

M2M Router®

User Manual (Extract)

v1.9.3



2018-01-31

Starting the router

1.1 Cable connection



1. **Mount** a 2G, 3G or LTE 450, CDMA 450 **SMA antenna** to the **Antenna** titled SMA-M interface (according to the module/router type).

In case of 4G router, use two antennas.

2. **Insert an activated data SIM card** to the SIM holder, placed the chip-side up and the cutted edge towards to inside and push until it sleeves.

3. **Connect UTP cable** to the **router Ethernet** titled port. The other side of the cable must be **plugged to the PC's Ethernet** port.

4. **The DHCP service is turned off for the router Ethernet interface**, by default. Therefore, **you have to configure an IP address for you PC, manually.**

Add for. e.g. the 192.168.127.10 IP address to your computer's Ethernet interface for connecting to the router.

(If you have the WiFi onboard version of the router, then you can configure your router on WiFi (DHCP activated)).

1.2 Starting the router

1. **Plug the 12V DC power adapter** chord **to the POWER** interface, then **plug the adapter to the 230V** electrical network.

2. The router has a pre-installed system (contains uploaded firmware and system software). After plugging the power adapter, the router begins to work, whereas its **LED signals** are showing the current **activity** during the operation.

When power up the router, all the three LEDs will flashes once – as in case of restart.

If the device was under power supply the **LED1** will light continuously (which means that the system booting is in progress).

3. The system starting then takes about 1-2 minutes while it will be ready for usage. Then you can login to the web user interface.
4. The module and the mobile network availability is signed by the **LED2**. When the SIM card network registration was successfully performed, the LED lights continuously.
5. The **LED3** signs the wireless modem and mobile network availability. When the modem successfully registered the SIM card to the network, the LED will light continuously.
6. **As soon as you can, configure the internet settings of the wireless module (SIM and APN) for connecting to the 2G/3G/LTE network – in other case the router will be restarting in every 10 minutes!**
7. If you notice any failure or unusual LED flashing, then go to the **Troubleshooting** chapter.

1.3 Web user interface of the router

1. Then now you can connect to the **router's local web interface (LuCi) through the Ethernet** interface – on its default address.

Attention!

For accessing the web user interface we offer the Mozilla Firefox web.

Default web user interface (LuCi) address is: <https://192.168.127.1:8888>

The login data are the following:

- **Username:** *root*
- **Password:** *wmrpwd*
- then push to the **Login** button.

Authorization Required

Please enter your username and password.

Username

Password

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2. **Allow the accessing of the router default IP address in your browser** by pushing to the **Special** button, then **allow the safety exclusion** into the pop-up window.

Attention!

When connecting to the public network, it is recommended to change the login password!

The ethernet IP address can be modified after login from the OpenWrt.

1.4 Dashboard / Main page (Status overview)

When you have login to the web interface, the startup screen appears with the current status of the router.

Check the *Build Date* (OpenWrt) status and the *STM32 Firmware* version if they are new.

At the **Network** part you can check the **Modem model**, modem identifier (**IMEI**), the SIM identifier ICC (**SIM ID**), the **Modem RSSI** (mobile network signal strength), the **Modem SQ** (signal quality CSQ) values, and the **SIM-card logon data** (*AT+COPS?*), with the **IPv4 WAN status** of the network (as connection Type, IP address).

1.5 Menu

The menu can be found in the header. There you can access the following features:

- **Status** – Status data, operation logs, operation monitoring
- **System** – System settings, administration, software and fw-refresh, backup/restrore of the configuration settings
- **Router** – Device Manager settings, Modem and Logging parameters, Ping an IP address, Daily restart, Factory settings

- **Network** – network interface settings, DHCP, DNS, Route rules, diagnostics, firewall

1.6 CDMA menu (only for CDMA devices)

The modem's **MSIN identifier** can be configured here: [CDMA/Set MSIN](#).

If you give a new **MSIN number**, then the WAN interface will be automatically configured for the router. This setting can be checked at the [Network/Interfaces](#) menu.

