AROFLEX

**Rapid Off Line Crypto Equiment
with line-connected capability**

Type UA 8116

AROFLEX
type UA8116/01
Serie Nr.: 0012
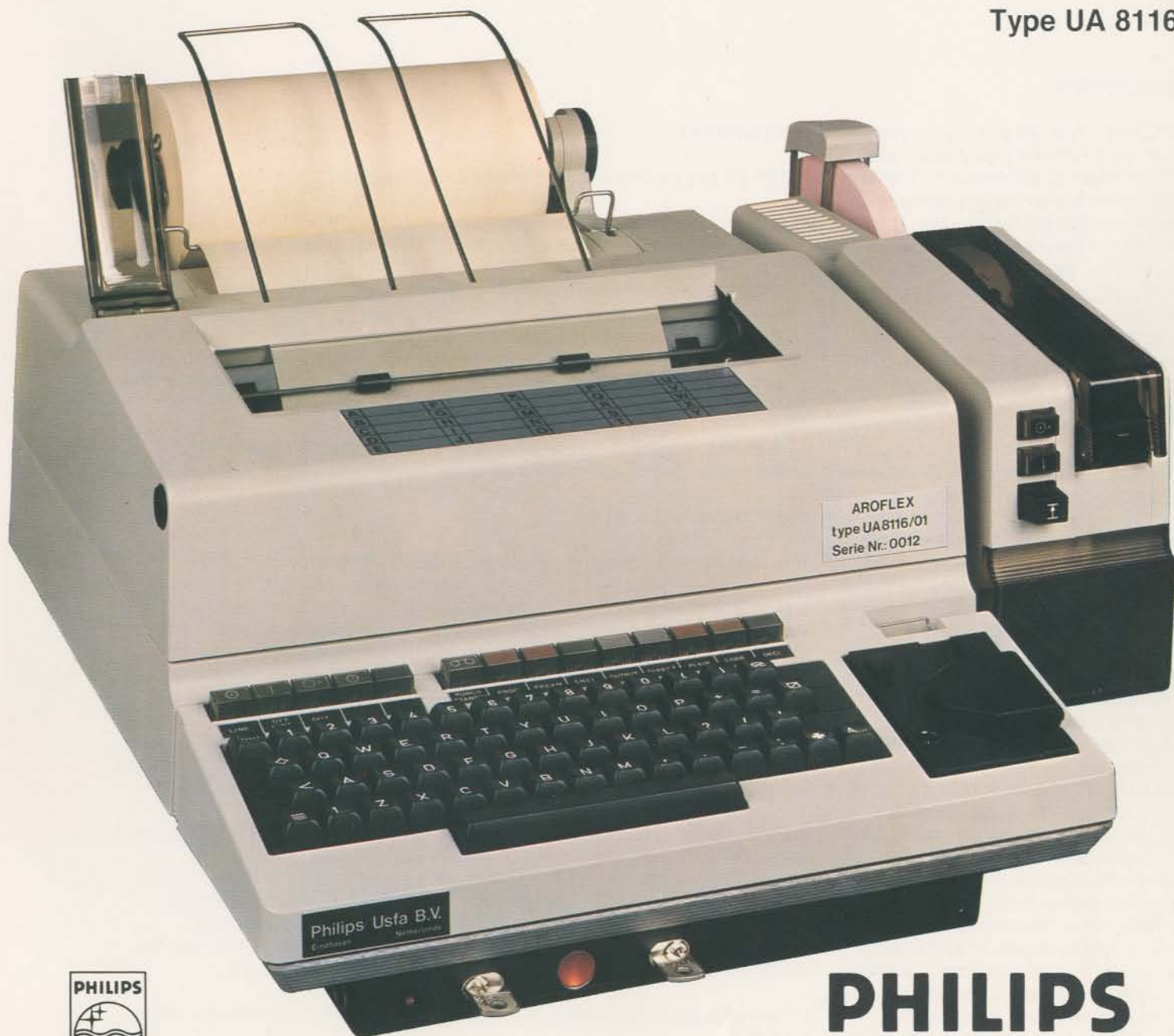
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DESCRIPTION

AROFLEX -type UA 8116- is a compact, self-contained and highly automated combination of a Siemens "T 1000" teleprinter and a microprocessor-based crypto module by Philips Usfa. It is capable of rapid encryption and decryption, with crypto text formatted in 5-letter groups in the English alphabet.

It is NATO-adopted and its operation allows of complete adherence to the ACP-127 procedures. It can operate both in the OFF-LINE and in the "line-connected" mode.

AROFLEX is equipped with 25 separate key settings. At the user's option, encryption and decryption can take place with or without monitoring of the input, allowing of instantaneous corrections when necessary.

