TELTONIKA

Mini PCI-E WiMAX modem

User Manual
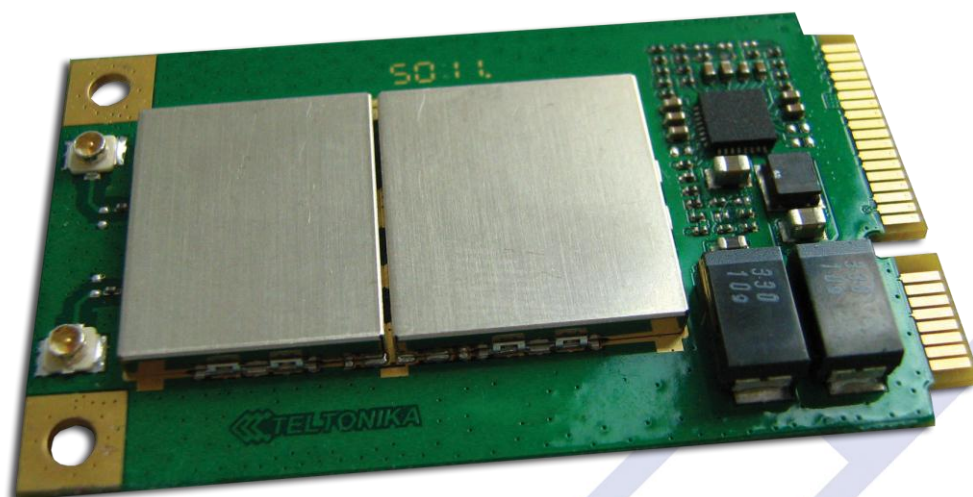
Version 1.0
Suitable for:
GM6225, GM6235

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 GM6225/GM6235 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.

To avoid mechanical damages to the device it is recommended to transport it packed in a damage-proof pack.

Protection against overcurrents, short circuiting and earth faults should be provided as a part of the building installation.

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 GM6225 and GM6235 PCI Express Mini Card WiMAX modems offer high speed data rate connectivity via WiMAX networks. Both modems are compliant with IEEE802.16e-2005 WiMAX Wave 2 standard thus they support mobile wireless connectivity and is ideally suited for laptops, netbooks or any device with a Mini PCI-E socket. GM6225/GM6235 incorporates a separate embedded CPU for running connection management applications therefore only a few drivers are needed on a host device. GM6225/GM6235 implements dual independent transmit chain with an advanced 2Tx closed-loop diversity (2T-CLD) algorithm which provides significantly increased link budget, improved cell coverage, and superior mobile performance. 2T-CLD delivers diversity gains well beyond single Tx solutions and ensures the best diversity for any channel environment.

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

- Mini PCI-E socket

- 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.

Mini PCI-E pinout

Top side		Bottom side	
1		2	3.3V
3		4	GND
5		6	
7		8	
9	GND	10	
11		12	
13		14	
15	GND	16	
Mechanical key			
17		18	GND
19	Reserved	20	Reserved
21	GND	22	PERST
23		24	3.3V
25		26	GND
27	GND	28	
29	GND	30	
31		32	
33		34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	3.3V	40	GND
41	3.3V	42	LED_ACTIVITY
43	GND	44	LED_NETWORK
45	Reserved	46	
47	Reserved	48	
49	Reserved	50	GND
51	Reserved	52	3.3V

WebUI OVERVIEW

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

Connecting to the WebUI

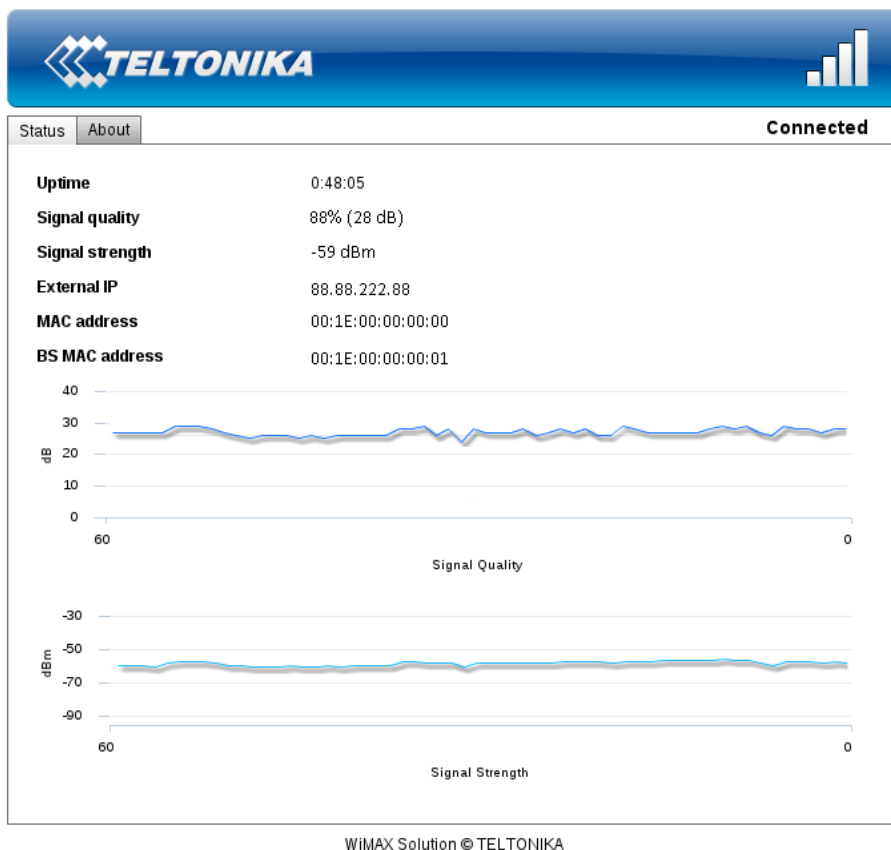To connect to the configuration web page do the following steps:

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 two main pages: **Status**, **About**.

Status

Status page

Status page consists of 6 properties that define the current state of the GM6225/GM6235 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.

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 (GM6225) or 3.3-3.6GHz (GM6235)
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	2x25 dBm @ 2.5-2.7GHz; 2x23dBm @ 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 Connector	2 x U.FL
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
LED Pins	Pins for Link Status and Link Activity leds
Software	Hostless Operation

Electrical, Mechanical & Environmental

Dimensions (H x W x D)	51mm x 30mm x 5mm
Weight	10g
Power Supply	3.3V ±5%
Power Consumption	< 3W
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