EDL - Micro Secure Digital Data Links
Micro Sized Software Defined Radios

Aeronix's 802.16 Micro Data Links are conduction cooled very small, lightweight, modular, and scalable data links that enhances security and range. Aeronix can customize the packaging and functionality to meet customer requirements. The EDL-Micros provides guaranteed control, high quality video transmission, data security, and adaptive data rates with flexible bandwidths for extended range. The size, weight, and power consumption is perfect for small and mini unmanned vehicles.

With either the standard Micro (**3.28 cubic inches / 3 ounces)** or the Micro filtered power supply module (**6.125 cubic inches / 5 ounces)**, the 802.16 Micro Data Link currently provides the capability of inter-flight communications (command and control, 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.

USB OTG 2.0 allows easy connection to android smartphones while their small size make them excellent for manpack applications.

- Scalable ARM and High Speed DSP
- H.264 Video Compression
- RS-170 Video Input
- Graphics Accelerator
- Software Defined Radio
- 1 Watt RF Output
- Conduction Cooled /Industrial Temperature
- Modular RF 2.4—2.5 GHz (4.6 & 5.8 GHz - planned)
- OTG USB 2.0

Tactical 802.16 Waveform

- AES TRANSEC with 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.
- QoS built into 802.16 waveform.
- SCA Compatible architecture.
- Waveform supports distances to 250 miles.
- Waveform of ARMY WIN-T LAW Radio
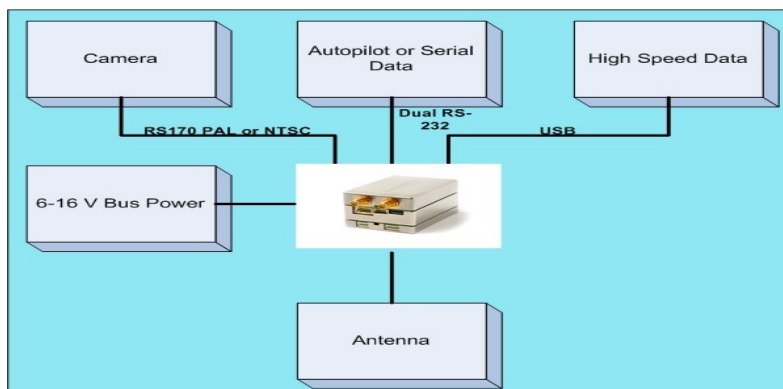
Applications

C^2, Sensor, VoIP, Data, Video, including:

- **UAV Data Link** - High speed secure data link form UAV to ground collection station.
- **Sensor** - USB for transferring sensor data, 2 UART ports and Video Input
- **Air Relay** - Over-the-hill communications link for VoIP

AERONIX

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Networking

Waveform	LAW Tactical 802.16
	Modulations Supported: BPSK, QPSK, QAM16, QAM64, 8PSK, 16PSK
Network: Point to Multipoint	Network includes one Base-Station with multiple Subscribers
	Total of 20 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 = 70%, Min = 30% of aggregate throughout.
Network Routing	Routing configuration via automatic setup modes and user configuration
IP I	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 28 (Mbps)

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 USB OTG 2.0 External USB-to-Ethernet card available SNMPv3 Capable
Software Selectable BS /SS	Radios can be configured via GUI selection as either a base-station or subscriber-station.

Security

TRANSEC Cover	AES256 Cover - Cover for network management information and data. Configured on/off via user GUI.
DSCP QoS Capability	Support for HAIPE Qos Descriptors via user GUI
Pedigree	U.S. design and manufacture
FIPS 140-2	Future

EVM/Power vs Temp C
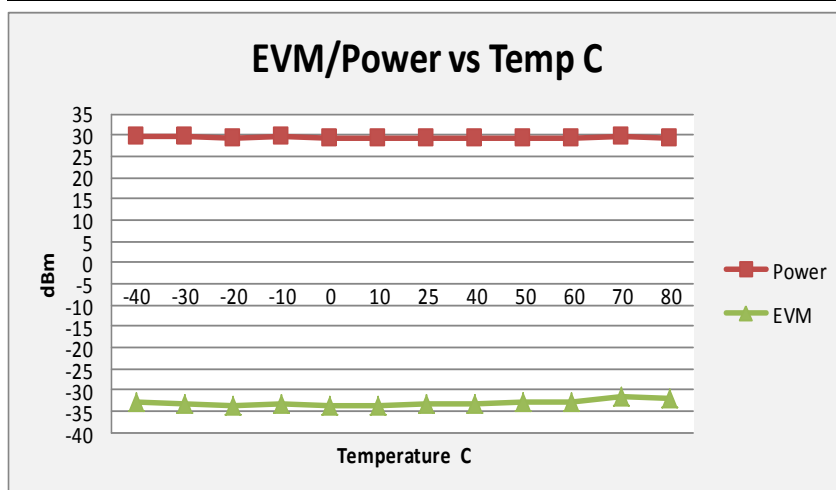
Radio Specifications

RF Freq.	2.4 –2.5 GHz
Channels Supported	(User Configured via GUI)
Channel BW	3.5. 7.0 14.0 MHz
Channel Tuning Steps	Configured in 1 MHz steps via GUI
RF Output Power	1W Average at BPSK (2W preamble)
Noise Figure	<4 dB

Connector Interfaces

High Speed I/O Network I/O	Micro USB, drives Ethernet Dongle
DC Power	3v and 5V (with PS 6v to 16v)
Low Speed I/O	RS232
Tx/Rx I/O	Supports external switching amplifiers if more power is desired.
Video I/O	RS170NTSC Video In
RF I/O	Single RF SMA antenna interface

Physical Characteristics

Weight	3oz (5oz with PS)
Power	< 9 watts

Environmental

Temp	-40 to 60C, cold plate
Shock	50g
Chassis	Unsealed
Cooling	Conduction

User Data Rates

BPSK@ 3.5MHz	1 Mbps
QAM16@3.5 MHz	6.5 Mbps
BPSK@ 7MHz	2.01 Mbps
QAM16@7MHz	11.8 Mbps
QAM64@7MHz	17.6 Mbps
QAM64@14 MHz	37.9 Mbps

Situational Range Performance

10 dB ground patch to 0 dB air omni	7.5 miles, 12 km
3 dB ground omni to 0 dB air omni	4 miles, 6 km
27 dB ground directional to 0 dB air omni	40 miles, 64km
4 dB ground omni to 4 db ground omni	2 miles, 3.5 km