



Manuale IoT3000

v1.0



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1. Introduction

This installation manual is for the Logbot IOT3000 series family of products. These are points of the product:

- Ideal for industrial control and monitoring
- Extensive wireless and wired connectivity
- Industrial build quality and reliability

Models	LTE Support	Wifi Support	Ethernet Support	Bluetooth Support
IOT3070	✓	✓	✓	✓
IOT3060	-	✓	✓	✓
IOT3050	-	-	✓	-

2. Help and support

For additional product support, installation tips and specifications go to <https://logbot.cloud/support/>.

For direct technical support and questions, get in touch with our Technical Support team.

E-mail info@logbot.cloud

Phone +39 049 5413500

Warning

Read this manual carefully before installing or operating the Logbot IOT3000 series



3. Safety Instructions

Neglecting the essential safety precautions and safety guidelines outlined below could result in significant harm to individuals and property!

It is crucial to adhere to all the safety instructions and information provided in the relevant product documentation. Doing so is essential for ensuring safe and problem-free operation. Please pay close attention to the specific safety instructions provided in the other sections of this manual.

3.1. Personnel

Only qualified and skilled personnel are allowed to work with the Logbot IOT3000 series and they shall have the following qualifications:

- They are familiar with the installation, mounting, commissioning, and operation of the Logbot IOT3000 series.
- They possess the appropriate qualifications for their tasks.
- They are familiar with all regulations for the prevention of accidents, directives, and laws applicable at the location and are able to apply them.

3.2. Device

The hardware and software of the Logbot IOT3000 series must never be modified in a way that is not described in the installation manual. If you carry out any modifications that are not permitted, all your warranty claims will become null and void. This will result in exclusion of liability on the part of Logbot.

3.3. Application

The Logbot IOT3000 series is an electrical communication device. It is only suitable for installation in control cabinets or other similar closed operating environments.

3.4. Handling

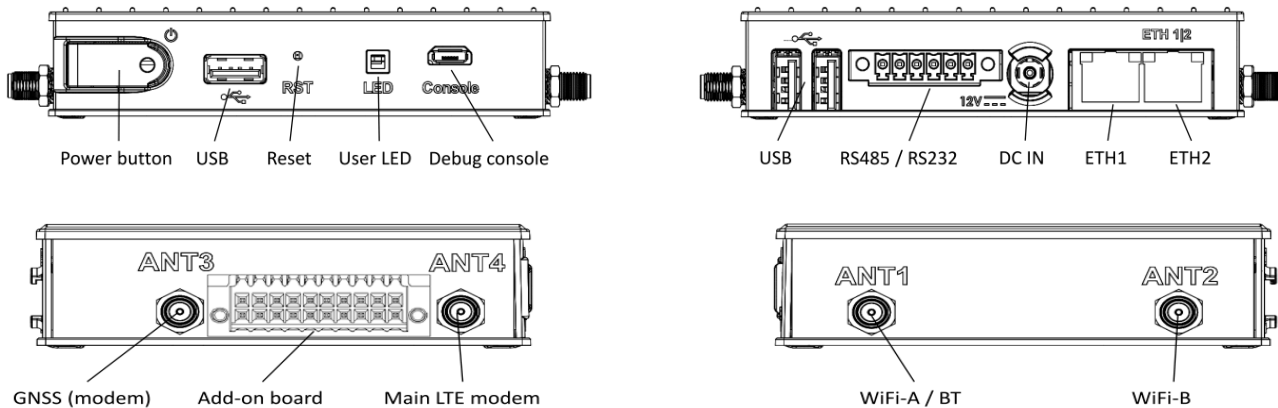
The Logbot IOT3000 series must be handled as follows:

- Connect or disconnect all pluggable terminals only when the Logbot IOT3000 series is powered off.
- Only remove the Logbot IOT3000 series from the installation when the Logbot IOT3000 series is powered off.

