USB WiMAX modem

User Manual

Suitable for UM6225 & UM6235

LEGAL NOTICE

ATTENTION

Before using the device we strongly recommend reading this user manual first.

Do not rip open the device. Do not touch the device if the device block is broken.

All wireless devices for data transferring may be susceptible to interference, which could affect performance.

The device is not water-resistant. Keep it dry.

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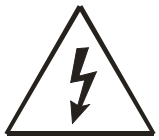
SAFETY INFORMATION

In this document you will be introduced on how to use a UM6225/UM6235 modem safely. We suggest you to adhere to the following recommendations in order to avoid personal injuries and or property damage.

You have to be familiar with the safety requirements before using the device!

To avoid burning and voltage caused traumas, of the personnel working with the device, please follow these safety requirements.

The PC to which the device is connected, should satisfy LST EN 60950-1 standard. The device can be used on first (Personal Computer) or second (Notebook) computer safety class.



Do not mount or serve device during a thunderstorm.

To avoid mechanical damages to the device it is recommended to transport it packed in a damage-proof pack. While using the device, it should be placed so, that its indicating LEDs would be visible as they inform in which working mode the device is and if it has any working problems.

Protection against overcurrents, short circuiting and earth faults should be provided as a part of the building installation. To disconnect the device plug it off the USB (Universal Serial Bus) port.

Signal level of the device depends on the environment in which it is working. In case the device starts working insufficiently, please refer to qualified personnel in order to repair this product. We recommend forwarding it to a repair centre or the manufacturer. There are no exchangeable parts inside the device.

PRODUCT OVERVIEW

Introduction

Teltonika UM6225/UM6235 is a compact USB dongle offering high speed data rate connectivity to WiMAX networks. It supports the IEEE 802.16e connection standard, thus it is flexible and can be used in a set of different environments: the office, home, a public place or even a bus or a car. In addition, our product uses a hostless solution, which makes it run evenly well on different platforms with all the popular operating systems.

Package contents

UM6225/UM6235
• WiMAX modem • Leaflet “Quick Start Guide”

Note: The provisioning information is provided by your service provider, thus the questions regarding connection problems should be addressed to it.

Note: If any of the components are missing or damaged, please contact the retailer or reseller from which this product was purchased.

System requirements

- USB port
- Windows XP, Windows Vista, Windows 7, MAC OS X, or most of the Linux-based operating systems.
- A web browser must have a flash player plug-in (version 10 or higher) to access the WebUI for network configuration.

Hardware, LED's and connections

USB modem LED

Two LED indicators show the state of the device.
Status LED – modem started successfully.
Activity LED – indicates data transfer.

WebUI OVERVIEW

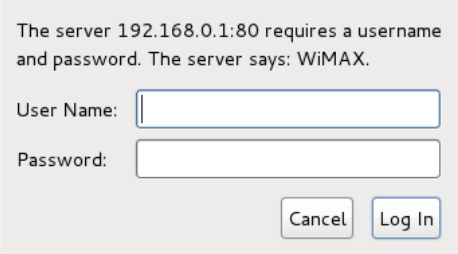
In this section you will be briefly introduced to our user interface.

Note: we use the tool tip system in our web user interface in order to show additional information. To see this data hover your mouse cursor above the field. Also, if the frame of the field becomes red, it usually means that the data in the field is incorrect, in this case look into the red tool tip for more information.