AROFLEX is equipped with a lightweight optical tape reader and a clip-on tape punch to give it maximum applicability, especially for smaller stations with mixed clear text and crypto traffic. It can be equipped with appropriate line terminating circuitry for all types of lines such as: point-to-point circuits, message switches, circuit switches, telex over radio, etc. One of outstanding features of AROFLEX is that it is capable of real-time, on-line decryption of incoming cryptograms. Transmission of plain or crypto text by means of AROFLEX is subjected to extensive communications security measures so that the risk of compromise of text because of a single operator's mistake is very small.

EMPLOYMENT

AROFLEX can be employed for the following purposes:

- self-contained rapid off-line encryption and decryption
- teleprinter with all modern characteristics for transmission and reception of clear text
- message preparation facility with or without instant encryption
- on-line, real-time decryption
- line-connected transmission of previously encrypted text
- end-to-end encryption device for use over telex, ARQ, message switching and circuit switching systems, with routing indicators in clear text and the contents of the message in crypto.

As it makes very little noise in any mode, it can be used in normal offices without soundproofing or other measures.

CRYPTOGRAPHIC DATA

The 25 keysetting compartments of AROFLEX can be filled from the keying lists by means of the keyboard or tape reader; each keysetting results in a pre-calculated control group so that an immediate check on the correct keysetting (and hence the correct operation of the equipment) is provided. Keysettings cannot be recalled after having been inserted. Hold cells are incorporated to prevent loss of keysettings because of power failures. Keysettings can only be inserted after the physical "INSERT' key has been turned. The 2 keysetting compartments indended for SPECAT traffic are accessible only after the SPECAT key has been turned in the SPECAT lock. The keysettings consist of 24 characters. In case of emergency, the keysettings can be very rapidly be destroyed by actuating the ZEROIZING push-button.

Each message is provided with a unique crypto start sequence which prevents overlap and allows repeated use of one keysetting.
Ample ComSec mearures, such as a shunt device for clear text, are provided to prevent the inadvertent transmission of plain text. Fail-safe supervisory circuits result in immediate crypto alarm in case of single or multiple component failure in essential circuits. A separate algorithm is provided for enciphering the serial number of the keysetting (system indicator).

On-the-spot production of keysetting lists is possible with an add-on software facility.

OPERATION

The operation of AROFLEX is so simple that a skilled teleprinter operator can be trained in the use of AROFLEX within 1 hour. When an operator makes a mistake in the operation, AROFLEX gives an automatic warning and blocks till the mistake has been set right. The automatic group count, paging procedure, crypto procedure and termination of messages, combined with the possibility of correcting the clear text message preparation, make for a simple, versatile equipment. The monitoring of the input is a useful feature.

The page copy of all outgoing traffic, which contains a clear indication of the moment when encryption was started, allows of effective control over the traffic.
Incoming calls as a rule have priority over the off-line mode so that no messages are lost. The software programming of AROFLEX takes the various checks and controls as used in switching systems into account and allows of clear text routing indicators and addresses and secure transmission of classified messages.

PHYSICAL DATA

Input: Keyboard, tape reader, line, cassette tape recorder
Output: page copy, punched tape, line, cassette tape recorder
Operating modes:
- clear text on-line
- crypto off-line and crypto line-connected
- message preparation facility
- with or without monitoring of input
- always with automatic decryption

Formatting arrangements according to ACP-127, viz. Format Lines 1 . . .4 without counting of Line Feeds, Format Lines 5 . . .11 with counting of Line Feeds, automatic paging procedure after every 20 lines, automatic termination of messages, maximum 6 pages.

Dimensions: height 265 mm without roll of paper, 320 mm with roll of paper
depth   : 545 mm without roll of paper, 600 mm with roll of paper
width   : 530 mm including clip-on tape punch
weight   : 25 kg including tape punch

Operating temperature range: $-10°C +55°C$.
  Power supply: 110-220 Volts a-c, 50/400 Hz
  Power consumption: 150 VA in full operation, 40 VA in standby
  Operating speeds: 50, 75 or 100 Bauds on the line, 100 Bauds in the off-line mode
  Telegraph code: ITA Code No. 2. (CCITT Alphabet No. 5)

OPERATIONAL FEATURES

Decryption, whether in the off-line or in the line-connected mode, is entirely automatic with automatic selection of the correct keysetting. This implies that unattended line-connected reception and decryption are possible. AROFLEX can very well be used as line-connected crypto equipment when Traffic Flow Security is not required, such as for instance the smaller stations of a network, where advantage can be taken of the possibility for 100% key compartmentation.

The crypto output, viz. 5-letters groups according to the APC-127 format, is always printable and conforms with the current formatting arrangements with automatic page numbering and group counting.
The cryptomemory is sufficient for the storing of 6 pages of crypto text or 1200 5-letters groups. Correction of input is possible without losing crypto-synchrony.

As the AROFLEX has a microprocessor based crypto part, it can be software-modified to cater to specific wishes, thus making for a very versatile instrument.

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