Data sheet

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ELCRODAT 4-2

Secure voice and data communications

- Interoperable with a wide variety of voice and data encryption units already in use
- Upgradability
- Suitable for stationary and mobile use, in shelters, wheeled and tracked vehicles as well as on board ships and aircraft
- Versatile use through configurable interfaces (analog/digital)
- Operation via MIL bus (central) or control unit (local/remote)
- For all national and NATO security classifications

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Encryption and decryption of analog and digital information for all levels of classification

The Multimode Encryption Device ELCRODAT 4-2 (ED 4-2) is used for encrypting and decrypting analog and digital information. It is suitable for use in stationary and mobile communications systems (e.g. in shelters, wheeled and tracked vehicles as well as on board ships, aircraft or motor vehicles).

The ELCRODAT 4-2 transmits voice and data information; depending on the operating mode selected and the transmission method, it operates in simplex, halfduplex or duplex mode. As a common item of supply, the ELCRODAT 4-2 replaces the voice and data encryption devices ED 4-1, ED 5-2, EB 3-1 and EB 3-2; it is interoperable with these devices as well as with the appropriate NATO devices KG84A, KG84C, BID950, BID1650, BID1750 and KIV7 in various operating and traffic modes.

Design

The ELCRODAT 4-2 consists of the basic unit ED 4-2 and – depending on the application – the control unit ED 4-2 or the MIL-bus module (see Fig. 1).

Basic unit ED 4-2

The basic unit ED 4-2 comprises the following functional groups:

- Signal processing, plain data
- Crypto device
- Signal processing, crypto data
- DC power supply

Control unit ED 4-2

The control unit ED 4-2 is accommodated in a separate housing with display and control elements. It can be operated locally, attached to the basic unit, or remotely via additional connecting elements (accessories).

MIL-bus module

The electronic control for the MIL bus is accommodated in a separate housing. The MIL-bus module can be mounted to the basic unit instead of the control unit. The MIL-bus connector is provided on the basic unit ED 4-2.

