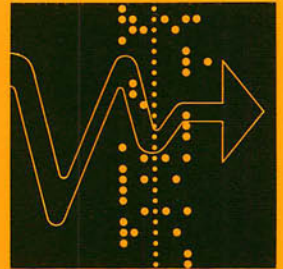


CIPHER TELEPRINTER

SP 300 GCA
CIPHER TELEPRINTER



SP 300 GCA CIPHER TELEPRINTER

The SP 300 GCA cipher teleprinter is used for regular or ciphered data transmission on automatic telex-networks, dedicated lines, message switching systems or data circuits. The latest in HASLER teleprinter engineering, combined with a modern GRETAG cipher attachment, are the best guarantee for an information exchange system which is both dependable and safeguarded against unauthorized access.

Cipher operation is possible either in on-line or off-line mode. In clear text mode the SP 300 GCA is compatible with the ordinary HASLER SP 300. Half-duplex or full-duplex operation is possible, and a variety of line interfaces are available.

Encryptionwise, compatibility is also assured with the GRETACODER 505, 805 and 906 in the GRETAG range of ciphering equipment. This allows mixed use or combination of data from networks with different ciphering units.

The combination of state-of-the-art microprocessor technology plus Swiss precision engineering has made possible a terminal system of unusual flexibility, ease of operation, and reliability.



Teleprinter section

The teleprinter section is identical to the all-electronic HASLER SP-300 unit. The modular design consists of 4 basic assemblies:

- the receiver unit (includes encryption unit)
- the keyboard (with optional add-on memory)
- the paper tape punch
- the paper tape reader

The receiver unit alone works as a receive only (RO) teleprinter, but it can easily be expanded with additional modules into a complete printer terminal system for telex or data application with speeds up to 30 characters per second.

In addition to the modular hardware, further modularity is offered in the software domain. This flexibility enables individual programming of most operating parameters and provides the user with a variety of program features such as:

Electronic text memory

with a capacity of 4'000 to 16'000 characters.

Editing capabilities

for efficient message preparation.

Short-text memory

for selectable characters, e.g. for company name, place and date, etc.

Serial number generator

for automatic consecutive numbering of outgoing and incoming messages.

Time printout

of local time, automatic and/or manual.

Tabulator

for horizontal and vertical tabulation, up to max. DIN A4 page size.

Automatic line feed

to initialize carriage return and line feed within user specifications.

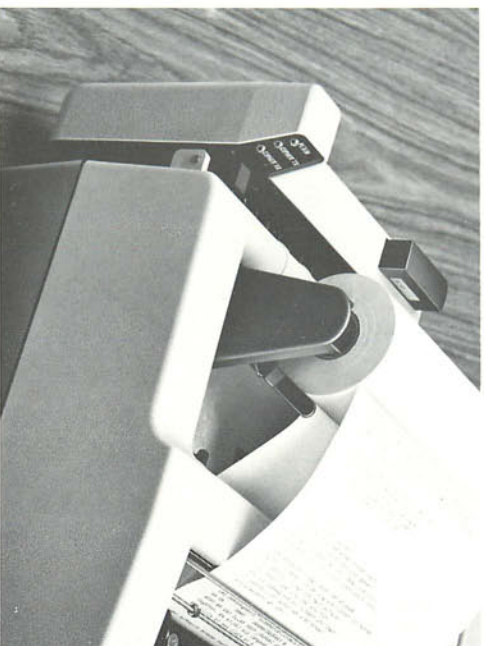
Memory dialling system

with storage capability for 15 user programmable international call numbers (16-digits). Numbers can be recalled via a single character (A – O). There is also a repeat feature for manually dialled numbers (Key R).



Ciphering section

The cipher attachment GRETACODER 521 features a microprocessor based nonlinear encryption algorithm with guaranteed cryptological specifications. For highest security a triple key system is used: Elementary key, combiner key and auxiliary key ensure maximum protection even against sophisticated computer-based code breaking attacks.



An electronic identification system based on a secret password prevents cipher mode operation by unauthorized users.

Operating in cipher mode on the SP 300 GCA differs only marginally from working in clear mode. The following printout illustrates the few commands which are necessary in the dialogue with the machine to transmit a telex.

```
* 5390 greta ch
32413 have ch
jjjjj
key nr 82132
start cm 32

the combination of state-of-the-art microprocessor technology plus swiss precision engineering has made possible a terrestrial system...

jjjjj
(answer cm)

* ... of unusual flexibility, ease of operation, and reliability..
(end cm)
```

One small key module contains the combiner key and 194 elementary keys, both being secret key elements. The key module can be removed and stored separately if security requires so. Key module programming devices are available to users; they generate keys randomly without user involvement. Five further elementary keys can be entered via the keyboard to be recalled as often as required during operation.

The auxiliary key, generated automatically by a physical random generator, causes each message to be ciphered in another manner without changing either the combiner key or the elementary key. This principle is a vital cryptological security feature.

The ciphered messages consist entirely of alphabetic letters. Character combinations which are used as control commands in international telex networks and message switches are not generated in order to ensure transparency.

zaynz aapap gapq rpgsi qbbf rpgsi qbbf rpgsi qbbf hccif
occhj fcbab dcdnd joim kamcf jkba opke oniak ekkn jalian
gnhek ntdjc aifek fjomp ahten dphpi gmbgc fnehd mdko mgkn
tjmdg klesoe pdapd fjnpb tcdjlk tjdern zendz

Reporting and bookkeeping activities allow for convenient checks on key numbers used, clear or cipher mode of individual messages, etc.

