

## Complete Wireless Client Site Solution

Turnkey routing  
equipment package

Waterproof Enclosure  
and PoE for  
outdoor installations

Up to 12km PtMP

Up to 40km Ptp

Effective  
Backbone Link

High-speed Client to  
Base Unit connection



## (RB/KTO) RouterBOARD 220 2.4 GHz Wireless Outdoor Client Package

The RouterBOARD 220 2.4 GHz Wireless Outdoor Client Package offers you reliable network solution with perfect design, compact size and feature-rich operating system. The best RouterBOARD 200 series hardware and MikroTik RouterOS combination in this wireless system gives your company the chance to develop efficient network and creating individual Internet using policy! Use the embedded Motherboard with Outdoor case for outdoor installations and the Power over Ethernet for providing power supply and data transmission via one standard UTP Ethernet cable. With outdoor case and PoE you can mount a Router on high masts, towers etc. near to antenna and simply provide power up by Ethernet cable (up to 150+m long!). Usually there is lot of problems on providing electricity to high locations-with our RouterBOARD series products, this problem is solved.



### Package includes

- 802.11b 11 Mbps Wireless Prism 2.5 200 mW MiniPCI Card with pigtail cable (add \$45 to get 802.11b+g 52 Mbps Wireless Card)
- RouterBOARD 220 with Outdoor case
- 64 MB RAM
- 48v 30w Power Adapter (power plug included)
- 64 MB Compact Flash with installed MikroTik RouterOS software license with Wireless feature
- 19dBi Flat Panel Antenna
- Optional: 24 dBi Directional Grid Antenna (add \$45)
- 2.2 m low-loss cable (-22 dB/100 m)
- Power over Ethernet Injector (Power Plug included)
- 20 m Ethernet cable
- Optional: Lightning Arrestor (add \$99)

### Applications

The RouterBOARD 220 2.4 GHz Wireless Client Package provides high-speed Internet connection between the client site and the base unit and guarantees a powerful backbone link. The client router connects your network on client site to any Internet connection and provides the fast data transfer speed. Configurable as a HotSpot server, bandwidth manager, firewall router, etc, the RouterBOARD 220 acts as a secure Internet gateway on a local area network (LAN) and serves to protect the LAN against outside intruders. The RouterBOARD 220 can also be configured to filter internal users' access to the Internet. Also, use this RouterBOARD 220 package to set up high-speed backbone link over long distances.

## RouterBOARD 220

The RouterBOARD 220 offers a professional solution to the growing need for more capacity and an easy management of enterprises' networks. The router provides cost-effective, high-performance and secure service for connecting and setting up multiple WLAN architectures. It supports policy-based routing and sophisticated data rate management and you can use it as a stateful firewall to ensure security of your network. In addition, the RouterBOARD performs HotSpot and VPN router functions and supports many popular tunnel standards like PPTP, L2TP and IPsec security protocol.

### Specifications:

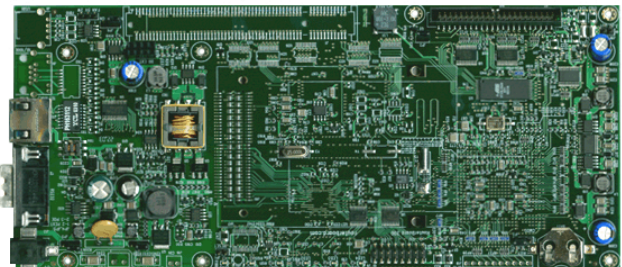
- 266 MHz NSC SC1100 system on a chip CPU (Pentium architecture)
- one SoDIMM (up to 256MBytes SDRAM)
- 2 Mbit Flash BIOS on board
- IDE CompactFLASH I/II socket (support for standard CF and IBM Microdrive)
- 44 pin boxhead IDE connector for Laptop Hard Drive (2.5 inch)
- one 10/100 Mb/s Ethernet using the NSC DP83816 (DP83815 driver compatible)
- one Serial port with DB9 connector
- Power LED, Activity LED, Error LED
- Mini-PCI type III
- PC mini-speaker
- LCD out header
- nine GPIO
- CPU temp, Motherboard temp, Power supply area temp, PCMCIA area temp
- Voltage monitor for CPU, 12v, 5v, and 3.3v supplies
- enclosure intrusion detector header
- 3.3v out power header
- 5v out power header
- board size 105mm x 215mm (4.13 inch by 8.46 inch)
- operating temperature in enclosed case -20°C to +70°C (-4°F to 158°F)
- two separate watchdog controllers
- Power over Ethernet 802.3af standard
- onboard power jack 20-56vDC in
- onboard power header 48v in (to connect telecom 48v power wires)

