

M a n u a l

for serials and parallel interfaces

S 7 R a n g e

S7 Mega

S7 Supra



A19765 C



A DOVER COMPANY

Serials RS232/RS422 interface

Parallel interface

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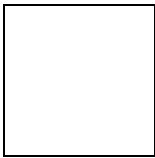
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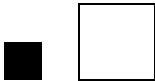
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This manual describes the serial links on S7 MEGA and S7 SUPRA printers and the parallel link on the S7 SUPRA printer.

The printer manual should be consulted for normal use and for programming the printer.



1 Serial links - Introduction

The printers have an asynchronous, serial interfaces, allowing a V24/RS232C or RS422 mode, "voltage level" or "20 mA loop" link.

Extension cassettes offering RS422 or RS232/V24 links are wired by default for RS232/V24 operation. To change to RS422 see the "Configuration" chapter in this section.

Current loop operation is not available as standard.

REMINDER	RS422 and current loop transmissions have excellent immunity to electrical and electromagnetic interference. They are therefore particularly recommended for long links or if interference is high.
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The RS232C/V24 or RS422 standard describes the signals available during a dialog between a DTE (Data Terminal Equipment) and a DCE (Data Communication Equipment).

NOTE	The printers are to be considered as a DCE.
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2 Connection

The connection of the serial link to the Extension cassette is made as follows:

- disconnect the printer from the mains then remove the Extension cassette,
- remove the four screws securing the cassette,
- pass the shielded link cable through the stuffing boxes provided,
- Attach the wires to their corresponding terminals according to the type of link used (at voltage or current level). See pages 4 and 5

IMPORTANT

The shielding of the link wire must be connector throughout the full length of the metallic stuffing box of the Extension cassette, and the same type of connection must be made on the computer. Since the Extension cassette is in fact an extension of the printer, it must always be SWITCHED OFF at the mains before being connector or disconnected.

Figure 1: The Extension board and terminals

- | | |
|---|-----------------|
| 1 | Stuffing box |
| 2 | Connecting bars |

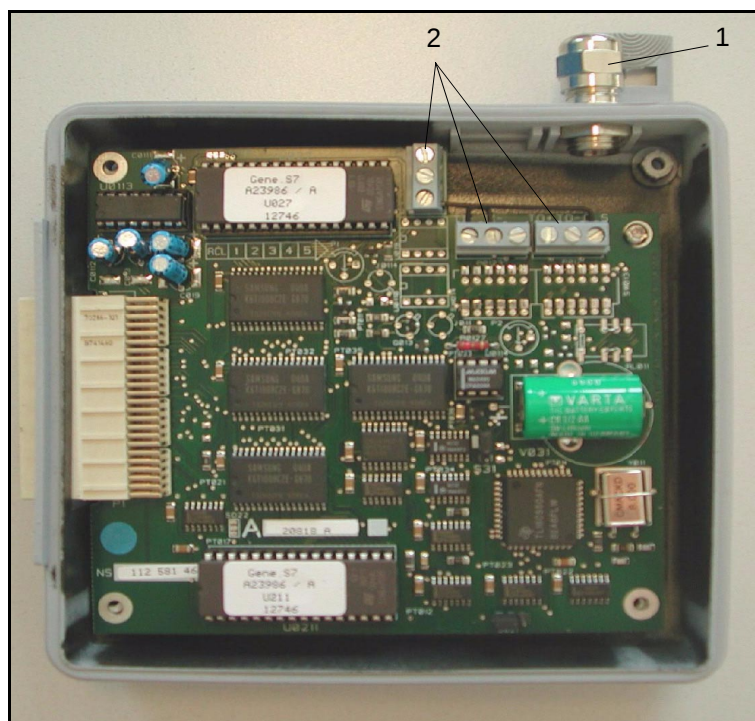
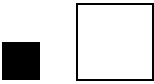
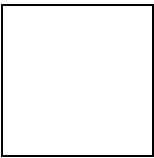


Figure 1



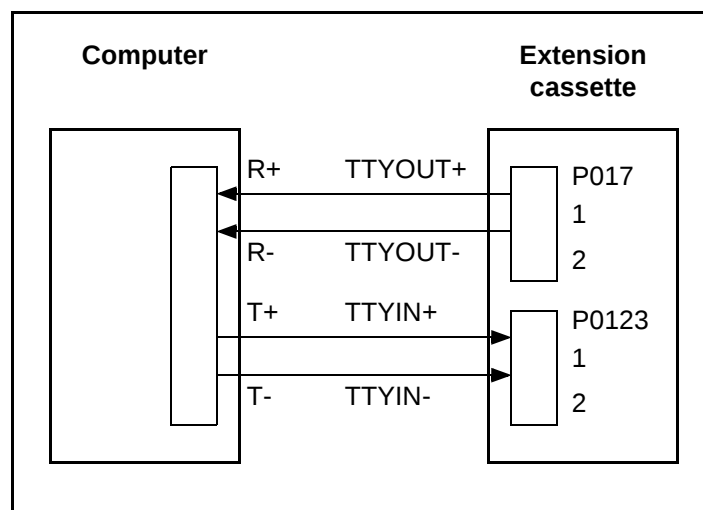
3 Wiring diagrams

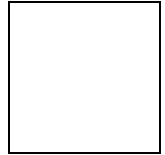
The transmission links are wired between terminals P016 (RXD, TXD, 0V), P0123 (TTYIN+, TTYIN-) and P017 (TTYOUT+, TTYOUT-, CLS) of the extension cassette and the terminals of the industrial computer or PC.

