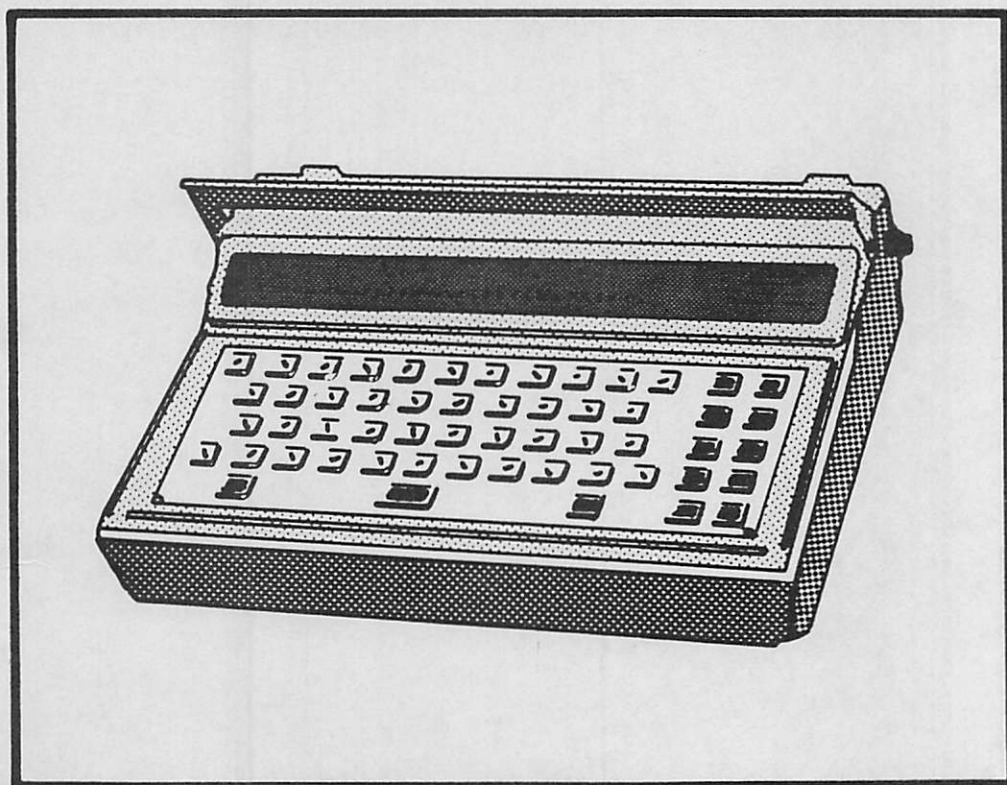


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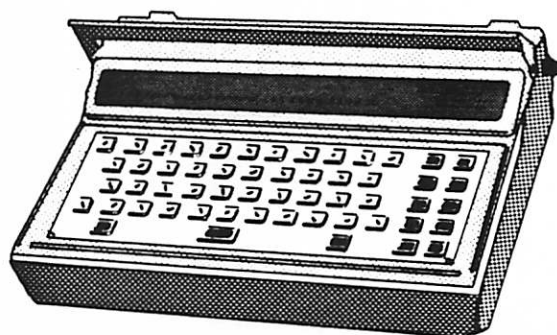
System description

SHORT-BURST
MESSAGE TERMINAL
TYPE UA 8295/00



PHILIPS

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MESSAGE TERMINAL
TYPE UA 8295/00



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REQUIREMENTS FOR MILITARY COMMUNICATION

Modern military communication systems rely increasingly on digital data transmission using compact microprocessor-based terminals.

Growing demand is placed on fast, reliable and safe operation in severe environmental conditions and varying combat situations.

Flexibility in communication network configuration, connection possibilities to various input/output devices and access to redundant transmission paths are also of vital importance.

Philips' digital message transmission terminals provide a continuously developing family of state-of-the-art devices designed to meet the requirements of the fast developing area of tactical communication.