Available also **RouterBOARD 230** with two Ethernet ports, two PCMCIA slots, and one MiniPCI slot for multiple radios in one box (add \$25).

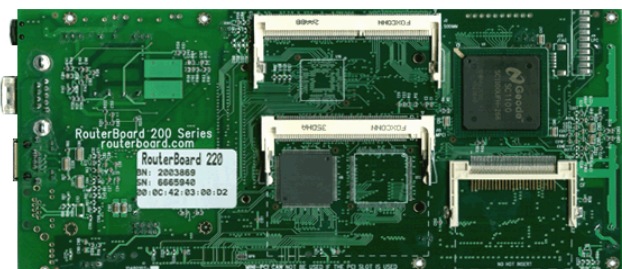
**Most compact router solution - with just one Ethernet and Wireless port, you don't need to pay for unnecessary interfaces!**

**Outdoor Case and 48v 30w power adapter +Power Plug included!**

**Front Side**

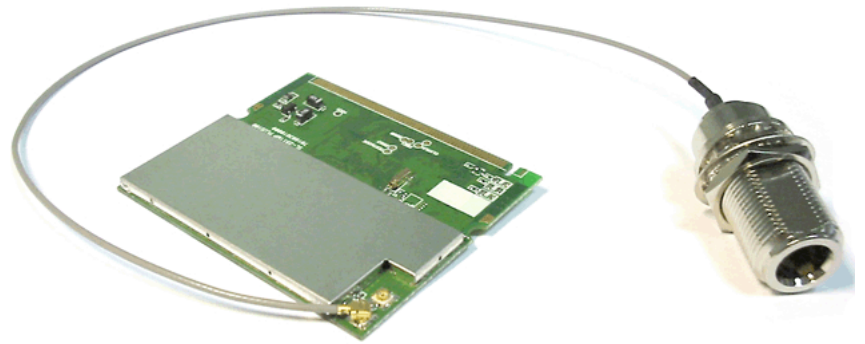


**Back Side**



## (2G/PMP) Low-Cost Prism 2.5 Wireless MiniPCI Card

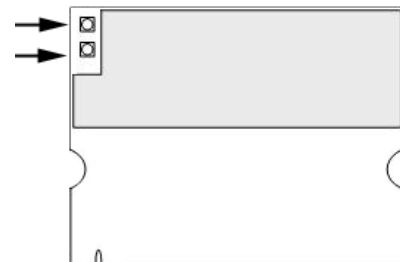
The Prism 2.5 200 mW MiniPCI Card provides long operating range and high-speed data transmission. Using the MikroTik RouterOS, the high-power Prism card is the perfect solution for wireless connections, that enables you to create wireless networks in any place, at any time. The Prism Wireless MiniPCI Card includes U.fl to N-Female bulkhead connector that allows the wireless card to be connected to external antenna or cable.



