



**L3HARRIS™**  
FAST. FORWARD.

## CR-128 COMMAND RECEIVER

### RECEIVER

#### Input Characteristics

Frequency Range	UHF, 420-to-450 MHz (field selectable)
Operating BW	± 35 kHz
Antenna Impedance	50 ohms (nominal)
Threshold Sensitivity	-116 dBm to -107 dBm
Dynamic Range	-107 dBm to +13 dBm
RF Input Power	+13 dBm (max without damage)
FM Demodulation	CPFSK, bi-phase encoded
Data Formats	Manchester encoded
Data Rate	50 Hz message rate, 7200 symbols/sec
Acquisition Time	60 ms typical (100 ms max)
Response Time	< 1 ms (after message received)
Failsafe Function	Programmable loss of command link time, programmable supply undervoltage

#### Output Characteristics

28V CMD Outputs	Monitor: 2 A max (continuous), constant voltage Optional: 2 A max (continuous), constant voltage Arm: 2 A max (continuous), constant voltage Terminate: 2 A max (continuous), constant voltage 5 A min (50 ms pulsed), constant current 7.5 A max (50 ms pulsed), constant voltage
Configuration/Status	Serial (RS-232)
User-Defined	Serial (RS-232)
SSTO (Signal Strength)	Analog (linear 0 to 5 VDC)
RSTO (Receiver Status)	Analog (linear 0 to 5 VDC, 0.5 V steps)

#### Environmental Specifications

EMI Per MIL-STD-461E	
Explosive Atmosphere	Per MIL-STD-810
Qual Temperature	-40 °C to +85 °C
Humidity	Qualified to RCC 319-99 levels
Random Vibration	20 Hz to 2 kHz, 22.43 G's rms
Shock	Pyrotechnic level of 9,500 G's at 10 kHz
Acceleration	± 125 G's, 3 axis
Altitude	0.0133 pascals
Derating	MIL-STD-975 is used as a guideline for derating all components
Reliability	2,000 hrs MTBF (launch) 5,000 hrs MTBF (flight)



The CR-128 is the next-generation missile and unmanned aerial vehicle command receiver specifically designed for the enhanced flight termination system (EFTS). Light weight, low power, small volume and configurable digital processing make the receiver ideal for numerous platforms. L3Harris is also the provider of the associated compatible EFTS ground support equipment.

The digital demodulator uses advanced digital signal processing techniques implemented in a field-programmable gate array to perform carrier acquisition/tracking and data recovery, frame synchronization, Reed-Solomon decoding and triple DES decryption. All functions are embedded and fully implemented within the decoder. The standard CR-128 contains a message command processor that is compliant to the EFTS message format.

An efficient isolated power supply is used to provide the RF/IF and decoder assemblies greater than 1 MΩ of isolation between primary power and chassis. A simple mechanical packaging design that consists of a single chassis and one external cover results in an overall volume of 3.7 cubic inches. Additionally, the aluminum-alloy chassis provides superior strength-to-weight ratio with excellent thermal and electrical conductivity. The mechanical package is designed and environmentally sealed to survive defined missile and unmanned aerial vehicle environments without degradation in electrical performance. Each receiver is field tunable from 420 MHz to 450 MHz. Frequency control is performed through the digital control of phase-locked synthesizers which are programmable in 100 kHz steps.

RECEIVER	
<b>Physical</b>	
Volume	3.3" L x 2.2" W x 0.515" H (3.7 in <sup>3</sup> total)
Weight	4.0 oz max (113 grams)
<b>Power Requirements</b>	
Input Voltage	+22 VDC to +36 VDC
Input Power	1.8 W typical
<b>Connectors</b>	
Data I/O	M83513/04 (25-pin micro-miniature D)
RF Input	SMA female (MIL-C-39012/60)
Fill I/O	6-pin micro-strip plug (DS-102 format)

## FEATURES

The unit is addressable for simultaneous missions. An embedded triple DES decryption-controlled cryptographic item prevents inadvertent terminations and has both serial and discrete telemetry outputs. Reconfigurability makes for easy sparing; spare receivers are not required for each configuration. Reed-Solomon decoding provides error correction and protection against burst errors, including an enhanced position location reporting system. As a drop-in replacement for legacy receivers, the user output allows for vehicle-control functions simultaneous with command functions.

## EXPERT SUPPORT

The CR-128 is designed, built, assembled and tested all within one facility and is serviced and supported by engineering professionals with decades of spaceflight design experience. Every CR-128 delivered is accompanied by domain expertise in parts, materials, radiation analysis, mechanical engineering, power supply design, digital signal processing, radio frequency design and manufacturing engineering. For most applications existing data items can be provided for review, reducing the analysis and testing required.

### CR-128 Command Receiver

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