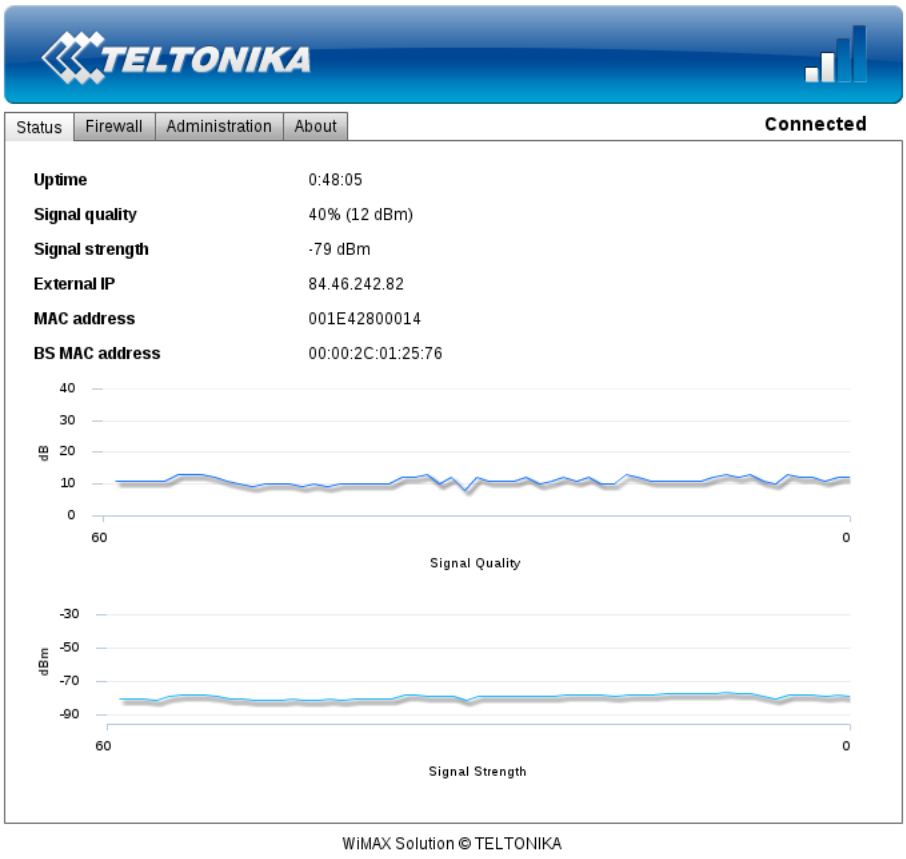
Connecting to the WebUI

To connect to the configuration web page do the following steps:

1. Type **192.168.0.1** to your favorite internet browser. Skip the step 2 if the password is disabled (default: disabled).
2. Window asking for authentication will pop up. Enter your username and password (default: username: user, password: user) and press enter.



3. Status window will appear in a few seconds:

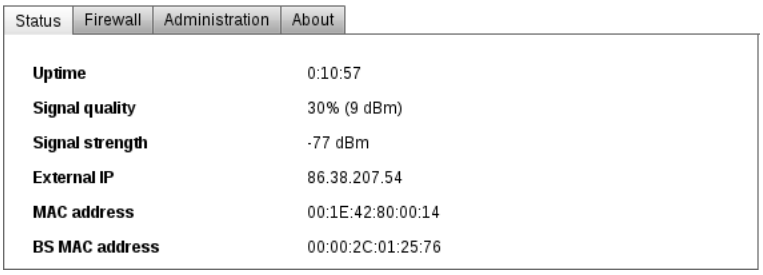


First page of WebUI

WebUI structure

Our modern web user interface provides you with all the tools needed within the four main pages: **Status**, **Firewall**, **Administration**, **About**.

Status



Status page

Status page consists of 6 properties that define the current state of the UM6225/UM6235 modem:

1. **Uptime** – the time since the modem was plugged in.
2. **Signal quality** – the quality of a signal in percents (and decibels).
   <30% poor
   >30% <50% decent
   >50% <90% good
   >90% very good

   Note: signal quality depends on the distance between your device and the base station and other factors: interference with other devices, etc.
3. **Signal strength** – the strength of a signal in dBm.
4. **External IP** – IP which was assigned to your device by the base station.
5. **MAC address** – physical address of the WiMAX connection module.
6. **BS MAC address** - physical address of the base station.

