title is 'Router Password'. A descriptive text below the title says 'Changes the administrator password for accessing the device'. There are two input fields: 'Password' and 'Confirmation', both with small green circular icons next to them. Below the fields are two buttons: 'SAVE' (blue) and 'CANCEL' (orange).

4.1 Restore

Restore the **Password Credential**, **LoRa Setting** and **Network Setting** to the default configurations.

Figure 4.2-A Restore

This screenshot shows a configuration interface for performing a reset. The title is 'Restore'. A descriptive text below the title says 'To reset the firmware to its initial state, click "Perform reset".' There is one input field 'Reset to defaults:' with a dropdown menu showing 'PERFORM RESET'. The background has a light gray gradient.



4.2 System Firmware

Here the current firmware version can be found. Click the "Choose File" button to upload the newest system firmware. Click the "UPGRADE" button to upgrade the system firmware.

Figure 4.2-A System Firmware

The screenshot shows a web-based interface for managing system firmware. At the top, it displays "Firmware Information". Below that, it shows the "Current firmware version: 0.1.7". There is a "CHECK NEW FIRMWARE" button. A file input field says "Please select a file to upgrade: Choose File No file chosen" and an "UPGRADE" button.

5 LoRa Settings

The LoRa menu consists of the following categories: **Mode Selection**, **Channel Scan** and **Log**. An introduction of each category will be distinctly stated in individual paragraphs.

5.1 Mode Selection

By default, the LoRa Mode is disabled. Configure the "**Packet Forwarder**" or "**Basic Station**" by using the dropdown list.

Figure 5.1-A LoRa Mode Selection

The screenshot shows a dropdown menu for selecting a LoRa mode. The menu is open, showing three options: "Disable" (which is highlighted in blue), "Packet Forwarder", and "Basic Station". Below the menu is a blue "APPLY" button.



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5.1.1 Packet Forwarder

Choose the "**Packet Forwarder**" option and click the "**APPLY**" button to Enable the Packet Forwarder mode. After applying the setting, the "Packet Forwarder" field can be found on the left menu.

Figure 5.1.1-A LoRa Mode Selection - Packet Forwarder

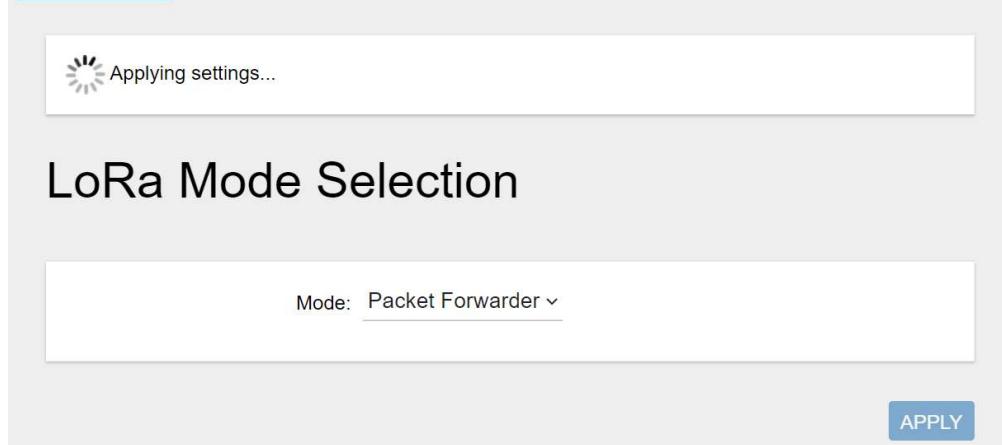


Figure 5.1.1-B LoRa Mode Selection - Packet Forwarder menu





5.1.1.1 Gateway Info

This page is to set up the LoRa configuration including **Gateway ID**, **Server Address**, **Server Uplink Port**, **Server Downlink Port**, **Keep-Alive Interval**, **Statistics Display Interval**, and **Push Timeout**.

