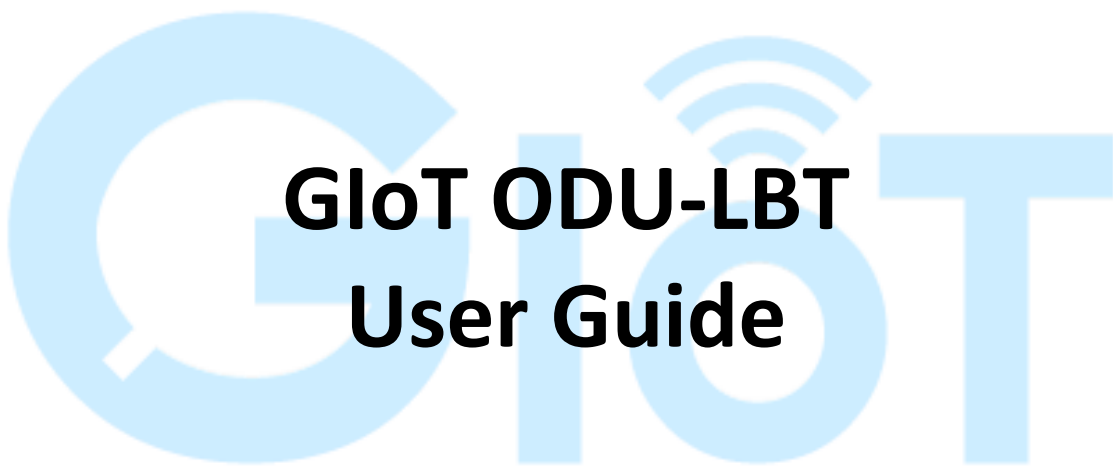


Document Number	QW_02_0035.001
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GloT ODU-LBT User Guide

This GloT Semi-ODU User Guide will assist you in navigating the system with the following comprehensive guidelines.

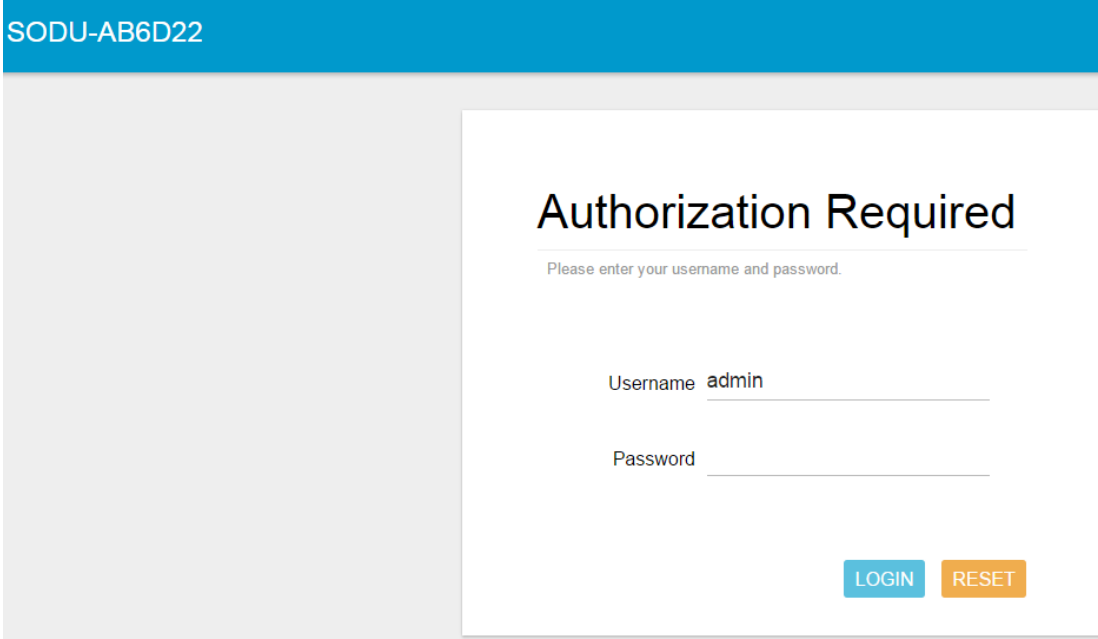
1. Open Admin GUI

Access Semi-ODU WebUI via WAN IP address assigned by dhcp.