The screenshot shows the 'Set MSIN' configuration page. At the top, there is a navigation bar with 'CDMA-device' highlighted in red, and other menu items: 'Status', 'CDMA', 'System', 'Network', and 'Logout'. Below the navigation bar, the page title is 'Set MSIN'. A note reads: 'Please fill out the new MSIN field. After 'Save&Apply' button wait 25 seconds and enter 'Set MSIN' menu again.' The form contains three rows: 'MEID' with the value 'A1000049AE18CF', 'MSIN' with the value '0000003103', and 'New MSIN' with an empty text input field. At the bottom right of the form, there are three buttons: 'Save & Apply', 'Save', and 'Reset'. Below the form, there is a footer that reads: 'Powered by LuCI Master (git-15.137.54403-f67d39e) / OpenWrt Designated Driver r49022'.

You can store the router settings with the **Save** button. The **Save & Apply** button stores the settings and reconfigure the router related on these settings. **When it was succesful, the router will be not restarting automatically futher.**

1.7 Network configuration




The list of the available network interfaces can be found at the **Interfaces / Interface Overview** menu item.

M2M-Router Status System Router Network Logout AUTO REFRESH ON

WAN USBLAN LAN

Interfaces

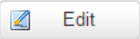
Interface Overview

Network	Status	Actions
<p>LAN</p>  eth0	<p>Uptime: 0h 13m 43s MAC-Address: 76:8B:9D:35:F5:91 RX: 0 B (0 Pkts.) TX: 0 B (0 Pkts.) IPv4: 192.168.127.1/24</p>	<p>Connect Stop Edit Delete</p>
<p>USBLAN</p>  usb0	<p>Uptime: 0h 13m 43s MAC-Address: 6A:06:EB:BF:D6:9D RX: 143.18 KB (1363 Pkts.) TX: 269.61 KB (857 Pkts.) IPv4: 192.168.10.1/24</p>	<p>Connect Stop Edit Delete</p>
<p>WAN</p>  3g-wan	<p>Uptime: 0h 12m 58s MAC-Address: 00:00:00:00:00:00 RX: 354 B (8 Pkts.) TX: 1.04 KB (23 Pkts.) IPv4: 172.31.112.8/32 IPv6: fe80::6dfe:f491:9bd3:7f4e/128</p>	<p>Connect Stop Edit Delete</p>

Add new interface...

Save & Apply Save Reset

The network interfaces are listed at the **Interface Overview**. The **LAN** interface means the Ethernet port connection (*eth0*), the **USBLAN** is the USB-Ethernet (*usb0*) and the **WAN** interface is the public wireless Internet connection (*3g-wan*) for the CDMA450, 2G, 3G, 4G LTE or LTE 450 modem.

At the interfaces, at right you can modify the settings with the  button.

At the upper **WAN**, **USBLAN**, **LAN** titles you will find further settings related to the chosen interfaces.

1.9 Mobile internet settings (modem, SIM, APN)

Open the **WAN** item from the upper selection. Then at the **General Setup** tab – in case of a 4G router at the **LTE settings** tab - you can see the current status of the interface and the transmitted data amount.

In case of CDMA450 router version you must not configure this settings, step to the Chapter 1.10, please.

Setup the module for connecting to the 2G/3G/4G/LTE450 mobile network (according to the assembled module type) – at the **WAN** interface tab.

For configuring and enabling the **roaming** settings – in **case of international or country border usage** – you may need to setup the **Mobile country code** and **Mobile network code** parameters – even if you are attempted to use only a preferred mobile network.

The international country codes can be found here: <http://mcc-mnc.com>

Ask your mobile operator about the available international settings.

The screenshot displays the configuration page for the WAN interface on an M2M-Router. At the top, there is a navigation bar with 'M2M-Router' in red, and menu items for 'Status', 'System', 'Router', 'Network', and 'Logout'. An 'AUTO REFRESH ON' button is located on the right. Below the navigation bar, there are tabs for 'WAN', 'USBLAN', and 'LAN', with 'WAN' selected. The main heading is 'Interfaces - WAN'. A descriptive paragraph explains that users can bridge multiple interfaces and use VLAN notation. Under 'Common Configuration', there are three sub-tabs: 'General Setup', 'Advanced Settings', and 'Firewall Settings', with 'General Setup' active. The configuration area shows the status of the '3g-wan' interface, including uptime, MAC address, RX/TX statistics, and IP addresses. Below this, various settings are listed with input fields and dropdown menus: Protocol (UMTS/GPRS/EV-DO), Modem device (/dev/ttyACM3), Service Type (UMTS/GPRS), Mobile country code, Mobile network code, Dual SIM (unchecked), SIM #1 APN (wm2m), SIM #1 PIN, SIM #1 PAP/CHAP username (root), SIM #1 PAP/CHAP password (masked), and Dial number (*99***1#). At the bottom, there are buttons for 'Back to Overview', 'Save & Apply', 'Save', and 'Reset'.