Figure 5.1.1.1-A Gateway Info

Gateway Info

Gateway ID: 1c497bfffefb5e56

Server Address: brown.eu1.cloud.thethings

Server Uplink Port: 1700 (1~65535)

Server Downlink Port: 1700 (1~65535)

Keep Alive Interval: 10 (seconds)

Statistics display Interval: 30 (seconds)

Push Timeout: 100 (milliseconds)

5.1.1.2 Antenna Gain

This page is to set up the **antenna gain** of Lora.

Figure 5.1.1.2-A Antenna Gain

Antenna Gain: 0 (0 ~ 15)

APPLY



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5.1.1.3 Radio and Channel Settings

This page is to configure the radio 0 and radio 1 configurations of Lora, including **Central Frequency**, **Channel Status**, and **Center frequency offset**.

Figure 5.1.1.3-A Radio and Channel Settings

Radio Settings

Here you can modify Central frequency of Radio 0 or Radio 1 to change channel frequencies.

Radio 0	Radio 1
Central Frequency: 867400000 (Hz)	Central Frequency: 868200000 (Hz)
RSSI Offset: -167 (dBm)	RSSI Offset: -167 (dBm)

Channel Assignment

CH 0 Status: Enable	Radio Interface: 0	CenterFreqOffset: -300000 (-100000~+100000)
CH 1 Status: Enable	Radio Interface: 0	CenterFreqOffset: -100000 (-400000~+400000)
CH 2 Status: Enable	Radio Interface: 0	CenterFreqOffset: 100000 (-400000~+400000)
CH 3 Status: Enable	Radio Interface: 0	CenterFreqOffset: 300000 (-400000~+400000)
CH 4 Status: Enable	Radio Interface: 1	CenterFreqOffset: -300000 (-400000~+400000)
CH 5 Status: Enable	Radio Interface: 1	CenterFreqOffset: -100000 (-400000~+400000)
CH 6 Status: Enable	Radio Interface: 1	CenterFreqOffset: 100000 (-400000~+400000)
CH 7 Status: Enable	Radio Interface: 1	CenterFreqOffset: 300000 (-400000~+400000)
CH 8 Status: Enable	Radio Interface: 1	CenterFreqOffset: 100000 (-375000~+375000) Channel Bandwidth: 250K

APPLY



5.1.1.4 LBT Settings

For some regions (i.e. Japan), the Listen Before Talk (LBT) function is a must. This page is to set up the LBT configuration of Lora, including **LBT Status**, **RSSI Target**, **Channel settings**.

Figure 5.1.1.4-A LBT Settings
LBT Settings

The screenshot shows a configuration page for LBT settings. At the top, there is a dropdown menu for "LBT Status" set to "Disable". Below it is a field for "RSSI Target" with the value "-80" and units "(dBm)". The main section is titled "Channel settings:" and contains eight entries, each with a frequency and scan time. The frequencies listed are 867100000, 867300000, 867500000, 867700000, 867900000, 868100000, 868300000, and 868500000. Each entry includes a "(Hz)" unit and a "Scan Time: 5000us" dropdown. At the bottom right is a blue "APPLY" button.

5.1.2 Basic Station

Choose the "**Basic Station**" option and click the "**APPLY**" button to Enable the Basic Station mode. After applying the setting, the "Basic Station" field can be found on the left menu.

Figure 5.1.2-A LoRa Mode Selection - Basic Station

The screenshot shows a configuration page for LoRa mode selection. At the top, there is a message "Applying settings...". The main section is titled "LoRa Mode Selection" and contains a dropdown menu for "Mode" set to "Basic Station". At the bottom right is a blue "APPLY" button.

Figure 5.1.2-B LoRa Mode Selection - Basic Station menu



The screenshot shows a web-based configuration interface for a Browan device. At the top, there's a navigation bar with the Browan logo and tabs for "System", "Radio Info" (which is selected), and "Connection Configuration". On the left, a sidebar lists "LoRa settings", "Mode Selection", "Basic Station" (which is highlighted in blue), "Channel Scan", "Log", and "Network". Below the sidebar, there's a "Logout" link. The main content area displays "Gateway EUI: 1C497BFFFEB5E56". Under "Radio 0", it shows "Radio Type: SX1257" and "RSSI Offset:". Under "Radio 1", it shows "Radio Type: SX1257" and "RSSI Offset:". At the bottom right of the main area are "RESTART SERVICE" and "APPLY" buttons.

