GENERAL DYNAMICS
Mission Systems

TACLANE®-Nano Encryptor (KG-175N)

Smallest, Lightest, Certified HAIPE® For Secure Tactical Communications

NOW NSA CERTIFIED

Lowest Size, Weight, Power and Cost (SWaP-C) HAIPE Encryptor

NSA Certified for Top Secret/SCI and below

Fastest Small Form Factor Encryptor; 200 Mb/s Aggregate Throughput

Compact, Ruggedized for Mobile, Dismounted and Kitted Applications

Enhanced Features for Networking, SATCOM and Unattended Operations
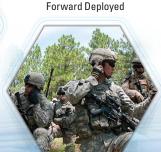
GEM® One Remote Management

Overview

Extremely compact and mobile, the new TACLANE-Nano provides end-to-end HAIPE encryption in the smallest, lightest and lowest power configuration than any HAIPE device available today. From battlefield to briefcase, the TACLANE-Nano is ruggedized to withstand the rigors of any mobile environment including tactical, mobile applications such as telework, dismounted deployments, and integration into mobile communications kits. The TACLANE-Nano is designed with the latest in crypto modernization technology to provide protection for information classified TS/SCI and below at 200 Mb/s aggregate throughput.

Key Features

- NSA certified to protect information classified TS/SCI and Below
- Simultaneous HAIPE v4.2.5 and IPMEIR 1.0 compliant
- Simultaneous Suite A/B without user intervention
- Supports asymmetric traffic flows of 200 Mb/s aggregate throughput
- Small size (1.2"H x 3.5"W x 2.25"D)
- Low power (5 Watts typical)
- Hot swappable/redundant power from USB or Power over Ethernet (POE)
- Embedded Agile TCP Performance Enhancing Proxy (PEP) for disadvantaged networks
- Supports Agile VLAN feature for Layer 2/Layer 3 agility and advanced networking
- Render Useless Zeroize (RUZ) feature for unattended operations
- Safe keying features including Classified/Unclassified Device Generated Shared Key (DGSK) and Exclusion Keys (EKs)
- ACC and KMI OTNK compliant
- IPv4/6 Dual Stack
- MIL-STD-810G ruggedized / MIL-STD-461F EMI compliant
- Supported by GEM One Remote Encryptor Manager

Mobile Communications Telework, Travel, Field Agent, Covert Ops, Flyaway kits.

Dismounted, Tactical, Forward Deployed

Unmanned Systems and Intelligence, Surveillance, Reconnaissance (ISR) OPs.

Platforms

TACLANE®-Nano Encryptor (KG-175N)

Improved Performance over Disadvantaged Networks

To increase network availability and accelerate performance in disadvantaged networks, the TACLANE-Nano includes the Agile Performance Enhancing Proxy (PEP) software feature. The TACLANE Agile PEP function works by hosting a specialized version of TCP resulting in better performance than an end-to-end standard TCP. Integrating this technology eliminates the need for external PEP devices. When the Agile PEP function is enabled, it uniquely provides simultaneous support for concurrent TACLANE Agile PEP, Standard TCP connections and all HAIPE traffic types on a per packet basis.

Unattended Operations

The Render Useless Zeroize (RUZ) feature provides a fast, simple way to make the TACLANE inoperable and inaccessible by eliminating Critical Security Parameters like cryptographic keys and algorithms. Once the device is rendered useless, adversaries cannot access information, reconfigure or operate the device. This is ideal for unattended operations and other high risk, hostile environments that are susceptible to overrun or unplanned leave behind.

Easy to Use, Deploy and Manage

The intuitive and familiar common TACLANE HMI can be used for local device configuration and management eliminating additional training for current TACLANE users. GEM One Encryptor Manager supports remote configuration and management to simplify operation and enable centralized secure management of all of your TACLANE devices on the network.