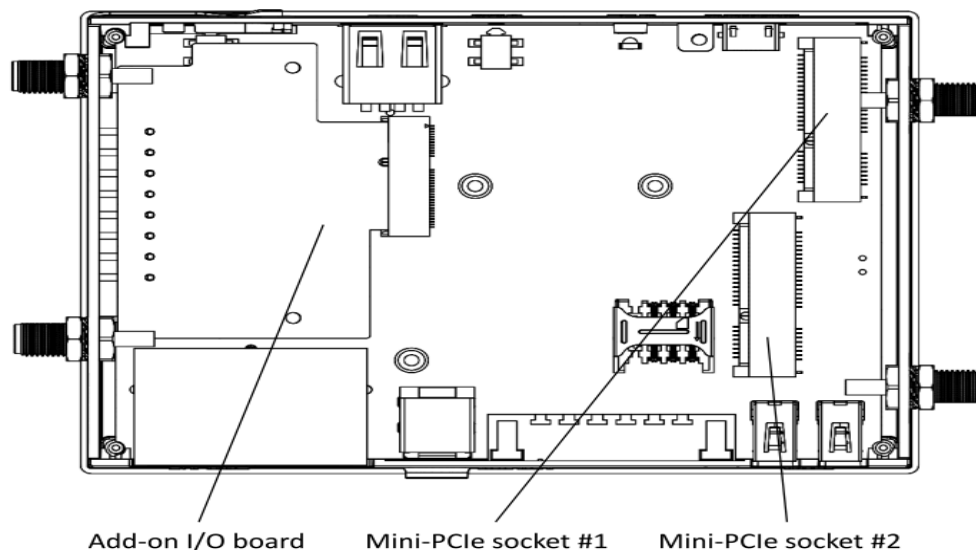
4. Hardware features

4.1 Connector Locations

4.1.1 Front and Back panel



4.1.3 Service bay



4.2. Technical data

Feature	Specifications
CPU	NXP i.MX8M Mini, quad-core ARM Cortex-A53, 1.8GHz
RAM	1GB, LPDDR4
Primary Storage	16GB eMMC flash, soldered on-board
Secondary Storage	16GB - 64GB eMMC flash, optional module

LAN	1x 1000Mbps Ethernet port, RJ45 connector 1x 100Mbps Ethernet port, RJ45 connector
WiFi	802.11ac WiFi interface
Bluetooth	Bluetooth 5.1 BLE
Cellular	4G/LTE CAT1 cellular module On-board micro-SIM card socket
GNSS	GPS / GLONASS
USB	3x USB2.0 ports, type-A connectors
Serial	1x RS485 (half-duplex) / RS232 port, terminal-block 1x serial console via UART-to-USB bridge, micro-USB connector
Security	Secure boot, implemented with i.MX8M Mini HAB module
RTC	Real time clock operated from on-board coin-cell battery
Supply Voltage	Unregulated 8V to 36V
Power Consumption	2W - 7W, depending on system load and configuration
Dimensions	112 x 84 x 25 mm
Enclosure Material	Aluminum housing
Cooling	Passive cooling, fanless design
Weight	450 grams
MTTF	> 200,000 hours
Operation temperature	Commercial: 0° to 60° C

4.3. DC Power Jack (J1)

DC power input connector.

Pin	Signal Name	
1	DC IN	
2	GND	

Manufacturer	Mfg. P/N
Contact Technology	DC-081HS(-2.5)

The connector is compatible with the Logbot IOT3000 series power supply unit available from CompuLab.

4.4. USB Host Connectors (J4, P3, P4)

The Logbot IOT3000 series external USB2.0 host ports are available through three standard type-A USB connectors (J4, P3, P4). For additional details, please refer to section 3.6 of this document.

4.5. RS485 / RS232 Connector (P7)

Logbot IOT3000 series features a configurable RS485 / RS232 interface routed to terminal block P7. RS485 / RS232 operation mode is controlled in software. For additional details please refer to Logbot IOT3000 series Linux documentation.

Pin	RS485 mode	RS232 mode	Pin numbering

1	RS485_NEG (B)	RS232_TXD	
2	RS485_POS (A)	RS232_RTS	
3	GND	GND	
4	NC	RS232_CTS	
5	NC	RS232_RXD	
6	GND	GND	

4.7. RJ45 Dual Ethernet Connector (P46)

The Logbot IOT3000 series two Ethernet ports are routed to dual RJ45 connector P46. For additional details, please refer to section 3.5 of this document.