At present we are offering the message terminal UA 8295/00 which, together with the personal hand-held message terminal UA 8296/00, can be connected in various ways to form a flexible, efficient and secure tactical communication network.

Fast transmission, error-correction features and the fixed-message-format option reduce "on-air" time to a minimum, making it difficult to locate or jam the transmitting equipment.

Data security is further enhanced by message encryption, a real-time clock and the non-volatile memory.

**SALIENT FEATURES OF THE
UA 8295/00 MESSAGE TERMINAL**

The UA 8295/00 is a microprocessor-based, self-contained and rugged digital message terminal for transmitting and receiving data via radio links and telephone lines. A typical configuration is shown in Fig. 1.

ECCM

The unit contains a data modem for fast transmission, and an automatic error-correction facility which minimises the need to re-transmit messages. By minimising "on-air" time, these features protect the associated transmitter against enemy direction-finding and jamming techniques.

Enciphering

The enciphering algorithm is implemented in software and can be tailored in accordance with customer's requirements. The keyword required by the algorithm is entered from the keyboard.

**Transmit and receive
memories**

Separate transmit and receive memories are incorporated, each with a maximum capacity of 2000 characters. The receive memory can store up to eight messages simultaneously. Additionally the transmit memory has a short memory of 250 characters for quick response when the main transmemory is occupied.

Message transmission

Message can be transmitted from either memory. The terminal automatically enciphers the message and adds the ID codes of the sending and receiving stations, the automatically-generated keyword and the time of transmission.

Message reception

In the receiving mode, error-detection/-correction and deciphering are also performed automatically.

**Automatic
acknowledgement**

The built-in automatic acknowledgement facility can be selected or disabled from the keyboard. After transmitting a message, the sending terminal waits three seconds for the acknowledgement.

Man/machine interface

A 32-character LED display with adjustable brightness provides an easy comprehension of messages. In addition, four separate LEDs will alert the operator to the following conditions:

- low battery voltage
- battery charging in progress
- message(s) received
- transmission in progress.

The operator's panel consists of nine function buttons and a standard keyboard. All keys can be programmed to provide a second special character or function by using the shift key.

Communication interface

The radio interface connects the terminal to HF or VHF/UHF radio equipment and through field telephones to wire lines. The built-in microprocessor-based data modem uses the frequency band from 1100 to 2300 Hz and is especially designed for HF data transmission.

Via the RS 232 interface the device can be connected to a printer terminal or to a telex printer by using a special adapter.

The standard RS 422 interface provides direct communication with computers for command and control applications.

Power supply

Internal power supply is provided by four rechargeable NiCd D-cells or alkaline dry cells. An external 10-30 V DC power source can be used to supply operating and charging current simultaneously. The non-volatile memory of the UA 8295/00 retains its contents even while the batteries are being changed.

Message formats add flexibility

The format of a message can be fixed or free.

In the former case only the ID number of the format and the variable data sections must be edited and transmitted; a check on the message format is performed by the terminal. An example of a fixed-format message is shown in Fig. 2.

Efficient error correction

The error-correction code employed allows the correction of seven bit errors inside a 127-bit block. All the blocks are interleaved for transmission, thereby increasing the probability that all the errors are corrected in case of error bursts.

**Enciphering guarantees
data security**

A very powerful digital enciphering algorithm is implemented in software and can be easily tailored to the customer's requirements. The keyword required by the algorithm is entered from the keyboard.

**Comprehensive set of
functions**

The main UA 8295/00 functions include:

- configuring the terminal
- message composition and editing
- message transmission
- message reception
- display of messages
- off-line encryption/decryption
- manual/automatic acknowledgement
- changing the key
- slave operation.

OPERATION

configuring

For configuring the terminal the following parameters can be easily altered from the keyboard:

- private address
- group address
- key (fixed key/day's key)
- automatic acknowledgement (ON/OFF)
- sound alarm (ON/OFF)
- transmission speed (150/600 Bd)
- output level (high/low)
- automatic printout
- : baud rate and parity handling for the printer interface
- baud rate and parity handling for the computer interface

For convenience, default values are available for all essential parameters.

