Evolution 8000 Series Airborne Router (e8000 AR XL)

Powerful and Secure Airborne IP Broadband Connectivity

The e8000 AR XL meets the unique needs of Airborne satellite communications (SATCOM) requirements. The 19-inch rack-mountable enclosure is ideal for roll-on/roll-off use and provides fast, secure and reliable military grade communications. The e8000 AR XL is certified to MIL-STD EMI, Power and Environmental specifications for aircraft.

Greater Mobility

Combined with leading edge spread spectrum technology, this Evolution series router enables use of ultra-small and phased-array antennas on aircraft. The e8000 AR XL is fully enabled for iDirect's Global Network Management System (GNMS) and automatic beam switching technology allowing for true global roaming while on the move. With embedded OpenAMIP ™ standard, the e8000 AR XL easily integrates with multiple antenna platforms and can support all airborne antenna variants – X-, Ku- and Ka- bands.

Greater Flexibility and Higher Performance

The e8000 AR XL series offers the choice between iNFINITI TDM or DVB-S2/ACM on the outbound, providing even more flexibility for network design and bandwidth optimization. Additionally, the e8000 AR XL can be operated in either MF-TDMA or SCPC return, providing return carrier symbol rates up to 15 Msps, for multiple high-definition (HD) video acquisition. Built into the unit is a fully integrated PCIe/104 with Quad core i7 processor computer for maps and additional applications.

High Security

Compliant with the highest military security requirements, the e8000 AR XL features embedded AES encryption and TRANSEC with advanced FIPS 140-2 Level 2 compliance. Also, to support Wideband Global Satellite (WGS) frequency ranges, the e8000 AR XL series is equipped to cover wider IF ranges, providing flexibility in secure network deployment.

Superior Quality of Service

With advanced Quality of Service (QoS), high-priority traffic designation can be recognized by advanced encryption devices and traffic can be segregated by groups of remotes, multiple sub-networks, and multiple applications, ensuring the highest quality transmissions where needed.

Features

- Certified to MIL-STD EMI and Environmental for aircraft
- Internal CPU for maps and applications
- Star and SCPC return topologies supported
- High data rates up to 45 Msps outbound, 15 Msps inbound
- Two modes of operation: iNFINITI and DVB-S2/ACM outbound
- Rugged D38999 connectors
- Spread spectrum waveform technology supports very small antennas and airborne applications
- Unique TRANSEC security with AES 256-bit encryption
- Advanced QoS and traffic prioritization options
- Supports WGS IF ranges: 950-2000 MHz
- DC/AC Power to 400 Hz
- Embedded OpenAMIP standard
- Remote Power
- Discrete inputs for antenna control

Airborne Tests & Certifications

Environmental Tests
- MIL-STD-810G
  - Rapid decompression
  - Explosive atmosphere
  - Acceleration
  - Shock and vibration
- MIL-STD-704F

EMI Certifications
- MIL-STD-461F
  - RE102-Radiated emissions
  - RE103-Radiated susceptibility
  - CE101-Conducted susceptibility, power leads
  - CE102-Conducted emissions, power leads

EMI Certifications (cont.)
- MIL-STD-461F (cont.)
  - CE106-Conducted emissions, antenna port
  - CS114-Conducted susceptibility, bulk cable
  - CS115-Conducted susceptibility, bulk cable
  - CS116-Conducted susceptibility, transients
- UL/CE Certifications

Stay connected. Stay informed. The mission depends on it.

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Configuration

		Downstream DVB-S2/ACM or (iNFINITI TDM)	Upstream D-TDMA or (SCPC Return)
Network Topology	Star		
Modulation		QPSK, 8PSK, 16APSK (BPSK, QPSK, 8PSK)	BPSK, QPSK, 8PSK (BPSK, QPSK, 8PSK)
FEC		LDPC, 0.25–0.9 (TPC, 0.495–0.879)	TPC**, 0.431–0.793 2D 16S,1/2-6/7 (2D 16 State 1/2- 6/7)
Maximum Rates	Symbol	45 Msps (15 Msps)	7.5 Msps (15 Msps)
	Info	150 Mbps[1] (21 Mbps[2])	12.8 Mbps[4] (24 Mbps[5])
	Line Card IP Data	149 Mbps[1] (20 Mbps[2])	11.1 Mbps[4] (20 Mbps[5])
	Remote IP Data	38.5 Mbps[1] (17 Mbps[3])	11.1 Mbps[4] (20 Mbps[5])

