Multimode Multirole Crypto Device MMC3000

Secure voice and data communication

Multimode
- Voice and data encryption
- HF/VHF/UHF and line transmission

Multirole
- Designed for all military services
- Air force
- Navy
- Army

Crypto
- High-grade configurable crypto board
- Crypto ignition key (CIK) protected
- Automated key-variable (KV) generation, management and distribution

ROHDE&SCHWARZ

Easy encryption and decryption of analog and digital information

The Multimode Multirole Crypto Device MMC3000 is used for encrypting and decrypting analog and digital information.

It is suitable for use in stationary and mobile communication systems (e.g. in shelters, wheeled and tracked vehicles, as well as on board ships and aircraft).

The MMC3000 transmits voice and data information; depending on the operating mode selected and the transmission method, it operates in simplex, halfduplex or duplex mode.

Design

The MMC3000 consists of the base unit and – depending on the application – the control unit or the MIL-bus module (see Fig. 1).

Base unit MMC3000
The base unit MMC3000 comprises the following functional groups:

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

Control unit for MMC3000
The control unit is accommodated in separate housing with display and control elements. It can be operated locally, when attached to the base unit or remotely via additional connecting elements (accessories).

MIL-bus module
The electronic control for the MIL bus (MIL-STD 1553B) is accommodated in 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 base unit.

Accessories

The following accessories are available for the MMC3000:

- Crypto ignition key (CIK)
- Mounting frame
- Power supply unit (115 V/230 V)
- Connecting accessories for remote operation of control unit
- Security Management System (SMS) for generating, managing and distributing keys
- Data Loading Device (DLD)

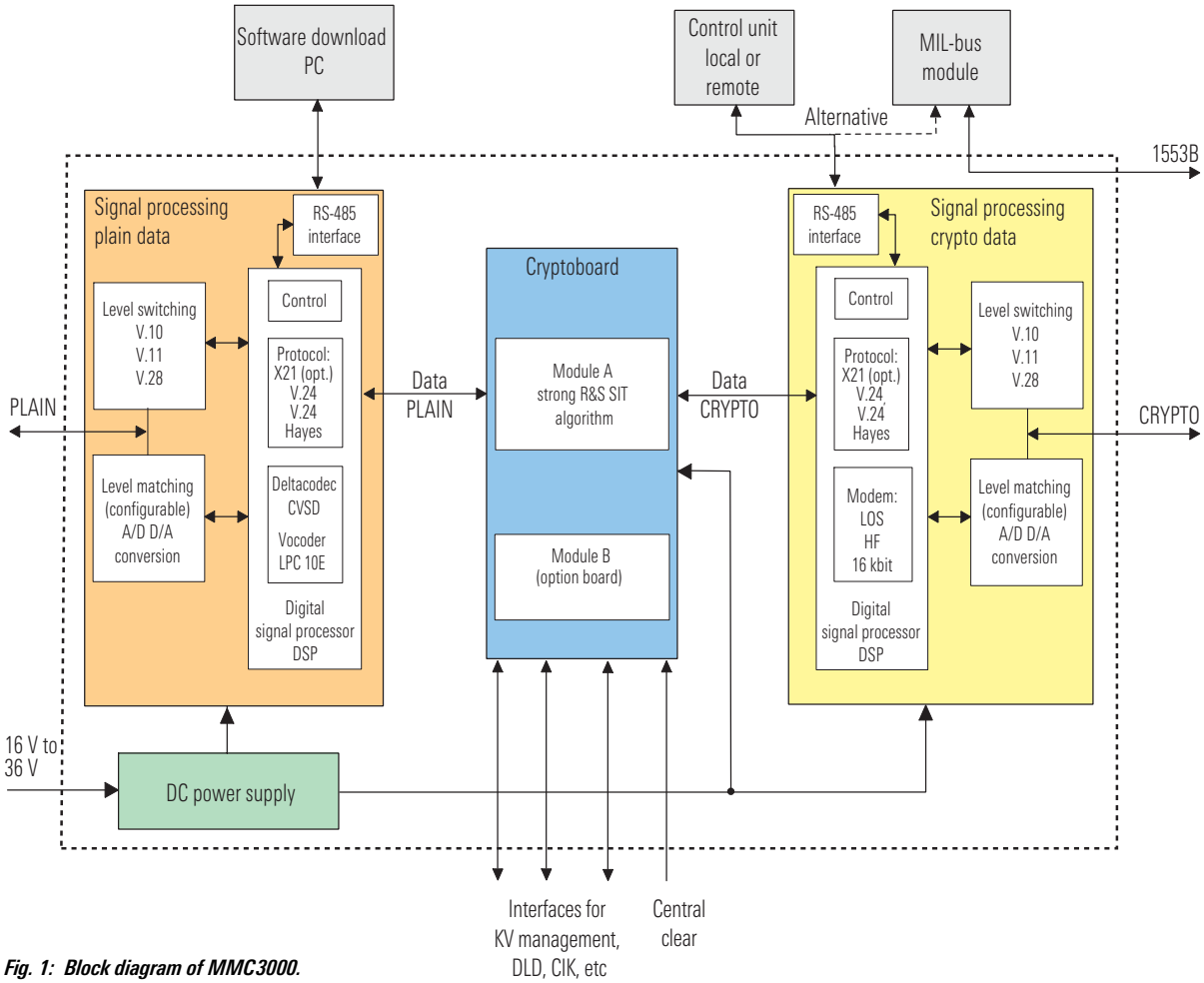

Fig. 1: Block diagram of MMC3000.