Message composition and editing

Free-and fixed-format messages up to 2000 characters in length are easily composed by the UA 8295/00 terminal and stored in the transmission memory.

For fixed-format messages, only the variable parts have to be given. At the end of a fixed-format message a part with free format can be added at will.

The composed messages can be easily edited by means of the editing keys and special function buttons on the keyboard.

Message transmission

Messages can be transmitted either from the input or the output memory. The terminal automatically adds the ID codes of the transmitter and receiver terminal, a new keyword and the time instant of the transmission to each message. It also automatically enciphers the message and adds error-correction information. The message can be printed automatically or at will.

Message reception

Upon detecting a synchronization pattern the modem processor interrupts the main CPU and transfers the message byte by byte. A LED or a buzzer alarms when a message has been received. The terminal carries out error detection and correction, deciphers the message and adds information on possible discrepancies which cannot be corrected. The message can be printed automatically or at will. After reception the main CPU resumes its previous operation.

Acknowledgement

Acknowledgement can be automatic or manual and is shown on the display of the transmitting unit. If automatic acknowledgement has not been selected, the operator at the receiving end can send a manual acknowledgement or nonacknowledgement.

Display of messages

Any message in the receiving buffer memory can be displayed any number of times to the user and scrolled across the display in either direction. The header information of any message includes the address of the transmitting terminal and information on possible data or clock error. False messages possibly transmitted by an interferer can be easily discovered with the help of the clock error information.

Off-line encryption/decryption

Text in plain language is typed into the transmission memory or it already exists in the receiver memory. By pushing a special key the text is encrypted in five-character groups, and the results can be printed at will. The manual decryption process is similar.

Changing the key

Upon request the four-character identification code generated from the original keyword is shown in the display. In all circumstances the original keyword itself is kept secret. A new keyword can easily be entered via the keyboard.

Slave operation

An external computer can be connected to the UA 8295/00 via an RS 422 standard interface. By a command from the keyboard the terminal can be operated in a slave mode, in which the configuration parameters and messages are accepted from the external computer, and the messages received via radio or telephone are transferred to the computer. Hence the UA 8295/00 acts as an encrypting/decrypting modem in the slave mode of operation.

Auxiliary functions

In addition, a number of auxiliary functions can be selected from the keyboard. These include:

- display and resetting the time of the internal clock
- deleting the memory content of the terminal
- adjusting the display brightness
- charging the battery at three different keyboard selectable rates.

STATE-OF-THE-ART SOFTWARE

The modular and versatile software of the UA 8295/00 allows easy customization of the terminal in accordance with the user's requirements.