### Specifications

<b>Frequency:</b>	2.4 - 2.484 GHz
<b>Radio Type:</b>	Direct Sequence Spread Spectrum (DSSS)
<b>Modulation:</b>	CCK (11, 5.5Mbps), DQPSK (2Mbps), DBPSK (1Mbps)
<b>Operation Channels:</b>	11
<b>RF Output Power:</b>	23dBm (200 mW) (can be changed manually within MikroTik RouterOS)
<b>Antenna:</b>	Two antenna connectors (U.fl)
<b>Sensitivity @FER=0.08:</b>	89 dBm @ 11 MHz; 89.5 dBm @ 5.5 MHz; 90 dBm @ 2 MHz; 91 dBm @ 1 MHz
<b>Radio Data Rate:</b>	11, 5.5, 2 and 1 Mbps, Auto Fall-Back
<b>Operating Voltage:</b>	3.3V/5V
<b>Compatibility:</b>	Fully interoperable with IEEE802.11b compliant products
<b>LED:</b>	Indicator RF Link activity
<b>Network Architecture:</b>	Support ad-hoc, peer-to-peer networks and infrastructure communication to wired Ethernet networks via Access Point
<b>Drivers:</b>	Windows 98/ME/2000/XP, MikroTik RouterOS, Linux
<b>Roaming:</b>	IEEE802.11b compliant
<b>Security:</b>	64/128-bit WEP data encryption
<b>Temperature Range:</b>	-10 to 60 C - Operating -40 to 70 C - Storage
<b>Humidity:</b>	5% to 95% typical
<b>Physical:</b>	Form Factor Mini PCI Type IIIA
<b>Dimensions:</b>	50.9 x 59.6 x 4.8 mm
<b>Weight:</b>	15 g

Secondary Connector  
Primary Connector



The Secondary connector doesn't work if the primary connector has not been connected to an antenna.

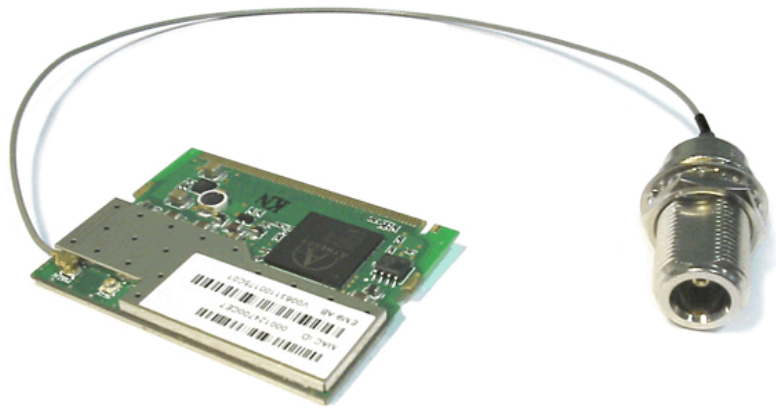
High-speed wireless connections

200 mW transmit power

Compatible with  
CISCO/Aironet,  
WaveLAN/Lucent/Orinoco

## Optional: 802.11b+g Standard Wireless MiniPCI Card (add \$45)

MikroTik presents a new wireless MiniPCI card for high-speed applications! The MiniPCI card enables users to build wide and high-speed networks with great amount of wireless clients. The new IEEE 802.11g standard increases the data rate of IEEE 802.11b networks from 11 Mbps to 54 Mbps. It provides the ability to serve up to four times more users than with 802.11b and to make use of many heavy-traffic possibilities, such as wireless multimedia video transmission and MPEG broadcasting.

