

mimo | **max**
wireless

Up to
1280 kb/s
in a 50kHz
channel



TORNADO

TORNADO

The high throughput, low latency narrowband linking solution you can trust

TORNADO

Key Benefits

High data rates over long distances – resulting in **efficiency** of information exchange

World leading spectral efficiency of 16bits/s/Hz

Low Latency - so you can trust your network to deliver complete data without delay

Ultra fast access times – find out what is happening in your systems NOW, you can act fast with **timely information** about your network

Robust Wireless Channels – **secure reliable** links you can count on

Excellent performance over difficult links – MiMOMax performs where others can't

MiMOMax solutions withstand major weather and natural disaster catastrophes where the alternatives don't – **disaster proof your network**

MiMOMax is Customizable - software features regulate what you need to optimize **performance for your needs**

Quality Service – MiMOMax stand by all radios with **exceptional support**

“The product was clearly developed to a very high standard – the entire project team were impressed. Testing was completed to a very high standard and the test report we received contained an excellent amount of information. Timescales were carefully managed throughout the project and the regular communication updates ensured project progress was clearly understood resulting in the project being delivered early.”

--Sandra Callowhill, Senior Project Manager, Airwave

The Future of Wireless Linking

MiMOMax Wireless delivers the next generation of high performance true MIMO narrowband remote radios for SCADA, protection and linking applications. MiMOMax Tornado is **the market leader for narrowband throughput** with a full duplex aggregate data rate of up to 1280kb/s in 50kHz in its highest modulation mode as well as delivering exceptional low link latency of < 3ms.

Features include isolated power supply with low power consumption, full duplex operation with built in duplexers and supporting a combination of Ethernet and RS232 interfaces, with very high scalable data rates, remote over the air network management, optional SNMP and DNP3 support and a very efficient random access protocol.

Operating in the licensed frequency bands between 136-174MHz, 400-470MHz, 757-788MHz & 806-960MHz, the Tornado has a wide temperature operating range and optional waterproof outdoor mount. The Tornado enables unrivalled performance while maintaining MiMOMax's renowned reputation for reliability and operational efficiency.



MiMOMax Tornado Narrowband Radio

Accessories

No narrowband radio solution is complete without an extensive range of accessories and software to customize a solution to each customer's individual needs.

MiMOMax offers a wide range of antennas to suit almost any terrain and weather conditions. From Omni-Directional, to Yagi and Panel, the full range of MiMOMax antennas are dual polarised to enable the MiMO system to fully exploit the available diversity.

With a vast selection of Software options, the Tornado is adaptable to suit your SCADA, OPV (Optimised Protection Variant) or linking needs. A market leader for quality and performance, the MiMOMax Tornado is supported to suit your requirements.

In conjunction with Tornado Media Converter, MiMOMax Tornado supports a wide range of synchronous serial interfaces include RS422, RS530, V.11, V.35, X.21, G703, Fiber C37.94

**Available for VHF, 400MHz, 700MHz, 900MHz
Frequency Bands**

MiMOMax Tornado can be configured for Point-to-Point, Point-to-Multi-Point and Optimized Protection Networks. Whatever your linking network needs, MiMOMax is likely to have a solution.

Application Examples

Bandwidth Optimization

A MiMOMax customer is operating in an area where spectrum is expensive and sometimes hard to obtain. With spectrum constraints in their region, this customer wants to utilize their existing bandwidth in a more efficient way. MiMOMax radios offer the highest spectral efficiency available allowing the customer to purchase less spectrum. Most importantly the MiMOMax solution offers the customer the ability to deploy 2-4 times as many links compared to other solutions, thus aligning with government trends towards narrow banding and offering a more efficient use of their spectrum resource.