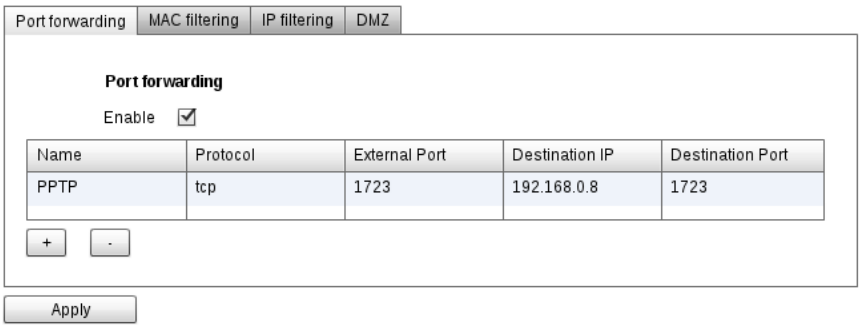
Firewall

Firewall page lets you configure firewall settings to meet your requirements. It includes port-forwarding, MAC filtering and IP filtering

Port forwarding

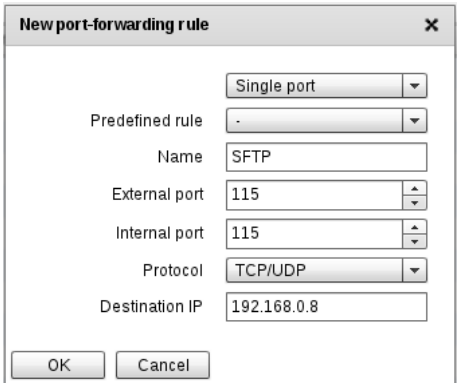
Port forwarding is the process of translating the address and port number of a packet to a new destination. It is used to permit communications by external hosts with services provided within local area network.
Follow these steps to add a port-forwarding rule:

1. **Enable** – check to enable the Port forwarding.
2. Press the **+** button.



Port forwarding form

3. The following port-forwarding rule creation window will pop-up. Choose a rule type (single port or port range) and fill the fields in a window to define the rule. Here are the explanations regarding the field data types:
   - **Predefined rule** – select from a list of the most common rules.
   - **Name** – the name of the rule that will be visible in the list of your defined rules.
   - **External port from/to** – external port range to be redirected to an internal port.
   - **Internal port** – port used by the destination device to receive data.
   - **Protocol** – the protocol with which the rule operates.
   - **Destination IP** – the address of the device to which all the data coming to the selected external ports is forwarded to.



New port-forwarding rule window

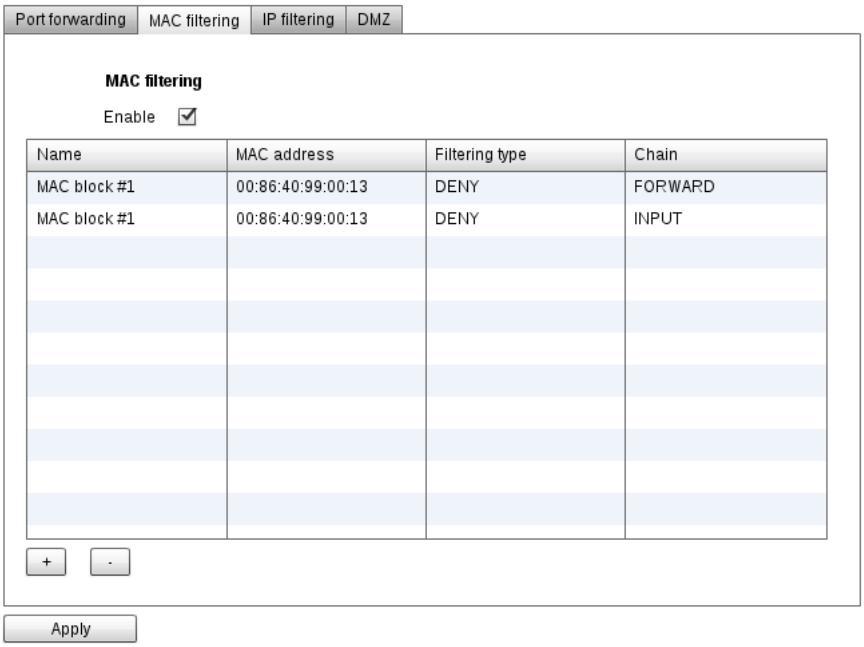
3. Press **OK** button to accept the rule.
4. After adding all the rules that you needed, press **Apply** to save the rules to the configuration.

Mac filtering

MAC filtering is a security access control method used to determine access to the network by physical address.