5.1.2.1 Radio Info

This page is to show the **Gateway EUI** information.

Figure 5.1.2.1-A Radio Info

This screenshot is identical to the one above, showing the "Radio Info" configuration page. It displays the "Gateway EUI: 1C497BFFFEB5E56" and the "Radio 0" and "Radio 1" settings. The "RESTART SERVICE" and "APPLY" buttons are also present at the bottom right.

5.1.2.2 Connection Configuration

This page is to set up the basic station configuration, including **Basic Station Mode**, **Protocol**, **Server Address**, **Server Port** and **Credentials**.

- LNS Mode

Configure the LNS Mode settings and click the "APPLY" button.

**Figure 5.1.2.2-A LNS Mode**

This screenshot shows the configuration interface for LNS Mode. At the top, it says "Basic Station Mode: LNS Mode". Below that are fields for "Protocol: WebSocket Secure", "Server Address: browan.eu1.cloud.thethings.", and "Server Port: 8887". There are two file upload fields: "Trust: Choose File No file chosen" with a "UPLOAD" button, and "CRT: Choose File No file chosen" with a "(Optional) UPLOAD" button. Below these are status indicators: "Trust Status: Installed" with a "DELETE" button, "CRT Status: Not Installed", and "Key: Choose File No file chosen" with a "(Optional) UPLOAD" button. "Key Status: Installed" also has a "DELETE" button. At the bottom are "RESTART SERVICE" and "APPLY" buttons.

Basic Station Mode:	LNS Mode
Protocol:	WebSocket Secure
Server Address:	browan.eu1.cloud.thethings.
Server Port:	8887
Trust:	Choose File No file chosen
CRT:	Choose File No file chosen
Key:	Choose File No file chosen
Key Status:	Installed
CRT Status: Not Installed	
RESTART SERVICE APPLY	

- CUPS Mode

Configure the CUPS Mode settings and click the "APPLY" button.

Figure 5.1.2.2-B CUPS Mode

This screenshot shows the configuration interface for CUPS Mode. At the top, it says "Basic Station Mode: CUPS Mode". Below that are fields for "Protocol: HTTPS", "Type: Boot", and "Server Address: browan.eu1.cloud.thethings.". There are two file upload fields: "Trust: Choose File No file chosen" with a "UPLOAD" button, and "CRT: Choose File No file chosen" with a "(Optional) UPLOAD" button. Below these are status indicators: "Trust Status: Installed" with a "DELETE" button, "CRT Status: Not Installed", and "Key: Choose File No file chosen" with a "(Optional) UPLOAD" button. "Key Status: Installed" also has a "DELETE" button. At the bottom are "RESTART SERVICE" and "APPLY" buttons.

Basic Station Mode:	CUPS Mode
Protocol:	HTTPS
Type:	Boot
Server Address:	browan.eu1.cloud.thethings.
Server Port:	443
Trust:	Choose File No file chosen
CRT:	Choose File No file chosen
Key:	Choose File No file chosen
Key Status:	Installed
CRT Status: Not Installed	
RESTART SERVICE APPLY	



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5.2 Channel Scan

Click the "SCAN" button to scan the RF signal. Then click the "EXPORT" button to export the scan result.

Figure 5.2-A Channel RSSI Scan
Channel Scan

The device can scan all supported channels based on ISM band regulation.
Note: The scanning process may take few minutes to complete, please wait until the end of process.