Applications

The TACLANE-Nano supports the bandwidth needed to support voice, video and data applications (such as real time video and data analytics) in mobile environments including:

- Mobile Communications - Telework, Travel, Field Agent, Flyaway Kits
- Dismounted, Tactical Forward Deployed
- Unmanned Systems and Intelligence, Surveillance, Reconnaissance (ISR) Operations
- Covert Operations
- Embedment into Deployable Communication Kits and Platforms

Certifications

- TACLANE-Nano is NSA Certified to protect information classified Top Secret/SCI and below.

Technical Specifications

- Size
  - 1.2"H x 3.5"W x 2.25"D
  - 19" Rack mountable, 4 Across, 1U
  - Weight: <8 Oz
- Power
  - 5 Watts (Typical)
  - Battery: Coin-Cell Battery (CR2450N or CR2450HR)
  - MIL-STD 461F compliant USB power supply
- Performance
  - Supports asymmetric traffic flow of 200 Mb/s aggregate throughput
- Reliability
  - 229,000 Hrs Mean Time Between Failure (MTBF)
- Environment
  - MIL-STD-810G compliant
  - Operating Temp: -40° to +60°C
  - Storage Temp: -40°C to +85°C
  - Humidity: 95% RH, Non-condensing
  - Altitude:
    - Operational: 1,500 ft below sea level to 50,000 ft above sea level
    - Storage/transit: 1,500 ft below sea level to 70,000 ft above sea level
  - Shock/Vibration: 40g shock, 11ms Transportation Vibration, General Vibration, Category 4
  - Sand: 40 mph winds
  - Dust: 20 mph winds
  - Rain: Drip, Flow Rate 280 liters/meter2/hour
  - Drop Test: 48" High Drop
  - EMI / TEMPEST: In accordance with NSTISSAM TEMPEST/1-92 Level 1
- Standards Compliance
  - HAIPE v4.2.5
  - ACC and KMI OTNK
  - HAIPE VLAN
  - IPMEIR v1.0
- Foreign Interoperability
  - Algorithm Agile – Simultaneous Suite A/B/AES EFF/IPMEIR without manual intervention
  - P^3, S^2, Q^2
- Power Options
  - Supports three hot-swappable power options including front/rear panel USB-C connectors and Ciphertext RJ45 Power Over Ethernet (PoE)
- Warranty
  - 3 year hardware and software warranty
- Keying:
  - Supports HAIPE to HAIPE Keying, APPK/ PPK, FIREFLY, Enhanced FIREFLY, Internet Key Exchange (IKE) v1/v2, Unclassified/Classified Device Generated Shared Key (DGSK), ACC, OTNK (KMI enabled)
- Networking Features & Protocols
  - Protocols Supported: TCP, UDP, IPv4/IPv6 Dual Stack, ICMP, IGMP, ARP, DHCP, MLD, TFTP, HTTPS, HTTP, RIP, RIPv2, RIPng, NDP, IKE, IKEv2, HAIPE, IPMEIR, OTNK, CMS, XML, non IP with VLAN, TCP PEP
  - Networking Features: Dynamic IP addressing, dynamic key management (key distribution through H-to-H key transfer and KMI enabled, red address confidentiality and selectable dynamic discovery via Generic Discovery/Secure Dynamic Discovery or IMPEPD, dynamic routing updates through RIP and discovery protocols, support for route of last resort, support for VLAN and layer 2 traffic
  - Management: Full SNMPv3 management and HTTP browser based management, GEM One Manager
  - Multicast: IGMP and MLD on Red and Black networks
  - Quality of Service: Type of Service Octet bypass, PCP to TOS mapping for VLAN traffic, ECN congestion control bypass
  - Fragmentation: Support for fragmentation and reassembly on Black network traffic and fragmentation of Red IP traffic
- Network Interfaces
  - Plaintext Data Interface
    - Electrical / Mechanical: IEEE 802.3/Ethernet2; copper RJ-45 10/100 Base-T
  - Ciphertext Data Interface
    - Electrical/Mechanical: IEEE 802.3/Ethernet2; copper RJ-45 10/100 Base-T
  - Console Management Interface
    - Electrical/Mechanical: USB 2.0; USB-C connector
  - Standard DS-101 key fill port; Micro USB connector
  - Remote zeroize input; Micro USB connector
  - Primary power 5VDC; USB Type-C connector
- Ordering
  - Available to order through IDIQ and General Dynamics

