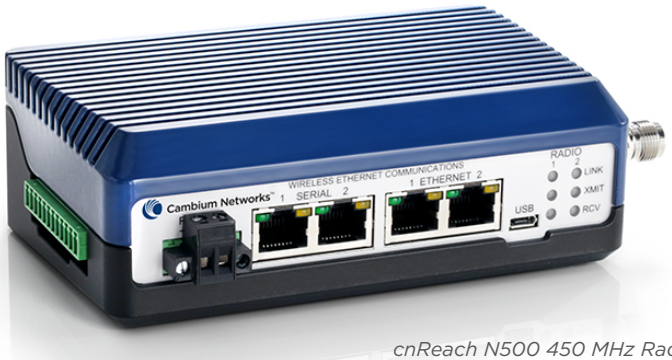
*cn*Reach™ N500 450 MHz Radio

For outdoor critical infrastructure operations, *cn*Reach transports process monitoring and control data from the remote sensor 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, *cn*Reach delivers reliable, secure connectivity to the petrochemical, electric utility, water/wastewater/stormwater and transportation industries. *cn*Reach eases the migration to modern networks by combining legacy serial and analog/digital I/O with TCP/IP and Ethernet connectivity.



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Fully integrated into a 'single pane-of-glass' management platform (*cn*Maestro™) *cn*Reach helps bridge the IT/OT sides of complex organizations. Combining *cn*Reach'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.

- Licensed 450 MHz (406-430 and 450-470 MHz)
- Up to 8W transmit (39 dBm) in FCC and Up to 2W transmit (33 dBm) in ETSI
- Point-to-point, Point-to-multipoint and Relay configurations in same hardware
- 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 multiple serial ports, Ethernet ports and 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 carrying traffic across sensors

PRODUCT	PRODUCT DESCRIPTION	FCC MODEL NUMBERS	ETSI MODEL NUMBERS
	N500 450 MHz Single	NB-N500410A-US	NB-N500410A-EU
	N500 450 MHz Single with IO	NB-N500411A-US	NB-N500411A-EU
	N500 450 MHz Dual	NB-N500420A-US	NB-N500420A-EU
	N500 450 MHz Dual with IO	NB-N500421A-US	NB-N500421A-EU
	N500 IO Expander	NB-N500001A-US	NB-N500001A-EU
DEPLOYMENT TOPOLOGIES			
	Point to Point (PTP)		
	Point to Multipoint (PMP)		
	Repeater (REP) - Single or Dual Radio		
	Stand-alone IO Expander		

Specifications

RADIO PERFORMANCE

Frequency Range	406.1-430 MHz and 450-470 MHz
Output Power	FCC: 406.1 - 430 MHz (up to 2 W / 33 dBm); 450-470 MHz (up to 8 W / 39 dBm); ETSI: 50 mW to 2W (33 dBm)
Step Size	10 mW
Modulations	MSK / QPSK / 8PSK / 16QAM / 32QAM
Capacity*	9.6 kbps to 56.7 kbps RF data rate; up to 34 kbps UDP throughput in 12.5 kHz channels
Channel Bandwidths	12.5 kHz (25 / 50 / 100 kHz available regulations permitting)
Range	Up to 70 miles

RECEIVE SENSITIVITY

	12.5 kHZ CHANNEL - FCC		12.5 kHZ CHANNEL - ETSI		25 kHZ CHANNEL	
	Rx Sensitivity (dBm)	Capacity (kbps)	Rx Sensitivity (dBm)	Capacity (kbps)	Rx Sensitivity (dBm)	Capacity (kbps)
MSK	-114	5.8	-118	5.8	-113	12
QPSK	-103	14	-110	14	-112	28
8PSK	-97	20	-105	20	-107	40
16QAM	-94	27	-101	27	-104	54
32QAM	-90	34	-98	34	-92	70

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
	*cn*Maestro integration (roadmap)
	Support for configuration files, remote software upgrades
	Built-in diagnostic tools via web interface such as RF Ping and RF Throughput

* Capacitie values are provided in usable UDP throughput which are typically 60% of the available over-the-air rate.

** At 8W output transmit duty cycles are reduced depending on operating conditions.

Specifications

INTERFACES

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)	3W Output			5W** Output		
	Transmit	Receive	Idle	Transmit	Receive	Idle
Single Radio Configuration (mA)	593	430	292	750	544	369
Dual Radio Configuration (mA)	620	467	311	784	591	393
IO Expander (mA)	293 mA					

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

REGULATORY

UL	Approved	
FCC ID	Z8H89FT0033 (406.1 - 430 / 2W)	Z8H89FT0034 (450 - 470 / 8W)
IC ID	109W-0033 (406.1 - 430 / 2W)	109W-0034 (450 - 470 / 8W)