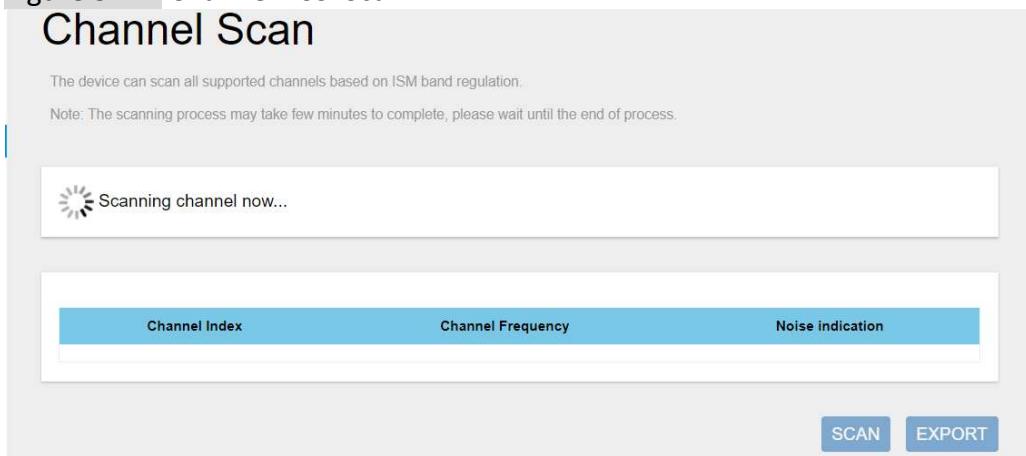


Figure 5.2-B Scan Result
Channel Scan

The device can scan all supported channels based on ISM band regulation.
Note: The scanning process may take few minutes to complete, please wait until the end of process.

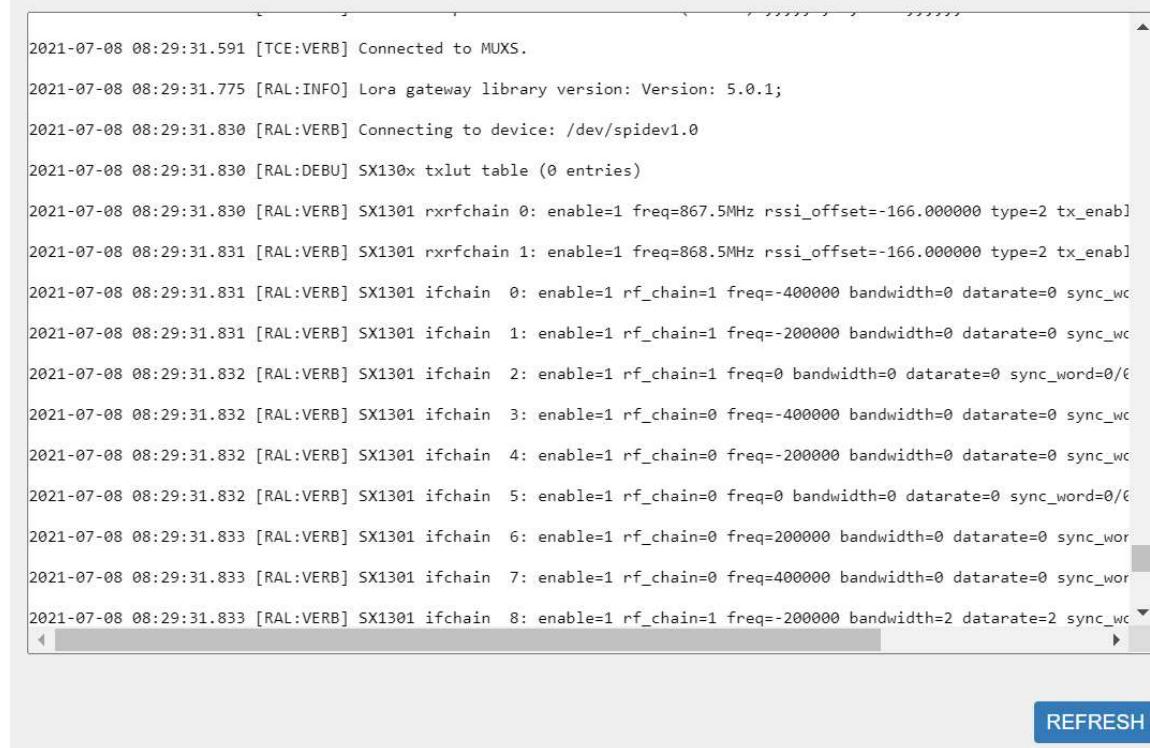
Channel Index	Channel Frequency	Noise indication
Channel 1	863100000	-88.150
Channel 2	863300000	-90.470
Channel 3	863500000	-86.480
Channel 4	863700000	-84.810
Channel 5	863900000	-87.730
Channel 6	864100000	-86.210
Channel 7	864300000	-85.260
Channel 8	864500000	-87.720
Channel 9	864700000	-89.070
Channel 10	864900000	-88.380
Channel 11	865100000	-88.500
Channel 12	865300000	-88.720
Channel 13	865500000	-87.030
Channel 14	865700000	-88.420
Channel 15	865900000	-88.290
Channel 16	866100000	-90.470