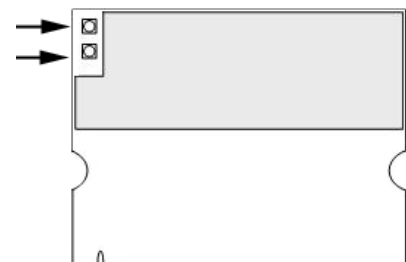


High-speed links (54 Mbps)  
and long distances  
on 2.4 GHz

### Specifications

<b>Frequencies:</b>	2.412 - 2.472 (5 MHz step, channels 1-13), 2484 (channel 14)
<b>Main Chipset:</b>	Atheros AR5212, AR5111, AR2111
<b>Modulation:</b>	802.11b/g: DSSS (DBPSK, DQPSK, CCK), OFDM for data rate >20 Mbps
<b>Host Interface:</b>	Mini-PCI form factor; Mini-PCI Version 1.0 type 3B
<b>Operation Voltage:</b>	3.3V +/- 5% DC
<b>Output Power:</b>	18 dBm
<b>Supported OS:</b>	MikroTik RouterOS
<b>Operation Mode:</b>	Infrastructure & Ad-hoc mode
<b>Transfer Data Rate:</b>	802.11b: 11, 5.5, 2, 1 Mbps, auto-fallback 802.11g: 11, 5.5, 2, 1 Mbps, auto-fallback, up to 54 Mbps
<b>Operation Temp.</b>	0° C ~ 70° C
<b>Storage Temp.</b>	-20° C ~ 80° C
<b>Humidity Range:</b>	10% ~ 90%
<b>Wi-Fi®:</b>	WECA Compliant
<b>EMC Certificate:</b>	FCC part 15 (USA) IC RSS-210 (Canada) Telec (Japan)
<b>Media Access Prot.</b>	CSMA/CA with ACK architecture 32-bit MAC
<b>Dimensions:</b>	59 x 44 mm

Secondary Connector →  
Primary Connector →



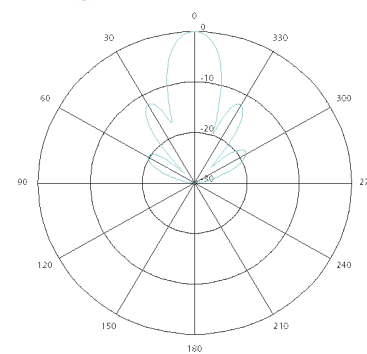
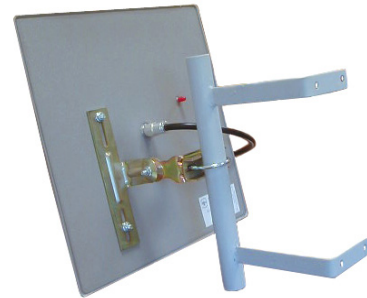
The Secondary connector doesn't work if the primary connector has not been connected to an antenna.

## (2G/ADF) 19 dBi Flat Panel Antenna

The 19 dBi Flat Panel Antenna provides wide territorial coverage with no signal waste. The antenna is protected from the weather impact and has direct ground lightning protection. The Flat Panel Antenna is easy installable and can be positioned almost everywhere due to its simple design.

### Specifications

<b>Frequency:</b>	2.4 GHz
<b>Gain:</b>	19 dBi
<b>Polarization:</b>	Vertical or horizontal
<b>VSWR:</b>	1.5:1
<b>Horizontal beamwidth:</b>	18°
<b>Vertical beamwidth:</b>	18°
<b>Cross polarization:</b>	>30 dB
<b>Antenna design:</b>	Sixteen patch
<b>Bandwidth:</b>	100 MHz
<b>Maximum power input:</b>	100 W
<b>Efficiency:</b>	70%
<b>Connector:</b>	N-Female
<b>Lightning protection:</b>	Direct ground
<b>Weight:</b>	1.8 kg
<b>Dimensions:</b>	394 x 394 x 28 mm
<b>Color:</b>	Grey

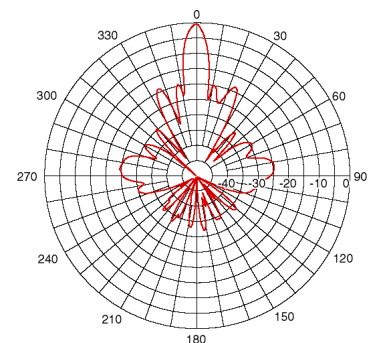


## Optional: (2G/ADG) 24 dBi Directional Grid Antenna (add \$45)

The 24 dBi Directional Antenna provides effective client site to base unit connection or point-to-point link. Due to its high gain and power, 24 dBi antenna is best solution for long distances in both - point-to-point and point-to-multipoint setups on 2.4 GHz. The antenna is made of a high-grade magnesium alloy material that is lightweight and does not rust. The die cast reflector grid, fabricated using an automated injection molding, ensures consistency in performance, and the grid's design provides field reliability and ease of handling and installation.

