



PRODUCT PREVIEW

MiMOMax SUB MUX INTERFACE

THE MiMOMax SUB MUX INTERFACE IS AN EXTERNAL, HIGHLY FLEXIBLE, AND FULL DUPLEX MULTIPLEX SOLUTION THAT COMMUNICATES DIRECTLY WITH A MiMOMax RADIO UNIT. TOGETHER THEY PROVIDE AN ULTRA SPECTRALLY EFFICIENT, VERY LOW LATENCY, HIGHLY ROBUST AND RELIABLE SOLUTION. A SINGLE MiMOMax SUB MUX INTERFACE IS ABLE TO SUPPORT A DIVERSE RANGE OF MISSION CRITICAL APPLICATIONS, SUCH AS SCADA, TELEMETRY, INTER-SITE SIGNALING AND TELE-PROTECTION, ALL OVER ONE RADIO LINK.



BENEFITS

Highly Reliable

Very Robust

Versatile

Scalable

Near Instantaneous

Highly Compatible

Very Efficient

Secure

KEY FEATURES

- ~ Very Low Latency
 - Async & Sync Serial latencies as low as <7ms in a 64QAM 25kHz radio channel bandwidth
- ~ Flexible Modes of Operation
- ~ Supports a diverse range of data interfaces
 - Up to 4 x Async Serial plus 2 x Sync Serial plus 1 X C37.94 Fibre plus Ethernet
- ~ Multiple Configuration Options
- ~ Local & remotely configurable via the MiMOMax CCMS software
- ~ Wide DC Power Range
- ~ Isolated Supply
- ~ Alarm Output
- ~ Multipurpose Solution for (but not limited to):
 - Tele-protection
 - Telemetry
 - Inter-site Signaling
 - SCADA

Asynchronous Serial Interface

RS232 (V.24) Data (1)	
Number of Channels	Up to 4
Connector	RJ45
Baud Rate	300 to 115 200

Synchronous Serial Interface (2)

X.21 Data	
Number of Channels	Up to 2
Connector	RJ45
Data Rate	64 000 bps
RS422 (V.35) Data	
Number of Channels	Up to 2
Connector	RJ45
Data Rate	64 000 bps (3)

Fibre IEEE802.3z Interface

Number of Channels	Up to 1 Full Duplex
Connector	ST
Data Rate	64 000 bps
Wavelength	850nm (Multimode)

Interface Latencies

Bandwidth & Modulation	X.21 & C37.94	RS422 (64 kbps)	RS232 (4) (9600 baud)
12.5 KHz/QPSK	N/A	N/A	(5)
12.5 KHz/16QAM	N/A	N/A	(5)
12.5 KHz/64QAM	10.6 ms	12 ms	19 ms (6)
12.5 KHz/256QAM	8.7 ms	9.2 ms	10.5 ms
25 KHz/QPSK	N/A	N/A	(5)
25 KHz/16QAM	7.2 ms	9.2 ms	7.9 ms
25 KHz/64QAM	6.1 ms	8.2 ms	6.6 ms
25 KHz/256QAM	6.0 ms	7.8 ms	6.2 ms

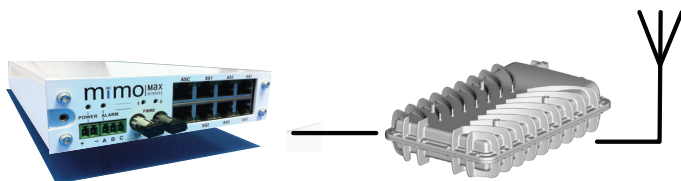
Alarm Interface

Connector	Detachable screw terminal
Physical	Voltage free changeover contacts (supporting N/O & N/C operation)

Connection to Radio

Connector	RJ45
Protocol	Direct proprietary HSSI connection to MiMOMax RU. (7)(8)

- (1) Supports Hardware Flow Control
 (2) Up to two Synchronous Serial channels can be supported in total. These can be either X.21 or RS422, or a combination of the two.
 (3) Other Data Rates available on request
 (4) RS232 latencies are measured with RS232 & X.21 ports concurrently operating.
 (5) This mode is supported for RS232. Latencies are application specific, please contact MiMOMax Wireless Ltd directly for more information.
 (6) The latency was measured at 1200 baud, in contrast to 9600 baud.
 (7) Matching MiMOMax Radio software is needed to support the proprietary HSSI interface.
 (8) The MiMOMax Sub Mux Interface Box can connect to 3rd party communications equipment using X.21 signaling via the HSSI Sub Mux HSSI port.



MiMOMax Sub Mux Interface

MiMOMax Link-end Radio Unit

Sub Mux Interface connected to MiMOMax Radio Unit

SUB MUX INTERFACE SPECIFICATIONS

Power & Mechanical

Connector	Detachable screw terminal
Type	Isolated DC/DC converter
Isolation	1500 volts
Nominal Input Voltage	12 to 48 V DC
Power Consumption	< 3.2W
Mechanical Dimension (H x W x D)	38mm x 140mm x 258mm (9)

Environmental

Temperature (Operational)	- 25 °C to 60 °C
Relative Humidity (Operational)	4% to 100% (per EN 300 019 sec. 3.3 & 4.2H)
Altitude (Operational)	0 to 3000m

Available User Bandwidth

Available Sub Mux Interface Bandwidth

Radio bandwidth & modulation	Total Sub Mux Interface Bandwidth available to user (kbps)(10)
12.5kHz / QPSK	20
12.5kHz / 16QAM	55
12.5kHz / 64QAM	85
12.5kHz / 256QAM	115
25kHz / QPSK	55
25kHz / 16QAM	115
25kHz / 64QAM	180
25kHz / 256QAM	245

Reserved IP Data Bandwidth (MiMOMax RU Interface)

Radio bandwidth & modulation	MiMOMax RU reserved IP Data Bandwidth available to user (kbps) (11) (12)
12.5kHz / QPSK	6
12.5kHz / 16QAM	8
12.5kHz / 64QAM	15
12.5kHz / 256QAM	22
25kHz / QPSK	8
25kHz / 16QAM	22
25kHz / 64QAM	31

- (9) Dimensions exclude 2 x ST connectors located in the front of the Sub Mux Interface Box.
 (10) Variable Bandwidth Overheads: 2 Channels subtract 10kbps, 3-4 Channels subtract 15kbps, 5-6 Channels subtract 20kbps. To calculate the Sub Mux Interface Bandwidth available per application, subtract the appropriate amount of variable bandwidth overheads as outlined above (depending on amount of channels required) from the total available Sub Mux Interface bandwidth.
 (11) IP Data is transmitted directly from MiMOMax Radio Unit via the Ethernet port, not through the MiMOMax Sub Mux Interface.
 (12) To calculate the total (variable + reserved) available IP Data Bandwidth via the RU's Ethernet port, add the reserved IP Data Bandwidth value from the table to the unused(variable) Sub Mux Interface bandwidth, after all interface bandwidth requirements have been calculated.

