

NETNode IP Mesh Radio (Plain)

COFDM – Video, Audio Telemetry and IP Products

COBHAM

October 2011 Data Sheet

The most important thing we build is trust



Cobham NETNode IP mesh radios are the latest innovations in the expanding range of Cobham Tactical Communications and Surveillance solutions improving surveillance connectivity.

NETNode IP radios can be combined in a fluid self forming, self healing mesh containing up to twelve radios. The NETNode radios within the mesh exchange data on a single frequency, simplifying frequency management. The entire mesh occupies just 2.5MHz of bandwidth (3.0, 3.5 and 5.0MHz also available). The NETNode radios employ the unique Cobham COFDM modulation scheme and therefore offer excellent RF penetration and performance in the presence of multipath.

The NETNode mesh radios can provide up to 5.0Mb/s of IP data (data rate depends on mode, number of nodes and range between nodes). This available IP data rate can be used to exchange IP data traffic between nodes. The highly flexible mesh topology means that data can be exchanged between nodes in a point-to-point or multi-point fashion, range can be extended by using nodes as repeaters. The self-forming, self-healing mesh architecture makes the NETNode product ideal for use in mobile surveillance applications, command and control,

or advanced robotics.

The NETNode can be connected to third party composite cameras using the NETAV option. Two PTZ control channels are available to enable control of third party PTZ cameras. Alternatively, there are two dedicated PTZ camera solutions available for direct connection to the NETNode: CAMPTZ* is a high performance, high quality day/night PTZ camera for long range and overt surveillance; CAMuPT is a miniature pan and tilt camera suitable for up-close surveillance. The CAMuPT and CAMPTZ* options require the NETAV option to be fitted. Third party IP cameras can also be directly connected to the NETNode.

Security of the entire mesh network can be ensured by the use of the optional AES128 or AES256 encryption. Control of the deployed mesh is achieved using the inbuilt web browser or comprehensive Mission Commander PC application. This software suite, based around a mapping display, is used to configure and monitor the mesh, and to control its nodes and cameras. Video can be viewed on the PC device using the Mission Commander software or, if IP Hardware Decoder devices are employed, video can be viewed on conventional monitors and recorded on conventional recorders. Mission Commander is now officially released with Milestone compatibility for data storage and retrieval.

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Specification:

Interfaces

RF Interfaces (Antenna 1 and 2)	SMA
Power	Lemo
Ethernet 1	RJ45
Ethernet 2	RJ45
Control and misc I/O	DType
Camera (A/V)	Lemo

Typical range

NETNode-P-217250 (1W)	Non Line of Sight Light urban 500-700m Line of Sight 40km+
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RF Interfaces

Antenna 1	Switched transmit & receive antenna
Antenna 2	Receive only antenna
RF and modulation	
Output frequency	340 to 470MHz, 1150 to 1400MHz, 1650 to 2380MHz*, 2170 to 2500MHz, 4400 to 5000MHz, or 5500 to 6000MHz*
Tuning step size	125kHz step
Output power	+30 to 0dBm in 0.25dB steps C-band 1W +/- 3dB
Bandwidth	2.5, 3.0, 3.5, 5.0MHz
Mesh capacity	Up to 5.0 Mb/s
Modulation	COFDM 360 carrier modulation
Carrier Modulation	BPSK, QPSK or 16QAM (adaptive)
FEC rate	FEC1/2
Receive diversity	Maximum Ratio Combining
Receive sensitivity	-98dBm for most robust mode

IP interface

Primary and secondary ethernet electrical	100BaseT Ethernet
IP address allocation	DHCP dynamic IP addressing
Video and audio streaming format	Multicast VLC compatible RTSP Support

A/V input option

Video input	Composite or SDI (selectable)
Video format	525 or 625 (PAL or NTSC)
Video encoding	MPEG4
Quality	User selectable quality level
Video bit-rate	2.4Mb/s to 50kb/s (variable)
Resolution	704, 576, 480 or 352
Frame rate	Self selecting 30 to 2F/s
Audio input	Line level or microphone level
Audio sample frequency	48KHz
Audio encoding	MPEG audio layer 1
Audio bit-rate	384 to 64kb/s

Store and forward options*

Storage format	SD card interface (Secure Digital card)
Record options	Continuous or triggered
Files download	From web browser interface (Milestone)
Video and audio clip size	30 seconds

Open Audio comms channel (shared voice channel)

