



NETWORK SECURITY

Cryptel - Network

TCE 731 – Ethernet encryption

The TCE 731 is a high-speed Ethernet encryption device within the Cryptel®-Network product family, designed to secure network communications by providing end-to-end security services.

TCE 731 protects the communication by adding end-to-end security services to the Ethernet protocol. The security services are based on the IEEE Ethernet security standards, but enhanced to comply with high assurance requirements including NATO Transec Directive.

The Cryptel®-Network Ethernet encryption system is designed to protect information up to Cosmic Top Secret (CTS)*.

The Cryptel®-Network Ethernet encryption system includes centralised crypto network planning and management. Generation of long-term keys is supported using the TCE 115 KGC or eCustodian. An attractive support concept including e-learning and classroom training is available.

* Approved for NATO SECRET, under evaluation for COSMIC TOP SECRET

Capabilities

- Throughput at 2* 10 Gbit/s
- Protecting all NATO classification levels*
- Post-quantum safe cryptography
- Automatic and redundant generation and distribution of traffic keys
- Managed locally via HMI or from central management application
- Re-programmable and upgradeable
- Low latency and jitter to support data centre interconnection
- Supports long and short reach optical connectors
- Reduces operating costs to a minimum

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Network security

Security concept

TCE 731 is delivered with either Suite A Mercator or Suite B AES algorithms. Secure communication between TCE 731 crypto devices is managed through the configuration of Ethernet Access Groups (EAG). Each EAG protects one or more VLANs and results in automatic establishment of Security Associations.

Management

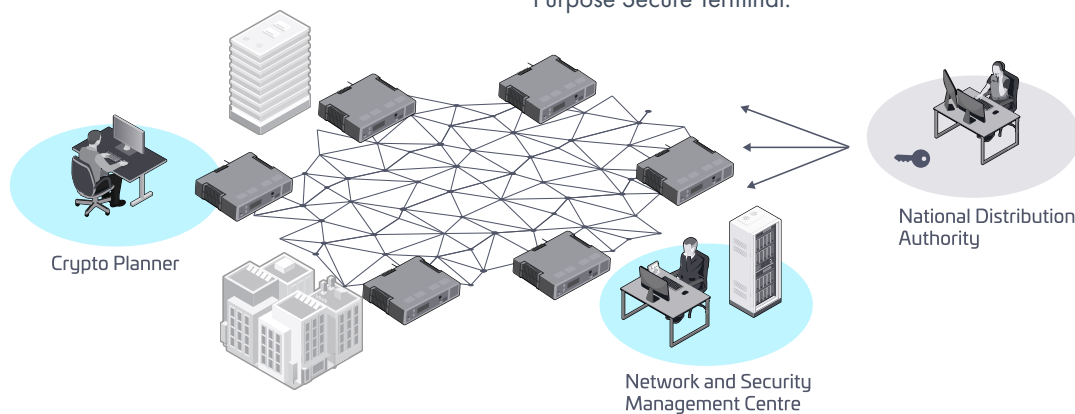
The Cryptel®-Network management system offers centralised management of the crypto network and devices. For smaller networks the TCE 731 HMI provides sufficient management functionality.

National autonomy

National control of key generation is provided using TCE 115 KGC, eCustodian or any key generation system producing DS-100-1 formatted pre-placed keys. A customisation vector may be added to nationalise the encryption algorithms.

Cryptel® portfolio

The Cryptel® portfolio includes Cryptel®-Network, with the TCE 621, TCE 721 and TCE 731, providing IP and Ethernet encryption, and their management systems. The portfolio also includes TCE 115 Key Generation Centre and TCE 811 Multi-Purpose Secure Terminal.



Security Characteristics

- **Suite A algorithm:** Mercator (Cosmic Top Secret)
- **Suite B algorithm:** AES-GCM (NATO Secret)
- **TEMPEST:** SDIP-27 Level A
- **Operational Security:**
 - Post quantum safe cryptography
 - Tamper detection and response
 - Crypto Ignition Key
 - Security Operator role for configuration
 - Zeroise switch
 - Crypto Destruct interface
 - Security events and alarms are recorded in Audit Log
 - Replay protection
 - Configurable frame padding and transfer rate
 - Red address and VLAN ID hiding
 - Automatic traffic key management
 - Easy exclusion of compromised crypto device

Performance

- Aggregated 20 Gbit/s throughput
- Latency 4 µs
- Maximum 32 EAGs, point-to-point and multipoint-to-multipoint

Capabilities

- Jumbo frames
- Ethernet flow control
- 4096 VLAN
- Red to Black priority bit and VLAN ID mapping
- Ethernet Access Group (EAG) configuration
- Red side SNMP

Interfaces and Protocols

- 2x10 Gbit/s Red/Black optical interface (SFP+)
- Interface redundancy
- DS-101 Key Fill Interface
- DS-100-1 formatted keys
- USB-C interface for upload of configuration and new firmware
- Local HMI for local management
- LED status indicators (power, link, alarm and tamper)

Physical Characteristics

- **External power supply:** 80-264 VAC 47-63 Hz
- **Nominal/max power consumption:** 50/60 Watt
- **Backup battery:** Lithium 3.6V, 60 months lifetime
- **Weight:** 11,5 kg
- **Size:** 444 x 406 x 88 (2U) mm (WxDxH)
- **Temperature:** Operation: 0°C to +40°C
Storage: -20°C to +70°C
- **Installation:** 19" rack mounting
- **Low pressure:** Operation: 15.000 ft.
- **EMC:** MIL-STD-461G, EN 55032 Class B, EN 55035
- **Reliability:** MTBF > 60.000 h (MIL-HDBK-217 F)

Conformance

- **Safety:** 2014/35/EU
- **REACH:** 1907/2006/EC
- **ROHS:** 2011/65/EU
- **WEEE:** 2012/19/EU
- **EMC:** 2014/30/EU
- **Battery:** 2006/66/EC