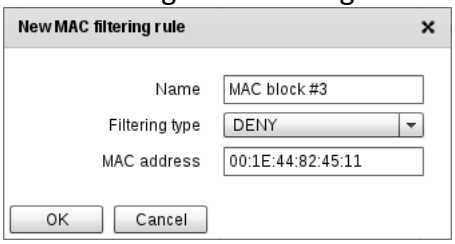
Follow these steps to add a MAC filtering rule:

1. **Enable** – check to enable the MAC filtering.
2. Press the **+** button.



Mac filtering form

3. The following MAC filtering rule creation window will pop-up.



New MAC filtering rule window

- **Name** – MAC filtering rule name.
- **MAC address** – physical address that you want to block from connecting to and/or through the modem.

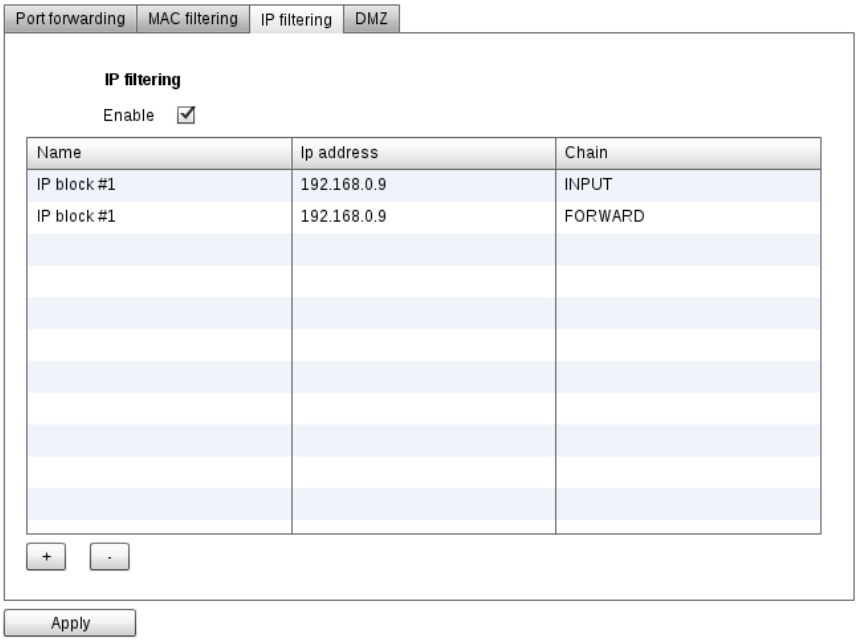
4. Press **OK** to add the rule.
5. After adding all the rules that you needed, press **Apply** to save the rules to the configuration.

IP filtering

IP filtering is a security access control method used to determine access to the network by IP address.

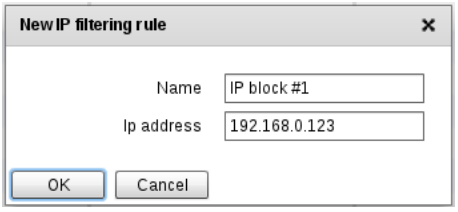
Follow these steps to add an IP filtering rule:

1. **Enable** – check to enable the IP filtering.
2. Press the **+** button.



IP filtering form

3. The following IP filtering creation rule window will pop-up.



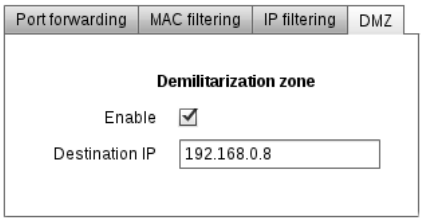
New IP filtering rule window

- **Name** – IP filtering rule name.
- **IP address** – IP address that you want to block from connecting to and/or through the modem.

4. Press **OK** to add the rule.
5. After adding all the rules that you needed, press **Apply** to save the rules to the configuration.

Demilitarization zone

In computer networks, a DMZ (demilitarized zone) is a computer host or small network inserted as a "neutral zone" between a private network and the outside public network.



