

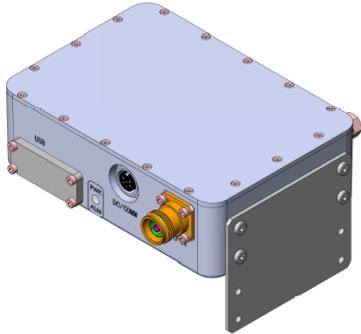


Amplifiers

DATA SHEET

ECHO Repeater Monitoring System

ECHO-ERMS



- Monitors both SIRIUS and XM Terrestrial Signals
- Triggers Alarms based on Pre-Set Performance Levels
- Records Alarm Events in Memory
- Upgradeable Firmware

Overview

The Echo Repeater Monitoring System (ERMS) is designed to continually monitor the health of the Sirius and XM signals and is typically installed at the output of the Echo Repeater. More specifically, the ERMS monitors Signal-to-Noise-Ratio (SNR), Bit-Error-Rate (BER), and Code Word Error Rate (CRER) statistics. When these statistics fall below pre-defined performance levels (as required by SiriusXM), the ERMS will trigger and communicate alarms via an RS-232 interface. When statistics fall below pre-defined acceptable levels, the ERMS will generate a MAJOR alarm and will simultaneously raise a Shutdown Signal. The alarms are monitored by the Echo Repeater and a Shutdown signal will cause the Echo Repeater to turn off.

Internally, the ERMS contains a low band (LB) receiver and a high band (HB) receiver module (one for the XM signal and one for the Sirius signal). These receiver modules are quite similar to those found in vehicles and other SXM end-user devices. A built-in microprocessor continually monitors the health of the signals and reports an alarm when conditions deteriorate. The ERMS also contains a built-in event recorder which keeps a record of all alarm events as well as the date and time at which they occurred. The alarm history can be downloaded to a USB memory stick via the micro-USB connector on the front panel.



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SPECIFICATIONS

ECHO Repeater Monitoring System

ECHO-ERMS

Electrical

RF Parameters	Specification (Sirius Band)	Specification (XM Band)
Frequency Range	2326.25 MHz \pm 2.006 MHz	2338.755 MHz \pm 2.53 MHz
Input Range	-10 dBm to -50 dBm	
VSWR (Return Loss)	1.5:1 Max. (14 dB Min.)	
Impedance	50 ohms	

General Characteristics

Operating Voltage	+7 VDC
Nominal Current at Rated Power	1A @ +7 VDC
Monitoring and Alarm Interface	RS-232

Environmental

Operating Temperature	-40 °C to +65 °C
Enclosure	NEMA 4X Weather Proof
MTBF	>500,000 hours



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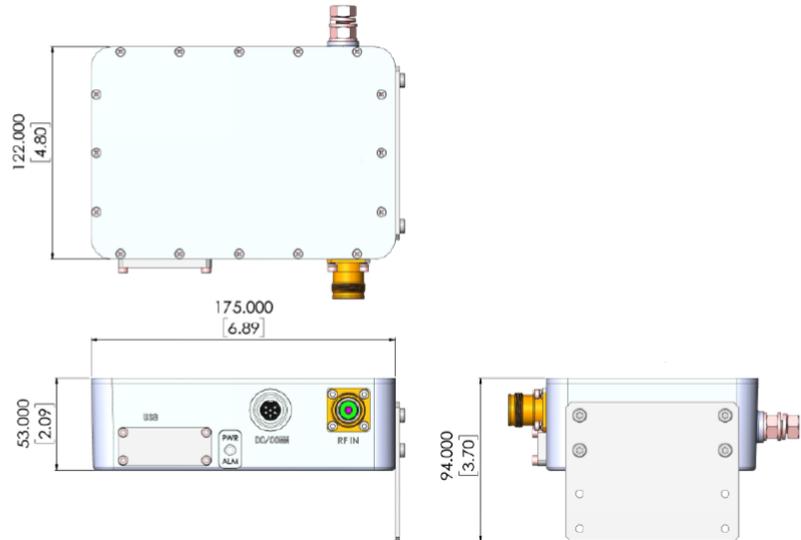
SPECIFICATIONS

ECHO Repeater Monitoring System

ECHO-ERMS

Mechanical

RF Connectors	1 x 4.3-10 female
ECHO Repeater Connector	Amphenol 6 pin C09131G100 Series
Event Recorder Interface	Micro USB
Dimensions (w/o Mtg. Brackets or Connectors)(HxWxD)	6.89 x 4.80 x 2.09 in. (175.0 x 122.0 x 53.0 mm)
Weight	3.0 lbs (1.4 kg)
Mounting	Mounting Ears for Surface Mount Installation; Mount Kit Supplied for piggyback Installation on ECHO Repeater