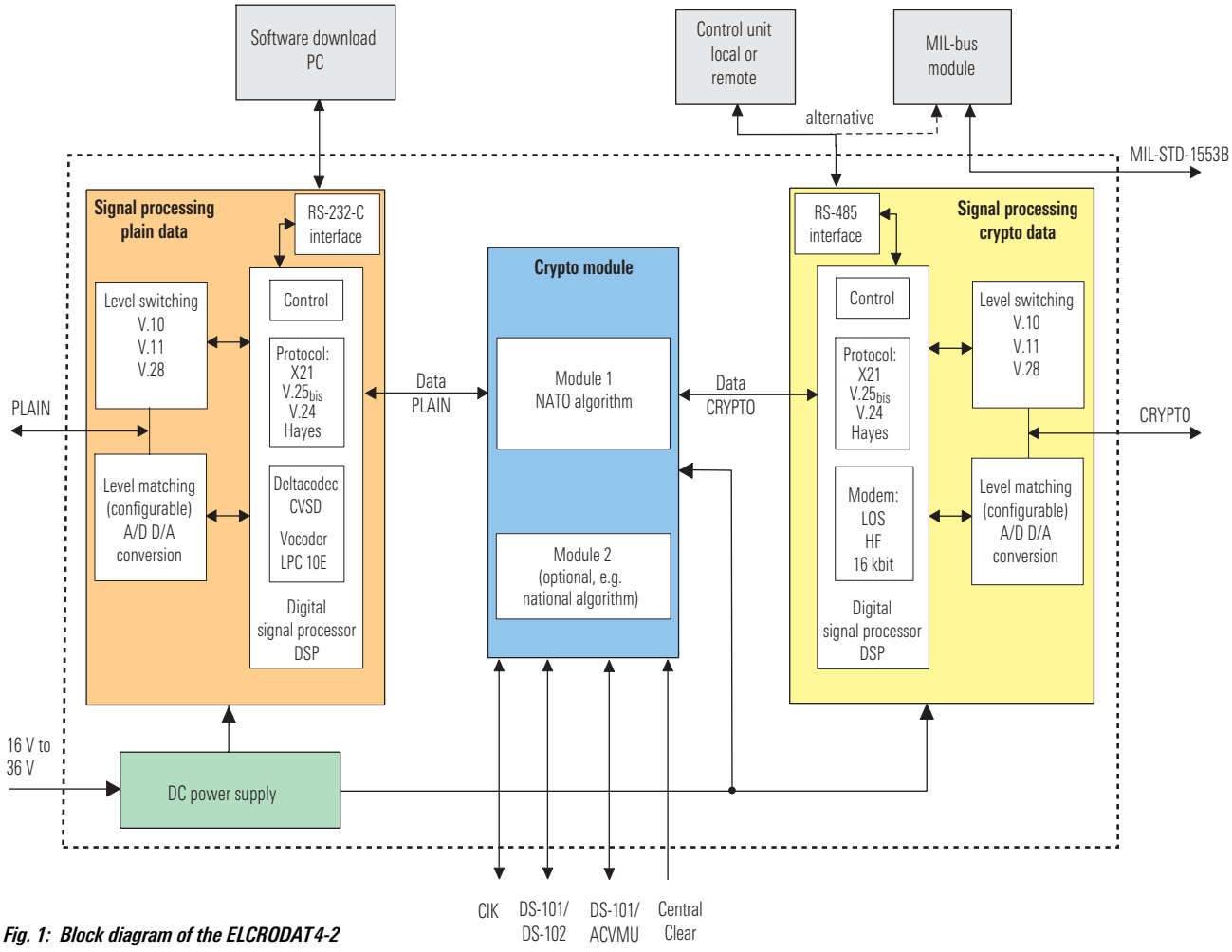

Fig. 1: Block diagram of the ELCRODAT 4-2

Accessories

The following accessories are available for the ELCRODAT 4-2:

- Crypto ignition key (CIK)
- Mounting frame
- Power supply unit (115 V/230 V)
- Connecting accessories for remote operation of control unit

Upgradability

The ELCRODAT 4-2 can be upgraded to meet future requirements via protected software download. A free slot is provided to accommodate a second crypto module; the cryptological capabilities of the ELCRODAT 4-2 can thus be adapted to national requirements.

Operating modes

The ELCRODAT 4-2 features four operating modes, which are determined by the wiring of the external interfaces and by parameterization:

- Voice Crypto
- Data Crypto
- Voice Plain
- Data Plain

The individual operating modes are parameterized via the control unit. The set parameters are stored in the basic unit ED 4-2. The parameterized operating modes can be activated via the MIL-bus interface or the control unit.

Cryptologic method

The encryption in the basic unit ED 4-2 is based on standardized NATO algorithms. Up to 96 crypto variables can be stored. Access to the crypto variables memory can be protected with an external crypto ignition key (CIK). The ED 4-2 features modern crypto variable management.

Applications

Data Crypto mode

In the Data Crypto mode (see Fig. 2), the ELCRODAT 4-2 can be integrated into a data transmission system equipped with interfaces to ITU-T V.24/V.10/V.11/V.28 or X.21/V.11. Dialing protocols to ITU-T $V.25_{bis}$ or Hayes commands (AT commands) can be used.

After identification and checking of the dialing protocol or Hayes commands sent by the data terminal equipment (DTE), the ED 4-2 passes on the dialing information, synchronizes to the called station, and switches to the encrypted data mode.

If the analog interface is used, the integrated LOS modem (following ITU-T V.26) or HF modem to STANAG 4197 is active.

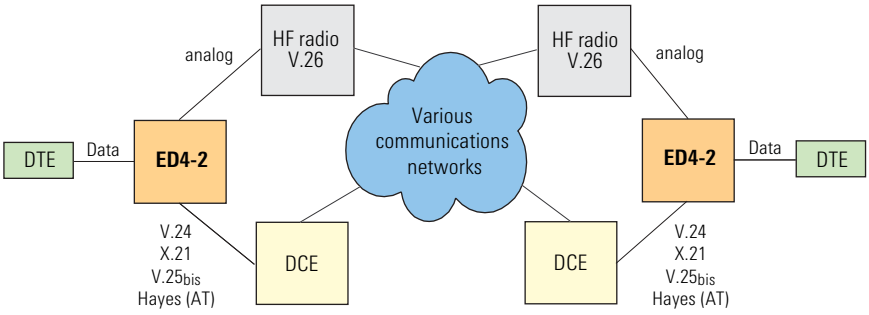

Fig. 2: Data encryption in various communications network

Voice Crypto mode

In the Voice Crypto mode (see Fig. 3), the voice signals are digitized either by LPC 10E vocoder or CVSD deltacodec, depending on the traffic mode.

