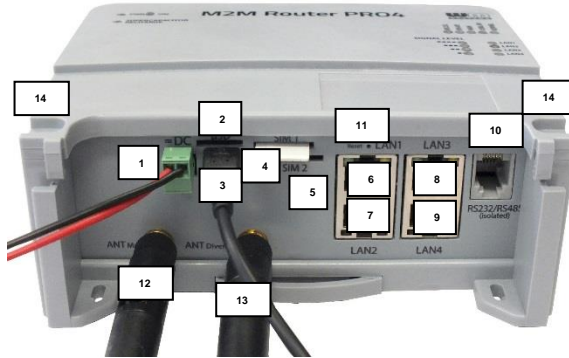


M2M Router PRO 4® – Quick Installation Guide

CONNECTORS

- 1 – Power supply connector (12..24V DC, 2-pins terminal block)
- 2 – micro SD card slot (for uSD card, for uSD boot or data storage)
- 3 – micro USB connector (PC connection - for configuration, debug)
- 4 – Primary SIM-card slot (2FF type mini SIM card, push-insert)
- 5 – Secondary SIM-card slot for DUAL SIM option (inactive)
- 6 – Ethernet LAN1 port (IEEE 802.3, 100/10 Mbit FastEthernet, full duplex, bridged, RJ45 connector)
- 7 – Ethernet LAN2 port (IEEE 802.3, 100/10 Mbit FastEthernet, full duplex, bridged, RJ45 connector)
- 8 – Ethernet LAN3 port (IEEE 802.3, 100/10 Mbit FastEthernet, full duplex, bridged, RJ45 connector)
- 9 – Ethernet LAN4 port (IEEE 802.3, 100/10 Mbit FastEthernet, full duplex, bridged, RJ45 connector)
- 10 – RS232/RS485 port (isolated RS232 and RS485, half-duplex interface, RJ12 connector)
- 11 – Reset button (hole)
- 12 – ANT Main – Primary antenna connector, SMA-M, 50 Ohm
- 13 – ANT Diversity - Diversity antenna connector, SMA-M, 50 Ohm



POWER SUPPLY, INTERFACES

- Power supply: 12 - 24 VDC 800mA & 24V DC, 2.5 – 10W
- PSU connector: 2-pin terminal block, pinout left→right: - / +
- Supercapacitor: against short <5sec power outages, part is assembled on the PCB, in case of full discharge it takes 6-10 minutes charging
- Wireless communication: • GSM/GPRS: B3(1800), B8(900) • UMTS: B1(2100), B8(900) • LTE: B3(1800), B7(2600), B20(800), B1(2100), B8(900)
- SIM cards: 2 SIM slots: 2FF type mini SIM cards - internal protection against spontaneous falling out
- Ports: • 4 Ethernet ports (10/100Mbit, LAN, RJ45) • Isolated RS232 / RS485 (RJ12, half duplex, 300 – 19 200 bps) • microSD slot • microUSB connection

MECHANICAL DESIGN & ENVIRONMENTAL CONDITIONS

- Size: • 150 x 150 x 58 mm / 460 grams (with terminal cover) • 150 x 130 x 58 mm / 410 grams (without terminal cover)
- IP51 plastic housing, sealable terminal cover, DIN-rail mounting supported
- Temperature conditions: Operation between -35°C and +55°C, storage between -40°C and +80°C, at 0-95% humidity (Note that changes in temperature may result in condensation!)

WARNING / CAUTION!

The device must be used and operated according to the related user manual. The installation can be carrying out only by a responsible, instructed and skilled person by the service team (as fixation, carrying out wiring of the device)! Only certified experts or the manufacturer is allowed to open the enclosure!



By general the device is using DC mains. 24V DC mains electric shock (12..24V DC) hazard inside the enclosure! PLEASE DO NOT open the enclosure and DO NOT touch the PCB.

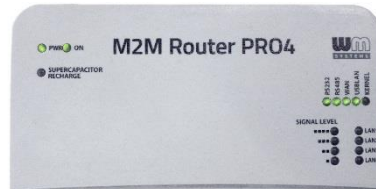
In case of using the optional orderable AC power source, please consider the following. ~110-230V AC 50Hz, electric shock (~110-230V AC) hazard inside the enclosure! DO NOT open the enclosure and DO NOT touch the PCB.