4.8. uSIM socket (P12)

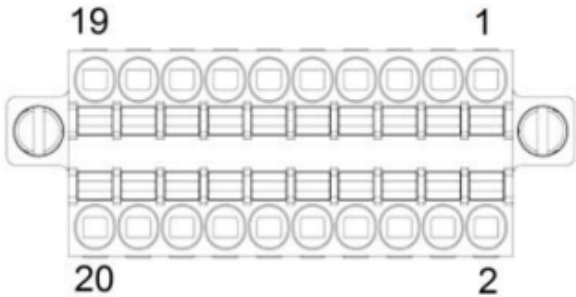
The uSIM socket (P12) is connected to mini-PCIe socket P8.

4.11 Industrial I/O add-on board

I/O module	Pin	Signal
A	1	RS232_TXD / RS485_POS (A) / CAN_H / 4-20_mA_IN+
	2	ISO_GND_A
	3	RS232_RXD / RS485_NEG (B) / CAN_L
	4	NC
	5	4-20_mA_IN-

B	6	4-20_mA_IN-
	7	RS232_TXD / RS485_POS / CAN_H / 4-20_mA_IN+
	8	ISO_GND_B
	9	RS232_RXD / RS485_NEG / CAN_L
	10	NC
C	11	OUT0
	12	OUT2
	13	OUT1
	14	OUT3
	15	IN0
	16	IN2
	17	IN1
	18	IN3
	19	24V_IN
	20	ISO_GND_C

Industrial I/O add-on connector pin-out

Connector type	Pin numbering
P/N: Kunacon PDFD25420500K 20-pin dual-row plug with push-in spring connections Locking: screw flange Pitch: 2.54 mm Wire cross section: AWG 20 – AWG 30	

Industrial I/O add-on connector data

4.12. Indicator LEDs

The tables below describe Logbot IOT3000 series indicator LEDs.

Main power connected	LED state
Yes	On
No	Off

Power LED (DS1)

General purpose LED (DS4) is controlled by SoC GPIOs GP3_IO19 and GP3_IO25.

LED state	Status
Off	Off or starting up
Yellow	Not configured
Blinking Slow Yellow	Not connected
Blinking Fast Yellow	Error
Green	OK connected
Slow Blinking Green	Locating

Flashing Fast Green	In Updating
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User LED (DS4)

4.13. Antenna Connectors

Logbot IOT3000 series features up-to four RP-SMA connectors for external antennas.

Connector	Function
ANT1	WiFi-A antenna
ANT2	Modem MAIN antenna

Default antenna connector assignment

5. CORE SYSTEM COMPONENTS

5.1. System Memory

5.1.1. DRAM

Logbot IOT3000 series is available with 1GB of on-board LPDDR4 memory.

5.1.2. Primary Storage

Logbot IOT3000 series features 16GB of soldered on-board eMMC memory for storing the bootloader and operating system (kernel and root filesystem). The remaining eMMC space can be used to store general purpose (user) data.

5.2. WiFi and Bluetooth

Models	Wifi Support	Bluetooth Support
IOT3070	✓	✓
IOT3060	✓	✓
IOT3050	X	X

IOT3070 and IOT3060 assembled with the WiFi module providing WiFi 802.11bgn and Bluetooth 4.0 interfaces.

WiFi / Bluetooth antenna connections are available via RP-SMA connectors on the Logbot IOT3000 series side panel.

5.3. Cellular and GPS

Models	LTE Support
IOT3070	✓
IOT3060	X
IOT3050	X

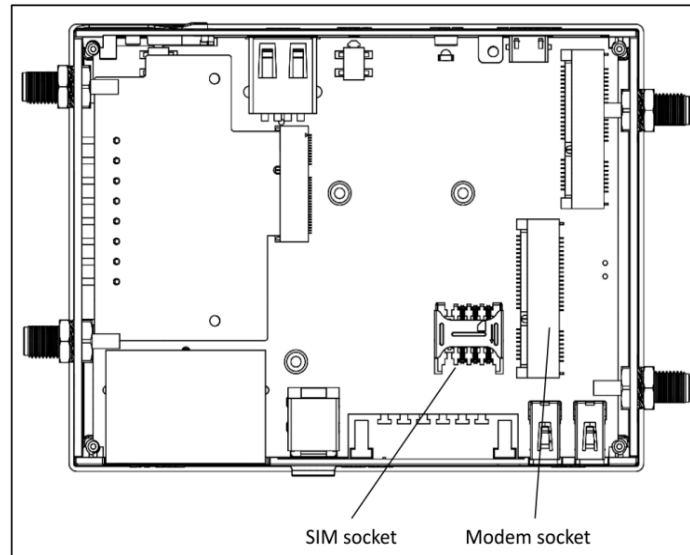
The IOT3070 cellular interface is implemented with a mini-PCIe modem module and a microSIM socket. In order to set up IOT3070 for cellular functionality, install an active SIM card into micro-SIM socket P12. The cellular module should be installed into mini-PCIe socket P8.