Notes: [1]16APSK, 8/9 FEC;   [2]QPSK, .897 FEC;   [3]QPSK, .793 FEC;   [4]QPSK, 6/7 FEC;   [5]QPSK, 4/5 FEC
Maximum downstream and upstream data rates cannot be achieved simultaneously
Maximum rates are achieved with optimal configurations

Spread Spectrum	Spreading Factor	(TDM: 2, 4 and 8)	1, 2, 4, 8, and 16 (SCPCR: 2, 4 and 8)
	Max Chip Rate	(TDM: 15 Mcps)	7.5 Mcps (SCPC Return: 15 Mcps)

Interfaces

SATCOM Interfaces	TX Out: Type-N, 950–2000 MHz, +5dBm/-35dBm RX In: TNC, 950–2000 MHz, -5dBm (max) composite/ -130+10*log (Fsym) dBm (min) single carrier RX Out: TNC, 950–2000 MHz Software controllable 10 MHz reference on TX Out and RX In ports
Data Interfaces	LAN: Two Gigabit Ethernet; 1-front, 1-back Two 10/100 Mbps Ethernet; 2-D38999 Console: RS-232 Console connection RS-232: GPS input or Antenna Control Signaling 10 MHz: TNC, External reference clock
CPU Interfaces	USB – front panel KVM – rear panel Serial Com 1 – (RS-232) – rear panel Serial Com 2 – (RS-485) – rear panel
Protocols Supported	TCP, UDP, ICMP, IGMP, RIP v2,Static Routes, NAT, DHCP, DHCP Helper, Local DNS Caching, OpenAMIP, cRTP, and GRE
Security	AES Link Encryption (256-bit), TRANSEC (iNFINITI and S2 modes), FIPS 140-2 Level 2 Compliant, x.509 digital certificates authentication, Automatic Key Management
Traffic Engineering	Group QoS, QoS (Priority Queuing and CBWFQ), Strict Priority Queuing, Application Based QoS, Minimum CIR, CIR (Static and Dynamic), Rate Limiting
Discrete Interfaces	Transmit Mute (Input), Transmit Mute (Output), Weight on Wheels, Flight Crew Ground Transmit Override, Maintenance Ground Transmit Override
Other Features	Built-in Automatic Uplink Power, Frequency and Timing Control, Authentication, Antenna Control Interface (OpenAMIP), Remote On/Off Interface Available

Mechanical/Environmental

Size	e8000 AR XL: W 19 in x D 21.97 x H 1.73 (w 48.26cm x D 55.80cm x H 4.39cm)
Weight	16.9 lbs (7.66Kg)
Operating Temperature	-20° to +60℃ (-4° to +140°F) at sea level with temperature gradient of 1℃ per 1 min
Altitude	Operational: Up to 10,000 feet (3048m); Storage: up to 30,000 feet (9144m)
Relative Humidity	Max 95% non-condensing humidity (operational) Max 100% condensing humidity (storage)
Input Voltage	22-36VDC, 100-240VAC, 50-400Hz
Power Consumption	DC: 5 Amps maximum at 28VDC AC: 4 Amps maximum at 110VAC, 60Hz
Operational Vibration	MIL-STD-810G Method 514.6
Operational Shock	MIL-STD-810G Method 516.6
Acceleration	MIL-STD-810G Method 513.6
Rapid Decompression	MIL-STD-810G Method 500.5
Explosive Atmosphere	MIL-STD-810G Method 511.5@10K ft.
Electro Magnetic Interface (EMI)	MIL-STD-461F
Aircraft Electrical Power	MIL-STD-704F

**   TPC not supported for use with DVB-S2 outbound in iDX 3.0 and above