5.3 Log

The LoRa logs will be shown on this page. Packet forwarder mode will show recent logs with a maximum limit of 5MB. Basic Station mode will show recent logs within 5,000,000 lines.

Figure 5.3-A Logs
LoRa Logs



A screenshot of a web-based log viewer titled "LoRa Logs". The main area displays a scrollable list of log entries from July 8, 2021, at 08:29:31.591. The log entries are in JSON format, showing various system and library messages related to the SX1301 module. A "REFRESH" button is located in the bottom right corner of the log window.

```
2021-07-08 08:29:31.591 [TCE:VERB] Connected to MUXS.  
2021-07-08 08:29:31.775 [RAL:INFO] Lora gateway library version: Version: 5.0.1;  
2021-07-08 08:29:31.830 [RAL:VERB] Connecting to device: /dev/spidev1.0  
2021-07-08 08:29:31.830 [RAL:DEBU] SX130x txlut table (0 entries)  
2021-07-08 08:29:31.830 [RAL:VERB] SX1301 rxrfchain 0: enable=1 freq=867.5MHz rssi_offset=-166.000000 type=2 tx_enab]  
2021-07-08 08:29:31.831 [RAL:VERB] SX1301 rxrfchain 1: enable=1 freq=868.5MHz rssi_offset=-166.000000 type=2 tx_enab]  
2021-07-08 08:29:31.831 [RAL:VERB] SX1301 ifchain 0: enable=1 rf_chain=1 freq=-400000 bandwidth=0 datarate=0 sync_wc  
2021-07-08 08:29:31.831 [RAL:VERB] SX1301 ifchain 1: enable=1 rf_chain=1 freq=-200000 bandwidth=0 datarate=0 sync_wc  
2021-07-08 08:29:31.832 [RAL:VERB] SX1301 ifchain 2: enable=1 rf_chain=1 freq=0 bandwidth=0 datarate=0 sync_word=0/e  
2021-07-08 08:29:31.832 [RAL:VERB] SX1301 ifchain 3: enable=1 rf_chain=0 freq=-400000 bandwidth=0 datarate=0 sync_wc  
2021-07-08 08:29:31.832 [RAL:VERB] SX1301 ifchain 4: enable=1 rf_chain=0 freq=-200000 bandwidth=0 datarate=0 sync_wc  
2021-07-08 08:29:31.832 [RAL:VERB] SX1301 ifchain 5: enable=1 rf_chain=0 freq=0 bandwidth=0 datarate=0 sync_word=0/e  
2021-07-08 08:29:31.833 [RAL:VERB] SX1301 ifchain 6: enable=1 rf_chain=0 freq=200000 bandwidth=0 datarate=0 sync_wor  
2021-07-08 08:29:31.833 [RAL:VERB] SX1301 ifchain 7: enable=1 rf_chain=0 freq=400000 bandwidth=0 datarate=0 sync_wor  
2021-07-08 08:29:31.833 [RAL:VERB] SX1301 ifchain 8: enable=1 rf_chain=1 freq=-200000 bandwidth=2 datarate=2 sync_wc
```

6 Network

The Network menu consists of the following categories: **WAN** and **Diagnostics**. Introduction and input procedures for each category are described in the following paragraphs.

6.1 WAN

The purpose of this category is to view current WAN settings. This category is further divided into three sectors: **WAN Status**, **Wan Settings** and **3G/4G LTE Log**. These individual options are listed and labeled above the main content.



