

NCW-1200 NETWORK CENTRIC WAVEFORM (NCW) 1.2 METER FLYAWAY TERMINAL



The NCW-1200 is a 1.2 meter Ku-band transportable SATCOM At-The-Halt (ATH) transit-case terminal that provides NCW tactical users with the specialized Internet Protocol (IP) communication capabilities to keep remote users connected where infrastructure is lacking (e.g. natural disasters, border surveillance and tactical scenarios).

The NCW-1200 is comprised of three major transportable components, a rack-mount Baseband Power Distribution (BPD) transit-case, a Terminal Support Equipment (TSE) transit-case, and an Antenna Pedestal Positioner (APP) transit-case. Together, these transport components comprise a fully self-contained NCW network asset that requires only external prime power (shore/vehicle AC or vehicle DC) and a laptop PC for deployment.

The NCW-1200 is designed to operate at full capability over all standard and extended Ku-band commercial satellites. By employing the optional Ka-band kit, which is also stored in the TSE transit-case, the terminal may be operated over the Wideband Global SATCOM (WGS) Satellite. By employing this multi-band capability on a common pedestal, the NCW-1200 terminal offers greater world-wide deployment flexibility for both military and commercial applications.

The standard terminal provides plug-and-play NCW network operation with auto-acquisition in the Ku-band. The 1.2 meter antenna also offers an affordable and flexible VSAT capability that provides enhanced performance when throughput and portability must be traded to optimize mission requirements.

OPERATING FEATURES

• NCW Networking

- Ethernet switch architecture at Satellite Link-Layer (SLL)
- Real-time voice & video supported
- Native mesh topology with star & hybrid support
- DAMA resource scheduling
- MF-TDMA resource access
- Fully automatic link-management
- Adaptive DSSS emissions control (FCC/ITU compliant)
- Rapid network acquisition
- Rapid re-acquisition after fadeout
- Heterogeneous terminal operations in the same network
- Hub-assisted (i.e. double-hop) forwarding for disadvantaged terminals
- Differentiated services (Diffserv) QoS
- FIPS 140-2 Level-2 (AES-256) cover

• Deployment Flexibility

- Easy transportability (three transit cases)
- Estimated 30-minute setup time
- Estimated 15-minute stowage time
- One-button satellite acquisition
- Operation in Ku-bands (military Ka-band optional)
- Interchangeable antenna feeds (Ka-band stub adapter standard)
- Ethernet 802.3 data/M&C ports for NCW operation
- Standard serial data/M&C interface ports for FDMA operation

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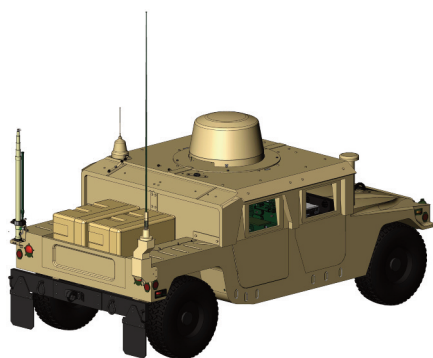
At the IP networking level, the BPD rack-mount transit-case can support a suite of baseband networking devices, including the L-3 Linkabit MPM-1000 modem, which can be configured to accommodate both military and commercial IP networking requirements. These devices can include routers, COMSEC units, TCP accelerators, or other baseband



Deployed 1.2 m Antenna



MPM-1000 Modem



NCW-1200 HMMWV Stowage

SPECIFICATIONS

ANTENNA/RF	
Reflector	1.2 meter circular, 6-segment carbon fiber: other reflector sizes optional
Transmit frequency	Ku: 13.75 – 14.50 GHz Ka: 30.0 – 31.0 GHz (optional)
Receive frequency	Ku: 10.95 – 12.15 GHz (LNB 1) 11.70 – 12.20 GHz (LNB 2) 12.25 – 12.75 GHz (LNB 3) Ka: 20.2 – 21.2 GHz (optional)
Polarization	Ku: Linear orthogonal Tx and Rx (reversible) Ka: LHCP/RHCP Tx and Rx (reversible, optional)
BUC/SSPA	Ku: 40 Watts @ P1dB (25 Watts available) Ka: 12 Watts @ saturation (optional)
EIRP	Ku: 58 dBW @ P1dB, typical midband Ka: 60 dBW @ saturation midband (optional)
G/T	Ku: 20 dB/K @ 11.9 GHz, clear-sky 30° elevation Ka: 23 dB/K @ 20.7 GHz, clear-sky 20° elevation (optional)
Cross-polarization	30 dB within 1 dB of beamwidth
Off-axis sidelobes	Ku: meets FCC, ITU, Intelsat, and Eutelsat requirements Ka: meets MIL-STD-188-164A requirements
Position control	One-button auto-acquisition, peaking, and polar-adjust with integrated GPS/compass/level-sensor
Travel limits	Azimuth: +/- 90 degrees Elevation: 7 - 85 degrees Polarization: +91 degrees Motorized EI over Az positioner with polar rotation feed

devices unique to some military networks. In addition, the black BPD power-distribution function allows operation in a classified enclave that provides red primary power, such as in a tactical ISR sensor vehicle.