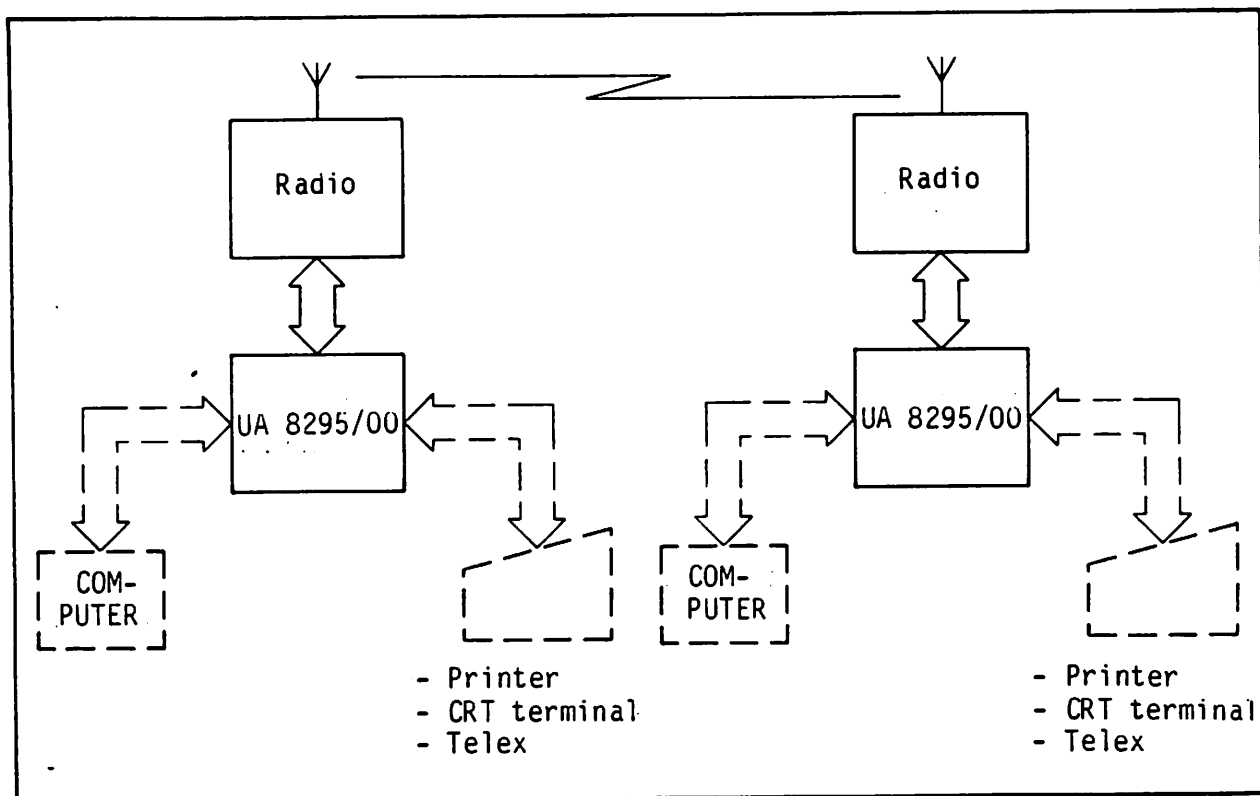
The terminal has two microprocessors of which the main processor contains the message-handling programs, man-machine communication programs and the device drivers.

The modem processor contains the programs for hunting and receiving messages as well as for their transmission.

MAIN EMPHASIS ON RELIABILITY

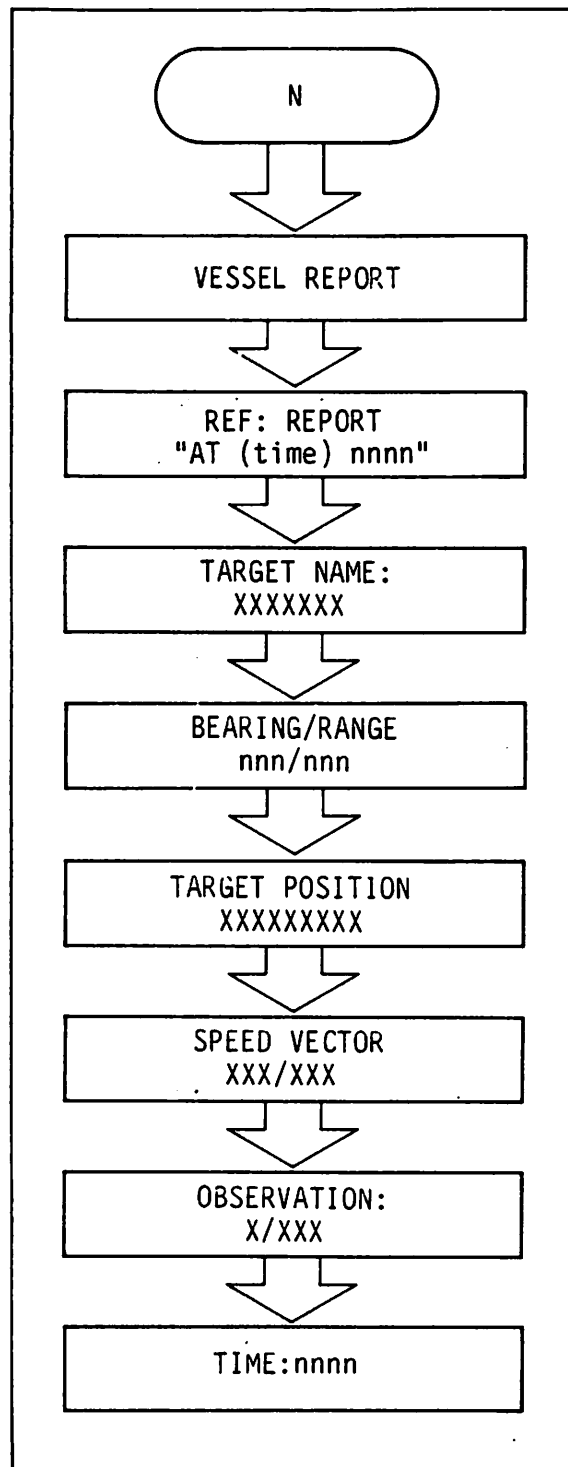
Strict military standards have been applied in the design of the Philips UA 8295/00 message terminal, thus guaranteeing its resistance to extreme environmental conditions. For instance, the terminal is fully immersible.