The cellular modem module also implements GNSS / GPS.

Modem antenna connections are available via RP-SMA connectors on the Logbot IOT3000 series side panel.

Logbot supplies IOT3070 with the following cellular modem options:

- 4G/LTE CAT1 module, Quectel EG-25G (global bands)



service bay - cellular modem

5.4. Ethernet

Logbot IOT3000 series incorporates two Ethernet ports:

- ETH1 - primary 1000Mbps port implemented with i.MX8M Mini MAC and Atheros AR8033 PHY
- ETH2 – secondary 100Mbps port implemented with Microchip LAN9514 controller

The Ethernet ports are available on dual RJ45 connector P46.

5.5. USB 2.0

Logbot IOT3000 series features three external USB2.0 host ports. The ports are routed to USB connectors P3, P4 and J4. Front panel USB port (J4) is implemented directly with the



i.MX8M Mini native USB interface. Back panel ports (P3, P4) are implemented with the on-board USB hub.

5.6. RS485 / RS232

Logbot IOT3000 series features a user configurable RS485 / RS232 port implemented with the SP330 transceiver connected to NXP i.MX8M Mini UART port. Port signals are routed to terminal block connector P7.

5.6.1. RS485

RS485 function is implemented with MAX13488 transceiver interfaced with i.MX8M-Mini UART port. Key characteristics:

- 2-wire, half-duplex
- Galvanic isolation from main unit and other I/O modules
- Programmable baud rate of up-to 4Mbps
- Software controlled 120 ohm termination resistor

5.6.2. RS232

RS232 function is implemented with MAX3221 (or compatible) transceiver interfaced with i.MX8M Mini UART port. Key characteristics:

- RX/TX only
- Galvanic isolation from main unit and other I/O modules
- Programmable baud rate of up-to 250kbps

6.SYSTEM LOGIC

6.1. Power Subsystem

6.1.1. Power Rails

Logbot IOT3000 series is powered with a single power rail with input voltage range of 8V to 36V.

6.1.2. Power Modes

Logbot IOT3000 series supports two hardware power modes.

Power Mode	Description
ON	All internal power rails are enabled. Mode entered automatically when the main power supply is connected.
OFF	i.MX8M Mini core power rails are off, most of the peripherals power rails are off.

6.1.3. RTC Back-Up Battery

Logbot IOT3000 series features a 120mAh coin cell lithium battery, which maintains the on-board RTC whenever the main power supply is not present.

6.2. Real Time Clock

The Logbot IOT3000 series RTC is implemented with the AM1805 real time clock (RTC). The RTC is connected to the i.MX8M SoC using the I2C2 interface at address 0xD2/D3. Logbot IOT3000 series backup battery keeps the RTC running to maintain clock and time information whenever the main power supply is not present.

7. OPERATIONAL CHARACTERISTICS

7.1. Absolute Maximum Ratings

Parameter	Min	Max	Unit
Main power supply voltage	-0.3	40	V

Absolute Maximum Ratings

NOTE: Stress beyond Absolute Maximum Ratings may cause permanent damage to the device.

7.2. Recommended Operating Conditions

Parameter	Min	Typ.	Max	Unit
Main power supply voltage	8	12	36	V

Recommended Operating Conditions

7.3. Typical Power Consumption

Use case	Use case description	Current	Power
Linux idle	Linux up, Ethernet up, no activity	220mA	2.6W
Wi-Fi or Ethernet data transfer	Linux up + active ethernet or Wi-Fi data transmission	300mA	3.6W
Cellular modem data transfer	Linux up + active modem data transmission	420mA	5W
Heavy mixed load without cellular activity	CPU and memory stress-test + Wi-Fi running + Bluetooth running + Ethernet activity + LEDs	400mA	4.8W



