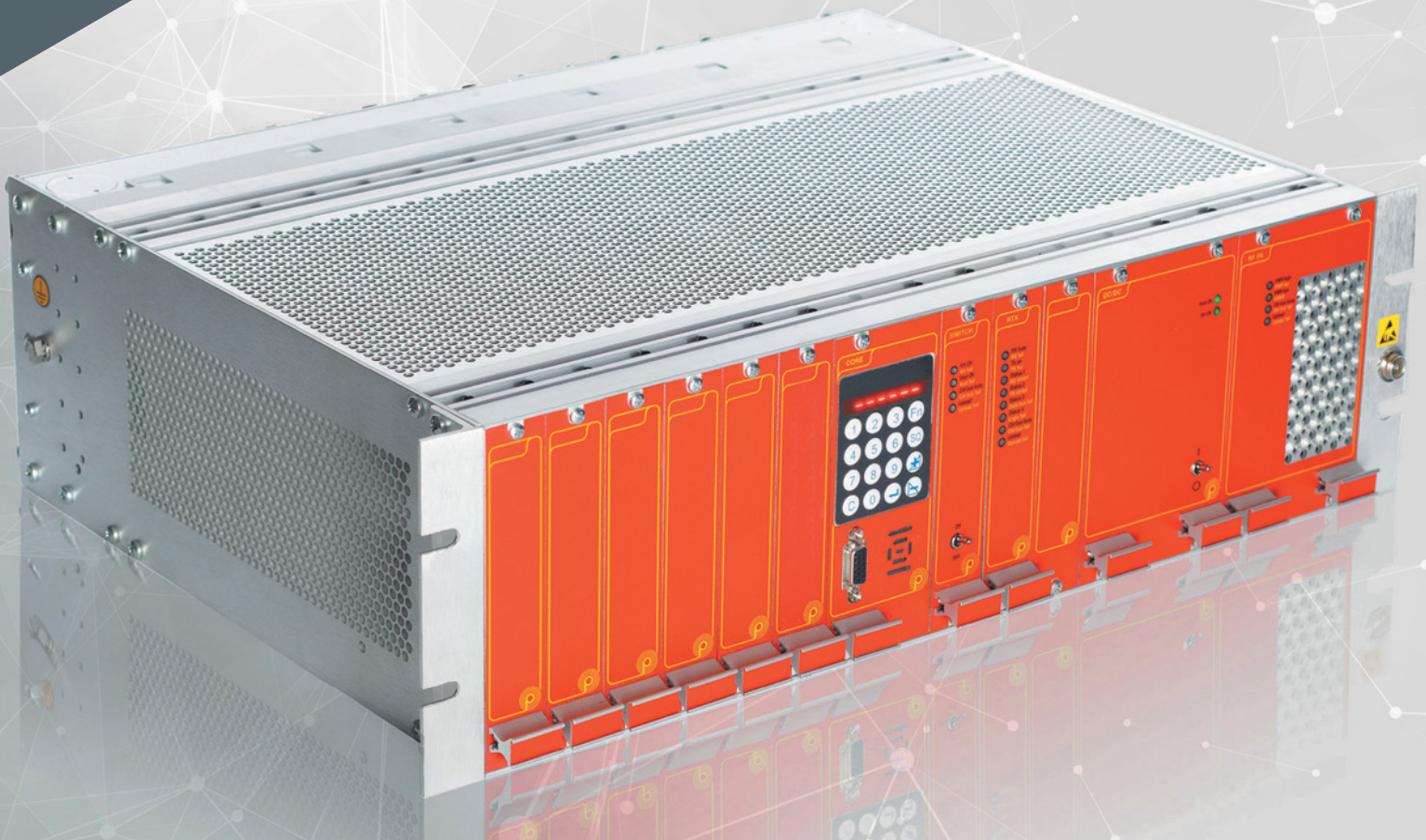


LMR SYSTEMS



RBS4000 110W

ECOS-D Radio
Base Station



[Request More Info Here](#)

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Selex ES Inc, a Leonardo Company.

Leonardo's Extended Communications System - Digital (ECOS-D) RBS4000 110W is a modular voice and data radio base station (RBS) designed to meet and exceed the requirements of professional land mobile radio systems.

High quality, state-of-the-art reliability and outstanding modularity allow the ECOS-D RBS4000 110W digital-based equipment to support analog FM, digital DMR conventional Tier II and digital DMR trunking Tier III.