### Specifications

<b>Frequency:</b>	2.4 GHz
<b>Gain:</b>	24 ± 1 dBi
<b>Polarization Isolation:</b>	>26 dBi
<b>Side Lobe Suppression:</b>	>18 dBi
<b>-3 dB Beamwidth:</b>	7.5°
<b>-10 dB Beamwidth:</b>	11°
<b>Front/Back Ratio:</b>	>30 dBi
<b>Impedance:</b>	50 ohm
<b>VSWR:</b>	1.4:1
<b>Pigtail extension:</b>	0.61 m
<b>Output connector:</b>	N-Male
<b>Mounting:</b>	25–51 mm O.D. pipe
<b>Vertical Tilt:</b>	0–60°
<b>Operational Wind Load:</b>	120 km/h
<b>Survivable Wind Load:</b>	225 km/h
<b>Reflector Type:</b>	Parabolic Grid
<b>Reflector Material:</b>	Cast Magnesium Alloy
<b>Dimensions:</b>	600 x 997 x 380 mm
<b>Weight (with mount):</b>	2.7 kg



The cost-effective way to extend coverage

Easy to handle and install

High gain for point-to-point and multipoint

Durable to survive changing climate conditions

Flat Panel Antenna guarantees minimal signal waste

## Optional: (AC/LAR) Lightning Arrestor (add \$99)

To keep the routing system stable and safe, Lightning Arrestor is provided as an option to the standard RouterBOARD 220 2.4 GHz Client Package.



Lightning Arrestor protects your equipment and assures safe routing

Countless radio and telecommunication users have seen their precious electronic equipment destroyed by the lightning inducted surges, traveling on their coax feed lines. Most common targets for lightning strike are the devices installed on towers and roofs that usually are higher than most trees. Be wise and protect your valuable network devices from lightning damage by applying the extra-secure MikroTik Lightning Arrestor! The MikroTik Lightning Arrestor's ultra-fast gas discharge tube safely shunts up to 5000 amperes of peak impulse current harmlessly to an independent ground connection. This arrestor is designed to be installed between your outdoor antenna and the antenna cable. Installation should be performed indoors.

## Low-Loss Cable

The Low-Loss Cable provides improved operation and increased protection against damage in outdoor installations caused by water. The Low-Loss Cable is highly flexible, and offers excellent RF shielding.

### Specifications

<b>Minimum bend radius:</b>	25.4 mm
<b>Bending moment:</b>	0.68 Nm
<b>Weight:</b>	0.10 kg/m
<b>Tensile strength:</b>	72.6 kg
<b>Flat plate crush:</b>	0.71g/mm
<b>Inner conductor:</b>	Solid BCCAI 2.74 mm
<b>Dielectric:</b>	Foam polyethylene 7.24 mm
<b>Outer conductor:</b>	Aluminum tape 7.39 mm
<b>Overall braid:</b>	Tinned copper 8.13 mm
<b>Standard jacket:</b>	Polyethylene 10.29 mm
<b>Cutoff frequency:</b>	16.2 GHz
<b>Velocity of propagation:</b>	85%
<b>Voltage withstand:</b>	2.500 VDC
<b>Peak power:</b>	16kW
<b>Impedance:</b>	50 ohms
<b>Capacitance:</b>	78.4 pF/m
<b>Inductance:</b>	0.2 uH/m
<b>Shielding effectiveness:</b>	>90 dB
<b>Phase stability:</b>	<10 ppm/°C



Lowest loss related to cable diameter

High power handling capability

Extremely flexible