Heavy mixed load with active cellular modem data transfer	CPU and memory stress-test + active modem data transmission	600mA	7.2W
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Logbot IOT3000 series Typical Power Consumption

Power consumption has been measured with the following setup:

1. Configuration - IOTG-IMX8-D4-NA32-WB-JS7600G-FARS4-FBCAN-PS-XL
2. Standard Logbot IOT3000 series 12VDC PSU
3. Software stack - stock LogbotOS for Logbot IOT3000 series v3.1.2

8. Configuration Devices

8.1. Prerequisites

Before you can configure a device, you must have:

1. Logbot license
2. USB flash driver
3. Ethernet cables (x2) and a PC equipped with a browser

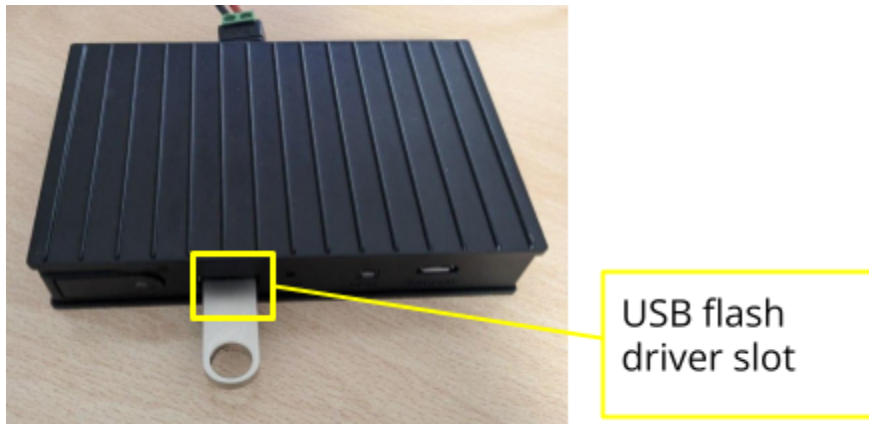
8.2. Flash Logbot OS

The first step is to make sure you have Logbot OS installed on your device.

You must flash the system to a USB flash drive. It is possible to download Logbot OS from <https://logbot.cloud/supporto/download/#toggle-id-4>

Once the file is downloaded, you can flash USB stick through third-party software such as Balena Etcher (<https://www.balena.io/etcher>)

8.3. USB flash



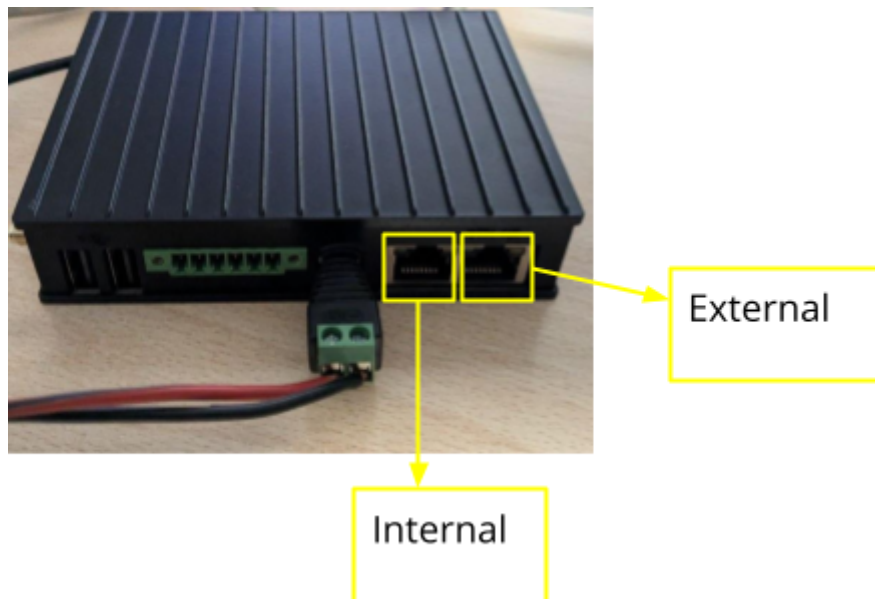
Note: Ensure the device is powered off and unplugged.

Prerequisite: Prepare your USB flash drive by flashing it first according to the previous section.