The WAN IP address will configure to 192.168.77.1 after enabling 3G/4G LTE.

Default username is "admin" and password is "admin"

Figure 1



SODU-AB6D22

Authorization Required

Please enter your username and password.

Username

Password

2. GloT

The GloT menu consists of the following categories: Status, Provision, Configuration and Network Server.

2.1 GloT - Status

The purpose of this category is to view GloT information as in its provision code, gateway type, gateway ID or LoRa modules, channels and spreading factor.

Figure 2 - GloT Info

GloT
Status
Provision
Configurations
Network

GloT Status

GloT Info

Provisioning Code	80001158 (Provision)
Area Code	80001158
Gateway Type	Micro
LoRa Module 1	ON
Gateway ID	1c497ba84631
Radio 0	Ch0: ON 922.625MHz Ch1: ON 922.875MHz Ch2: ON 923.125MHz Ch3: ON 923.375MHz
Radio 1	Ch4: ON 923.625MHz Ch5: ON 923.875MHz Ch6: ON 924.125MHz Ch7: ON 924.375MHz

2.2 GloT - Provision

GloT provision code can be setup on this page.

Figure 3 - Provision Code

GloT
Status
Provision
Configurations
Network

Provision Code

System will reboot when provision code is applied successfully.

Code

APPLY

2.3 GloT - Configuration

Click “*PERFORM RESTART*” button to restart LoRa server.

LoRa provides 3 modes: Normal AP, Repeater AP and Repeater. Users can set up the required mode in LoRa Configuration.

Figure 4 - GloT Management

2.4 GloT - Network Server

Users can configure ODU to connect to mqtt broker over the network server. The proper provision code has to be in place to reveal and access the network server features on the system menu. Please contact GloT personnel if needed.

Figure 5 - GloT Network Server

3. LoRaWan

The LoRaWan menu consists of the following categories: OTAA Status, Node Parameters, OTAA and ABP. The proper provision code has to be in place to reveal and access the LoRaWan features on the system menu. Please contact GloT personnel if needed.

3.1 LoRaWan - OTAA Status

The purpose of this category is to view the process status of a node joining Network Server via OTAA, which includes DevAddr, Device EUI, App EUI, OTAA Group Index and Latest Update Time.

Figure 6 - OTAA Status

DevAddr	Device EUI	App EUI	Group Index	Latest Update Time
08000000	0800000000000000	0800000000000000	1	2017-07-20 09:13:15
08000001	0800000000000001	0800000000000001	1	2017-07-20 09:13:15
08000002	0800000000000002	0800000000000002	1	2017-07-20 09:13:15
08000003	0800000000000003	0800000000000003	1	2017-07-20 09:13:15
08000004	0800000000000004	0800000000000004	1	2017-07-20 09:13:15

Click “**REFRESH**” to renew OTAA information.

When there are over 20 OTAA Status entries on the page, users can click on the page number on the upper-right corner to move on to the next page.

Definition of OTAA Status Fields:

DevAddr: The device address of node assigned by network server

Device EUI: The unique device EUI of node.

App EUI: The unique app EUI of node.

OTAA Group Index: The unique index of OTAA EUID group.

Latest Update Time: The last time an uplink data was sent (sync per hour)

3.2 LoRaWan - Node Parameters

The purpose of this category is to view node parameters, which includes DevAddr, Rx1DrOffset, Rx2DataRate, Delay, Rx2Freq and LastDownMsgSeqNo.

