L3HARRIS®
FAST. FORWARD.

KI-700 MEDIUM RATE ADVANCED ENCRYPTION STANDARD (AES) UNIT

Manages telemetry and mission data within a single encryption unit

The KI-700 is the latest National Security Agency (NSA) certified AES-256 based encryption and decryption unit supporting data rates up to 640 megabits per second (Mbps). The unit provides secure uplink and downlink protection for satellite command, telemetry, crosslink and payload communications links. The KI-700 is certified to protect data. The unit can be used to secure the command and telemetry links for foreign and domestic commercial satellites seeking compliance with Committee on National Security Systems (CNSS) Policy No. 12.

The KI-700 handles command authentication, telemetry link and data links in a single integrated encryption unit. The KI-700 utilizes an existing NSA certified application-specific integrated circuit (ASIC) for uplink decryption up to 40 Mbps and downlink encryption up to 640 Mbps. The unit is radiation hardened for geostationary (GEO) environments and is designed to support a traditional 15-year GEO mission life.

The qualified design features the same family of parts successfully flown in our heritage space products. The unit provides cryptographic capabilities for multiple communication links integrated into a small, lightweight housing. The KI-700 is available for procurement direct from L3Harris or through the U.S. Air Force's Material Life Cycle Management Center.

L3Harris has over 25 years of experience embedding a variety of NSA devices into high-reliability airborne and space applications. With a strong spaceflight heritage, L3Harris is a recognized industry leader in NSA certified and below space cryptographic solutions with over 350 units manufactured.

SPECIFICATIONS

INTEGRATED ENCRYPTOR/DECRYPTOR	
Encrypt	CTR, CFB, GCM AES-256 modes
Decrypt	GCM, ECB w/VCC, CTR, CFB AES-256 modes (authenticated modes)
Keying capability	PROM keys: Decrypt selectable TEKs up to 224, encrypt TEKs Selectable up to 256 TEKs, with OTAR capability supported with the use of up to 32 keys KEKs
Data rate	Encrypt 1 kbps to 640 Mbps max, Decrypt 1 kbps to 40 Mbps max
Over-the-air rekey	From ground encryptor in GCM mode via uplink or from CD&H using host interface in ECB mode
INTERFACE	
Uplink/crosslink downlink	Data, clock and gate: LVDS serial Data, clock and gate: LVDS serial to 40 Mbps Parallel 8-bit to 320 Mbps Parallel 16-bit to 640 Mbps
Telemetry	LVDS serial
Mode configuration and discrete telemetry status	Low-Voltage Complementary Metal-Oxide Semiconductor (LVCMOS)



KEY BENEFITS

- Lowers risk by using qualified design and family of space-proven parts
- Provides greater efficiencies with single, compact, light-weight unit
- Offers convenient procurement process that supports multiple quantity builds
- Offers more robust mission life

SPECIFICATIONS - CONTINUED

POWER REQUIREMENTS	
Input voltage	+ 5Vdc, ± 5%
Power (nominal)	2.25 W standby (no data/clk), 4.2 W uplink 40 Mbps and downlink 40 Mbps (GCM), 8.9 W full duplex and maximum data rates (ECB) UL 40 Mbps/CTR DL 640 Mbps
Inrush current	< 2 A for < 300 msec (@ highest data range settings)
GENERAL	
Dimensions	5.8 in L x 5.8 in W x 1.07 in H
Weight	< 1.63 lbs
Temperature	QUAL: -30 °C to +72 °C; FM: -28 °C to +65 °C
Vibration	34 Grms
EMI	MIL-STD-461C/D
Radiation	100 krads (Si) (chassis)
Mission life environments	Designed for a 22-year life, inclusive of 15 years on-orbit mission operation in GEO
NRE OPTIONS	
DS-101 interface for electronic keying capability and plain text buffering for GCM messages prior to authentication	

KEY FEATURES

- Possesses NSA certification
- Is total dose and single effect hardened
- Supports encryption and decryption in a single unit
- Designed for commercial GEO hosted payload and small satellite applications
- Offers encryption and decryption for command authentication, telemetry and crosslinks
- Offers 40 Mbps command authenticate uplink and 640 Mbps downlink
- Supports multiple AES-256 modes
- Supports high data rate applications
- Provides over-the-air (OTAR) rekeying capability

KI-700 Medium Rate Advanced Encryption Standard (AES) Unit

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