ORBIT

Communications without Boundaries

Orion™

3D Audio Management System

Building on years of leadership in Audio Management Systems, the innovative Orion system couples Orbit's well-established robust designs and reliability with next generation capabilities. Orion provides exceptional 3D Audio, Adaptive Noise Reduction and Voice-Activated Detection as standard features. It delivers a 360-degree clear audio experience with significant benefits for pilots, including increased situational awareness, survivability and flight safety.

Furthermore, Orion's patented Dual IP Ring topology reduces weight while providing inherent system redundancy, incremental scalability and flexibility to suit any size civil or military platform.

Dual IP Ring

Dual IP Ring is a patented topology in which Communication Control Panels (CCPs) are linked via a robust Ethernet/AFDX Dual IP Ring. The CCP is comprised of an operator panel and a communications switch, eliminating the need for a central communications unit and thus reducing unit count and system weight.

Each CCP adds capabilities and dedicated processing power per crew member in an incremental manner. This allows for implementation of processor-intensive algorithms such as 3D Audio, Adaptive Noise Reduction and Voice-Activated Detection.

Orion's multiple Ethernet ports can interface with avionics systems in many different ways, including:
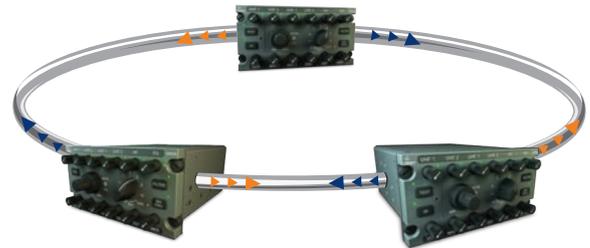

- Software-Defined Radio (SDR)
- Operation via touchscreen or third-party control panels using a feature-rich Ethernet API
- Radar Warning Receiver (RWR)
- Triggering of voice messages and warning tones
- Mission computers

3D Audio

3D Audio significantly enhances situational awareness and flight safety by spatially separating audio warnings and multiple radio signals.
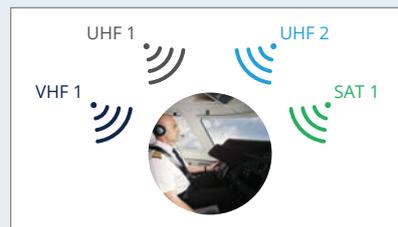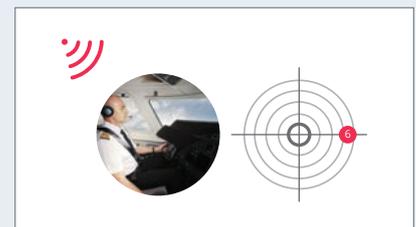
Directional Alerts:
Increases Safety
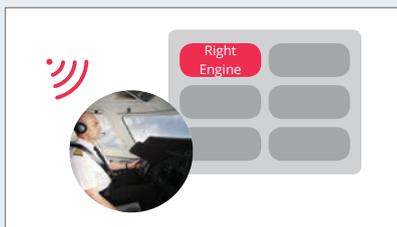
Radio Separation:
Enhances Intelligibility

Directional Threat Cues:
Increases Survivability

Adaptive Noise Reduction (ANR)

Superior noise reduction is achieved by dealing with all effects of cockpit noise: microphone noise, earphone noise and electrical noise.

Microphone Noise Reduction

Orion analyzes the noise from both the pilot's microphone and a dedicated noise microphone in each CCP. During pilot radio transmissions, noise is cancelled out at the source using an adaptive algorithm, resulting in crystal-clear audio communications.

Active Headset Noise Reduction

Orion reduces pilot fatigue and hearing loss and increases speech intelligibility by cancelling out ambient noise via a special microphone in each earcup.

Electrical Noise Reduction

Aircraft avionics systems sometimes induce harmonics into the audio signal paths that cause annoying tones. Orion eliminates these tones without reducing speech intelligibility.