Network Protection

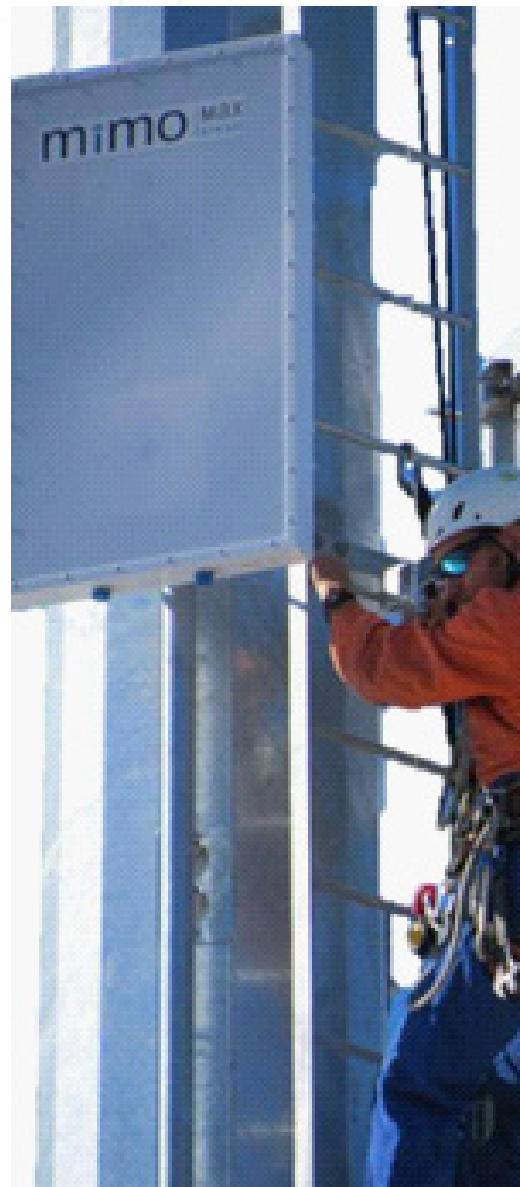
A MiMOMax customer is a supplier of power over a wide network. A tree has fallen on a power line, cutting its supply to all supported customers on that power line. MiMOMax radios communicate this fault to protection relays allowing the fault to be isolated, preventing further accidents and identifying the fault location to be found easily and repair to be made. The outlay of this solution is minimal compared to fibre and microwave options, and the throughput that MiMOMax offers enables timely and accurate information relay.

Isolated and Difficult Terrain

A MiMOMax customer's radio network runs in difficult terrain, including over water to isolated locations. Alternative solutions struggle to offer reliable communications over the network when countering the reflection from the water. In addition the isolated location requires helicopter access. Luckily the MiMOMax radio does not require site visits for regular maintenance and upgrades can be carried out remotely. The MiMOMax solution creates a secure location link that can receive updates and SCADA information without reflection interference.

SCADA Software Update

A MiMOMax customer has 300 RTU's that require software updates; to visit every RTU it could take more than 100 working days at a cost of \$1000 a day. A low throughput SISO linking solution can deliver updates at 9kbps taking approximately 3 years to update all radios through the network. With a throughput rate of 640kbps, the MiMOMax solution will eliminate truck rolls and complete the network wide software updates in a timely fashion.



“The MiMOMax installation went very well as it was plug and play. It was the easiest link install we have ever done.”

-Mike Munafo, President at Southern Communications



MiMOMax is a name that is synonymous with reliable and efficient narrowband linking. Founded in 2007, MiMOMax has worked closely with radio network providers to create reliable and secure wireless linking products and services.

Utilizing MiMO technology, MiMOMax has created reliable linking that works across simple and complex paths, with outstanding throughput and low latency.

At MiMOMax, we pride ourselves on excellent customer service and fit for purpose linking solutions.

MiMOMax is a future forward thinking company that offers solutions that meet customers needs in the now, and in the future.

Contact Us

US Office

4630 East Elwood St, Suite 4
Phoenix, AZ 85040

Phone: 602 441 2448

Email: sales@mimomax.com

Regional

North America ussales@mimomax.com

Europe eusales@mimomax.com

UK uksales@mimomax.com

Australia ausales@mimomax.com

New Zealand nzsales@mimomax.com

Or Your Local Partner

General	
Configuration	2x2 MIMO
Supply Voltage	10.5 V DC to 60 V DC
Maximum Power Consumption	26w (at 13.8V) 20W typical
Power Consumption (active Rx only)	<6W typical
Ambient Temperature	Range -30 C to +60 C
Mounting	1U High Rack Mount
	Pole Mount
	Wall Mount
	DIN Rail Mount
Dimensions (L x W x H)	180 x 270 x 44mm
Gross Data Rate (256QAM)	50kHz 640kb/s Full-duplex
	25kHz 320kb/s Full-duplex
	12.5kHz 160kb/s Full-duplex
Weight	2kg (radio unit only, excl. mounts)

Receiver	
Modulation	QPSK/16/64/256QAM
Frequency Range	136-174MHz, 400-470MHz, 757-788MHz, 806-960MHz
Frequency Step Size	5kHz & 6.25kHz <i>selectable</i>
Frequency Accuracy and Stability	better than +/- 1 ppm
Nominal Channel bandwidth	12.5kHz, 25kHz (50kHz in 700MHz, 900MHz and VHF)

Transmitter	
Number of MiMO Transmitters	2
Modulation	QPSK/16/64/256QAM
Frequency Range	136-174MHz, 400-470MHz, 757-788MHz, 806-960MHz
Frequency Step Size	5kHz & 6.25kHz <i>selectable</i>

Duplexer (Internal)	
Type	Bandpass
Tx / Rx Split	5 MHz minimum (400MHz) 9 MHz minimum (900MHz) 30 MHz minimum (700MHz)