The ECOS-D RBS4000 110W can be used in a real-time dual-mode analog FM/Digital DMR conventional Tier II or in digital DMR trunking Tier III mode.

All the modes of operation of the ECOS-D RBS4000 110W natively support flagship simulcast technology without any external ancillary. The ECOS-D RBS4000 110W can be used from stand-alone repeater to conventional simulcast to digital multi-site trunking with a configuration change only, and can be connected to build a system natively with IP links.

Main Features

- › 3 RU device designed to be hosted in 19-inch rack
- › Available in VHF, UHF frequency bands at 12.5 kHz/25 kHz programmable channel spacing
- › RBS and stand-alone repeater mode of operation:
 - Conventional analog FM only
 - Digital DMR conventional Tier II only
 - Real-time automatic dual-mode conventional analog FM/digital DMR conventional Tier II with priority mode setting
 - Digital DMR Trunking Tier III (embedded trunking controller)
- › Designed to natively support Simulcast technology:
 - Multi-site simulcast support: available for both conventional and trunking operations
 - Simulcast Server, Sub-server, Client mode within the same device (virtually no limits in the number of RBS per simulcast channel)
 - Reliable fall-back mode: Client in-cabinet repeating and backup Server automatic reconfiguration
 - Synchronization: GPS and/or Precise Time protocol IEEE 1588v2 with fall-back
- › Voting: analog FM and digital DMR best-in-class voting
 - Auto Adaptive Technology (A2T): each RBS "adapts" itself to the time and frequency response of the backbone and automatically compensates time-variant differences
 - Redundant IP link management between RBSs
- › Provides high levels of protection from access by unauthorised radio users, via the Unauthorised Access Protection procedure
- › Embedded AMBE+2 vocoder for DMR Tier II clear or encrypted (ARC4) voice communications from a local microphone (embedded loudspeaker)
- › DMR data transmission ports (RS232/RS485/LAN), digital I/O and analog inputs available.

Maintenance

- › Display and keypad for easy local maintenance and fault handling
- › Modular structure for easy front and back cards replacement. In the event of failure, all modules are individually removable
- › Digital I/O, Analog inputs, power supply, antenna connectors and backbone interfaces hosted on dedicated back-cards, easily removable from the back and insulated from voltage overload
- › Remote Firmware upgrade over LAN with integrity control (embedded dual-flash memory for storage of two firmware)
- › SNMPv2c Network Management System (each RBS is a SNMP agent) and MIB availability for integration with thirdparty NMS system

Interoperability

- › Interoperability (IOP) certificates with DMR major terminals vendors in Tier II and Tier III modes of operations (for further details, please visit the DMR Association website at: www.dmrassociation.org.)



ECOS-D RBS4000 110W TECHNICAL DATA

GENERAL	
Dimensions	3 RU compatible with 19" rack mounts
Weight	From 13 kg [28.6 lbs] ¹
Supported modulations	› FM/PM for analog mode › 4FSK/C4FM for digital mode with I&Q mo/demodulator
Frequency generation	Synthesized
Channel spacing	12.5 kHz / 25 kHz ²
Mode of operation	Simplex / Half-Duplex / Duplex
Digital data gross bit rate	9600 bps with 4FSK/C4FM digital modulation in 12.5 kHz channel
Temperature range	From -30° to +60°C [-22°F to +140°F]
Power supply	48 Vdc (galvanically insulated)
Input current (at 48 Vdc)	Transmission ³ Standby ³ VHF: 6A VHF: 0.9A UHF: 7A UHF: 0.9A 800: 7A 800: 0.9A 900: 7A 900: 0.9A
CTCSS	(Tx/Rx split-tones) Yes. 67 – 254.1Hz (with 0.1Hz step)
DCSS	(Tx/Rx split-tones) Yes
Backbone interface	1xLAN port 10/100 Base T (SolP Link, remote firmware upgrade and SNMP NMS)
I/O ports	LAN, RS232, 4 digital inputs, 4 digital outputs, 2 analog inputs

SYNCHRONIZATION	
RBS main clock	OCXO (Oven Controlled Crystal Oscillator) 20 ppb temperature stability with programmable zero-offset compensation
Simulcast synchronization	› From Built-in GPS (1+1 option available on request) › From incoming IP GMC/BC/OC PTP IEEE 1588V2

TIER II CONVENTIONAL / ANALOG FM CONVENTIONAL	
Configuration mode	Stand-alone repeater
Simulcast configuration wide coverage virtual repeater	Radio Base Station: macro-cell Server/ Sub-server/Client

TIER III TRUNKING	
Configuration mode	Radio Base Station with Embedded Trunking Controller: Control Channel RBS/Traffic Channel RBS
Simulcast configuration wide coverage virtual repeater	Radio Base Station macro-cell Server with embedded Trunking Controller/macro-cell Server for Traffic Channel/sub-server/client

Specifications subject to change without notice.