Back Panel

GENERAL DYNAMICS
Mission Systems

GENERAL DYNAMICS
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TACLANE®- FLEX (KG-175F) Encryptor

Multi-Speed Customizable Encryption Platform

NSA Certified for Top Secret/SCI and below

Protect Your Investment with Hardware Scalable
for Future Needs - 200 Mb/s to 2 Gb/s Aggregate Throughput

Smallest, Lightest, Most Power Efficient 2 Gb HAIPE® Encryptor

Optional TACLANE Trusted Sensor Software and Agile VLAN

GEM® One Remote Management Capability

Overview

The TACLANE-FLEX is the next generation encryptor designed to address today's increased level of threat - both insider focused and external cyber attacks – as well as user demands for higher bandwidth applications and low SWaP equipment. TACLANE-FLEX is the first user customizable encryption platform to support multiple speeds, environments and feature requirements.

Flexibility

Customer configuration puts the user in control of their encryptor based on needs and budget. The TACLANE-FLEX is a single encryption platform, scalable from 200 Mb/s to 2 Gb/s aggregate throughput by simply changing the pluggable interface and a field software upgrade. This provides a cost effective security solution for today and eases migration as bandwidth needs grow in the future.

SWaP Optimized

Designed to provide a robust feature set in the smallest form factor possible, the TACLANE-FLEX extends to a wide variety of applications including those heavily restricted by size, weight and power consumption. MIL-STD 810G compliant, the TACLANE-FLEX is designed to support both strategic and tactical applications that can be exposed to restrictive or harsh environments such as data centers, GSA safes, vehicular embedment and field command posts.

Features at a Glance

- User pluggable interfaces to support 200 Mb/s to 2 Gb/s Aggregate Throughput
- Smallest, full featured HAIPE Encryptor
- MIL-STD ruggedized for harsh tactical environments and scalable to support strategic environments
- Simultaneous HAIPE v4.1 and IPMEIR 1.0 compliant
- Simultaneous Suite A/B without user intervention
- Safe Keying Features (CDGSK and KMI OTNK* software upgradeable)
- ACC Upgradeable*
- Supported by GEM One Remote Encryptor Manager
- Supports Exclusion Keys
- Power Management Capability

*General Dynamics is developing the KMI OTNK capability and ACC compliance to be available via software upgrade.

Back Panel

TACLANE-FLEX (KG-175F) Encryptor

Advanced and Optional Features

- **Power Management:** Designed to maximize efficiency, this feature enables users to select Standard Mode or Enhanced Mode providing greater control of power consumption. In Standard Mode, the FLEX provides the lowest power consumption and touch temperatures available in a 2 Gb HAIPE. Enhanced Mode supports advanced features such as TTS and Power over Ethernet (POE) that require additional power.

- **Layer 2 Passthrough / Agile VLAN:** This optional feature provides support for simultaneous Layer 3 HAIPE and Layer 2 Data Link communications on a per packet basis without any infrastructure changes providing users a bridge to networks utilizing Ethernet Data Encryption. VLAN enabled TACLANEs still interoperate with Non-VLAN enabled TACLANEs. Other benefits include equipment and cost savings, increased bandwidth efficiency, failover and redundancy.

- **TACLANE Trusted Sensor (TTS):** Leveraging the location of the in-line network encryptor (INE) in the network, the optional TTS software adds cyber sensing (IDS/IPS) capability through Deep Packet Inspection (DPI). This capability enables packet header and content filtering for malicious data and issues high assurance encrypted alerts to further protect from attacks. TTS uniquely supports open source, user unique or government classified rule sets. This in-depth inspection provides network administrators greater understanding of overall system health and the ability to fine tune network filtering to reduce response time and increase defense in depth.