Upgradeability

With a PC and a special software download package, the MMC3000 can be upgraded to meet future requirements via protected software download.

A free slot is provided to accommodate a (cryptologic) option board.

Operating modes

The MMC3000 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 base unit MMC3000.

The parameterized operating modes can be activated via the MIL-bus interface or the control unit.

Cryptologic method

The encryption in the base unit MMC3000 is based on the high-performance crypto board from Rohde & Schwarz SIT.

Access to the crypto variable memory can be protected with an external crypto ignition key (CIK).

The MMC3000 features modern black crypto variable management as well as a high-performance Security Management System (optional). Black keys are loaded from a Data Loading Device (DLD) into the MMC3000.

Applications

Data Crypto mode
In the Data Crypto mode (see Fig. 2), the MMC3000 can be integrated into any data transmission system equipped with interfaces to ITU-T V.24/V.10/V.11/V.28 or X.21/V.11 (optional).

Dialling protocols or Hayes commands (AT commands) can be used. After identification and checking of Hayes commands sent by the data terminal equipment (DTE), the MMC3000 passes on the Hayes commands, 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.

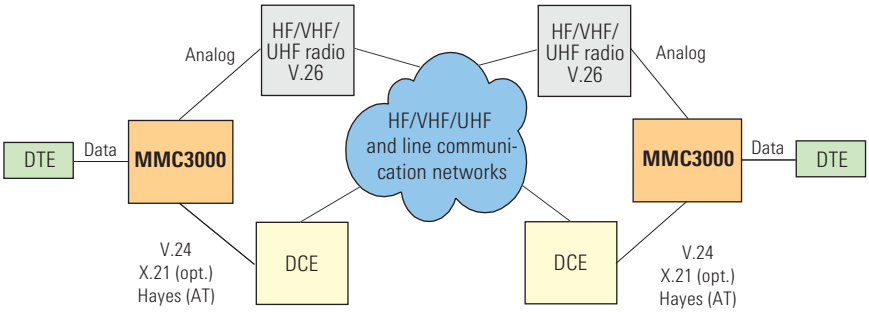

Fig. 2: Data encryption in various communication networks.

Voice Crypto mode
In the Voice Crypto mode (see Fig. 3), the voice signals are digitized either by the 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.

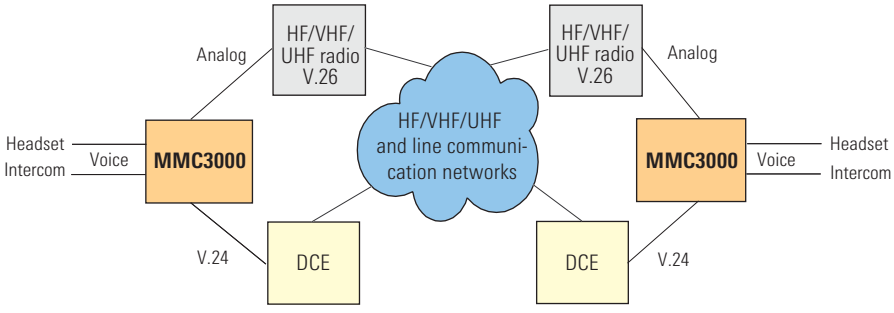

Fig. 3: Voice encryption in various communication networks

Plain modes
In addition, there are several plain modes for voice and data, depending on the different chosen applications (voice: HF, VHF, UHF modes; data: digital V.24 mode).

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

Specifications

Operational data

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

Telecommunications data

Analog interface	
Audio	2 universal 4-wire audio/intercom interfaces level (–47 dB to +13 dB) adjustable in 1 dB steps 600 Ω impedance
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) to STANAG 4198
Digital interface	
V.24	asynchronous 1200 bit/s to 57.6 kbit/s asynch/synch 200 bit/s to 19.2 kbit/s synchronous 600 bit/s to 64 kbit/s suitable for Hayes commands
X.21 (optional)	600 bit/s to 64 kbit/s
Other interfaces	
Key input	RS-485 (DLD)
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	tested
EMC	MIL-STD-461C Category A1b, Part 2

General data

Dimensions (H x W x D)	193.5 mm x 90.4 mm x 200 mm
Weight	3.8 kg
Supply voltage	115 V (97 V to 126 V) AC, 50/60 Hz 230 V (176 V to 264 V) AC, 50/60 Hz 28 V (16 V to 36 V) DC
Power consumption	<15 VA
MTBF	>8000 h
Functional test with BITE (built-in test equipment)	

Ordering information

Designation	**Order No.**
MMC3000, set (base unit, control unit, user guide)	3566.0202
MIL-bus module	3566.0802
Accessories	
Power supply (115 V/230 V)	3543.9549.00
Crypto ignition key (CIK)	3543.9532.0X
Mounting frame	3544.5330.02
Data Loading Device (DLD)	t.b.d.
Security Management System (SMS)	t.b.d.

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