Message reception is fully automatic. The SP 300 GCA does not need to be attended to receive clear or ciphered incoming messages.

Technical data

Transmission parameters

Code:	Baudot or ASCII (optional)
Transmission speed:	50/75/100/110/150/200/300 baud
Operating modes:	<ul style="list-style-type: none">– telex mode, keyboard selection A or B– DATEX mode– dedicated private line mode (point-to-point)
Line interface:	<ul style="list-style-type: none">– double current ± 20 mA– single current 40 mA– data interface X.20– audio frequency to V.21– audio frequency for EDW– data interface V.24
Receive margin:	$> 45\%$ depending on the
Send distortion:	$< 5\%$ interface chosen

Power supply

Power voltage:	110/220 VAC $\pm 10\%$
Power frequency:	50 or 60 Hz
Power dissipation:	150 W max., 30 W idle
RF suppression:	noise category N of VDE 0875

Operation

continuous

Noise level

< 60 dB (A) at 50 baud

Environment

Temperature range:	in operation 0 – 50 °C
	storage and transport –30 to + 70 °C

Dimensions and weight

	Height	Width	Depth	Weight
ASR (with paper tape attachment)	190/280	545	655mm	24 kg
MSR (without paper tape attachment)	190/280	395	655mm	20 kg
RO	190/280	395	505mm	18 kg

Printer

Principle:	9-dot matrix printer
Max. usable speed:	30 characters per sec.
Service interval:	10^8 characters or 4 years
Character font:	Latin ECMA standard (others on request)
Character representation:	9 x 9 matrix for upper and lower case letters for Latin script 9 x 14 matrix for Arabic script
Character spacing	10, 12 or 15 characters per inches
Character set:	96 characters including special symbols

Characters per line:	69, 72, 80, 104 (narrow script)
Line spacing:	4.3, 6.4, 8.5 mm, switchable
Paper width:	210, 216, 250 mm form paper
Ribbon:	Bar cassette, black
Copies:	original and 3 copies

Keyboard

Principle:	<ul style="list-style-type: none">– keys with Hall generators– n-key-roll-over
Key panel:	<ul style="list-style-type: none">– 5 bit version, 4-row full keyboard– 8 bit with dual assignment
Special keys:	<ul style="list-style-type: none">– for signalling and message preparation combined keys such as “new line”, etc.
Finger pressure:	42...85 gr
Key stroke:	4mm (0.16")
Buffer:	44 characters

Control electronics

Processor system:	Intel 8080 multiprocessor system
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Cipher attachment

Cipher generator:	<ul style="list-style-type: none">– non-linear cipher generator for highest security levels– period: 10^{54} bits (10^{45} years at 300 baud)– total key diversity: 10^{60}– recursion length: $7 \cdot 10^9$ bit
Elementary key:	<ul style="list-style-type: none">– 194 elementary keys stored in key module (PROM). diversity 10^{24}– 5 further elementary keys defined via keyboard (16 letters) diversity 10^{21}
Combiner key:	<ul style="list-style-type: none">– diversity: 10^{38}– stored in key module
Auxiliary key:	<ul style="list-style-type: none">– generated automatically for each message and transmitted with error protection
Monitoring:	<ul style="list-style-type: none">– continuous monitoring of the ciphering procedure and random generator. Transmission shut down and alarm in case of failure.
User Identification:	<ul style="list-style-type: none">– with programmable password (up to 15 letters)
Status display:	<ul style="list-style-type: none">– via LEDs on cipher attachment– Plain, Cipher TX, Cipher RX

Paper tape punch

Operating principle:	non-stop rotating punch drive with coding by means of roll armature magnets
Code block:	5 or 8 bit
Operating speed:	30 characters per sec.

Paper tape reader

Scanning principle:	opto-electronic
Operating speed:	30 characters per sec.
Controls:	On, Off, Step (Skip)
Tape monitor:	tape tension, end of reel
Automatic request mode:	for TOR or MUX operation

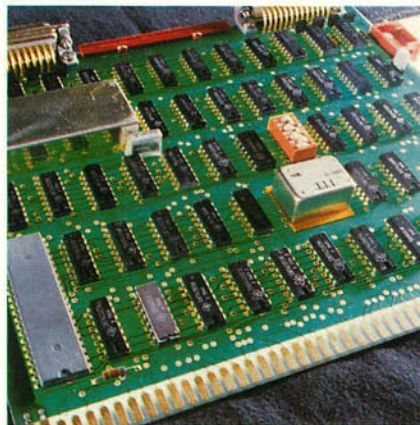
Additional equipment (programmable)

Text memory:	4000, 8000, 12000, 16000 characters
Short-text memory:	32 characters
Responder:	48 characters
Serial number generator:	incoming and/or outgoing, max. 8 decades
Time printout:	local time
Tabulator:	horizontal and vertical up to max DIN A4
Automatic end-of-line feature:	by end-of-word recognition
Abbreviated dialling system:	– 15 freely-selectable and programmable call numbers (16-digit for international dialling) – repeat key for last call number

Accessories

- Programming unit for answer back
- Key programming unit
- Additional key plug-in modules

Continuous development and improvement is one of our policies; therefore we reserve the right to change specifications without notice.



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