Figure 7 - Node Parameters

DevAddr	Rx1DrOffset	Rx2DataRate	Delay	Rx2Freq	LastDownMsgSeqNo
00000001	0	0	1	9265000	0
00000002	0	0	1	9265000	0
00000006	0	0	1	9265000	0
0000000c	0	0	1	9265000	0
00000011	0	0	1	9265000	0

User can input a device address in the blank field and click “**APPLY**” to filter, click “**CLEAR**” to cancel filter.

Click “**REFRESH**” to renew Node Parameter information.

When there are over 20 Node Parameters entries on the page, users can click on the page number on the upper-right corner to move on to the next page.

Definition of Node Parameters Fields:

DevAddr: The unique device address of node.

Rx1DrOffset: The downlink data rate offset of Rx1.

Rx2DataRate: The downlink data rate of Rx2.

Delay: The delay between TX and RX.

Rx2Freq: The downlink frequency of RX2.

LastDownMsgSeqNo: The number of downlink data sent.

3.3 LoRaWan - OTAA

The purpose of this category is to view and configure OTAA rules.

Click “**ADD**” button to enter OTAA add page and input Group Index, AppEUI Start, AppEUI Counts , DevEUI Start , DevEUI Counts , Devaddr Start, Devaddr Counts, Appkey and Aging Out Time, then click “**SAVE**” to create an OTAA rule.

User will leave OTAA add page after clicking “**CANCEL**”.

Following information on the OTAA:

Group Index: The unique index of OTAA EUID group.

AppEUI Start: The start number of AppEUI.

App Counts: The number of AppEUI in this Group.

DevEUI Start: The start number of DevEUI.

DevEUI Counts: The number of DevEUI in this Group.

DevAddr Start: The start number of DevAddr.

DevAddr Counts: The number of DevAddr in this Group.

AppKey: Appkey for OTAA join request.

Aging Out Time(Minutes): If the Node hasn't sent uplink within the aging out time limit, the allocated OTAA DevAddr will be expired and released.

Note: The Aging Out Time must be at least 60 minutes.

Figure 8.A - OTAA - Add

Parameter	Format	
Group Index	INT (1~255)	253
AppEUI Start	16 HEX digits	0011223344556670
AppEUI Counts	Digit (1~4096)	100
DevEUI Start	16 HEX digits	0011223344556670
DevEUI Counts	Digit (1~4096)	100
DevAddr Start	8 HEX digits	2530ff00
DevAddr Counts	Digit (1~4096)	100
AppKey	32 HEX digits	53A6B13B1E372D384C57F76B429C
Aging Out Time	Minute (60~65535)	65

To delete entries, select one or more OTAA rule entries and click “**DELETE**” button.

Figure 8.B - OTAA - Delete

Group Index	AppEUI Start	AppEUI Counts	DevEUI Start	DevEUI Counts	DevAddr Start	DevAddr Counts	AppKey	Aging Out Time (Minutes)	
253	0011223344556670	100	0011223344556670	100	2530ff00	100	53A6B13B1E372D384C57F76B429C	65	EDIT

To edit an entry, select a rule entry and click “**EDIT**” button to proceed. Edit AppEUI Start, AppEUI Counts , DevEUI Start , DevEUI Counts , Devaddr Start, Devaddr Counts, Appkey and Aging Out Time, then click “**SAVE**” to edit the OTAA rule. User will leave OTAA edit page after clicking “**CANCEL**”.

Figure 8.C - OTAA - Edit

Parameter	Format	Value
Group Index	INT (1~255)	253
AppEUI Start	16 HEX digits	0011223344556670
AppEUI Counts	Digit (1~4096)	100
DevEUI Start	16 HEX digits	0011223344556670
DevEUI Counts	Digit (1~4096)	100
DevAddr Start	8 HEX digits	2530ff00
DevAddr Counts	Digit (1~4096)	100
AppKey	32 HEX digits	53A6B13B1E372D384C57;
Aging Out Time	Minute (60~65535)	65

3.4 LoRaWan - ABP

The main function of this feature is to add/delete/edit ABP rule entries on this page. The ABP menu consists of the following categories: INDIVIDUAL and NETID GROUP.