6.1.1 WAN Status

The current network status will be shown on this page.

Figure 6.1.1 WAN Status

WAN Status

Ethernet WAN	Status
WAN eth0	MAC-Address: 00:16:16:31:10:2C IPv4 Address: 192.168.11.222 Subnet Mask: 255.255.255.0 Gateway: 10.248.18.17 DNS Server: 8.8.8.8, 168.95.1.1

3G/4G LTE	Status (main outgoing interface)
WAN sim card	SIM card status: Detected IMEI: 861107039270856 IMSI: 466011700357331 Module Info: Quectel, Product:EC25, Revision:EC25AUFA02A04M4G Network Info: LTE BAND 3 APN: internet IP: 10.248.18.16 Network Status: Connected

LTE

General Information	
	State: Connected Network Operator: Far EastTone Technology: NA Uptime: 0 day 0 hr 57 min 8 sec Signal Strength: 29 (dBm)

LTE Information	
	Downlink Bandwidth: 20 (MHz) Uplink Bandwidth: 20 (MHz) RSRP: -88 (dBm) RSRQ: -12 (dBm) SINR: 10 (dB) PCI: 503 Cell ID: 36C040C

Uplink Status	
	Tx Date Rate: 20 (MHz) Tx bytes: 635 (bytes) Tx Packets: 52074

Downlink Status	
	Rx Date Rate: 20 (MHz) Rx bytes: 630 (bytes) Rx Packets: 35936



6.1.2 WAN Settings

Pico Next supports 3 WAN Modes: ***Ethernet WAN, 3G/4G LTE*** and ***Dual WAN (Ethernet+3G/4G)***.

Figure 6.1.2-A WAN Mode

The screenshot shows a "WAN Settings" interface. At the top, a note says "System will reboot if settings are applied successfully." Below it is a dropdown menu labeled "WAN Mode" with the current setting "Ethernet WAN". A blue highlight indicates the option "Ethernet WAN". Other options in the dropdown are "3G/4G LTE" and "Dual WAN (Ethernet + 3G/4G)".

6.1.2.1 Ethernet WAN

- DHCP Client

Figure 6.1.2.1-A DHCP Client

The screenshot shows the "Ethernet WAN" configuration screen. Under "WAN Type", the setting "DHCP Client" is selected. This is indicated by a blue highlight around the text "DHCP Client".

- Static IP

Figure 6.1.2.1-B Static IP

The screenshot shows the "Ethernet WAN" configuration screen for static IP settings. The "WAN Type" is set to "Static IP", which is highlighted with a blue border. Below it, the "IP Address" is set to "192.168.11.222", "Subnet Mask" is "255.255.255.0", and "Gateway" is "192.168.11.1". In the "DNS Server" section, the primary server is listed as "8.8.8.8" and the secondary server is "168.95.1.1", with the note "(optional)" next to the secondary entry.



6.1.2.2 3G/4G LTE

Configure “APN” information according to mobile service provider requirements.

Figure 6.1.2.2-A LTE Settings

The screenshot shows a configuration page for 3G/4G LTE settings. At the top, it says "3G/4G LTE". Below that, there is a field labeled "APN" with the value "internet". Underneath the APN field is a dropdown menu labeled "Debug mode" set to "Enable". A note below the dropdown states: "(After enabling this feature, you can export the debug log in "3G/4G LTE Log" section when you have connection issues)". Following this are several optional fields: "PIN" (optional), "Dial number" (optional), "Authentication" (set to "NONE" with an optional dropdown), "Username" (optional), and "Password" (optional). Each optional field has a green circular icon with a gear symbol to its right.

6.1.2.3 Dual WAN (Ethernet+3G/4G)

Configure the Ethernet Setting and LTE Setting at the same time. If the Dual WAN mode is selected, the primary interface needs to be specified by default. Pico Next Gateway will automatically set the other workable interface to be the backhaul.

