

# NETNode IP Mesh Radio Phase 3 (Plain)

COFDM – Video, Audio Telemetry and IP Products

**COBHAM**

September 2012 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 that feature Cobham technology at their core.

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, 5.0 and 6.0MHz 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 over 5.0 (6.0)Mb/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 cameras using the NETAV option. Alternatively, there are dedicated PTZ camera solutions available for direct connection to the NETNode e.g. CAMPTZ\* is a high performance, high quality day/night PTZ camera for long range and overt surveillance. The CAMPTZ\* option requires the NETAV option to be fitted.

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-3P-217250 (1W)	Non Line of Sight Light urban 500-700m
NETNode2W-3P-217250 (2W)	Non Line of Sight Light urban 800-1400m

### RF Interfaces

Antenna 1	Switched transmit receive antenna
Antenna 2	Receive only antenna
RF and modulation	
Output frequency	200 to 300MHz*, 300 to 450MHz*, 450 to 675MHz*, 675 to 1000MHz*, 1.0 to 1.5GHz* 1.65 to 2.38GHz, 2.0 to 2.5GHz, 4.4-5.0GHz
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, 5.0, 6.0MHz
Mesh capacity	Up to 6.0 Mb/s (Phase 3 mesh Only)
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
Data interface	
RS232/RS485 data input (shared with user camera control)	1K2 to 115K2 baud switchable With UDP and TCP routing protocol

### PTZ camera interface (with AVI fitted)

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

### 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	LED power and mesh status (Bi colour)
Remote control	Mission Commander PC application Full control of all parameters in a map based application Web Browser

### Physical

Sealing	Designed to meet IP 54 - splash proof
Dimensions	H 130mm, W 126mm, D 60mm (Inc Heatsink)
Mounting options base unit	Through hole screws on flange base.
Weight	960g (including heat sink) (1W)

### Power

DC input	12-14V
Power consumed 1W	10W approx
2W	18W approx
Output power 1W	+30 to 0dBm in 0.25dB steps (+/- 1dB)

### Environment

Temperature range	-10 to 50 deg C
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## Connectors

<b>Power:</b>		
Female Lemo 4 pin 0B	Pin 1	+12VDC
	Pin 2	+12VDC
	Pin 3	GND
	Pin 4	GND
<b>Ethernet 1:</b>		
RJ45 connector	Ethernet OP	
	Ethernet ON	
	Ethernet IP	
	Ethernet IN	
<b>Ethernet 2:</b>		
RJ45 connector	Secondary Ethernet OP	
	Secondary Ethernet ON	
	Secondary Ethernet IP	
	Secondary Ethernet IN	
<b>DB-15 (male)</b>		
	Pin 1	RS485 TX+
	Pin 2	RS485 TX-
	Pin 3	GND
	Pin 4	RS485 RX+
	Pin 5	RS485 RX-
	Pin 6	+12V
	Pin 7	Engineering use RS232TX1
	Pin 8	Engineering use RS232RX1
	Pin 9	GNS
	Pin 10	RS232 Control TX2
	Pin 11	RS232 Control RX2
	Pin 12	GND
	Pin 13	N/C
	Pin 14	N/C
	Pin 15	GND
<b>Female Lemo 3 pin (Data)</b>		
	Pin 1	GND
	Pin 2	RX
	Pin 3	TX

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

<b>Female Lemo 5 pin 0B (AV Cable)</b>		
	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
<b>Female Lemo 3 pin 0B (for RS232 input when encoder is fitted)</b>		
	Pin 1	TX
	Pin 2	RX
	Pin 3	GND



## Product Codes:

NETNode-3P-034047	IP Mesh Node Phase 3 Plain 1W 340-470MHz (excl Ants, incl PSU)
NETNode-3P-115140	IP Mesh Node Phase 3 Plain 1W 1.15-1.40GHz (excl Ants, incl PSU)
NETNode-3P-165238	IP Mesh Node Phase 3 Plain 1W 1.65-2.38GHz (excl Ants, incl PSU)
NETNode-3P-217250	IP Mesh Node Phase 3 Plain 1W 2.17-2.5GHz (excl Ants, incl PSU)
NETNode-3P-440500	IP Mesh Node Phase 3 Plain 1W 4.4-5.0GHz (excl Ants, incl PSU)
NETNode2W-3P-034047*	IP Mesh Node 2W Phase 3 Plain 340-470MHz (excl Ants, incl PSU)
NETNode2W-3P-165238	IP Mesh Node 2W Phase 3 Plain 1.65-2.38GHz (excl Ants, incl PSU)
NETNode2W-3P-217250	IP Mesh Node 2W Phase 3 Plain 2.17-2.5GHz (excl Ants, incl PSU)
NETNode2W-3P-440500	IP Mesh Node 2W Phase 3 Plain 4.4-5.0GHz (excl Ants, incl PSU)

## Product Codes Include

PSU12/1	Power supply for NETNode Plain
CA0588	Microphone/Headphone Cable
CA0474	External Control Cable Assembly

## Accessory Options

CAMP TZ*	Pan, Tilt and Zoom camera for NETNode
NETIPHW Audio	IP in with either 1, 2 or 4 Video and 2, 4 or 8 Out Decoder
MISCDR (Mission Commander)	Control Interface (Levels - Bronze/Silver/Gold)
NETNode-AVI-UP3P	Composite Video and Audio input for COFDM IP Mesh Node Plain
AP006819	S band 3G Cavity Filter
NETBAT-P	Battery Pack 14.8V (5.2Ah) 4-pin Lemo
NETBATC-P	Battery Charger for NETBAT-P

## Licensing Options

AES128NN	128bit AES Encryption
AES256NN	256bit AES Encryption

\* Starred items in italics will be supported in future releases

Products are available to security users only, in licensed frequency bands. These products are not approved for use by unlicensed users. Commercial products are available to unlicensed users - contact Cobham Tactical Communications and Surveillance direct for details

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