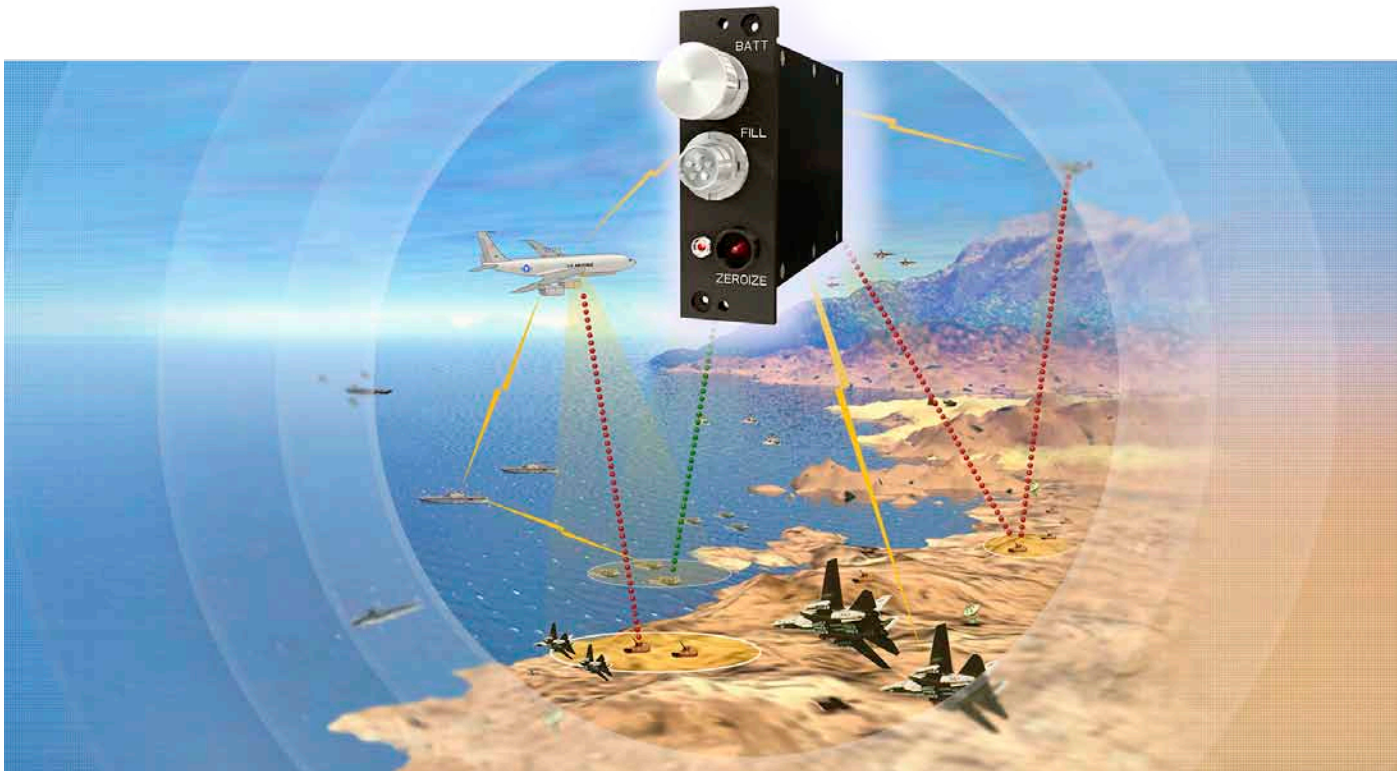
Mini IFF Crypto Appliqué (MICA)



Identification Friend or Foe Crypto Solutions Supporting the Customer's Needs

Small appliqué form-factor supports easy removal and storage without host impact

Mark XIIA (Mode 4 and Mode 5)

AIMS 04-900 compliant

Simultaneous Mode 4/5 interrogate and transpond support

Software upgradeable

As a leading supplier of cryptography for avionics systems, General Dynamics C4 Systems 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 General Dynamics Mini Identify Friend or Foe (IFF) Crypto Appliqué provides cryptographic and time-of-day services for a Combined Interrogator/Transponder (CIT) or individual interrogator or transponder Mark XIIA (Mode 4 and Mode 5) IFF system deployed to identify cooperative, friendly systems.

The General Dynamics Mini IFF Crypto Appliqué (MICA) 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.

General Dynamics' MICA is capable of both battery powered (Cold Load) and prime powered (Warm Load) key loading via DS-101. MICA is compatible with both the CYZ-10 and the new SKL key load devices. Other functions MICA provides for the CIT system include time-of-day services, status reporting, and host key management services. The MICA interface is specified in the Department of Defense AIM 04-900 document.

Mini IFF Crypto Appliqué (MICA)

General Specifications

- AIMS 03-1000
- AIMS 04-900 Option A
- STANAG 4193
- EKMS 308/608
- MIL-STD-810F
- MIL-STD-461E
- DO-160D

Modes of Operation

General Dynamics' MICA supports three power modes of operation:

- Storage Mode — minimum of eight years
- 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, timing and power consumption. However, this emulation does not use actual cryptography, and therefore is not a CCI device.

STE: Performs closed box confidence testing on MICA 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 C4 Systems, 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 C4 Systems 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 in. x 4.5 in. x 1.1 in. (approximate)

Weight . . . . . .17 oz. (approximate)

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*
Environmental Requirements	
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.)
Power	
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

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