

# KIV-78 — Mode 4/Mode 5 IFF Crypto Appliqué



Identification Friend or Foe Crypto Solutions

Appliqué form-factor supports easy removal and storage without host impact

Mark XIIA (Mode 4 and Mode 5)

AIMS 04-900 compliant, NSA certified

Simultaneous Mode 4/5 interrogate and transpond support

Software upgradeable

As a leading supplier of cryptography for avionics systems, General Dynamics has over 40 years of Type 1 system development experience. Our avionics systems include some of the most advanced hardware, software and mechanical designs, integrated to meet the community's high standards for security, in lightweight, low-power, ruggedized form factors.

The KIV-78 provides cryptographic and time-of-day services for a Mark XIIA (Mode 4 and Mode 5) IFF Combined Interrogator/Transponder (CIT), individual interrogator, individual transponder or IFF system deployed to identify cooperative, friendly systems.

The KIV-78 is capable of concurrent Mode 4/ Mode 5 operations as well as concurrent interrogator/transponder operations. It performs black key management supporting up to three months' worth of keys for Mode 4 and Mode 5 IFF and stores these keys in encrypted format, allowing black key recovery.

The KIV-78 is capable of both battery powered (Cold Load) and prime powered (Warm Load) key loading via DS-101. KIV-78 is compatible with both the CYZ-10, PYQ-10, KIK-20 and other EKMS308/608 compliant DS-101 key load devices. Other functions KIV-78 provides for the IFF system include time-of-day services, status reporting, and host key management services. The KIV-78 interface is specified in the Department of Defense AIM 04-900 document and is NSA-certified.

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## General Specifications

- AIMS 03-1000
- AIMS 04-900 Option A
- STANAG 4193
- EKMS 308/608
- MIL-STD-810F
- MIL-STD-461E

## Modes of Operation

The KIV-78 supports three power modes of operation:

- Storage Mode — minimum of eight years in benign environments
- Key Retention (Code Hold/Cold Load) Mode — minimum of six months
- Prime Power Mode — IR & XP simultaneously

## IFF Crypto Support Tools

**Emulator:** Performs Mode 4 and Mode 5 interrogate and transpond functions that are compliant to 04-900 Option A with respect to interface voltages, waveforms and timing. However, this emulation does not use actual cryptography, and therefore is not a CCI device.

**STE:** Performs closed box confidence testing on KIV-78 and emulator to verify unit is functional. The STE can also be used to collect crypto status, verify QKEK, check for low battery, and confirm which image versions are loaded.

## Why General Dynamics?

Designing any system is difficult, but given the gravity of IFF-based decisions, disciplined system design is even more critical. Our background and experience in cryptographic designs, paired with our strong design processes, result in low-risk, highly reliable systems.

At General Dynamics, we build IFF crypto solutions for every branch of the military. Our IFF crypto solutions provide legacy interoperability and the programmability to adapt to new cryptographic protocols without hardware modification. With 40 years of overall cryptographic experience and 15 years building IFF systems, General Dynamics has the proven ability to secure IFF systems.

## Features

- **Small appliqué design:**  
Removal leaves host equipment unclassified
- **Modes (all simultaneous)**  
Mode 4 . . . . . Encrypt/Decrypt  
Mode 5 . . . . . Encrypt/Decrypt
- **Size** . . . . . 3.4 in. x 4.7 in. x 2.1 in.
- **Weight** . . . . . 24 oz.
- **Interfaces**  
Mode 4 . . . . . Legacy video IAW AIMS 97-900  
Mode 5 . . . . . Serial IAW AIMS 04-900 (LVDS standard)  
Keying . . . . . EKMS 308/608, DS-101, cold load

Characteristics	Specifications
<b>Environmental Requirements</b>	
Operating Environment	
Temperature	-40°C to +91°C (-40°F to +196°F)
Altitude	78,000 feet (23774.4 meters)
Vibration	5 to 50 Hz (20 g's 90 minutes each axis) 10 to 2000 Hz (0.2 g2/Hz random each axis)
Relative Humidity	0% to 100%
Shock	≥40 g's 8 ms each axis
Acceleration	≥ 16 g's
Reliability (MTBF)	≥ 10,000 hours at 91°C
Storage Environment	
Temperature	-54°C to +95°C (-65°F to +203°F)
Relative Humidity	100% (meets the requirements of MIL-E-5400, paragraphs 3.2.17 and 3.2.24.4.)
<b>Power</b>	
Primary Power Input	+15 Vdc ±1.0 Vdc
Max. Continuous Current	200 mA
Max. Surge Current	400 ma (3 sec)
Battery Power	+7.8 Vdc
Normal Code Hold Current	<300 μA
Cold Load Current	<20 mA
Battery Life	>6 months under nominal temperature environment

## GENERAL DYNAMICS

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