IP MESH
NETNODE2X5W-5RM

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. NETNode IP radios can be combined in a fluid self-forming, self-healing mesh network containing up to 80 nodes. The NETNode 5RM 5W variant provides up to 10W total RF power output over two transmit ports. The 5RM is ideal for extended outdoor deployment and feature rich with built in GPS receiver and both composite and SDI video inputs. Interoperable with DTC's Phase 3 and 4 Mesh allowing simple upgrade in the field, the NETNode-5RM adds flexibility and ease of use as nodes can be integrated into existing infrastructure, reducing cost and making it easy to expand any network.

KEY FEATURES

- 2 x 5W RF transmitters (up to 10W total)
- Self-forming, self-healing mesh architecture
- Ideal for use for wide area coverage & 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
- Built-in GPS receiver
- Software configurable RF bandwidth between 1.25MHz and 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 subject to export control)
- Mission Commander compatible

PRODUCT INFORMATION

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	Pelicase to house NETNode2x2W-5RM kit
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
CA3606	Microphone/headphone and RS232/RS485 data cable
NETR-5W-MB	NETNode 5W Robust mounting bracket
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

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TECHNICAL SPECIFICATIONS

INTERFACES

COFDM RF interfaces	N-Type x 4 (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 & data	22-way Amphenol 38999 series 3
Camera video & power	4-way Amphenol 62GB
SDI/HD-SDI	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	+37dBm per channel in 0.25dB step (10W 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/BPSK 1/2)

TYPICAL RANGE

NLOS light urban	2200m †
LOS (e.g. ground to air)	170km †

† Dependent on antenna height and gain

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 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	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

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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

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

OPEN AUDIO COMMS CHANNEL (SHARED VOICED 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
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)	30W (at max data rate)
Power consumed (MIMO)	60W (at max data rate)

PHYSICAL

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

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ENVIRONMENT

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

FREQUENCY

120170	1.20-1.70GHz
165230	1.65-2.30GHz
198255	1.98-2.55GHz
***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-NETNode2x5W-5RM	Interference Avoidance Scheme
AES128NN	AES NETNode 128 bit decryption
AES256NN	AES NETNode 256 bit decryption

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