



Version
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ELCRODAT4-2

Secure voice and data communications

- ◆ Interoperable with a wide variety of legacy voice and data encryption units
- ◆ Upgradeability (including dual mode)
- ◆ 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 dedicated control unit (local/remote)
- ◆ For all German and NATO security classifications



ROHDE & SCHWARZ

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

The ELCRODAT4-2 (ED4-2) multimode encryption device 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 ELCRODAT4-2 transmits voice and data information. It operates in simplex, halfduplex or duplex mode depending on the selected operating mode and the transmission method. As a common item of supply, the ELCRODAT4-2 replaces the ELCRODAT 4-1 and 5-2, ELCROTEL 5 and ELCROBIT 3-1 and 3-2 legacy voice and

data encryption devices; it is interoperable with these devices as well as with the corresponding ANDVT, KY57/58/99/100, KG84A, KG84C, BID950, BID1650, BID1750, and KIV7 NATO devices in various operating and traffic modes.

Design

The ELCRODAT4-2 consists of the ED4-2 base unit and – depending on the application – the ED4-2 control unit or the MIL-bus module (see Fig. 1).

ED4-2 base unit

The ED4-2 base unit comprises the following functional groups:

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

ED4-2 control unit

The ED4-2 control unit is accommodated in a separate housing with display and control elements. It can be operated locally, attached to the base 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 attached to the base unit instead of the control unit. The MIL-bus connector is provided on the ED4-2 base unit.

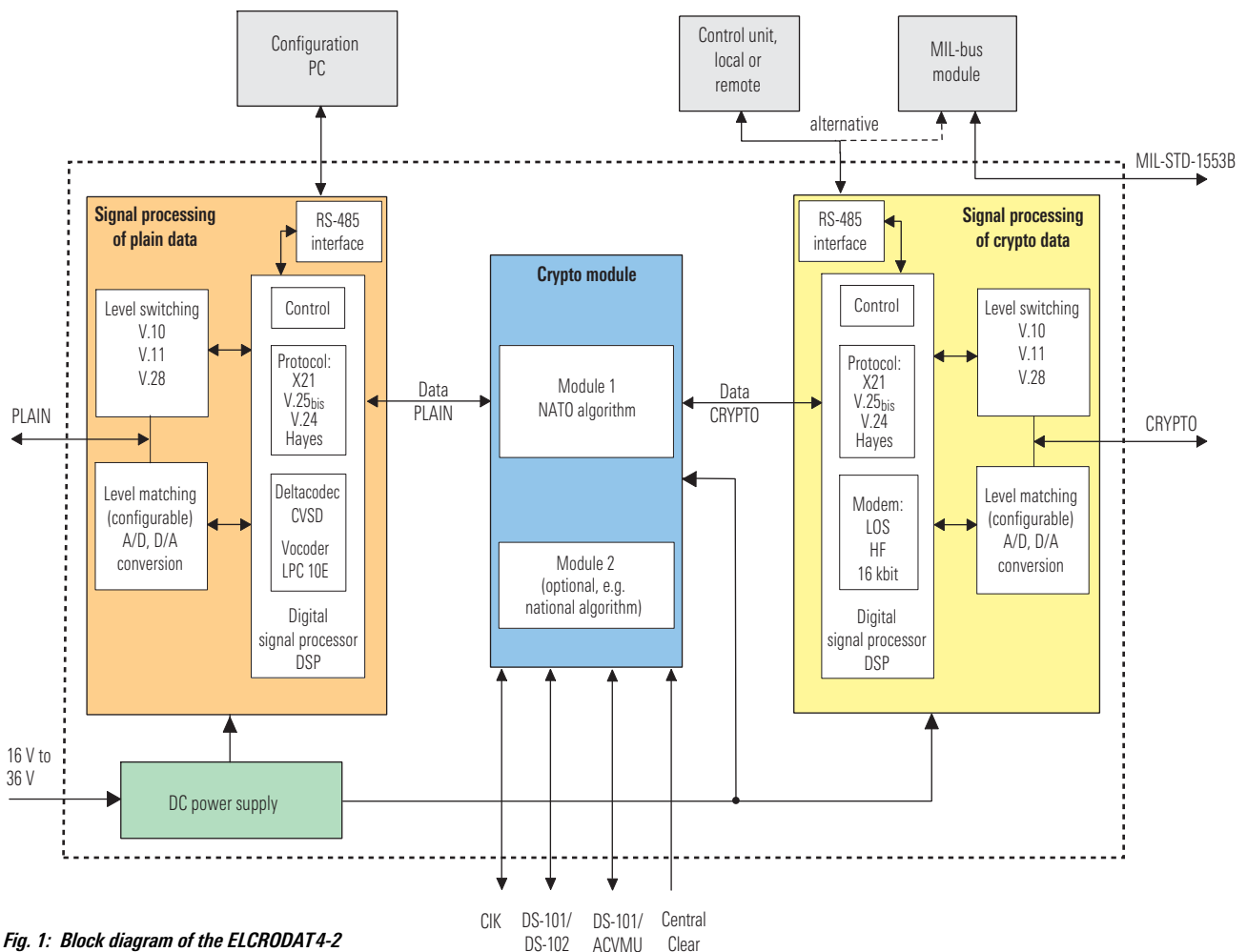


Fig. 1: Block diagram of the ELCRODAT4-2

Accessories

The following accessories are available for the ELCRODAT4-2:

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

Upgradeability

The ELCRODAT4-2 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 ELCRODAT4-2 can thus be adapted to national or future requirements.