M2M-Router Status System Router Network Logout AUTO REFRESH ON

WAN USBLAN LAN

Interfaces - WAN

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and enter the names of several network interfaces separated by spaces. You can also use VLAN notation `INTERFACE.VLANNR` (e.g.: `eth0.1`).

Common Configuration

General Setup Advanced Settings Firewall Settings

Status 3g-wan

Uptime: 0h 15m 29s
MAC-Address: 00:00:00:00:00:00
RX: 354 B (8 Pkts.)
TX: 1.04 KB (23 Pkts.)
IPv4: 172.31.112.8/32
IPv6: fe80::6dfe:f491:9bd3:7f4e/128

Protocol UMTS/GPRS/EV-DO

Modem device /dev/ttyACM3

Service Type UMTS/GPRS

Mobile country code

Mobile network code

Dual SIM

SIM #1 APN wm2m

SIM #1 PIN

SIM #1 PAP/CHAP username root

SIM #1 PAP/CHAP password

Dial number *99***1#

[Back to Overview](#) [Save & Apply](#) [Save](#) [Reset](#)

The LTE450 communication needs special network and an LTE capable SIM-card for the succesful connection!

Define the **SIM #1 APN** account name, and the **SIM #1 PIN** code if it is necessary for the connection.

Here you will found some examples for the APN settings:

M2M APN (enclosed)

APN name: wm2m

SIM #1 APN

Public Internet APN (opened)

APN name: net

SIM #1 APN

Automatic mode

When you not set any value for the APN, the router will connect by the SIM-card automatically to the next available network's available APN.

Authentication

The **PAP/CHAP username** and **PAP/CHAP password** settings can be also configured here – if it is required for the connection.

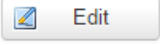
Click to the **Save & Apply** button for saving the settings, while the devices attempts then connecting to the mobile network.

Attention!

After doing the SIM, APN settings, and saving the settings, the router and the modem will not be automatically restarted futhermore!

1.10 Ethernet (LAN) settings

For the LAN interface, at the **LAN** menu item at the **General Setup** tab you can define an own IP range (**IPv4 address**), with the related **IPv4 netmask** (subnet mask).


The detailed **LAN** interface settings can be performed by the **Network Interfaces** menu item at the **LAN** interface  button.

Change the default 192.168.127.1 router **IPv4 address** to an own IP address, regarding the current subnet.

Check the **IPv4 netmask** to be proper for the selected and required network class which you are attempted to use.

Important!

The DHCP service is turned off for the router Ethernet interface, by default. Therefore, you have to configure an IP address for you PC, manually.

If you are not attempted to use a fixed IP address for the router, and if you are attempted to use DHCP given IP by a different network device, then modify the IPv4 address to the connecting gateway – or other network device - IP address, and choose the *Static address* at the **Protocol**, the *DHCP client* setting, and push the  button.

Then the DHCP client will be activated for ethernet interface.

Push the **Save & Apply** button for performing the changes.

1.11 DHCP, DNS settings

The DHCP service allows the automatic IP address providing for the connecting devices in the current IP segment by the router.

The DHCP settings can be found at the **Network** menu, **DHCP and DNS** item.

Important!

The DHCP service is disabled by the factory default configuration. First, you have to enable the DHCP service for the usage and performing the further DHCP settings!

If you attempted to **enable the DHCP service**, **uncheck** the *Disable DHCP for this interface* option. Then the related parameter settings will be visible with their default settings.

The **Start** field means the starting IP address in the subnet for the connecting devices (by default 192.168.x...). You can **Limit** how many IP addresses will be provided. The router will be providing addresses for the connecting devices in the 192.168.x subnet within the *Start* and between the *Start+Limit* address range (especially important for WiFi).

Save the settings with the **Save & Apply** button.

The further DHCP settings can be achieved at the **Network** menu, at the **DHCP and DNS** item, **General Settings** tab.

Further settings can be found in the detailed the User Manual document:

<http://www.m2mserver.com/en/products/m2m-router>