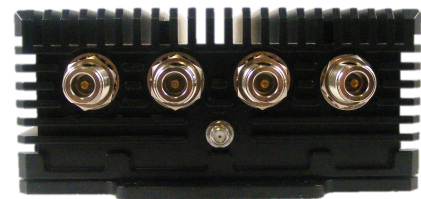# NETNode2×2W-5RM

NETNode IP Mesh Radio Phase 5 (Robust Mobile)

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 for our highest ever data capacities. IP radios can be combined in a fluid self-forming, self-healing mesh network containing up to 144 nodes depending on operating mode.

The NETNode 5RM is a Robust Mobile variant which offers an alternative form factor to the NETNode Phase 5 Robust, but being smaller allows a wider variety of applications. The 5RM is ideal for extended outdoor deployment and feature rich with new additions including built in GPS receiver, SDI video input and optional composite video input comparable to the previous Phase 3 and 4 Robust products. Interoperable with DTC's Phase 3, 4 and 5 Mesh allowing simple upgrade in the field, while adding flexibility and ease of use as nodes can be integrated into existing infrastructure, reducing cost and making it easy to expand any network.

Features and Benefits:

Self-forming, self-healing Mesh architecture

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

Low latency IP communication

Data capacity up to 90Mbps in 20MHz channel bandwidth

Built in composite video encoder (optional)

Built in GPS receiver

Configurable RF bandwidth between 1.25MHz and 20MHz

Interlink mode for enhanced capability and large scale systems

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

Optional AES128/256 encryption
(accredited to FIPS140-2 for MeshUltra™ waveforms)

Mission Commander compatible

Product Information:

Product Options

NETNode2x2W-5RM -xxxxxx-NAN	IP Mesh Phase 5 Robust Mobile 2x2W no composite video input
NETNode2x2W-5RM -xxxxxx-NAN-NC	IP Mesh Phase 5 Robust Mobile 2x2W no composite video input, no supplied cables
NETNode2x2W-5RM -xxxxxx	IP Mesh Phase 5 Robust Mobile 2x2W
NETNode2x2W-5RM -xxxxxx-NC	IP Mesh Phase 5 Robust Mobile 2x2W no supplied cables

xxxxxx denotes frequency

Product Includes

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

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Product Information:

Accessory Options (sold separately)

AP009562	Antenna GPS/GLONASS, 1.575-1.6GHz, SMA
CA2534	N-type (m) to N-type (m) RF cable, 1500mm
CA3802	N-type (m) to N-type (f) RF cable, 1500mm
CA0649	12VDC power supply unit for use with CA3229
AP009259	IP55 water resistant enclosure for use with CA0649
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
CA3606	Microphone/headphone and RS232/RS485 data cable
MW4044	Pelicase to house NETNode2x2W-5RM kit (contact DTC)
MISCDRTAC	Mission Commander Tactical application for desktop or tablet - refer to datasheet
MCS	Mission Commander Strategic advanced client/server application - refer to datasheet
NETR-MB	NETNode robust mounting bracket
SOL8SDI	HDMI or composite video to SDI converter

Technical Specification:

Interfaces

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

IP Interface

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

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

Output frequency	Frequency variant dependent
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	FEC1/2, FEC2/3 (adaptive)
Receive diversity	Maximum ratio combining
Receive sensitivity	-98dBm (BW 2.5MHz/QPSK 1/2)

Typical Range

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

† Dependent on antenna height and gain

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Technical Specification (cont.):

Streaming

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

Video

Video input	Two video streams (with optional composite input) Max total throughput of 1920x1080p30 Currently both video input resolutions must be identical
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 (optional)	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

Audio

Talkback audio input	High gain microphone stereo pair or talkback
Digital audio input	SD/HD-SDI digital stereo pair
Sample rate	16kHz-48kHz
Coding modes	4 channels stereo or mono MPEG Audio Layer 1 64-448kbps MPEG Audio Layer 2 32-384kbps MPEG Audio Layer 3 8-256kbps

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	30 seconds

Encryption

Standard	DES
Licensed	AES128/256 (subject to export control)

Open Audio Comms Channel (shared voice channel)

Multi-user audio comms channel	Interface microphone level/headphone output
Compression	G726 32kbit audio 8kHz sampling and mute

GPS

Built in GPS receiver	Garmin GPS-15xH-W

Data Interface

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

Camera Interface

User camera type	One HD-SDI or SD-SDI One PAL or NTSC (optional)
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

Power

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

Physical

Dimensions	H 160mm, W 160mm, D 70mm
Weight	2.5kg approx.
Mounting options base unit	Tripod mount and through hole screws
Mounting options adaption plate	Post mounting kit

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Technical Specification (cont.):

Environment

Sealing	IP66 minimum
Temperature range	-20°C to +50°C

Frequency

032047	320-470MHz
120170	1.20-1.70GHz
165240	1.65-2.40GHz
198255	1.98-2.55GHz
*300370	3.00-3.70GHz
440500	4.40-5.00GHz

* Future development

Software License Code

Silver (included)	Standard Mesh, MIMO Mesh, DES Encryption, Recording and Streaming
Gold	Silver plus SD H.264 Encoder
Platinum	Gold plus HD H.264 Encoder
IAS-NETNode2x2W-5RM	Interference Avoidance Scheme
P2MP-NETNode2x2W-5RM	Point-to-Multipoint System
L2BRIDGE-NETNode2x2W-5RM	Transparent Layer 2 Bridging Mode
LOWBIT-NETNode2x5W-5RM	Low Bitrate Video Encoding
SNAPSHOTS-NETNode2x5W-5RM	Triggered JPEG stills with timestamps
#AES128NN	AES 128-Bit Encryption
#AES256NN	AES 256-Bit and 128-Bit Encryption

Accredited to FIPS140-2 for MeshUltra™ waveforms

Export of encrypted products is subject to regulatory export controls.

For further information contact your Sales Account Manager, one of our Regional Sales Offices, or email solent.info@domotactical.com

AMERICA	UK	DENMARK	UAE	SINGAPORE	AUSTRALIA
T: +1 571 563 7077	T: +44 1489 566 750	T: +45 8791 8100	T: +971 0 44 53 72 01	T: +65 6339 0508	T: +61 8 8305 0311

domotactical.com