

LRDL - Long Range Data Link

Software Defined Radio—PN AE101838



Aeronix's 1.8-2.4 GHz LRDL Digital Data Link is a high power conduction cooled small, lightweight, modular, and scalable data link that enhances communication security and range. Aeronix can customize the packaging and functionality to meet customer requirements. The LRDL provides control, high quality video transmission, data security, and adaptive data rates with flexible bandwidths for extended range.

The LRDL Digital Data Link currently provides the capability of ion the move communications (telemetry, control, data, video, etc.) Point-to-Point or multipoint networked operations. Its software programmable architecture provides greater flexibility in waveform choice and allows users to easily upgrade to future waveforms without changing hardware.

The LRDL rugged construction and multipath resilient waveform along with diversity receive make it an excellent choice for applications such as mining, oil and gas, and harbor operations.

- 5.75"W x 9.0L" x 3.0H"
- 4 lbs
- Scalable ARM, FPGA, and High Speed DSP
- Graphics Accelerator
- Software Defined Radio
- Adjustable 8 Watt RF Output OFDM, 24 Watt GMSK
- Conduction Cooled /Industrial Temperature
- Modular RF 1.80-2.4GHz

Waveform

- AES Encryption with 128 or 256 bit key (no latency).
- Software Reprogrammable as needed for application specific requirements.
- Doppler correction for ground-to-air and air-to-air operation.
- Performs ACM at BPSK, QPSK, QAM16, QAM64, PSK8, and PSK16
- Additional PSK modulation modes for rotorcraft
- Implements the Point to Multi-point portion of the IEEE 802.16-2004 Specification. (Mesh 2nd Qtr 2017)
- QoS built into 802.16 waveform.
- Waveform supports distances to 250 miles.



General Applications

Sensor, VoIP, Control, Data, Video, including:

- **Data Link** - High speed secure communications
- **Sensor** - USB for transferring sensor data, 2 UART ports, and Video Input
- **Relay** - "Over-the-hill" communications link for VoIP voice, data, video, and imagery.



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Networking	
Waveform	IEEE 802.16 Modulations Supported: BPSK, QPSK, QAM16, QAM64, 8PSK, 16PSK
Network: Point to Multipoint	Network includes one Base-Station with multiple Subscribers Total of 10 subscribers supported
Network::Point-to-Point	High performance mode with reduced overhead. User configured mode via GUI.
Uplink / Down Link Ratio	Ratio is user configurable via GUI slide bar. Max = 80%, Min = 20% of aggregate throughput.
Network Routing	Routing configuration via automatic setup modes and user configuration
IP	IPv4 and IPv6 Support
Operating System	Linux general purpose processor operating system
Coded Burst Rate (Mbps)	Maximum radio burst transmission capability at maximum channel width of 38 (Mbps)
Lantency	22ms one way, 45ms round-trip

Management Features	
Remote Management	Radios can be configured remotely over the network via USER login via GUI
User Interface	Web Based GUI Serial Command IF, Serial Data Ethernet 10/100/1000 SNMPv3
Software Selectable BS /SS	Radios can be configured via GUI selection as either a base-station or subscriber-station.

Environmental	
Temp	-40 to 70C, cold plate
Chassis	Sealed
Cooling	Conduction



Radio Specifications	
RF Freq.	1800 - 2400 MHz
Channels Supported	User Configured in 1 MHz steps via GUI or SNMP
Channel BW	3.5. 7.0 or 14.0 MHz
Channel Tuning Steps	Configured in 1 MHz steps via GUI
RF Output Power	8 W Average @ BPSK for OFDM 24 W Average for GMSK
Noise Figure	<4 dB

Connector Interfaces	
High Speed I/O Network I/O	Ethernet
DC Power	9v to 36v
Low Speed I/O	RS232 x 2
Tx/Rx I/O	Supports external switching amplifiers if more power is desired.
Video I/O	Ethernet
RF I/O	1 TR/Rx and 1 Rx

Physical Characteristics	
Size	5.75"W x 9L" x 3H"
Weight	~ 4 lbs
Power	~61 watts @ 90% Tx Duty Cycle, ~12W when RxOnly

User Data Rates	
BPSK 1/2@ 3.5MHz	1.0 Mbps
BPSK 1/2 @ 7MHz	2.0 Mbps
QPSK 1/2 @ 3.5 MHz	2.1 Mbps
QPSK 1/2 @ 7 MHz	3.9 Mbps
QPSK 3/4 @ 7 MHz	5.8 Mbps
QAM16 3/4 @3.5 MHz	6.5 Mbps
QAM16 3/4 @7MHz	11.8 Mbps
QAM64 2/3 @7MHz	17.6 Mbps
QAM64 3/4 @14 MHz	37.9 Mbps

Situational Range Performance (BPSK 3.5 MHz)	
3 dB ground omni to 0 dB air omni	12.4 miles, 20 km
10 dB ground patch to 0 dB air omni	24.9 miles, 40 km
15 dB ground omni to 0dB air omni	46.6 miles, 75 km
27 dB ground directional to 0 dB air omni	161 miles, 260 km



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Specifications subject to change without notice.

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