- **Agile Performance Enhancing Proxy (PEP)*:** When enabled, this optional feature provides TCP acceleration increasing network availability and performance in disadvantaged networks like SATCOM. Integrating this technology in the INE eliminates the need for external PEP devices. TACLANE Agile PEP uniquely provides simultaneous support for concurrent TACLANE Agile PEP, Standard TCP connections and all HAIPE traffic types on a per packet basis.

- **GEM® One Remote Management:** An enterprise-level remote management solution, GEM One enables users to easily configure, monitor and maintain a dispersed network of encryptors and its ecosystem parts from anywhere in the network via an intuitive graphical user interface.

*Future capability available via software upgrade.

Technical Specifications

- **Size**
  - 1.6"H X 5.5"W x 10.85" D
  - 19" Rack mountable, 3 Across, 1U
  - Weight: <5 lbs based upon configuration

- **Power**
  - 32 Watts (Typical)
  - Battery: External user replaceable battery, one "1/2 AA" lithium cell
  - A full size lithium or alkaline "AA" battery is supported with a battery cap extender
  - Standard and MIL-STD 461F compliant power supply

- **Performance**
  - Supports both 200 Mb/s and 2 Gb/s aggregate throughput via user-pluggable interfaces

- **Reliability**
  - 314,000 Hrs Mean Time Between Failure (MTBF)

- **Environment**
  - MIL-STD-810G
  - Operating Temp: -40° to +60°C (without POE); -40°C to +52°C (with POE)
  - Storage Temp: - 40°C to +85°C
  - Humidity: 95% RH, Non-condensing
  - Altitude:
    - Operational: 1,500 ft below sea level to 50,000 ft above sea level
    - Storage/transit: 1,500 ft below sea level to 70,000 ft above sea level
  - Shock/Vibration: 20g shock, 11ms Transportation Vibration, General Vibration, Category 4
  - Sand: 40 mph winds
  - Dust: 20 mph winds
  - Rain: Drip, Flow Rate 280 liters/meter^2/hour
  - EMI / TEMPEST: In accordance with NSTISSAM TEMPEST/1-92 Level 1
  - Implementation guide for strategic and tactical rack mount applications is available upon request

- **Standards Compliance**
  - HAIPE v4.1
  - Crypto Modernization compliant
  - IPMEIR v1.0

- **Foreign Interoperability**
  - Algorithm Agile – Simultaneous Suite A/B/AES EFF/IPMEIR without manual intervention P^3, S^2, Q^2

- **Warranty**
  - 5 year hardware and software warranty

- **Keying:**
  - Supports Exclusion Key, HAIPE to HAIPE Keying, APPK/PPK, FIREFLY, Enhanced FIREFLY, Internet Key Exchange (IKE) v1/v2, Classified/Unclassified Device Generated Shared Key (DGSK)
  - Software upgradeable to support KMI OTNK, ACC

Networking Features & Protocols

- Protocols Supported: TCP, UDP, IPv4/IPv6 Dual Stack, ICMP, IGMP, ARP, DHCP, MLD, TFTP, HTTPS, HTTP, Netflow, NTP, RIP, RIPv2, RIPng, NDP, Syslog, IKE, IKEv2, HAIPE, IPMEIR, OTNK, CMS, XML, non IP with VLAN

- Networking Features: Dynamic IP addressing, dynamic key management (key distribution through H-to-H key transfer and KMI in the future), Red address confidentiality and selectable dynamic discovery via Generic Discovery/Secure Dynamic Discovery or IMPEPD, dynamic routing updates through RIP and discovery protocols, support for route of last resort, support for Jumbo Ethernet Frames, support for VLAN and layer 2 traffic

- Management: Full SNMPv3 management and HTTP browser based management, GEM X Manager

- Multicast: IGMP and MLD on Red and Black networks

- Quality of Service: Type of Service Octet bypass, PCP to TOS mapping for VLAN traffic, ECN congestion control bypass

- Fragmentation: Support for fragmentation and reassembly on Black network traffic and fragmentation of Red IP traffic