Voice-Activated Detection (VAD)

VAD provides exceptional hands-free crew intercommunication and is a significant improvement over VOX that may be activated by wind or other noise. VAD uses voice detection algorithms to ensure that only speech activates the intercom.

Suitable for Any Size Civil or Military Aircraft

Orion's incremental scalability and outstanding flexibility allows for optimization of system capabilities and configurations to mission requirements and platforms. Orion is ideal for small or large platforms, in almost any civil or military aircraft category, whether it be trainers and combat jets, helicopters, business jets, commercial airliners, transporters, tankers or special mission aircraft.

Key Features

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Patented Dual IP Ring topology

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3D Audio

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Adaptive Noise Reduction™

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Voice-Activated Detection™

—

Software-Defined Radio (SDR) support

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Operation via touchscreen or third-party control panels

—

Incremental scalability and flexibility

—

Reduced aircraft weight

2-Seater Jet Configuration

Commercial Airliner Configuration

Integrated SELCAL functionality eliminates the need for a separate SELCAL unit

Orion™ Specifications

	Orion system capabilities with 6 CCPs	Single CCP
Operator Panels BW/NVG	6	1
Radios Each CCP can support one additional Radio by using a Receiver input, an Audio output and a discrete output	18	3
Headsets Dynamic / Standard	6 Stereo or 12 Mono	1 Stereo or 2 Mono
NAV/Warning Receivers	42	7
Discrete Inputs	48	8
Discrete Outputs	30	5
Analog Audio outputs	6	1
Internal Alert messages	60 messages , up to 10 seconds each	
SELCAL	Integrated SELCAL functionality, Eliminates the need for separate SELCAL unit	
System Components Communication	Patented Dual IP Ring topology with inherent redundancy. Meets ARINC 664 part 7 standards	
IP/AFDX ready Ethernet ports for avionics integration	12	2
Redundancy Modes	Inherent, Backup & Emergency	
Compliance	DO-160G, DO-178C, DO-214A, DO-254	
Dimensions, per CCP Operator panel can be separated from CCP for low depth installations	(W x H x D) 146 x 85 x 165 mm	
Weight, per CCP	1.95 Kg	
Power Consumption, per CCP	24Watt @ 28V	
Standard Advanced Features		
3D Audio	360˚ directional audio for enhanced situational awareness. Applications include radio separation, crew positioning, directional safety alerts and directional threat alerts	
Adaptive Noise Reduction (ANR)	Microphone and electrical noise reduction	
Voice Activated Detection (VAD)	Ensures that only speech activates the microphone for crew intercom, allowing hands-free intercom even by helicopter winchman.	
Operation via touchscreen or third-party control panels	Supported by a feature-rich Ethernet API	

Environmental Conditions: per RTCA/DO-160G

Operational temperature	-15°C to +55°C continuous, -40°C to +70°C short-time
Storage temperature	-55°C to +85°C
Altitude	50,000 ft.
Humidity	95% relative humidity for 48 hours
Vibration	Cat. S, curve M
Shock and crash safety	Acceleration: 20g Shock, operational: 6g Shock, crash safety: 20g
Fire, Flammability	Cat. C

CCP Electrical Characteristics

Audio characteristics	Per DO-214A
Frequency response	Constant within +3dB from 300Hz to 6KHz for any audio channel. 2 optional wide band inputs per CCP: Constant within +3dB from 20Hz to 22KHz
Harmonic distortion	Less than 3% over the entire frequency range
Side tone level	Independent level adjustment for each radio and for intercom
Radio & receiver audio inputs	0.2 to 12 VRMS, 600 Ω
Radio & recorder audio outputs	0.1 to 1.5 VRMS, 150 Ω
Microphone inputs	High impedance: 50 to 1500 mVRMS , 150 Ω Low impedance : 0.22 to 4 mVRMS , 5 Ω Each CCP has two independent microphone inputs with separate AGC
Headset output	High impedance: Max. 100mW into 600 Ω or 250mW into 150 Ω Low impedance: Max. 1W into 9.5 Ω