

# NETNode2x2W-5RMT

## NETNode IP Mesh Radio Phase 5 (Robust Tri-Band)

### Overview:

Phase 5 is the latest generation of DTC's NETNode IP Mesh Radio family, offering built-in dual HD video encoders and MIMO capability, providing our highest ever data capacities and maximum frequency flexibility. The latest Tri-Band product offers increased frequency agility with support for high L-band, S-band and C-band, provided by one physical unit.

NETNode IP Mesh Radios can be combined in a fluid self-forming, self-healing mesh network containing up to 20 nodes. The Tri-Band radios exchange bidirectional IP data in a single RF channel, or can utilise different frequency channels for the uplink and downlink traffic, thereby, simplifying frequency management in a complex network. The entire mesh can operate in a bandwidth from 1.25kHz to 20MHz, employing DTC's unique COFDM modulation scheme. Multiple Input Multiple Output (MIMO) technology transmits two signals in the same channel, almost doubling the available data capacity, can also be configured in standard Mesh.

### Features and Benefits:

Self-forming, self-healing Mesh architecture

Ideal for use for wide area coverage & multi-hop, mobile applications such as robotics and city wide infrastructure

Tri Band capability offered in L-band (1.7-1.85GHz), S-band (2.2-2.5GHz) and C-band (4.4-4.9GHz)

4G IP connectivity for additional backhaul offering beyond mesh

Low latency IP communication

HD video encoder - data capacity of greater than 32Mbps of IP data possible

Composite video encoder with 12V external power

GPS receiver (antenna required)

Software configurable RF bandwidth from 1.25kHz to 20MHz

Interlink mode for enhanced capability and large scale systems

64Gb of on-board storage with store & forward functionality

Built in encryption (DES as standard, AES128/256 available subject to export control)

Mission Commander compatibility



### Product Information:

#### Product Includes

CA2585	Microphone/headphone and control/debug screened cable 1m
CA3229	Screened power/Ethernet cable
CA3256	Short bananas to XLR power cable

#### Accessory Options (sold separately)

AP000481	UK IEC power supply cable for use with CA0649
AP001483	US IEC power supply cable for use with CA0649
AP004634	EU IEC power supply cable for use with CA0649
AP007192	AU IEC power supply cable for use with CA0649
AP009259	IP55 water resistant enclosure for use with CA0649
AP009445	Pelican case to house NETNode2x2W-5RMT kit (contact DTC)
AP009562	Antenna GPS/GLONASS, 1.575-1.6GHz, SMA
CA0649	12VDC power supply unit for use with CA3229
CA3254	5m XLR to XLR extension for use with CA3229
CA3255	10m XLR to XLR extension for use with CA3229
CA3259	Video input and DC power output cable
NETR-MB	NETNode Robust mounting bracket kit
MISCDRTAC	Mission Commander Tactical application for desktop or tablet - refer to datasheet
MCS	Mission Commander Strategic advanced client/server application - refer to datasheet
SOL8SDI	HDMI or composite video to SDI converter

#### Related Documents

100232	NETNode Phase 5 Hardware Guide
100219	NETNode Phase 5 Software User Guide

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## NETNode IP Mesh Radio Phase 5 (Robust Tri-Band)

### Technical Specification:

#### IO

COFDM RF interfaces	N-Type x 4 (2 x Tx/Rx, 2 x Rx)
GPS antenna interface	SMA
Power and Ethernet (Eth0)	6-way Amphenol 38999 series 3
Ethernet (Eth1)	RJ45
Config & data	22-way Amphenol 38999 series 3
Composite video & power	4-way Amphenol 62GB
SDI/HD-SDI	BNC 75Ω female
USB	Type A

#### Typical Range

NLOS light urban	1400m †
LOS (e.g. ground to air)	106km †

† Dependent on antenna height and gain

#### RF Interfaces

Antenna A	Channel 1 receive only
Antenna B	Channel 1 switched transmit/receive
Antenna C	Channel 2 receive only
Antenna D	Channel 2 switched transmit/receive