Figure 6.1.2.3-A Network Primary

The screenshot shows a configuration page for WAN Settings. At the top, it says "WAN Settings". Below that is a note: "System will reboot if settings are applied successfully.". There is a dropdown menu labeled "WAN Mode" set to "Dual WAN (Ethernet + 3G/4G)". Below the WAN mode is a dropdown menu labeled "Network priority" set to "3G/4G LTE". A note next to the priority dropdown states: "Specify which WAN is Primary, the other one will be backup".



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Figure 6.1.2.3-B Ethernet and LTE Configuration

The screenshot shows a configuration interface for Browan Communications Inc. It is divided into two main sections: "Ethernet WAN" and "3G/4G LTE".

Ethernet WAN: A dropdown menu labeled "WAN Type" is set to "DHCP Client".

3G/4G LTE: The APN is set to "internet". The "Debug mode" is set to "Enable". A note below states: "(After enabling this feature, you can export the debug log in "3G/4G LTE Log" section when you have connection issues)".

For the 3G/4G connection, fields include:

- PIN: (optional)
- Dial number: (optional)
- Authentication: NONE (optional)
- Username: (optional)
- Password: (optional)



6.1.3 3G/4G LTE Log

If LTE Debug Mode is enabled, the LTE connection logs will be shown on this page. Click the "EXPORT" button to export the log.

Figure 6.1.3-A 3G/4G LTE Log

3G/4G LTE Log

```
[2021-07-09 17:48:33] 0 day 1 hr 2 min 3 sec
[2021-07-09 17:48:44] 0 day 1 hr 2 min 14 sec
[2021-07-09 17:49:58] ServingCell: +QENG: "servingcell","NOCONN","LTE","FDD",466,01,36C040C,503,1550,
[2021-07-09 17:50:07] LTE AT port no response this moment! Please wait for next retry!
[2021-07-09 17:50:08] LTE continuesly connect for: 0 day 1 hr 3 min 38 sec
[2021-07-09 17:54:50] ServingCell: +QENG: "servingcell","NOCONN","LTE","FDD",466,01,36C040C,503,1550,
[2021-07-09 17:54:57] LTE AT port no response this moment! Please wait for next retry!
[2021-07-09 17:54:58] LTE continuesly connect for: 0 day 1 hr 8 min 28 sec
[2021-07-09 17:58:58] 0 day 1 hr 12 min 28 sec
[2021-07-09 17:59:36] ServingCell: +QENG: "servingcell","NOCONN","LTE","FDD",466,01,36C040C,503,1550,
[2021-07-09 17:59:43] RSSI: 29,99
[2021-07-09 17:59:44] LTE continuesly connect for: 0 day 1 hr 13 min 14 sec
[2021-07-09 18:04:27] ServingCell: +QENG: "servingcell","NOCONN","LTE","FDD",466,01,36C040C,503,1550,
[2021-07-09 18:04:33] LTE AT port no response this moment! Please wait for next retry!
[2021-07-09 18:04:34] LTE continuesly connect for: 0 day 1 hr 18 min 4 sec
```

EXPORT **REFRESH**



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6.2 Diagnostics

Input a specific URL in the text field. Click the “PING” button to ping the URL specified.

Figure 6.2-A Network Utilities

The screenshot shows a user interface titled "Network Utilities". At the top, there is a note: "If the ping test is fail, please check your network setting." Below this, there is a section for "Ethernet" with the instruction: "Please make sure your backhaul network is available." A text input field contains the URL "www.brownan.com". Below the input field is a blue button labeled "PING". In the bottom half of the window, under the heading "Collecting data", the results of the ping test are displayed:

```
PING www.brownan.com (44.241.247.162): 56 data bytes
64 bytes from 44.241.247.162: seq=0 ttl=219 time=197.869 ms
64 bytes from 44.241.247.162: seq=1 ttl=225 time=154.677 ms
64 bytes from 44.241.247.162: seq=2 ttl=219 time=189.352 ms
64 bytes from 44.241.247.162: seq=3 ttl=225 time=154.293 ms
64 bytes from 44.241.247.162: seq=4 ttl=219 time=187.985 ms

--- www.brownan.com ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 154.293/176.835/197.869 ms
```