3.4.1 INDIVIDUAL

Click “INDIVIDUAL” button to enter the INDIVIDUAL function page.

Figure 9.A – INDIVIDUAL

DevAddr	NwkKey	AppKey	
00ffffaa	11111111111111111111111111111111 11111111111111111111111111111111	11111111111111111111111111111111 11111111111111111111111111111111	EDIT

Click “ADD” button to enter ABP add page and input DevAddr, NwkSKey and AppSKey then click “SAVE” to create an ABP (INDIVIDUAL) rule. User will leave ABP add page after clicking “CANCEL”.

Definition of ABP (INDIVIDUAL) Fields:

DevAddr: The unique device address of node.

NwkSKey: The network session key.

AppSKey: The app session key.

Figure 9.B – INDIVIDUAL–Add

ABP Individual-Add

The description for the ABP.

INDIVIDUAL NETID GROUP

Parameter	Format	
DevAddr	8 HEX digits	01ffff
NwkSKey	32 HEX digits	22222222222222222222222222222222
AppSKey	32 HEX digits	22222222222222222222222222222222

SAVE CANCEL

To delete entries, select one or more ABP (INDIVIDUAL) rule entries and click **“DELETE”** button.

Figure 9.C – INDIVIDUAL–Delete

ABP - INDIVIDUAL

The description for the ABP.

INDIVIDUAL NETID GROUP

	DevAddr	NwkSKey	AppSKey	
<input checked="" type="checkbox"/>	00ffffaa	11111111111111111111111111111111 11111111111111111111111111111111	11111111111111111111111111111111 11111111111111111111111111111111	EDIT

DELETE ADD

To edit an entry, select a rule entry and click **“EDIT”** button to proceed. Edit NwkSKey and AppSKey then click **“SAVE”** to edit the ABP (INDIVIDUAL). User will leave ABP edit page after clicking **“CANCEL”**.

Figure 9.D – INDIVIDUAL–Edit

ABP Individual-Update

The description for the ABP.

INDIVIDUAL NETID GROUP

Parameter	Format	
DevAddr	8 HEX digits	00ffffaa
NwkSKey	32 HEX digits	11111111111111111111111111111111
AppSKey	32 HEX digits	11111111111111111111111111111111

SAVE CANCEL

3.4.2 NETID GROUP

Click **“NETID GROUP”** button to enter NETID GROUP function page.

Figure 10.A – NETID GROUP

Click “**ADD**” button to enter ABP add page and input NwkID, NwkAddr Start, NwkAddr Total Number ,NwkSKey and AppSKey then click “**SAVE**” to create an ABP (NETID GROUP) rule.

User will leave ABP add page after clicking “**CANCEL**”.

Definition of ABP (NETID GROUP) Fields:

NwkID: The unique NETID of ABP group.

NwkAddr Start: The start number of ABP device address in the Group.

NwkAddr Total Number: The number of ABP device address in this Group.

NwkSKey: The network session key in the Group.

AppSKey: The app session key in the Group.

Figure 10.B - NETID GROUP - Add

Parameter	Format	
NwkID	0x0~0xFE	10
NwkAddr Start	6 HEX digits	10 f000
NwkAddr Total Number	Digits	11
NwkSKey	32 HEX digits	000000000000000000000000
AppSKey	32 HEX digits	aaaaaaaaaaaaaaaaaaaaa

To delete entries, select one or more ABP (NETID GROUP) rule entries and click “**DELETE**” button.

Figure 10.C - NETID GROUP - Delete

The screenshot shows the 'ABP - NETID GROUP' configuration page. On the left is a sidebar with navigation links: GLoT, LoraWAN, OTAA Status, Node Parameters, OTAA, ABP (highlighted), and Network. The main content area has a title 'ABP - NETID GROUP' and a subtitle 'The description for the ABP'. Below the title are two tabs: 'INDIVIDUAL' and 'NETID GROUP'. A table with a red border contains one entry. The table has columns: NwkID, NwkAddr Start, Total number, NwkSKey, and AppSKey. The entry has values: 10, 10fff000, 11, 88888888888888888888888888888888, and aaaaaaaaaaaaaaaaaaaaaa. An 'EDIT' button is next to the entry. At the bottom right are 'DELETE' and 'ADD' buttons.