Network Interfaces

- Plaintext Data Interface
  - Electrical / Mechanical: IEEE 802.3/Ethernet2; copper RJ-45 10/100/1000 Base-T, IEEE 802.3 optical rugged pluggable modules 100 Base-FX, 1000 Base-SX and 1000 Base-LX10, LC connectors, supports three PT ports (two pluggable optical connectors, one electrical Ethernet)

- Ciphertext Data Interface
  - Electrical/Mechanical: IEEE 802.3/Ethernet2; copper RJ-45 10/100/1000 Base-T, IEEE 802.3 optical rugged pluggable modules 100 Base-FX, 1000 Base-SX and 1000 Base-LX10, LC connectors, supports two CT ports (one pluggable optical connectors, one electrical Ethernet)

- Console Management Interface
  - Electrical/Mechanical: IEEE 802.3/Ethernet2; copper RJ-45 10/100 Base-T

- Standard DS-101 key fill port

- Remote zeroize input

- Primary power 5VDC

Certifications

TACLANE-FLEX is NSA Certified to protect information classified Top Secret/SCI and below.

Ordering

- Available to order through IDIQ & General Dynamics

- NSN#
  - 100 Mb FLEX: 5810-01-655-9229
  - 1 Gb FLEX: 5810-01-659-9037

GENERAL DYNAMICS
Mission Systems

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TACLANE®-ES10 (KG-185A) Encryptor

Smallest, Ruggedized 20 Gb/s High Assurance Ethernet Data Encryptor

Flexible Throughput (2 Gb/s to 20 Gb/s) and SFP Network Interfaces

Natively Compliant with NSA's Ethernet Data Encryption Cryptographic Interoperability Specification (EDE-CIS)

Designed to Protect Information Classified TS/SCI and Below

Low Size, Weight, Power and Cost (SWaP-C)

MIL-STD-810G ruggedized for tactical and strategic environments

GEM® One Remote Management

Overview

Increased data generation, network modernization and data center consolidation are driving the need for higher bandwidth capacity on transport networks as well as the continued need for network security and resiliency to continue mission critical information access, sharing and collection. That is why the TACLANE Portfolio is now expanding to include the E-Series Ethernet Data Encryption (EDE) compliant products. The E-Series is designed to support the low latency, security and performance requirements of high speed layer 2 network backbones. The TACLANE-ES10 (KG-185A) is the first product in the E-Series portfolio and supports flexible network data rates of 2 Gb/s to 20 Gb/s aggregate throughput. The TACLANE-ES10 also uniquely maximizes network infrastructure and equipment diversity with user pluggable (SFP/SFP+) interfaces. As part of the TACLANE family of high assurance encryptors, the new E-Series encryptors are manageable by the GEM® One Encryptor Management software.

Applications

Extending TACLANE high assurance encryption into the enterprise, the TACLANE E-Series encryptors support varied network performance requirements and cover a wide range of form factors for both tactical and strategic use cases. In all cases, the E-Series encryptors package high performance and modern interfaces in low Size, Weight, and Power (SWaP) packages to facilitate integration into user networks and data centers, and IT and device management systems. The TACLANE-ES10 is MIL-STD Ruggedized and supports the following applications:

- Data Center and Campus Interconnectivity (Site to Site; Site to Branch)
- High Bandwidth Applications (Database Replication, Data Transfer, Video)
- Continuity of Operations (COOP) / Disaster Recovery and Backup
- Trusted Point to Point (P2P) and Multiple P2P Link for Protection of IP Traffic Routing
- Big Data Processing and Cloud Applications
- CryptoMod replacement of Legacy Ethernet Security Specification (ESS), SONET and other Link Encryptors.