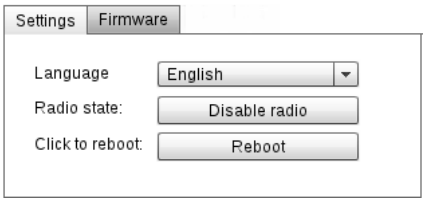
DMZ page

To set up DMZ, click the **Enable** checkbox and put in IP address of your destination in the **Destination IP** text field.

Administration

Administration page allows you to change the language of the WebUI, disable radio connection, reboot the modem, save firmware to your computer (in a binary file format) or update it with a newer version.

Settings



Settings page

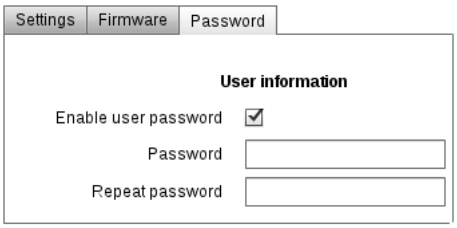
Language – select a language from the drop down list.
Radio state – disables or enables radio (WiMAX) connection.
Reboot button – click to reboot this device. You will have to wait for a few seconds until it boots up again.

Firmware

Firmware page

To save firmware: click **Save firmware to file** and at the following dialog browse to the directory you want to place the binary file.
To update firmware: click **Select firmware file** and at the following dialog window select the firmware file (note: file must be named **firmware.bin**). To start updating click: **Update firmware**. This process usually takes 5 to 10 minutes.
Note: A firmware backup is only suitable for the device from which it was downloaded. If a firmware backup is uploaded to another modem, that modem will malfunction.

Password



To set up or change a password check **Enable user password** and write a new one into two fields bellow. To disable user password simply uncheck **Enable user password** checkbox. You must click **Apply** if you want to save any of these to configuration.

About

About page

The About page displays the versions of your firmware and software that are currently running on your device. This helps you decide whether or not you need to update your firmware.
Note: The last part in the OS version string refers to the sector size (64 kilobytes in this case) of the flash memory. It is important that the firmware you update is made for the same flash sector size as the flash memory in the device.

TECHNICAL SPECIFICATION

Standard Compliant	IEEE 802.16e-2005
Air Interface	S-OFDMA
Frequency Band	2.5-2.7GHz (UM6225) or 3.3-3.6GHz (UM6235)
Channel Bandwidth	3 MHz, 3.5 MHz, 5 MHz, 6 MHz, 7 MHz, 8.75 MHz and 10 MHz
Modulation	Adaptive QPSK, 16QAM, 64QAM
MIMO	MRC, Matrix A + MRC, Matrix B
Beamforming	All I/O Beamforming Items
RF Output Power	2x20 dBm @ 2.5-2.7GHz; 2x17dBm @ 3.3-3.6GHz
RX Sensitivity:	QPSK1/2: -99.5 @ 2.5 GHz and 10 MHz BW 16QAM1/2: -94.29 @ 2.5 GHz and 10 MHz BW QPSK1/2: -99 @ 3.5 GHz and 10 MHz BW 16QAM1/2: -93.8 @ 3.5 GHz and 10 MHz BW
Antenna Gain	>2.5 dBi @ 2.6 GHz, >1.2 dBi @ 3.55 GHz
Antenna Type	Internal Omni-Directional
Handover	Hard / Optimized Handover
QoS Mechanism	UGS, Real-Time-VR, Non Real-Time-VR, Best Effort, ERT-VR
Authentication	EAP-TLS, EAP-TTLS-MSCHAPv2
Encryption	3 CCM-Mode 128-bit AES
Error Handling	HARQ UL and DL, up to Category 7
Throughput	40 Mbps Total DL + UL
OS Support	Windows XP/Vista/7, Linux, MAC OS
Installation	CD-free, Self Install
LEDs	Link Status and Link Activity
Software	Hostless Operation

Electrical, Mechanical & Environmental

Dimensions (H x W x D)	93mm x 27mm x 10mm
Weight	21g
Power Supply	USB
Power Consumption	< 2.5W
Operating Temperature	0º to 50º C
Storage temperature	-20º to 70º C
Operating Humidity	10% to 90% Non-condensing
Storage humidity	5% to 95% Non-condensing