Operating modes

The ELCRODAT4-2 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 selected parameters are stored in the ED4-2 base unit. The parameterized operating modes can be activated via the MIL-bus interface or the control unit.

Cryptologic method

The encryption in the ED4-2 base unit 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 optional external crypto ignition key (CIK). The ED4-2 features modern crypto variable management.

Applications

Data Crypto mode

In the Data Crypto mode (see Fig. 2), the ELCRODAT4-2 can be integrated into a data transmission system equipped with interfaces in line with ITU-T V.24/V.10/V.11/V.28 or X.21/V.11. Dialing protocols in line with ITU-T V.25_{bis} or Hayes commands (AT commands) can be used.

The ED4-2 checks and identifies the dialing protocol or the Hayes commands sent by the data terminal equipment (DTE). The ED4-2 forwards the dialing information, synchronizes the called station and switches to encrypted mode.

The analog interface is used when the integrated LOS modem (in line with ITU-T V.26) or the HF modem (in line with STANAG 4197) is active.

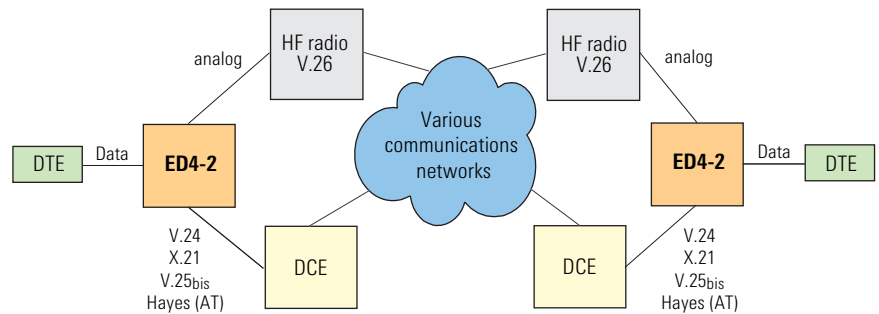


Fig. 2: Data encryption in various communications network

Voice Crypto mode

In the Voice Crypto mode (see Fig. 3), voice signals are digitized either by an LPC10E vocoder or a CVSD delatocodec, depending on the selected traffic mode.

Depending on the voice digitization method chosen, the following modes can be selected:

- ◆ HF modem in line with STANAG4197
- ◆ LOS modem (in line with ITU-T V.26)
- ◆ V.24 mode
- ◆ baseband/diphase mode (CVSD only)

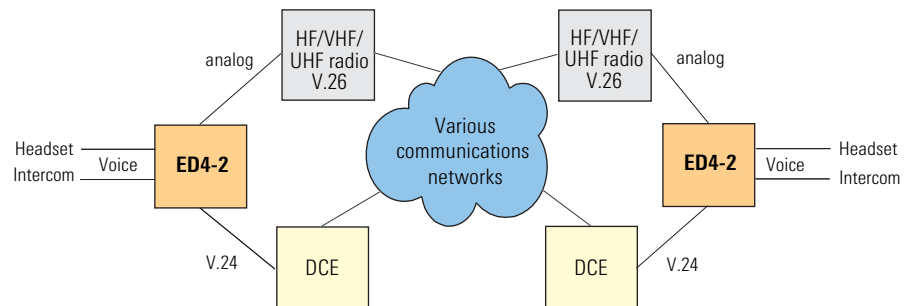


Fig. 3: Voice encryption in various communications networks

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)
Voice processing	deltacodec (CVSD) 16 kbit/s LPC 10E (2.4 kbit/s) in line with STANAG 4198
Digital interface	
V.24	asynchronous 1200 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 in line with ITU-T V.25 _{bis}
Other interfaces	
Key input	DS-101 DS-102 DS-101 (ACVMU)
Emergency key clearing	by mechanical switch (NL) or CENTRAL CLEAR interface
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 (7.62 in × 3.56 in × 7.88 in)
Weight	4 kg (8.82 lb)
Supply voltage	28 V (16 V to 36 V) DC
Power supply	input: 100 V to 240 V AC, 50 Hz to 60 Hz
Power consumption	<15 VA
MTBF	>8000 h
Functional test with BITE (built-in test equipment)	

Ordering information

Designation	Order No.
ELCRODAT4-2, set (in various combinations with control unit or MIL-bus module)	3544.5001.XX
Accessories	
AC power supply (115 V/230 V)	3543.9549.00
Crypto ignition key (CIK)	3543.9961.02
Mounting frame	3544.5330.03



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