TACLANE®-ES10 (KG-185A) Encryptor

TACLANE-ES10 (KG-185A)
Features at a Glance

- EDE-CIS Compliant and Interoperable
  - P2P and Multiple P2P
  - OTNK (KMI Aware and PDE Enabled) and ACC Compliant

- Independent port classification for User Traffic, KMI and Remote Management Ports for optimal network flexibility

- Lowest SWAP-C, MIL-STD-810G design for strategic and tactical data center optimization

- Near Zero Traffic Latency

- Common TACLANE Front Panel User Interface

- Link Operations, Administration and Management (OAM) Diagnostic and Administration Support

- Local and Remote Key and Render Useless Zeroize

- Centralized, Remote Management via GEM One Encryptor Manager (SNMPv3)

Ease of Use and Management Tools

- GEM One Encryptor Manager – An enterprise-level remote management solution, GEM One enables users to easily configure, monitor and maintain a dispersed network of secure devices including HAIPE and EDE compliant encryptors from a central location

- Since a distinct management port is provided, remote management can be performed at a different security level from the traffic being secured, providing new flexibility for the deployment of encryptor management solutions across users' networks

Technical Specifications

- Size
  - 1U, half rack width
  - 1.6"H x 8.5"W x 11.5"D
  - Up to 2 units mounted side-by-side in 19" rack
  - Weight: 6.2 lbs.

- Power
  - 22.5 Watts
  - External, user-replaceable AA lithium battery
  - MIL-STD-461F compliant power supply

- Performance
  - Full bandwidth, up to 20 Gb/s aggregate

- Reliability
  - 413,400 Hrs Mean Time Between Failure (MTBF)

- Environment
  - MIL-STD-810G
  - Operating Temp: -40° to +50°C
  - Storage Temp: -40° to +85°C
  - Humidity: 95% RH, Non-condensing
  - Altitude:
    - Operational: 1,500 ft below sea level to 50,000 ft above sea level
    - Storage/transit: 1,500 ft below sea level to 70,000 ft above sea level
  - Shock/Vibration: 20g shock, 11ms Transportation Vibration, General Vibration, Category 4
  - Sand: 40 mph winds
  - Dust: 20 mph winds
  - Rain: Drop, Flow Rate 280 liters/meter^2/hour
  - EMI/TEMPEST: In accordance with NSTISSAM TEMPEST/1-91 Level 1

- Standards Compliance
  - EDE-CIS
  - Crypto Modernization compliant

- Warranty
  - 5 year hardware and software warranty

- Keying
  - Supports KMI certificates, OTNK, ACC
  - WATARI key fill for field software upgrade

- Networking Features & Protocols
  - Protocols Supported: PTP, MPTP, EAP-TLS/MKA, OAM, OTNK
  - Modes Supported: EDE-M, EDE-CS, EDE-CC, EDE-SS, EDE-ETT (Single User Frame Encapsulation)
  - Networking Features: support for jumbo frames (up to 9,216B), support for VLAN tagging
  - Management: Full SNMPv3 management and HTTP/HTTPS browser based management; supported by GEM One

- Networking Interfaces
  - Plaintext or Ciphertext Data Interfaces
    - CT/PT SFP+ MSA Data Ports (1G/10G, short/long reach)
    - Pluggable optical SFP/SFP+ 1000BASE-SX/LX/EX/ZX, 10GBASE-SR/LR/ER/ZR
  - KMI or Management Data Interfaces
    - Separate Remote Management and KMI Ports (both SFP MSA) support Copper and Fiber (short and long reach)
    - Pluggable copper 1000BASE-T (10/100/1000), optical SFP/SFP+ 1000BASE-SX/LX/EX/ZX
  - Console Interface
    - Pluggable copper 1000BASE-T (10/100/1000)
  - Standard DS-101 key fill port; Micro USB connector
  - Remote zeroize input
  - Primary power 12VDC

Certifications

- TACLANE-ES10 is expected to be submitted to NSA for certification 4Q2020

Familiar TACLANE front panel and HMI reduces training requirements

Port independent classification levels and use of pluggable SFP modules provide maximum flexibility to the end user to deploy the ES10 almost anywhere in their network

MIL-STD-810G Ruggedized for tactical environments and other custom installations, the ES10 provides up to 40 Gb/s aggregate throughput per standard 1U 19" Rack

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