Multi-user audio comms channel	Interface microphone level/headphone o/p
Compression	G726 32kbit audio

Encryption

Type	AES128 or AES256 (both optional)
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GPS

Dedicated GPS interface	RS232/RS485
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Data interface

RS232/RS485 data input (shared with user camera control)	1K2 to 115K2 baud switchable With UDP and TCP routing protocol
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PTZ camera interface (with AVI fitted)

User camera type	PAL or NTSC
User camera control	From Mesh Commander PC application using VISCA, PELCO-D or PELCO-P From any user supplied desk controller Requires RS232 interface
NETNode bespoke cameras	CAMPtz long range Pan Tilt Zoom CAMuPT short range Pan Tilt

Triggers

Trigger source	Third party equipment remote trigger (e.g. PIR, Nugget. etc) User pre-set time trigger
Trigger action	Video motion detection (NETAV option)* Audio level (NETAV)* Start to transmit (silence mode) Activate video stream (NETAV option) Activate audio stream (NETAV option) Move camera to preset position
	Activate local store feature

Control

Local control	LEDs power and mesh status
Remote control	Mission Commander PC application Full control of all parameters in a map based application Web-browser control

Physical

Sealing	No IP rating - splash proof
Dimensions	H 155mm, W 153mm, D 45mm
Mounting options base unit	Through hole screws
Weight	1.24kg (including heat sink)

Power

DC input	12-14V
Power consumed 1W	14W

Environment

Temperature range	-10 to 50 deg C
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Connectors

Power:

Female Lemo 4 pin 0B	Pin 1	+12VDC
	Pin 2	+12VDC
	Pin 3	GND
	Pin 4	GND

Ethernet 1:
RJ45 connector

Ethernet OP
Ethernet ON
Ethernet IP
Ethernet IN

Ethernet 2:
RJ45 connector

Secondary Ethernet OP
Secondary Ethernet ON
Secondary Ethernet IP
Secondary Ethernet IN

DB-15 (male)

Pin 1	RS485 TX+
Pin 2	RS485 TX-
Pin 3	GND
Pin 4	RS485 RX+
Pin 5	RS485 RX-
Pin 6	GND
Pin 7	Engineering use only
Pin 8	Engineering use only
Pin 9	GND
Pin 10	RS232 Control TX
Pin 11	RS232 Control RX
Pin 12	GND
Pin 13	Unused
Pin 14	Unused
Pin 15	GND

PLUS the following two optional connectors for use when an encoder card is fitted

Female Lemo 5 pin 0B	Pin 1	Audio right channel
	Pin 2	Audio left channel
	Pin 3	Ground for audio
	Pin 4	Composite video
	Pin 5	Ground for composite video

Female Lemo 3 pin 0B
(for RS232 input when
encoder is fitted)

Pin 1	TX
Pin 2	RX
Pin 3	GND

Product Code:

NETNode-P-034047 IP Mesh Node 1W 340-470MHz



(excl Ants, incl PSU12/1)	
NETNode-P-115140	IP Mesh Node 1W 1.15-1.40GHz
(excl Ants, incl PSU12/1)	
NETNode-P-165238	IP Mesh Node 1W 1.65-2.38GHz
(excl Ants, incl PSU12/1)	
NETNode-P-217250	IP Mesh Node 1W 2.17-2.50GHz
(excl Ants, incl PSU12/1)	
NETNode-P-440500	IP Mesh Node 1W 4.40-5.00GHz
(excl Ants, incl PSU12/1)	
NETNode-P-550600	IP Mesh Node 1W 5.50-6.00GHz
(excl Ants, incl PSU12/1)	

Product Code Includes:

CA0588	Headset adaptor cable
CA0023	12V Power Block
CA0002	12V power lead
CA0474	15Way HD D control lead
CA0001	3 Pin Lemo to 9 way D RS232 lead

Accessory Options:

NETNode-AVI-UP2P	Composite Video and Audio input for COFDM IP Mesh Node Plain
CAMPtz*	Pan, Tilt and Zoom camera for NETNode
CAMuPT	Micro Pan and Tilt camera for NETNode
NETIPHW	IP in with either 1, 2 or 4 Video and 2, 4 or 8 Audio Out Decoder
Mission Commander	Control Interface Bronze/Silver/Gold

Licensing Options:

AES128NN	Adds 128 bit AES Encryption
AES256NN	Adds 256 bit AES Encryption

Note: AES may be subject to export control

* Starred items in italics will be supported in future releases

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