NwkID	NwkAddr Start	Total number	NwkSKey	AppSKey
10	10fff000	11	88888888888888888888888888888888	aaaaaaaaaaaaaaaaaaaaaaaa

To edit an entry, select a rule entry and click “**EDIT**” button to proceed. Edit NwkAddr Start, NwkAddr ,NwkSKey and AppSKey then click “**SAVE**” to edit the ABP (NETID GROUP).
User will leave ABP edit page after clicking “**CANCEL**”.

Figure 10.D - NETID GROUP - Edit

The screenshot shows the 'NetID-Update' configuration page. On the left is a sidebar with navigation links: GLoT, LoraWAN, OTAA Status, Node Parameters, OTAA, ABP (highlighted), and Network. The main content area has a title 'NetID-Update' and a subtitle 'The description for the ABP'. Below the title are two tabs: 'INDIVIDUAL' and 'NETID GROUP'. A form contains five rows, each with a parameter name, its format, and a value field. The parameters are NwkID, NwkAddr Start, NwkAddr Total Number, NwkSKey, and AppSKey. At the bottom right are 'SAVE' and 'CANCEL' buttons.

Parameter	Format	
NwkID	0x0~0xFE	10
NwkAddr Start	6 HEX digits	10 fff000
NwkAddr Total Number	Digits	11
NwkSKey	32 HEX digits	88888888888888888888888888888888
AppSKey	32 HEX digits	aaaaaaaaaaaaaaaaaaaaaaaa

4. Network

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

4.1 Network - WAN

The purpose of this category is to view current WAN settings.

This category is further divided into three sectors: Ethernet Wan and 3G/4G LTE.

These individual options are lodged and labeled above the main content panel.

Figure 11.A - WAN

ODU 3.00.12

GloT Ethernet WAN 3G/4G LTE

Network

WAN

WAN

Wan Type	DHCP
WAN	MAC-Address: 1C:49:7B:A9:EE:1C IPv4 Address: 192.168.1.120
eth0	

4.1.1 Ethernet WAN

This page is to setup the connection type in terms of Static IP and DHCP client. The three different options can be selected in the drop-down menu in "WAN Type". Please fill in the respective fields exhibited under each selection. Please make sure the Ethernet cable is connected to a WAN port.

Figure 11.A - WAN: Static IP

GloT Ethernet WAN 3G/4G LTE

Network

WAN

Ethernet WAN

System will reboot if settings are applied successfully.

WAN Type Static IP

IP Address 192.168.11.10

Subnet Mask 255.255.255.0

Gateway 192.168.11.10

DNS Server

Figure 11.B - WAN: DHCP Client

The screenshot shows the 'Ethernet WAN' configuration page. The left sidebar has 'WAN' selected under the 'Network' category. The main content area is titled 'Ethernet WAN' and contains a message: 'System will reboot if settings are applied successfully.' Below this message is a dropdown menu for 'WAN Type' with 'DHCP Client' selected. At the bottom right, there are 'APPLY' and 'RESET' buttons.

4.1.2 3G/4G LTE

This page is to setup required information for 3G/4G LTE.

Note: Make sure the SIM card is installed.

Figure 12 - WAN: 3G/4G LTE

The screenshot shows the '3G/4G LTE' configuration page. The left sidebar has 'WAN' selected under the 'Network' category. The main content area is titled '3G/4G LTE' and contains a message: 'System will reboot if settings are applied successfully.' Below this message are several input fields: 'APN', 'PIN' (optional), 'Dial number' (optional), 'Username' (optional), and 'Password' (optional). Each optional field has a green checkmark icon next to it. At the bottom right, there are 'APPLY' and 'RESET' buttons.