



## NDL - NETWORK DIGITAL LINK

THE **MiMOMax NETWORK DIGITAL LINK (NDL)** IS AN ULTRA SPECTRALLY EFFICIENT VERY LOW LATENCY LONG HAUL FIXED LINKING AND **SCADA** SOLUTION FOR **CRITICAL NETWORK INFRASTRUCTURE**. THE **NDL** LINKS CONVENTIONAL AND TRUNKED, **IP** AND ANALOGUE RADIO SITES OVER DISTANCES OF UP TO **100KMS** PER LINK.

### **BENEFITS**

*Very Efficient*

*Highly Reliable*

*Robust*

*Scalable*

*Compatible*

*Secure*

*Economical*

*Future Defensive*

*Environmentally Sound*

### **KEY FEATURES**

- ~ Very high data throughput
  - Up to 320kb/s raw data rate in a 25kHz channel
  - Up to 160kb/s raw data rate in a 12.5kHz channel
- ~ Very low latency
- ~ Low jitter
- ~ Point-to-Point
- ~ UHF licensed spectrum
- ~ Multipurpose solution
  - Fixed long haul (up to 100kms) IP & Analogue linking
  - SCADA solution
- ~ Ethernet, Serial & Audio interfaces
- ~ IP data Encryption & Firewall security
- ~ Advanced software features
- ~ User settable frequency & programmable power
- ~ Rack, pole & wall mountable
- ~ Supports open network standards in trunked and conventional configurations
  - MPT 1327
  - P25
  - DMR
  - TETRA
  - QS Simulcast



# NDL PRODUCT SPECIFICATIONS

RF General		
RF Bands	400MHz	900MHz
RF Frequency Range	369 to 470MHz <sup>(1)</sup>	806 to 960MHz <sup>(1)</sup>
RF Frequency Band Splits	369-390MHz 420-430MHz 440-450MHz 450-470MHz	806-869MHz 852-933MHz 896-960MHz
Configuration	2 x 2 MIMO 2 x 4 MIMO	2 x 2 MIMO
Supply Voltage	(Non-Isolated) 10.5V DC to 32V DC	(Isolated) 10.5V DC to 64V DC
Nominal Channel Bandwidth	12.5kHz & 25kHz (50kHz future)	
Modulation Options <i>(Software Configurable)</i>	QPSK/16/64/256QAM	
Gross Data Rates	25 kHz 12.5 kHz	80/160/240/320kb/s 40/80/120/160kb/s
Maximum Power Consumption	92W Max (at 13.8V) 72W Typical	
Standby Power Consumption <sup>(2)</sup>	8W Typical	
Ambient Temp Range	-25°C to +60°C	
Symbol Rate	2 x 20k symbols / second	
Mounting	2U high Rack Mount Pole Mount Unit Wall Mount Unit	
Dimensions (W x H x D)	Rack mount option	440 x 84.5 x 382mm <i>box size</i> 481 x 86 x 392mm <i>incl. protrusions</i>
	Wall/pole mount option	262 x 393 x 86.5mm, <i>radio unit only, excl. mounting</i>

Transmitter	
Modulation	QPSK/16/64/256QAM
RF Power Output	2 x +30dBm (1 Watt) average
RF Power Control Range	>20dB
Frequency Step Size	5kHz & 6.25kHz Adjustable
Frequency Accuracy and Stability	≤2ppm

Receiver / Diversity Receiver		
Modulation	QPSK/16/64/256QAM	
Typical RF Sensitivity for 10-4 BER	25 kHz	<-102/-99/-94/-87dBm
	12.5 kHz	<-106/-102/-97/-90dBm
Typical RF Sensitivity for 10-7 BER	25 kHz	<-101/-98/-92/-85dBm
	12.5 kHz	<-105/-101/-95/-88dBm
Frequency Step Size	5kHz & 6.25kHz Adjustable	
Frequency Accuracy and Stability	≤2ppm	

Duplexer (Internal)		
RF Bands	400MHz	900MHz
Bandwidth	>500kHz <i>(Stop Band)</i>	>4MHz <i>(Pass Band)</i>
Tx / Rx Split	5MHz minimum	24-76MHz
Stop Band Attenuation	>70dB	

## Internal Digital Interfaces (Data & Analogue)

ETHERNET	
Format	10BaseT (400MHz) 10/100BaseT (900MHz)
Connector	RJ45
Supported Bit Rates	Up to 280 kb/s <sup>(3)</sup>
FIBRE	
Format	Fibre Ethernet (Future)
Connector	ST
ASYNCHRONOUS SERIAL	
Format	Single & Dual <sup>(4)</sup> RS232
Connector	RJ45
Baud Rate	300 - 115,200 baud

SYNCHRONOUS SERIAL	
Format	RS422, V.35, X.21, HSSI, V.11 OR G.703
Connector	RJ45
Baud Rate	64 000 baud

## External Network Interfaces via Interface Hardware

FOUR WIRE AUDIO	
Format	6 x 4 wire 600Ω ports <i>incl. E &amp; M Signalling</i>
Coding	32kbps ADPCM <sup>(5)</sup>
Connector	RJ45
Signalling	Via RS232 serial port 9600 Baud Rate

SUB MUX	
Format	2 x RS422, V.35, X.21 4 x V.24 (RS232) 1 x C37.94

## Compliances

RF Bands	400MHz	900MHz <sup>(6)</sup>
Radio Performance	ACMA <i>AS/NZS 4768 &amp; AS/NZS 4295-2004</i>	ACMA <i>AS/NZS 4768 &amp; EN 300 113</i>
	FCC 47CFR part 90 <i>FCC: XMK-MMXRUDHB002</i>	FCC 47CFR part 101
	RSS-Gen <i>RSS-119</i>	RSS-Gen <i>RSS-119</i>
	IC Canada <i>8587A-RUBFDHB2</i>	
	EN 302 217 <i>EN302 217-2-2 V1.2.3 &amp; EN302 326-2 V1.2.2</i>	
	EN 302-113 <i>EN 300-113-2 V1.4.1</i>	
EMC	AS/NZS/CISPR22 EN 301 489 <i>EN 301 489-1 V1.8.1 &amp; EN301 489-4 V1.3.1</i>	
	FCC 47CFR part 15 ICES-003	
Environmental	EN 300 019 <i>Sections 3.3 &amp; 4.2H</i>	
Safety	EN 60950 (2006)	

- (1) Other frequencies available on request
- (2) NDL configured with MiMOMax Power on Demand software
- (3) Total aggregate Data Rate is 70, 140, 210, 280 kbp/s, depending on configuration and path signal
- (4) The Dual RS232 does not include hardware flow control
- (5) Other CODECS also available on request
- (6) Designed to be compliant with listed standards