INSTALLATION STEPS

- Remove the plastic, transparent port protector part of the router from the interface by releasing the two screws (No. 14) from the top of the enclosure and slide up the plastic part, then remove upside. Now you can connect the ports and make the wiring properly.
- Mount a 4G LTE antenna to the ANT Main titled (no. 12) SMA antenna connector and mount an recommended to also using a secondary antenna also and mount to the ANT Diversity (no. 13) SMA connector. Twist the antenna to the connector until it is fastened
- The antenna must be placed or oriented to any direction which has a clearance or open sky (if it is used externally).
- Insert and push an activated mini SIM card to the SIM 1 titled card holder (No. 4), top SIM holder. Insert by following the hints of SIM card figure for the proper orientation. (The SIM chip-side will be at the top up and the cutted edge towards to inside and push until it sleeves).
- You can use the microUSB (No. 3) connector with a microUSB-to-USB cable connection as USB LAN - instead of the Ethernet connection.
- You also can connect an UTP cable to the LAN1 (No. 6) and/or LAN2 (No. 7), LAN3 (No. 8), LAN4 (No. 9) RJ45 interface Ethernet port.
- The other side of the UTP cable must be plugged to your computer or a network device (hub or switch, if you are attempted to use one).
- (Note, that the Ethernet ports are bridged by default, which means its equal which port you are using.)
- Plug the 24V DC power supply to the 12..24V DC interface (No. 1), then plug the adapter to the external 24V DC (12..24V DC) power supply – according the pinout (from left-to right direction: - / +), to the terminal block part of the power supply and connect to the device, by adding stable 24V DC power.

STARTING THE DEVICE

- The router has a supercapacitor inside which can protect the device against short (<5sec) power outages. Therefore this part can be charged and it can be exhausted after an outage or if you store the router for months without connecting power source or using.
- In this phase you cannot start the router as usual by adding the DC power supply, because only the PWR led will be active, but the router won't start further.
- First, you must start the router by the adding the power source and pushing the Reset button (No. 11) for 2 seconds by a sharp object (e.g. pen) – while the ON led will be also active – then release the Reset button. Then the router will start immediately and charging the supercapacitor (SUPERCAPACITOR CHARGE led will be also active). (Next time you don't need to push the Reset, only you need to provide the DC power source).
- Afterall, the router begins to perform booting – the LED signals are always showing the current activity during the operation. The system start needs about 40-50 seconds while it will be ready for usage, network communication.
- During the device begins to operate, whereas its LED signals are showing the current activity during the operation:
 - First the LAN1 – LAN4 leds are blinking for half a second, which signs that the power was added. The PWR and ON leds are also active.
 - Then RS232 and RS485 LEDs are lighting for ~10 seconds during firmware start.
 - Then RS232, RS485, WAN, USBLAN leds will be flashing for 30 sec until booting.
 - At the end of the boot, only the WAN, USBLAN are flashing for 5-10 seconds.
 - When connectivity LEDs are not blinking anymore the system load has finished.
 - If the WAN (APN) was not configured, the SIGNAL LEVEL low LED is blinking which means the router tries to connect to the wireless network. If it was configured properly and the registration was succesful (in case of a properly configured WAN connection: APN, password and SIM PIN is matching) then the WAN led will be lighting and the current SIGNAL LEVEL leds will be also lighting which means connected and you have useful wireless signal reception for the usage.



CONFIGURATION STEPS

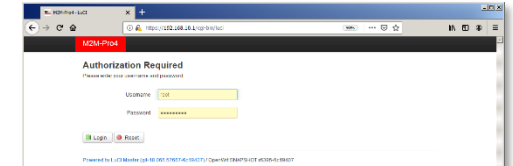
- By default, the router has an installed OpenWRT® operating system which is ready to use and configure to your SIM card APN and for you usage requirements.
- When the router has already started it is accessible on LAN and USBLAN interfaces, therefore you can login to the Luci® web user interface (or via SSH).

via Ethernet connection (any of LAN1..LAN4 connecting to a computer):

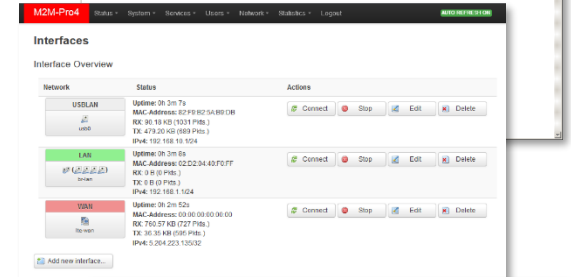
- The router's default Ethernet IP address is 192.168.1.1
- Add the 192.168.1.x IPv4 address (where x can be between 2 and 255) to your computer's Ethernet interface for connecting to the router. Then you can access the device through the web user interface or by SSH.
- For connecting to the router on its web interface use this URL: <https://192.168.1.1>

via USB connection (USBLAN, USB connection to a computer):