ECHO-ERMS Outline Drawing

Pin Number	Signal	Description
1	RS-232	ECHO Repeater to ERMS
2	RS-232	ERMS to ECHO Repeater
3	Shutdown +5V TTL	Used by ERMS to Turn Off Repeater
4	TTL Ground	Supplied by ERMS
5	+7 VDC	Supplied by ECHO Repeater to power ERMS
6	Common	Ground Supplied by ECHO Repeater

ECHO Repeater Monitoring System (ERMS) Connector Pinout



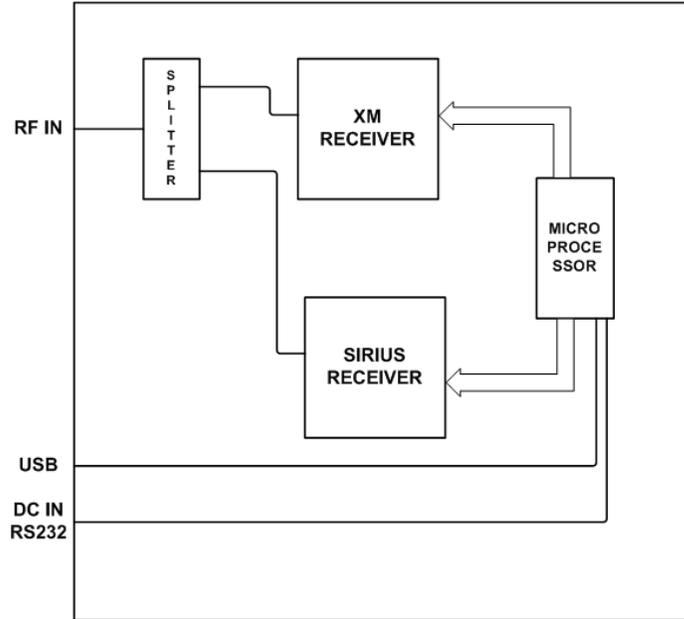
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SPECIFICATIONS

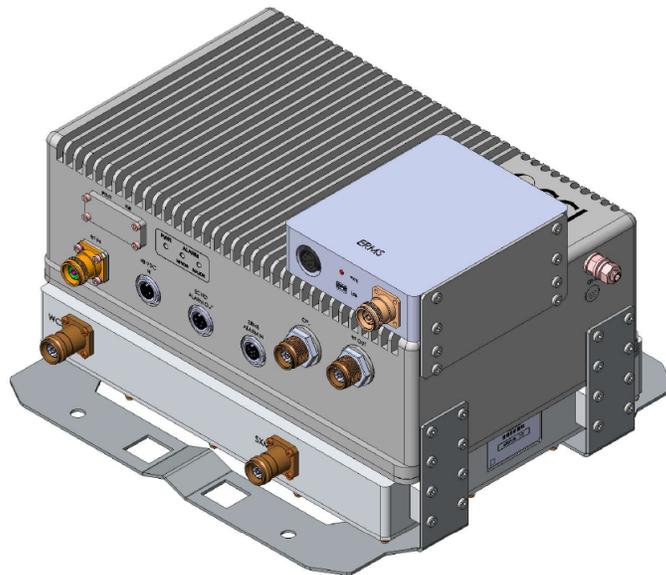
ECHO Repeater Monitoring System

ECHO-ERMS

Block Diagram



ECHO-ERMS Block Diagram



Mounting of ECHO Repeater with Diplexer and ERMS Module



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STANDARDS & CERTIFICATIONS

ECHO Repeater Monitoring System

ECHO-ERMS

Parts & Accessories

ECHO-ERMS ECHO Repeater Monitoring System

Standards & Compliance

Safety	EN 60950-1, UL 60950-1
Emission	EN 55022
Immunity	EN 55024
Environmental	IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-5, IEC 60068-2-6, IEC-60068-2-11, IEC 60068-2-14, IEC 60068-2-18, IEC 60068-2-27, IEC 60068-2-29, IEC 60068-02-30, IEC 60068-2-52, IEC 60068-2-64, IEC61000-4-5, GR-63-CORE 4.3.1, EN 60529 IP67, IP68

Certifications

Antenna Interface Standards Group (AISG), Federal Communication Commission (FCC) Part 15 Class B, Federal Communications Commission (FCC) Part 25*** CE, CSA US, ISO 9001

*** $\geq 2W$ EIRP w/DPO-2323-Sx Diplexer, or $< 2W$ EIRP w/o DPO-2323-Sx



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