

M2M Router PRO®

User Manual (Extract)

v1.9



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Intelligence in machine-to-machine communication

1. Starting the Router

1.1 Cable connection



1. **Mount a 2G/3G or two LTE SMA antenna –** according to the module type - to one of the **Antenna** titled SMA-M interfaces (in case of LTE module all the two antenna must be mounted).
2. If there is a WiFi module presented, then connect a WiFi antenna to the **WiFi** titled **antenna** connector.
3. **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.
4. **Connect UTP cable to the RJ45 port** (**Ethernet** titled), the other side of the cable must be **plugged to the PC** or a current network device.
5. **The DHCP service is turned off for the router Ethernet interface**, by default. Therefore, **you have to configure an IP address for your 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 First starting of 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). By plugging the power adapter to the 230V AC socket, the router begins to work, whereas its **LED signals** are showing the **current activity** during the operation.

3. When the router is booting, the upper **ST LED** will be flashing once per seconds with **green** light, which means that the system is loading the system. The system starting then takes about 2 minutes while it will be ready for usage.
4. When the **ST LED** will not flashing anymore (but the other LEDs are active), then the system is ready for operating. Then the **ST LED** will blink once in every 10 seconds. The router is available on the web user interface and operating well.
5. *In case of availability of the **WiFi** (if WiFi module is presented in the device) then the lower **WiFi LED** lighting continuously by **green** light. This assigns that the WiFi/Access Point is available for the connecting clients – for accessing the public Internet.*
6. The mobile network availability is signed by the middle **Cell LED**. When the SIM card network registration was successfully performed by the modem, the middle LED lights continuously by **green**.
7. **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!**
8. If you notice any failure or unusual LED flashing, then go to the **Troubleshooting** chapter.

In **case of restart** or manual restarting of the router, **all the three LEDs** will lighting for 1 second with **red** colour, then will be blank for a couple of seconds. Then the boot sequence repeats from the point nr. 3 as it is written here above.

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	<input type="text" value="root"/>
Password	<input type="password" value="*****"/>
<input type="button" value="Login"/> <input type="button" value="Reset"/>	

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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)

After login to the web interface, the startup screen appears with the current status of the router.

Check the *Build Date* (OpenWrt) statuts that it is 2017-04-20 or newer and the *STM32 Firmware* version.

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

By the menu 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
- **Services** – DynDNS (dinamic DNS) settings, Ser2net configuration (RS232/RS485)
- **Network** – network interface settings, WiFi settings, DHCP, DNS, Route rules, diagnostics, firewall

1.6 Network configuration

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

The screenshot shows the 'Network' section of the M2M-Router-PRO web interface. It displays three network interfaces: LAN, WIFI, and WAN. Each interface has a status summary, a list of statistics, and action buttons (Connect, Stop, Edit, Delete). A 'Save & Apply' button is located at the bottom right.

Network	Status	Actions
LAN	Uptime: 0h 24m 4s MAC-Address: 0E:64:1B:3E:B0:87 RX: 363.31 KB (3678 Pkts.) TX: 775.27 KB (3463 Pkts.) IPv4: 192.168.127.1/24	Connect Stop Edit Delete
WIFI	Uptime: 0h 23m 44s MAC-Address: 38:1D:D9:43:ED:FA RX: 0 B (521 Pkts.) TX: 1.62 KB (5 Pkts.) IPv4: 192.168.5.1/24	Connect Stop Edit Delete
WAN	Uptime: 0h 22m 49s MAC-Address: 00:00:00:00:00:00 RX: 1.09 KB (14 Pkts.) TX: 1.51 KB (26 Pkts.) IPv4: 172.31.158.141/32 IPv6: fe80::e88f:b795:207a:96c0/128	Connect Stop Edit Delete

Add new interface...

Save & Apply **Save** **Reset**

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The **LAN** interface meaning the Ethernet port connection (**eth0**), the **WAN** interface is the public wireless Internet connection (as **3g-wan**, **in case of LTE: eth1**) – which means the 3G, 4G, LTE 450 module by physically. In case of **WiFi** the proper related interface is also available.

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

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

1.7 Mobile internet settings (modem, SIM, APN)

Open the **WAN** item from the upper selection. Then at the **General Setup** tab you can see the current status of the interface and the transmitted data amount.

Configure the module to the wireless internet and for the 3G/4G/LTE network connection (by the modem type and network behaviour) here for the **WAN** interface.

WAN WIFI 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 28m 40s MAC-Address: 00:00:00:00:00:00 RX: 1.09 KB (14 Pkts.) TX: 1.51 KB (26 Pkts.) IPv4: 172.31.158.141/32 IPv6: fe80::e88f:b795:207a:96c0/128
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Protocol	UMTS/GPRS/EV-DO
Modem device	/dev/ttyACM3
Service Type	UMTS/GPRS
Mobile country code	
Mobile network code	
Dual SIM	<input type="checkbox"/>
SIM #1 APN	wm2m
SIM #1 PIN	
SIM #1 PAP/CHAP username	
SIM #1 PAP/CHAP password	
Dial number	*99***1#

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 attempting 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.

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

Here you will find some examples for the APN settings.

M2M APN (enclosed)

APN name: wm2m

SIM #1 APN

wm2m

Public Internet APN (opened)

APN name: net

SIM #1 APN

net

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

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.

When you are attempted to use a DUAL-SIM version router

This can be used well as an alternative – or spare - network path, when the operation can be granted with better change instead of the field coverage (adding further mobile operator service).

Check in the **Dual SIM** option and define the **SIM #2 APN** and PIN code parameters.

When you modified the settings, save them by the **Save & Apply** button. Then the router will try to connecting to the mobile network.

Dual SIM	<input checked="" type="checkbox"/>
SIM #1 APN	net
SIM #1 PIN	
SIM #1 PAP/CHAP username	
SIM #1 PAP/CHAP password	
SIM #2 APN	wm2m
SIM #2 PIN	
SIM #2 PAP/CHAP username	
SIM #2 PAP/CHAP password	

Attention!

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

Only in case of using the LTE450 modem:

- After the SIM switching, the modem cannot registered for more than 2 minutes
- After 1 minute of the registration it still does not get WAN IP address to the **eth1** interface (still will be 10.0.0.10)

1.8 WiFi settings (optional)

Choose the **WiFi** option from the menu, then at the **General Setup** tab you can define a different IP address range for the **IPv4 address**.

The WiFi feature is optional for the router. In case of presence of the WiFi, the default mode is the AccessPoint, where clients can connect to the router. The **default WiFi password** for the **M2M_Pro3** SSID is: **M2MPro_123**

The interface of the WiFi module is bridged to the ethernet by default.

Attention!

*The reconfiguration of the **SSID** is highly recommended, which can be initiated by the  button.*

When you modified the settings, save them by the **Save & Apply** button.

1.9 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 your 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.

When you modified the settings, save them by the **Save & Apply** button.

1.10 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-pro>