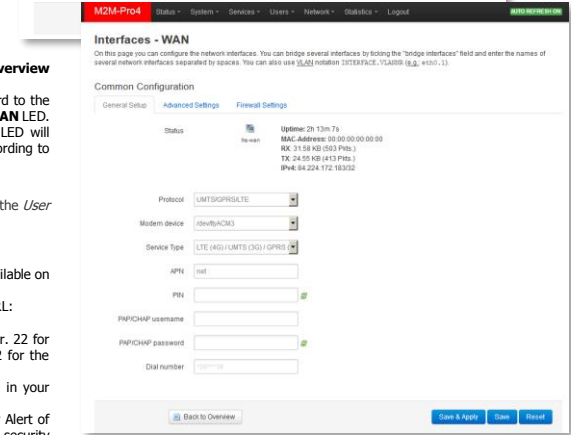
- Download, unpack and install driver for USB connection: http://www.wmsystems.hu/m2m-downloads/USB_Ethernet_RNDIS_DRIVER.zip
- After you've connected the USB-microUSB cable, you can add the driver in the Windows® / Start / Control Panel / System / Device Manager. Find the Network Cards, extend it and you will found the „USB Ethernet / RNDIS Gadget“. Double click on the entry and choose the Driver tab, and the Refresh button, then browse the uncompressed file's directory then Install the driver.)
- Build connection between PC←→ router with uUSB-USB cable.
- Configure the USB-Ethernet interface IP address on your PC for the „USB Ethernet/RNDIS Gadget“ and setup the net fixed ipv4 address: 192.168.10.10, subnet mask is: 255.255.255.0 – connect these settings. (You can ping the device through the USB connection on its IP address.)
- The USBLAN interface IP address is 192.168.10.1
- For router web interface use: <https://192.168.10.1>



- The router's local web user interface (Luci®) is reachable via one of the listed URLs in your Mozilla browser.
- There you will get a security risk message, its not important to take care, but choose the Advanced option. Then click on the Accept the Risk and Continue button to access the router webpage.
- The Luci® / OpenWrt® web interface has loaded into the browser. Fill the Username and Password fields and click on the Login button for the entry. (Username: root, Password: wmpwrdM2M)
- On the dashboard (Status/Overview screen) you can check all relevant information about the router.
- Before using the wireless access you need to setup the SIM card's current APN properties. You have to configure the SIM / APN settings.
- Choose the Network / Interfaces menu, WAN interface, Edit button. Add the APN and PIN or username, password (ask your Mobile Operator for APN, pass).
- Then click the Save & Apply.



- Soon the wireless module will be configured by the settings. If the module with the SIM is operating, the network traffic Rx/Tx values will be changing at Interface status: Interfaces / Interface Overview part, the WAN interface (Ite-wan).
- During this, the router will try to connect and register the SIM card to the network. The availability of the mobile network is assigned by the WAN LED. when it has successfully registered to the given APN, the WAN LED will lighting by green and the SIGNAL LEVEL will be also signed according to the signal reception.



All further detailed settings, detailing the LED signals can be found in the User Manual document, which you can download from the product website.

SSH ACCESS

- The router can be accessed through SSH connection, when it is available on its IP address – by a terminal utility (e.g. the putty tool).
- Putty is a free tool which can be downloaded from the following URL: <https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html>
- The router can be accessed by SSH on the 192.168.1.1:22 (port nr. 22 for Ethernet LAN1.. LAN4 interfaces) or 192.168.10.1:22 (port nr. 22 for the USB interface).
- Allow to access the router, ignore the security breach message in your computer in the pop-up window.
- Choose Accept (Yes) at the Putty or other SSH terminal's Security Alert of the RSA2 key of the router to allow and trust the connection – by security reasons.
- SSH login data (Login: root, Password: wmpwrdM2M)
- You can find document about the UCI Linux Command Line Interface description, which also can help you about the useful commands for using and configuring the router.

DOCUMENTATION & SUPPORT

The documentations can be found on the product website: <http://www.wmsystems.hu/en/product/m2m-router-pro-4/>
In case of support request, ask our support at lotsupport@wmsystems.hu or check the support website <http://www.wmsystems.hu/en/support/>

This product is marked with the CE symbol according to the European regulations.

The crossed out wheeled bin symbol means that the product at the end of its life cycle should be disposed of with general household waste within the European Union. Only discard electrical/electronic items in separate collection schemes, which cater for the recovery and recycling of materials contained within. This refers not only to the product, but also to all other accessories marked with the same symbol.