Simple and straightforward design using up-to-date technology and standard, well-proven, industrial grade components also contribute greatly to the high reliability of the equipment. Each unit is subjected to several weeks of pre-aging and thorough testing before leaving the factory. As a result very low failure rate figures are obtained. Modular design simplifies maintenance and repair.



----- optional equipment

Figure 1 A typical configuration with the UA 8295/00



N = message number

xxx)
) = variable data sections
nnn =)

Figure 2 An example of a fixed-format message

TECHNICAL DATA FOR
UA 8295/00

Display

32-character LED display

Keyboard

55 key silicone rubber keyboard

Memory capacity

Output memories 2000 characters
 250 characters

Input memory 8 messages or
 2000 characters

Interfaces

Communications Voice grade, 150 and 600 Bd
equipment

Optional equip- RS-422, 110-1200 Bd
ment RS-232, 50-1200 Bd

Power supply

Battery 4 D-size cells

Battery life 24 h in normal use

External power 10-30 V DC

Dimensions and weight

Size 300 x 220 x 70 mm

Weight 3 kg

A protective bag for transportation can be delivered with each terminal.

With a few additional parts the terminal can be attached to a flat surface.

**ENVIRONMENTAL SPECIFICATIONS
FOR UA 8295/00**

Operating Temperature	IEC 68-2-1	Test Aa, -40°C, 16 h
	IEC 68-2-2	Test Ba, +55°C, 16 h
Storage temperature	IEC 68-2-1	Test Aa, -55°C, 72 h
	IEC 68-2-2	Test Ba, +75°C, 16 h, (without battery)
Rapid change of temperature:	IEC 68-2-14	Test Na, 30 min, 5 cycles +70°C / -40°C (Two chamber method)
Vibration:	IEC 68-2-6	10 Hz...60 Hz constant amplitude of 0.35 mm, 60 Hz...500 Hz constant acceleration of 49 m/s ² , 90 min
Shock:	IEC 68-2-27	490 m/s ² , half-sine, 11 ms, 3 shocks in 3 perpendicular directions
Bump:	IEC 68-2-29	245 m/s ² , half-sine, 6 ms, 1000 bumps in 3 perpendicular directions
Humidity:	IEC 68-2-30	Test Db, 95 % / +55°C 12 h, 95 % / +25° C 12 h, 2 cycles
Free fall	IEC 68-2-32	750 mm, dropping on to each side, edge and corner
Protection against ingress of liquid:	IEC 144	Test IP67
Electromagnetic emission and susceptibility:	MIL-STD-461B	Class A3