You should follow these steps:

- **Step 1:** Insert the USB flash drive into its slot that it mentioned in the picture.
- **Step 2:** Connect the power cable, turn on the device, and wait for it to power off automatically.
- **Step 3:** Disconnect the power cable and remove the USB flash drive.
- **Step 4:** Reconnect the power cable. The device is now ready.

8.4. Wired Connectivity



It will now be necessary to power the device and connect it:

- On the INTERNAL port to the local network, the one where the PLCs reside.
- On the EXTERNAL port, to the external network, the one that will give access to the Internet

However, to make an initial configuration, it is necessary to:

1. Power up the device and wait for the LED to come on
2. Connect with your PC to the internal port of the device
3. Set the IP address of your PC's network card as follows:
 - a. Address: 192.168.253.100
 - b. Mask: 255.255.255.0
4. Open your browser and type on the address bar <http://192.168.253.252>



8.5. Leds

For more information you can see tables in section 4.12. Indicator LEDs.

8.6. Firewall

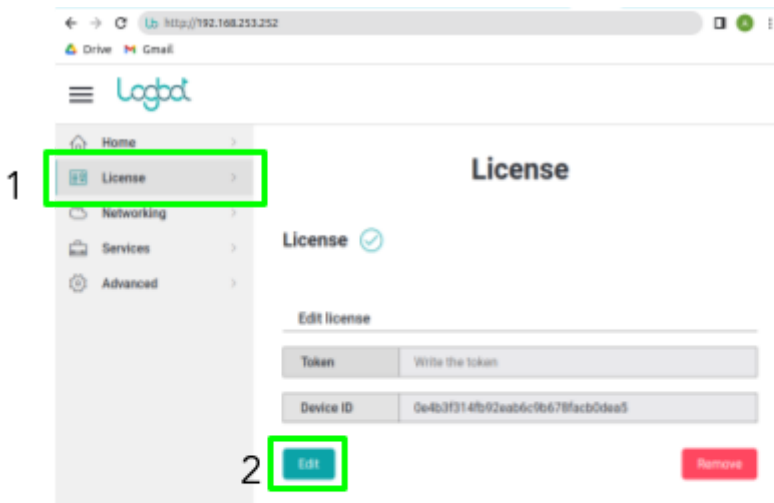
If the facility to which the IoT is connected applies a corporate firewall on entry/exit from the corporate network, the network administrator should be contacted to enable the following options on entry/exit:

Action	URL	Ports
Send Metrics	upstream.logbotiot.cloud	TCP: 9092
VPN connection	vpn.logbotiot.cloud	TCP: 80, 443
Device management	api.logbotiot.cloud	TCP: 80, 443
Edgeservices management	registry.logbotiot.cloud	TCP: 80, 443
VPN client management	vpn-client.logbotiot.cloud	TCP: 80, 443
VPN client access	iam.logbotiot.cloud	TCP: 80, 443
VPN client devices interaction	devices.logbotiot.cloud	TCP: 80, 443
VPN client updates	logbot-vpn-client.fra1.digitaloceanspaces.com	TCP: 80, 443

8.7. Logbot License

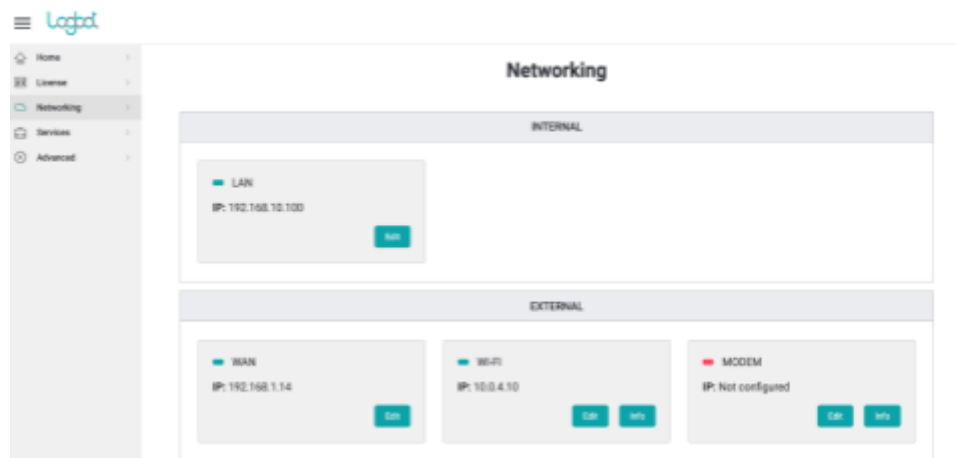
To activate the Logbot license you need to:

1. Click on License from the side menu
2. Press the Edit button
3. Enter the token provided
4. Press Update
5. Reboot the device



8.8. Network Setting

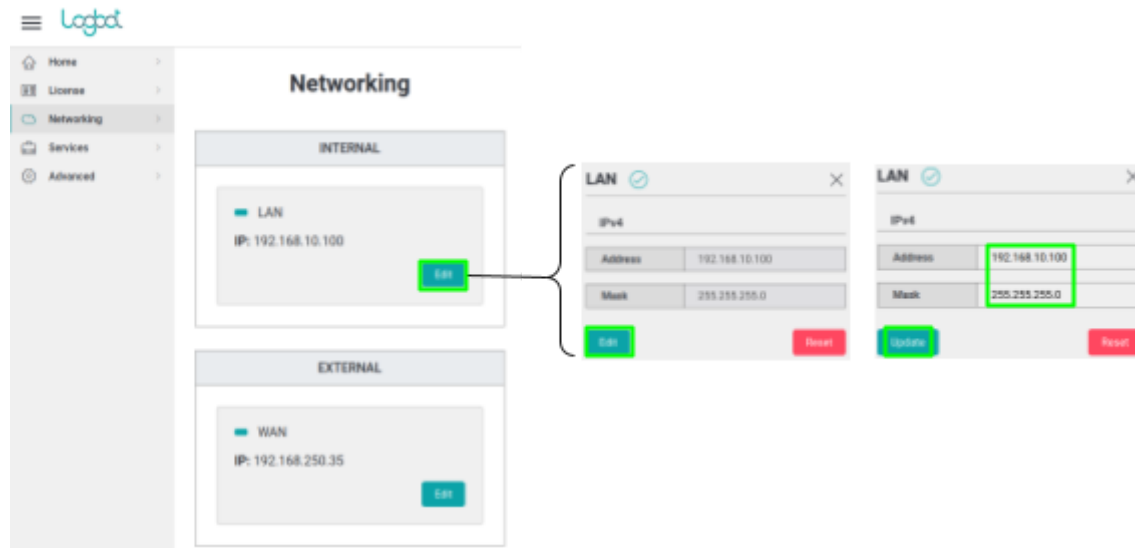
It is necessary to set up the LAN network to communicate with the PLCs and the WAN network for Internet access. To set them up, go to the Networking section of the side menu.



8.8.1. Lan Configuration

For LAN:

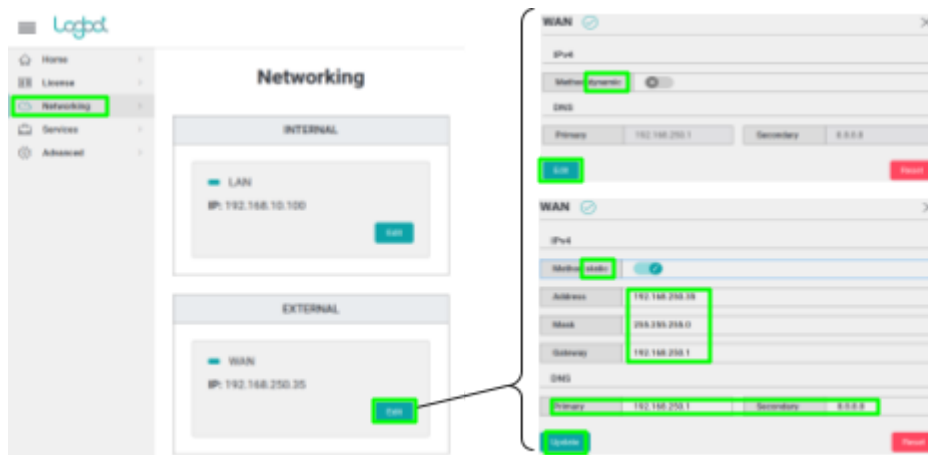
- Press the Edit key.
- Set IP address and subnet mask to be assigned to the IoT
- Press Update



8.8.2. WAN Configuration

For WAN network:

- Press the Edit key
- If the method is chosen:
 - Dynamic: the router will assign an IP address to the IoT automatically
 - Static: you need to manually set IP address, mask and gateway
- It is possible to set a DNS different from the default one
- Press Update

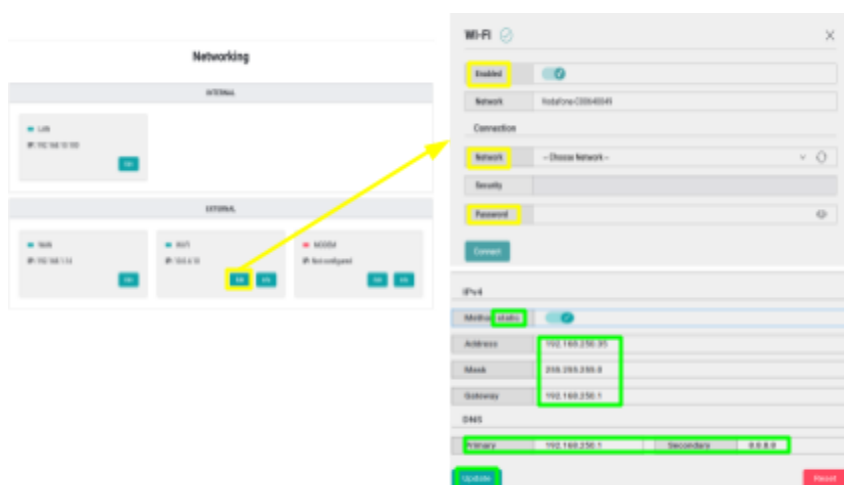


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8.8.3. WI-FI Configuration

For configuring the Wi-Fi network:

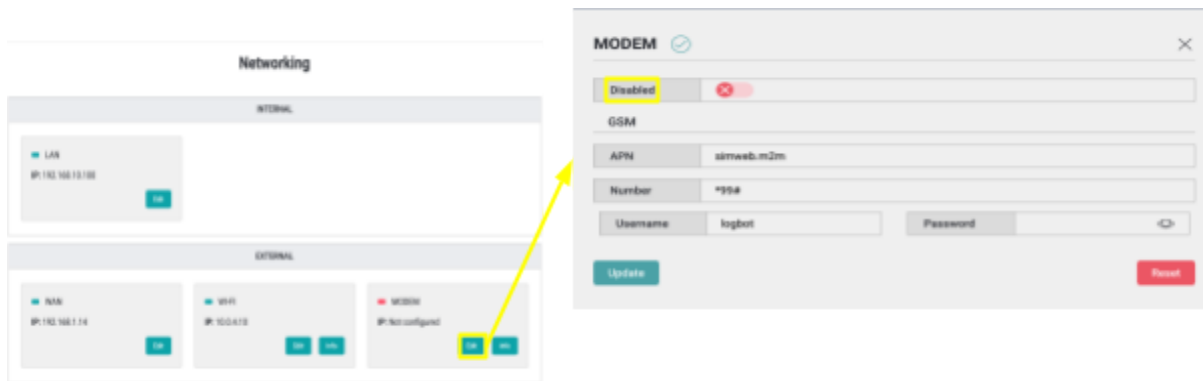
- Press the Edit button.
- Enable the Wi-Fi network.
- Select your network.
- If your network is secured, enter the password.
- Depending on the chosen method:
 - **Dynamic:** The router will automatically assign an IP address to the IoT device.
 - **Static:** You must manually set the IP address, subnet mask, and gateway.
- You can also set a custom DNS server instead of the default one.
- Press Update to save the changes.



8.8.4. MODEM Configuration

For configuring the MODEM:

- Press the Edit button.
- Enable the MODEM.
- If you are using a Logbot SIM, no further configuration is needed. Otherwise, you will need to enter the required parameters provided by your ISP.



8.9. Reset to factory

For reset factory press the Power button 10 times in a time window of 10 seconds.





8.10. Basic Authentication

Our device includes a basic authentication service that is enabled by default once the device is configured. This service is required for accessing the device via VPN or LAN connection. The default login credentials are:

- **Username:** admin
- **Password:** Admin123!

You have the option to change this default password or disable the service. However, even if you disable the service, authentication will still be required using the default credentials (username: admin, password: admin).