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 eight 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 bit-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 applications, 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 wider Cobham Surveillance systems, and to control its nodes and cameras. Video can be viewed on the PC device using the Mission Commander software and recorded using Milestone Compatible recorders.
### Specification:

#### Interfaces

**RF Interfaces**
- (Antenna 1 and 2): N-Type
- Power and Ethernet: Amphenol 38999 Series 3
- Control and misc I/O: Amphenol 38999 Series 3

**Typical range**
- NETNode-R-217250 (1W): Non Line of Sight Light urban 500-700m
- Line of Sight 40km+

**RF Interfaces**
- Antenna 1: Switched transmit receive antenna
- Antenna 2: Receive only antenna

**RF and modulation**
- Output frequency:
  - 220 to 240MHz, 340 to 470MHz, 1150 to 1400MHz, 1650 to 2380MHz*, 2170 to 2500MHz, 4400 to 5000MHz, or 5500 to 5950MHz*
- Tuning step size: 125kHz step
- Output power: +30 to 0dBm in 0.25dB steps (+/-1dB)
- Bandwidth: 2.5, 3.0, 3.5, 5.0MHz
- Mesh capacity: Up to 5.0Mb
- Modulation: COFDM 360 carrier modulation
- Carrier Modulation: QPSK/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/Static IP
- 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
- Video bit-rate: 2.4Mb/s to 50kB/s (variable)
- Resolution: 704, 576, 480, 352 or SIF (1/4 Resolution)
- 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 (Milestone)
- Files download: From web browser interface/RTSP
- Video and audio clip size: 30 seconds

**Open Audio comms channel (shared voice channel)**
- Multi-user audio: Interface microphone level/headphone o/p
- Compression: G726 32bit audio 8KHz sampling and mute

**Encryption**
- Type: AES128 or AES256 (both optional)

**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 PELCOP
- From any user supplied desk controller
- Requires RS232/RS485 interface
- NETNode camera options: CAMPTZ long range Pan Tilt Zoom
- CAMuPT short range Pan Tilt

**Triggers**
- Trigger source: Third party equipment remote trigger (e.g., PIR, etc)
- User pre-set time trigger
- Video motion detection (NETAV option)*
- Audio level*
- Trigger action:
  - 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: IP66
- Dimensions: H 180mm, W 180mm, D 65mm
- Mounting options base unit: Pole mounting kit
- Mounting options adaptation plate: Weight 1.80kg
- Tripod mount and through hole screws

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

**Environment**
- Temperature range: -20 to 50 deg C
## NETNode IP Mesh Radio Phase 2 (Robust)

**COFDM – Video, Audio Telemetry and IP Products**

March 2013 Data Sheet

### Product Code:

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NETNode-R-022024</td>
<td>IP Mesh Node 1W 220-240MHz excl PSU15/5 &amp; ANTs</td>
</tr>
<tr>
<td>NETNode-R-034047</td>
<td>IP Mesh Node 1W 340-470MHz excl PSU15/5 &amp; ANTs</td>
</tr>
<tr>
<td>NETNode-R-115140</td>
<td>IP Mesh Node 1W 1.15-1.40GHz excl PSU15/5 &amp; ANTs</td>
</tr>
<tr>
<td>NETNode-R-165238</td>
<td>IP Mesh Node 1W 1.65-2.38GHz excl PSU15/5 &amp; ANTs</td>
</tr>
<tr>
<td>NETNode-R-217250</td>
<td>IP Mesh Node 1W 2.17-2.50GHz excl PSU15/5 &amp; ANTs</td>
</tr>
<tr>
<td>NETNode-R-440500</td>
<td>IP Mesh Node 1W 4.40-5.00GHz excl PSU15/5 &amp; ANTs</td>
</tr>
<tr>
<td>NETNode-R-550595</td>
<td>IP Mesh Node 1W 5.50-5.95GHz excl PSU15/5 &amp; ANTs</td>
</tr>
</tbody>
</table>

### Accessory Options:

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<tbody>
<tr>
<td>NETNode-AVI-UP2R</td>
<td>Composite Video and Audio input</td>
</tr>
<tr>
<td>PSU15/5</td>
<td>AC Power Supply IP66 Robust Mesh Node</td>
</tr>
<tr>
<td>CAMPTZ*</td>
<td>Pan, Tilt and Zoom camera for NETNode</td>
</tr>
<tr>
<td>NETIPHW</td>
<td>IP in with either 1, 2 or 4 Video and 2, 4 or 8 Audio Out Decoder</td>
</tr>
<tr>
<td>Mission Commander</td>
<td>Control Interface Bronze/Silver/Gold</td>
</tr>
<tr>
<td>NETBAT-R</td>
<td>Battery Pack, 14.8V (5.2Ah) 6-pin Amphenol</td>
</tr>
<tr>
<td>NETBATCH-R</td>
<td>Battery Charger for NETBAT-R</td>
</tr>
</tbody>
</table>

### Product Code Includes:

- CA403: Power & Ethernet external cable 5m
- CA406: Control & Data external cable 2m
- CA589: Headset adaptor cable

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<table>
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<tr>
<td>AES128NN</td>
<td>Adds 128 bit AES Encryption</td>
</tr>
<tr>
<td>AES256NN</td>
<td>Adds 256 bit AES Encryption</td>
</tr>
</tbody>
</table>

Note: AES may be subject to export control

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Products are available to security users in licensed frequency bands. These products are not approved for use by unlicensed users. Commercial products are available if used in appropriate licensed frequency bands.