#### RF and Modulation

Tuning step size	125kHz step
Output power	+33dBm per channel in 0.25dB step (4W total)
Bandwidth	1.25, 1.5, 1.75, 2.5, 3.0, 3.5, 5.0, 6.0, 7.0, 8.0, 10.0MHz (video and IP Mesh) 12.0, 14.0, 16.0, 20.0MHz (IP Mesh only)
Mesh capacity	Up to 87Mbps MIMO, 17Mbps standard Mesh
Modulation	COFDM 360 carrier modulation
Carrier modulation	BPSK/QPSK/16QAM/64QAM (adaptive)
FEC rate	FEC 1/2, FEC 2/3 (adaptive)
Receive diversity	Maximum ratio combining
Receive sensitivity	-98dBm (BW 2.5MHz / BPSK 1/2)

#### IP Interface

Primary and secondary Ethernet electrical	100/1000Base-T Ethernet
IP address allocation	DHCP dynamic IP addressing/static IP

#### Streaming

Format	UDP multicast/unicast RTSP/RTP/UDP multicast/unicast ONVIF Profile S
MJPEG	TCP/HTTP

#### Video

Video input	Two video streams Max total throughput of 1920x1080p30
SDI input formats	1920x1080i 60/59.94/50Hz 1920x1080p 30/29.97/25/24/23.97Hz 1920x1080psf 30/29.97/25/24/23.97Hz 1280x720p 60/59.94/50Hz 720x576i 50Hz or 720x480i 59.94Hz
Composite input formats	PAL NTSC
H.264 compression	AVC / H.264 / MPEG-4 Part 10 High profile level 4.0
Coding options	Horizontal scaling of 3/4, 2/3, 1/2, 1/4 Vertical scaling of 1/2, 1/4 Sub-frame rate of 1/2, 1/4, 1/8, 1/24
Encoder delay	1s to 10ms (mode dependent)
Encoder bitrates	0.25Mbps to 32Mbps

#### Digital Audio

Digital audio input	SD/HD-SDI embedded digital stereo pair
Sample rate	16kHz-48kHz
Coding modes	Four channels stereo or mono MPEG Audio Layer 1 64-448kbps MPEG Audio Layer 2 32-384kbps MPEG Audio Layer 3 8-256kbps

#### Open Audio Comms Channel (shared voice channel)

Talkback audio input	High gain microphone stereo pair or talkback
Multi-user audio comms channel	Interface microphone level/headphone o/p
Compression	G726 32kbit audio 8kHz sampling and mute

#### Store and Forward Options

Storage format	SD card interface (Secure Digital card) - not user accessible
Record options	Continuous or triggered (Milestone)
Files download	From web browser interface/RTSP
Video and audio clip size	Thirty seconds

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## NETNode IP Mesh Radio Phase 5 (Robust Tri-Band)

### Technical Specification (con't):

#### Encryption

DES	Standard
AES128/AES256	Licensed (subject to export control)

#### GPS

Built in GPS receiver	Garmin GPS-15xH-W
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#### Data Interface

RS232/RS485 bi-directional data (shared with user camera control)	1k2 to 115k2 baud switchable with UDP and TCP routing protocol
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#### Camera Interface

User camera type	One HD-SDI or SD-SDI One PAL or NTSC
User camera control	Mission Commander PC application using VISCA, PELCOD or PELCOP User supplied desk controller (requires RS232/RS485 interface)

#### Triggers

Trigger source	Video motion detection Brightness
Trigger action	Enable Mesh Record

#### Control

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

#### Physical

Sealing	IP66 minimum
Dimensions	H 160mm, W 160mm, D 70mm
Mounting options base unit	Through hole screws
Mounting options base plate	Post mounting kit
Weight	<2.0kg

#### Power

DC input (12V)	10-18V
Power consumed (non-MIMO)	12W approx.
Power consumed (MIMO)	25W (40W pk) approx.

#### Environment

Temperature range	-10 to +50°C
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#### Frequencies

NETNode2x2W-5RM-175500T	Tri-band - L-band (1.7-1.85GHz), S-band (2.2-2.5GHz), C-band (4.4-4.9GHz)
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#### Software License Code

Silver (included)	Standard Mesh, MIMO/SIMO Mesh, DES encryption, recording and streaming
Gold	Silver plus SD H.264 encoder
Platinum	Gold plus HD H.264 encoder
AES128NN	AES NETNode 128 bit decryption
AES256NN	AES NETNode 256 bit decryption

Export of encrypted products is subject to United Kingdom regulatory export controls.

For further information contact your Sales Account Manager, one of our Regional Sales Offices, or email [solent.enquiries@domotactical.com](mailto:solent.enquiries@domotactical.com)

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