Evolution 8000 Series Airborne Enclosure (e8000 AE)

e8000 AE front view

Powerful and Secure Airborne IP Broadband Connectivity

The e8000 AE meets the unique needs of airborne satellite communications (SATCOM) requirements for a fixed mounted terminal. The 4MCU (ARINC variant) of the satellite router is ideal for permanent integration on aircraft. The e8000 AE provides fast, secure and reliable military grade communications and is certified to DO-160G Environmental and MIL-STD EMI specifications for aircraft.

Seamless Connectivity

Combined with leading edge spread spectrum technology, this Evolution series router enables use of ultra-small and phased-array antennas on aircraft. The e8000 AE 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 Open AMIP™ standard, the e8000 AE easily integrates with multiple antenna platforms and can support all antenna variants – X-, Ku-, commercial and military Ka-bands.

Greater Flexibility and Higher Performance

The e8000 AE 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 AE can be operated in either MF-TDMA or SCPC return, providing return carrier symbol rates up to 15 Msps, for multiple high-definition video acquisition. Built into the unit is a fully integrated PCIe/104 computer with i7 processor for mapping software and custom ACU integration.

High Security

Compliant with the highest military security requirements, the e8000 AE features embedded AES encryption and TRANSEC with advanced FIPS 140-2 Level 2 compliance. iDirect's TRANSEC implementation provides channel masking, control channel obfuscation and digital certificates that provide hub and remote authentication and validation.

Superior Quality of Service

With advanced Quality of Service, 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.

**See reverse for complete list of tests*

Features

- Certified to DO-160G and Environmental for aircraft
- Internal CPU with i7 processor 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
- ARINC 600 size 2 connector
- Spread Spectrum waveform technology supports very small antennas and airborne applications
- Unique TRANSEC security with AES 256-bit encryption
- Advanced QoS traffic prioritization options
- Supports WGS IF ranges: 950-2000 MHz
- DC/AC power to 400 Hz
- Embedded OpenAMIP standard

Certifications

- DO 160G*
- MIL-STD 704F
- MIL-STD-461F
  - RE102-Radiated emissions
  - CE102-Power leads
  - CE106-Conducted emissions from antenna port
  - CS114-Bulk cable injection EMI
  - CS115-Bulk cable injection inputs
  - CS116-Damped Sinusoidal Transients

Evolution 8000 Series Airborne Enclosure (e8000 AE)

e8000 AE rear view

Configuration

Network Topology	Star and SCPC (return)		
		Downstream DVB-S2/ACM or (iNFINITI TDM)	Upstream D-TDMA or (SCPC Return*)
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

Primary Interface	ARINC 600 Size 2 – per ARINC 791, Part 1	
SATCOM Interfaces	TX Out: Size 5 Coax, 950–2000 MHz, +5dBm/-35dBm	
	RX In: Size 5 Coax, 950–2000 MHz, -5dBm (max) composite/ -130+10*log (Fsym) dBm (min) single carrier	
	10 MHz Reference: Size 8 Coax - software controllable	
Data Interfaces	LAN: Three Gigabit Ethernet; 1-front (RJ45), 2-back (Size 8 Quadrax)	
	Three 10/100 Mbps Ethernet - rear (Size 8 Quadrax)	
	Console: RS-232 Console connection	
	RS-232: GPS input or Antenna Control Signaling	
	ARINC 429 Input: Aircraft Position Information	
Discrete Inputs/Outputs	Remote Power Reset, Weight on Wheels, TX Mute In, TX Mute Out, TX Control In, Operator Ground Enable, Maintenance Ground Enable	
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 (optional), 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	
Other Features	Built-in Automatic Uplink Power, Frequency and Timing Control, Authentication, Antenna Control Interface (OpenAMIP)	

Mechanical/Environmental

Size	e8000 AE: 4MCU per ARINC 600	W 4.88 in x D 15.03 x H 7.62 (w 12.40cm x D 38.18cm x H 19.35cm)
Weight	16 lbs (7.26Kg)	
Operating Temperature	-20° to +60°C (-4° to +140°F) at sea level with temperature gradient of 1°C 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	18-36VDC; 100-264VAC, 50-400Hz	
Power Consumption	DC: 4 Amps maximum at 28VDC	AC: 3 Amps maximum at 110VAC, 400Hz
DO-160G Certifications	Operational Shock, Crash Safety Vibration Decompression Altitude Explosive Atmosphere Electrostatic Discharge (ESD)	Magnetic Effects Power: Input, Voltage Spike, Lightening Induced Transient Susceptibility Audio Frequency Conducted Susceptibility – Power Inputs Induced Signal Susceptibility Radio Frequency Susceptibility Emission of Radio Frequency Energy
Electro Magnetic Interface (EMI)	MIL-STD-461F	
Aircraft Electric Power	MIL-STD 704F	

** SCPC Return can only be operated when using DVB-S2/ACM*
*** TPC not supported for use with DVB-S2 outbound in iDX 3.0 and above*