¹ Depending on RBS equipment

² According with the national regulations where RBS is used

³ Value is to be intended for a fully equipped RBS configuration

TRANSMITTER	
Frequency bands	› VHF: 136-174 › UHF: 450-526 › 800: 806-894 › 900: 896-941
Output impedance	50 Ohms
Output Power	Programmable from 10W up to 110W
Maximum Deviation (RSD)	±2.5 / ±4 / ±5 kHz (12.5/25 kHz)
Adjacent channel power	<-60 dB@12.5 kHz / <-70 dB@25 kHz
Intermod. attenuation	>40dB (ETSI)
Spurious and harmonic emission	› VHF/UHF: • <-36dBm < 1GHz <-30dBm > 1GHz › 800/900: • <-36dBm < 1GHz <-26dBm > 1GHz
Audio response	+1, -3dB; 300-3000 Hz
Audio distortion	< 3% @ 1000Hz; 60% RSD
S/N	>45dB (12.5 kHz) / >50dB (25 kHz)
Frequency stability	± 0.02 ppm

RECEIVER	
Frequency bands	› VHF: 136-174 › UHF: 450-526 › 800: 806-894 › 900: 896-941
RF input impedance	50 Ohms
Analog FM sensitivity	(12.5 KHz): < -109,5 dBm @ 20 dB SINAD psofo
Digital sensitivity	› 4FSK (12.5 KHz): < -115 dBm @ BER = 1x10 ⁻² › C4FM (12.5 KHz): < -115 dBm @ BER = 1x10 ⁻²
Adjacent channel selectivity	>60 dB/70 dB (ETSI) (12.5/25 kHz)
Intermodulation rejection	>70 dB (ETSI) 12.5/25 kHz
Spurious and image response rejection	>70 dB (ETSI)
Audio response	+1, -3dB; 300-3.000 Hz
Audio distortion	< 3% @ 1.000Hz; 60% RSD
S/N	>45dB (12.5 kHz) / >50dB (25 kHz)
Line output	-10 dBm

EMISSION DESIGNATORS	
Analog FM/PM	› 8K50F3E/8K50G3E › 11K0F3E/11K0G3E › 16K0F3E/16K0G3E
Digital 4FSK	7K60FXD/7K60FXE
Digital C4FM	8K10FID/8K10FIE

COMPLIANCIES	
FCC	CFR Title 47 - Part 90, Part 15B - Part 22
ISED	RSS-119 - ICES-003

Not all variants and features are available in all countries or in all geographic areas.

Encoding Criteria

The following legend defines the coding rules for the products derived from the archetypes. It is specific for an ECOS-D RBS4000 110W.

The model name for each product derived from the archetype, is obtained by assigning to the variables (letters in yellow color) one of the values listed here.

Models available

RBS4000H-A-B-AOC1-4W0-E100-N-F-L-010 (VHF) RBS4000K-A-B-AOC1-4W0-E100-N-F-L-000 (UHF/800/900)		
A	V3110	110W VHF (136-174 MHz)
	U2110	110W UHF (450-526 MHz)
	U4110	110W 800 (806-894 MHz)
	U5110	110W 900 (896-941 MHz)
	V3000	Receive only VHF (136-174 MHz)
	U2000	Receive only UHF (450-526 MHz)
	U4000	Receive only 800 (806-894 MHz)
	U5000	Receive only 900 (896-941 MHz)
B	W	Single Receiver
	D	Receiver Diversity
N	S0	No SolP piggy-back
	S1	With one SolP piggy-back
F	V1	No Vocoder
	V2	AMBE 3003 multi-vocoder board
L	G0	No GPS Receiver
	G1	Single GPS Receiver
	G2	Dual GPS Receiver



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