NOTE: The BPD transit-case is common to the L-3 Linkabit TRM-1000 SATCOM On-The-Move (SOTM) terminal.

FDMA OPERATING MODE

MIL-STD-188-165A	Type I
Modulation and data rate	BPSK: 64 kbps to 6000 kbps QPSK/OQPSK: 64 kbps to 8472 kbps
FEC and scrambling	Convolutional coding, RS coding and data scrambling (IAW IESS-308, 309, 310, and OM-73)
Input data	MIL-STD-188-114/RS-422/RS-423 interface port
Monitor and control	RS-485 interface port L-3 Linkabit HMI software (laptop optional)

NCW OPERATING MODE

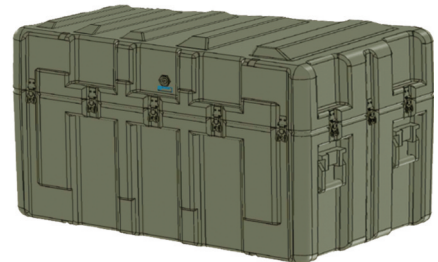
Data rate (kbps)	32, 48, 64, 96, 128, 192, 256, 384, 512, 768, 1024, 1536, 2048, and 3072 *
Modulation	BPSK: Rate $\frac{1}{2}$ coding OQPSK: Rate $\frac{1}{2}$ and $\frac{3}{4}$ coding 8 PSK: Rate $\frac{3}{4}$ coding (future upgrade)
FEC	Serial Concatenated Convolutional Coder (SCCC, turbo coder)
DSSS spread factors	1, 2, 4, 6, 8, 12, and 16 (for FCC/ITU mobile communications)
Simultaneous carriers	MF-TDMA: 2-transmit, 4-receive
Encryption	FIPS 140-2 certified AES-256 (CBC) TRANSEC
Input data	Ethernet 802.3 10/100/1000 Base-T interface port (RJ-45)
Monitor and control	SNMPv3 protocol Ethernet 802.3 10/100 Base-T interface port (RJ-45) L-3 Linkabit HMI software (laptop optional)
Network bandwidth	Up to 500 MHz **
Network capabilities	Up to 255 addressable nodes Full mesh, star, and hybrid topologies Burst-to-burst link management w/ LPC and ACM

* Maximum data rate depends on link and satellite characteristics

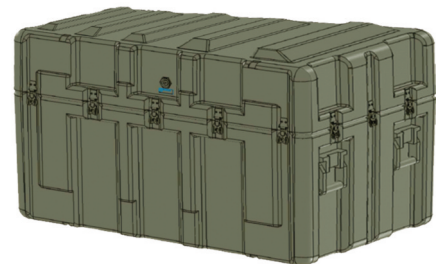
** Available with Ruggedized MPM-1000



Baseband Power Distribution
Transit Case



Antenna Pedestal Positioner
Transit Case



Terminal Support Equipment
Transit Case

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PRIME POWER	
Shore input	90 – 265 VAC, single-phase, 47 – 400 Hz
Vehicle input	21 – 36 VDC
ENVIRONMENTAL	
Temperature	Antenna/RF: -20° C to +52° C (operating) BPD indoor unit: -0° C to +50° C (operating) All equipment: -34° C to +71° C (non-operating)
Humidity	Baseband equipment: 5 to 85% non-condensing Outdoor equipment: 0 – 100% condensing
Wind	30 mph operating w/ gusts to 45 mph (stabilizers deployed) 60 mph in stowed position
TRANSPORT CASES	
Baseband power distribution	5RU rack-mount transit-case: 25H x 28W x 14D inches @ 151 lbs Contains: MPM-1000 modem, power inverter, power filters, and router
Terminal support equipment	20H x 36W x 24D inches @ 179 lbs (standard) NOTE: <150 lbs with optional Ka-band equipment Contains: Reflector, remote ACU and power supply, stabilizers, BUC/SSPA and power supply, LNBs, antenna feed boom, and assorted W/G and cables
Antenna pedestal positioner	20H x 36W x 24D inches @ 120 lbs Contains: Antenna positioner and pedestal

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