

cnReach™ N500 450 MHz ETSI RED Radio

For outdoor critical infrastructure operations, cnReach transports process monitoring and control data from remote sensors or RTU/PLC's back to the operations center supporting real-time automated decision making and on-going analytics. Covering large geographic areas, hard to reach terrain and challenging spectrum environments, cnReach delivers reliable, secure connectivity to the petrochemical, electric utility, water/wastewater/stormwater and transportation industries. cnReach eases the migration to modern networks by combining legacy serial and analog/digital I/O with TCP/IP and Ethernet connectivity. Fully integrated into a 'single pane-of-glass' management platform (cnMaestro™), cnReach helps bridge the IT/OT sides of complex organizations. Combining cnReach's licensed and unlicensed narrow-band radios with Cambium Networks' broadband technologies, industrial organizations are delivering end-to-end Industrial Internet of Things solutions today.



cnReach N500 450 MHz ETSI RED Radio

- Licensed 450 MHz (406-430 and 450-470 MHz); ETSI RED Compliant w/ CE Mark (also available in an FCC model)
- Up to 8W transmit (39 dBm)
- Point-to-point, Point-to-multipoint and Back-to-back Relay configurations (dual radios)
- Secure communications with AES 128/256-bit encryption and password authentication
- Highly reliable communications with access point synchronization and adaptive modulation
- Single and dual radio configurations for advanced back-to-back relay topologies.
- Extensive I/O capabilities easing the transition from serial to all-IP networks with two serial ports, two Ethernet ports and optional analog/digital I/O built-in.
- Sophisticated network planning with LINKPlanner, a no-charge planning tool enabling network designers to predict both capacity and availability of networks crossing all of Cambium's technologies.
- Supported by cnMaestro software for monitoring the status of entire networks

| PRODUCT | PRODUCT DESCRIPTION | ETSI MODEL NUMBERS |
|---------|--|--------------------|
| | N500 450 MHz Single - ETSI RED | NB-N500430A-EU |
| | N500 450 MHz Single with IO - ETSI RED | NB-N500431A-EU |
| | N500 450 MHz Dual - ETSI RED | NB-N500440A-EU |
| | N500 450 MHz Dual with IO - ETSI RED | NB-N500441A-EU |

DEPLOYMENT TOPOLOGIES

- Point to Point (PTP)
- Point to Multipoint (PMP)
- Back-to-back Repeater (BTB) - Requires Dual Radio

RADIO PERFORMANCE

| | |
|--------------------|---|
| Frequency Range | 406-430 MHz and 450-470 MHz |
| Output Power | 50 mW to 8W (10 dBm to 39 dBm) |
| Step Size | 10 mW |
| Modulations | BPSK / MSK / QPSK / 8PSK / 16QAM / 32QAM |
| Capacity* | 9.6 kbps to 44 kbps RF data rate; up to 26 kbps UDP throughput in 12.5 kHz channels |
| Channel Bandwidths | 12.5 kHz (25 / 50 / 100 kHz available regulations permitting) |
| Range | Up to 110 km / 70 miles |

RECEIVE SENSITIVITY

12.5 KHZ CHANNEL - ETSI

| BER = 10E-4; (for 10E-6 reduce sensitivities by 2 dB) | Rx Sensitivity (dBm) | Capacity* (kbps) |
|---|----------------------|------------------|
| BPSK | -110 | 9 |
| MSK | -105 | 10 |
| QPSK | -106 | 17 |
| 8PSK | -101 | 26 |
| 16QAM | -98 | 35 |
| 32QAM | -95 | 44 |

DATA CAPABILITIES

| | |
|----------------------------|---|
| Packet handling | Layer 2 bridge |
| | Layer 3 static routes |
| | VLAN support |
| Error Correction | Up to 32-bit CRC, Retransmit on error |
| Data Encryption | 128/256-bit AES |
| I/O and Serial Data Access | Optional I/O allows seamless integration of Modbus RTU and Modbus TCP protocols |

MANAGEMENT

| |
|---|
| Web-based Interface via HTTP/HTTPS |
| LINKPlanner integration (capacity and availability planning) |
| Remote Management via SNMP |
| cnMaestro integration (roadmap) |
| Support for configuration files, remote software upgrades |
| Built-in diagnostic tools via web interface such as RF Ping and RF Throughput |

* Capacities are over-the-air signalling rates. Usable throughput varies based on payload size, uplink/downlink ratio and protocol. UDP traffic is typically 55-60% of the over-the-air signalling rate.

INTERFACES

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|-------------------------------|--|
| Ethernet Interfaces | 2 x RJ-45 |
| | 10/100BaseT, Full Duplex, rate auto negotiated (802.3 compliant) |
| Serial Interfaces | 2 x RJ-45 |
| | RS-232/422/485, up to 230.4 kbps |
| Analog/Digital I/O (optional) | 8 pins for analog input/output and digital input/output |
| RF / Antenna | TNC RF connectors (1 or 2 depending on single or dual-radio configuration) |

POWER

| | | | | | | |
|--|---|---------|------|-----------|---------|------|
| Input | 10-32VDC with reverse polarity protection | | | | | |
| Power Consumption (12VDC average) | 1W Output | | | 8W Output | | |
| | Transmit | Receive | Idle | Transmit | Receive | Idle |
| <i>Single Radio Configuration (mA)</i> | 611 | 266 | 194 | 1145 | 430 | 345 |
| <i>Dual Radio Configuration (mA)</i> | 1200 | 380 | 215 | 2600 | 1108 | 387 |

PHYSICAL

| | | |
|----------------|--|---------------------|
| Dimensions | 6.625" x 3.45" x 1.835" (168 mm x 876 mm x 466 mm) | |
| Weight | Single Radio Configuration | 1.54 lbs. (0.70 kg) |
| | Dual Radio Configuration | 1.61 lbs. (0.73 kg) |
| DIN Rail Mount | optional | |

ENVIRONMENTAL

| | |
|-----------------------|---|
| Operating Temperature | -40C to +70C |
| Humidity | 95% operating humidity @ 60C non-condensing |
| HAZLOC | UL-Approved to Class 1 / Div 2 |

REGULATORY

| | |
|------------|----------|
| UL | Approved |
| EMC/Safety | CE Mark |