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MCNU™

Mulitband Configurable Networking Unit

Smarter Vehicles, Safer Roads

TechnoCom's Multiband Configurable Networking Unit (MCNU) is a roadside ready wireless routing and application hosting platform designed to support Vehicle Infrastructure Integration (VII) and Intelligent Transportation Systems (ITS).

The MCNU can serve as a roadside unit (RSU), broadband wireless router or multi-band wireless access point. It can also serve as a mobile station integrated into the vehicle onboard system to allow for wireless vehicle communication.

5.9 GHz VII and ITS Communications Ready

The MCNU is the industry leading platform designed to enable communications in the 5.9 GHz ITS DSRC band. The MCNU integrated wireless radios support IEEE 802.11p wireless standards. The MCNU communication software supports new features of the DSRC/WAVE IEEE 1609 standard designed for vehicle security, safety and mobility applications.

Licensed 4.9 GHz, Unlicensed 2.4 GHz and 5. GHz

The MCNU dual radio multi-band system can be configured locally or remotely to operate in the licensed 4.9 GHz Public Safety or the unlicensed 5 GHz and 2.4 GHz municipal WiFi bands. The MCNU multi-radio, multi-frequency architecture can enhance existing local wireless infrastructure, or support its expansion, and allows for VII, Public Safety, Public Works and Public Access to be given separate and dedicated wireless broadband access.

Secure Routing

The MCNU has three high-speed Ethernet ports to enable flexible routing between multiple IP subnets in the roadside network infrastructure. Built-in IPv4 and IPv6 firewall and VPN capabilities enable secure routing to the backhaul networks.

Installation Ready

Installed in the vehicle or attached to roadside infrastructure such as light poles, power poles, freeway signs, traffic signal controllers, or buildings, the MCNU is easy to deploy and installation ready. The MCNU management software provides a comprehensive SNMP-based network management solution for remote control of network configuration and performance monitoring.

Integrated GPS Positioning

The MCNU provides fast and accurate location information with its built-in WAAS enabled GPS receiver that allows data to instantaneously pass through the vehicle to the infrastructure. It can assist in the deployment of general ITS, security surveillance, municipal WiFi, as well as, VII safety, mobility and e-commerce applications.

Service Hosting Platform

The MCNU interoperable platform can enable traditional communication services or host news application services for a variety of ITS and VII applications:

Safety-Related Applications

- Collision avoidance
- Road hazard warnings
- Electronic brake lights

Traffic Mobility Applications

- Probe data collection
- Navigation assistance
- Traffic signal priority

e-Commerce Applications

- Parking and other payment applications
- Toll collection
- Infotainment

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Technical Specifications

Host Computer

Processor: Pentium grade (1.5 GHz with Dynamic Freq. Scaling)
Memory: 512 MB RAM
Storage: 2 GB Flash
Operating System: Linux OS Kern Level 2.6

Built-in modules

16 channel WAAS-enabled GPS receiver
1609.2 Security Accelerating module (R1500S only)
Temperature and humidity sensors

Wireless Interfaces

Two (2) wireless radio interfaces:
IEEE 802.11a/b/g/j/p PHY

Frequency Band

2.400 - 2.484 GHz (ISM)
4.940 - 4.990 GHz (PS)
5.150 - 5.250 GHz (UNII)
5.250 - 5.350 GHz (UNII)
5.470 - 5.725 GHz (UNII)
5.725 - 5.825 GHz (UNII)
5.825 - 5.8250 GHz (ISM)
5.850 - 5.925 GHz (ITS-DSRC)

Data Rates

1, 2, 5.5, 11 Mbps
3, 4.5, 6, 9, 12, 18, 24, 27 Mbps
6, 9, 12, 18, 24, 36, 48, 54 Mbps

Supported networking standards

Support for IEEE P1609.2/3/4
Support for IPv6 and IPv4
Security enhancements - IEEE 802.11i
QoS enhancements - IEEE 802.11e
Mesh backhauling with 802.11a/b/g and 4.9 GHz

Software features and packages (selected)

Network security: IPsec, VPN, Firewall
Routing: IPv4 and IPv6
Remote Management: SNMP-based
Java: Java2SE 1.5 JVM and JRE
FTP and Web servers

Add-on software

WAVE Software Development Kit

WAVE SDK implements the following IEEE standards

P1609.3	Network services
P1609.2	Security (R1500S only)
P1609.4	Multi-channel operation
802.11p	5.9GHz based PHY/MAC

Positioning API

Positioning software API and driver to interface the built-in GPS receiver

Sensor API

Software driver and API to read built-in temperature and humidity sensors inside the unit enclosure.

Connections and interfaces

4 - N-type radio antenna connectors (2 radio interfaces per radio to support radio antenna diversity)
1 - SMA connector for internal GPS
3 - 10/100 Mbps Ethernets (RJ-45)
1 - Combo connector (barrel-type) combining:
RS232 Serial (2)
USB 2.0 (1)
3 - LED status indicators (2 are user programmable)

Electrical power

DC power 12 to 40 VDC.
AC power 120V AC (via external supply)
Power consumption 30W max

Physical and Environmental

Temperature
-35° C to +65° C @ 1.0 GHz
-35° C to +75° C @ 733 MHz
-35° C to +85° C @ 400 MHz
Enclosure NEMA4X compliant
Weight 8.4 lbs. / 3.8 kg (including pole-mount hardware)
Size 12" x 6.7" x 4.78"

MODEL INFORMATION

R1500 MCNU base platform
R1500S MCNU platform with security enhancements

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