Depending on the voice digitization method chosen, an HF modem to STANAG 4197, LOS modem (following ITU-T V.26), baseband/diphase or V.24 mode can be selected.

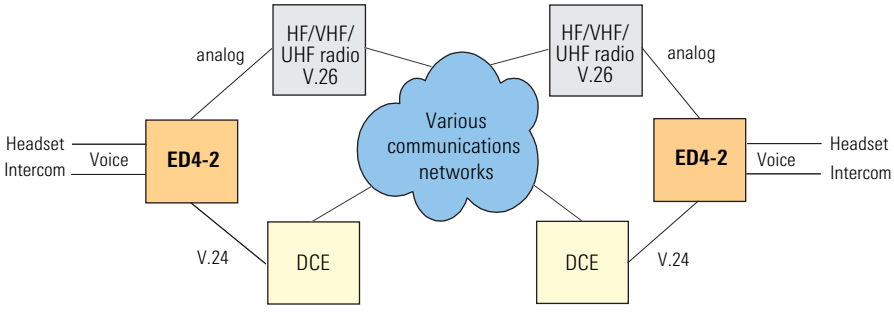

Fig. 3: Voice encryption in various communications networks

Specifications

Operational data

Operating modes	voice PLAIN/CRYPTO data PLAIN/CRYPTO
Traffic modes	halfduplex (voice) simplex halfduplex (HDX) duplex (DX) or double simplex duplex with acknowledgement (DXD) duplex with interoperability (DXI)

Telecommunications data

Analog interface	
Audio	universal 4-wire audio/intercom interface level (–47 dB to +13 dB) adjustable in 1 dB steps 600 Ω impedance one headset interface
Radio interface	narrowband/wideband level (–40 dB to +20 dB) adjustable in 1 dB steps 600 Ω impedance
Traffic mode	halfduplex
Transmission method	BASEBAND/DIPHASE LOS modem (V.26) HF modem (STANAG 4197) AF digital (SATURN interface)
Voice processing	deltacodec (CVSD) 16 kbit/s LPC 10E (2.4 kbit/s) to STANAG 4198
Digital interface	
V.24	asynchronous 200 bit/s to 57.6 kbit/s synchronous 600 bit/s to 64 kbit/s suitable for Hayes (AT) commands
$V.25_{bis}$	600 bit/s to 9.6 kbit/s
X.21	600 bit/s to 64 kbit/s dialing protocol to $V.25_{bis}$
Other interfaces	
Key input	DS-101 DS-102 DS-101 (ACVMU)
Key emergency clearing	switch CENTRAL CLEAR
MIL bus	MIL-STD-1553B
CIK	crypto ignition key

Operating and storage temperatures

Operation	–30 °C to +71 °C
Storage	–40 °C to +85 °C

RF leakage/EMC

RF leakage	TEMPEST tested
EMC	MIL-STD-461C Category A1b, Part 2

General data

Dimensions (H × W × D)	193.5 mm × 90.4 mm × 200 mm
Weight	4 kg
Supply voltage	28 V (16 V to 36 V) DC
Power supply	input: 100 V to 240 V AC, 50 Hz to 60 Hz output: 24 V DC
Power consumption	<15 VA
MTBF	>8000 h
Functional test with BITE (built-in test equipment)	

Ordering information

Designation	**Order No.**
ELCRODAT 4-2, set (basic unit ED4-2, control unit ED4-2, compact user guide)	3544.5001.14
MIL-bus module	3545.0603.12
Accessories	
Power supply (115 V/230 V)	3543.9549.00
Crypto ignition key (CIK)	3543.9961.02
Mounting frame	3544.5330.03

Certified Quality System
ISO 9001
REG. NO CERT-01 100 025007

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