*cn*Reach™ N500 700 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 700 MHz (cnReach is also available in 900 MHz licensed and unlicensed in a single radio)
- Up to 10W transmit (37 dBm) allows deployments up to FCC EIRP limits of 40 dBm in all bandwidths and modulations.
- 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 applications.
- 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	MODEL NUMBERS
	N500 700 MHz Single	NB-N500710A-US
	N500 700 MHz Single with IO	NB-N500711A-US
	N500 700 MHz Dual	NB-N500720A-US
	N500 700 MHz Dual with IO	NB-N500721A-US
	N500 IO Expander	NB-N500001A-US
DEPLOYMENT TOPOLOGIES		
	Point to Point (PTP)	
	Point to Multipoint (PMP)	
	Back-to-Back Repeater (REP) - Dual Radio	
	Stand-alone IO Expander	

** At 10W output transmit duty cycles are reduced depending on operating conditions.

Specifications

RADIO PERFORMANCE	
Frequency Range	757-758 MHz and 787-788 MHz
Output Power	50 mW to 10W (10 dBm to 40 dBm); FCC limits maximum EIRP to 44 dBm in 700 MHz
Step Size	10 mW
Modulations	MSK / QPSK / 8PSK / 16QAM / 32QAM / 64QAM
Capacity*	10 kbps to 1 Mbps; up to 550 kbps UDP throughput
Channel Bandwidths	12.5 / 25 / 50 / 100 / 200 / 250 kHz
Range	Up to 70 miles

RECEIVE SENSITIVITY	12.5 kHZ CHANNEL		25 kHZ CHANNEL		50 kHZ CHANNEL	
	Rx Sensitivity (dBm)	Capacity* (kbps)	Rx Sensitivity (dBm)	Capacity* (kbps)	Rx Sensitivity (dBm)	Capacity* (kbps)
MSK	-113	10	-113	19	-110	39
QPSK	-109	23	-107	36	-108	71
8PSK	-104	34	-102	52	-99	101
16QAM	-100	45	-98	70	-93	137
32QAM	-94	57	-93	87	-93	175
64QAM			-93	105		
	100 kHZ CHANNEL		200 kHZ CHANNEL		250 kHZ	
	Rx Sensitivity (dBm)	Capacity* (kbps)	Rx Sensitivity (dBm)	Capacity* (kbps)	Rx Sensitivity (dBm)	Capacity* (kbps)
MSK	-108	76	-108	153	-104	194
QPSK	-103	160	-102	320	-101	403
8PSK	-97	240	-94	480	-95	605
16QAM	-91	320	-91	640	-91	806
32QAM	-87	400	-87	800	-87	1008

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

* 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.
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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 +70C
Humidity	95% operating humidity @ 40C non-condensing
HAZLOC	UL-Approved to Class 1 / Div 2

REGULATORY

UL	Approved
FCC ID	Z8H89ft0026

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