- TXD: (equivalent to TD: Transmit Data)
T+
T-
TTY out +:
TTY out -:
Data transmission line
- RXD: (equivalent to RD: Receive Data)
R+
R-
TTY in +:
TTY in -:
Data reception line
- GND: (groups)
Electrical common

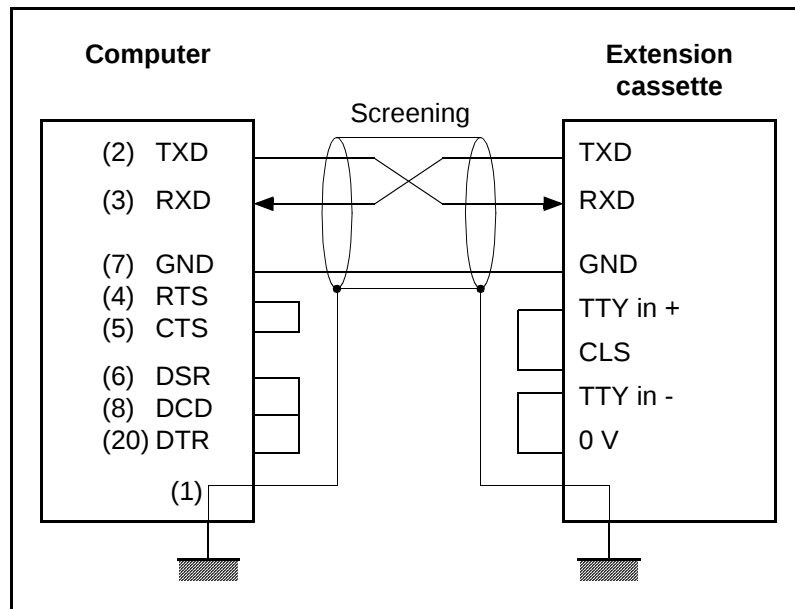
3.1 Voltage transmission wiring diagrams

3.1.1 RS422 link

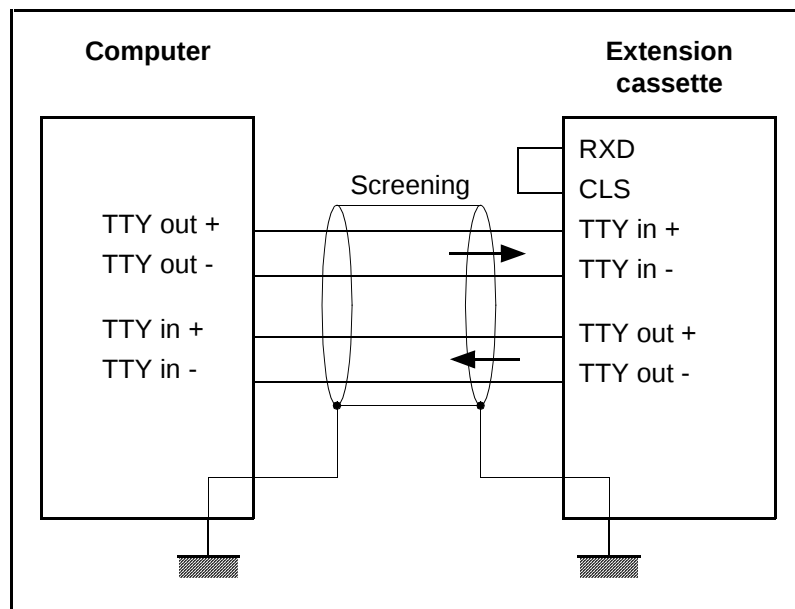




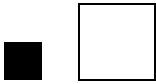
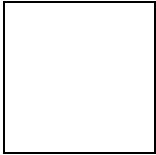
3.1.2 RS232/V24 link



3.2 Loop transmission wiring diagram



For correct operation connect the RXD and CLS terminals on the Extension cassette.



4 Format and transmission speed

The data are coded in hexadecimal unless otherwise indicated.

All the data coded on several bytes must be transmitted with the high order byte first. All bytes must be transmitted with the least significant bit first.

- Three possible formats:
 - 1 start bit, 8 bits, no parity, 1 stop bit,
 - 1 start bit, 8 bits, no parity, 2 stop bits,
 - 1 start bit, 8 bits, even number, 1 stop bit.
- Speed transmission (in bauds):
 - 38400
 - 19200
 - 9600
 - 7200
 - 4800
 - 3600
 - 2400
 - 1200
 - 600
 - 300
 - 150



5 Electrical specifications

The electrical specifications are governed by the V24, RS232C standard or the RS422 standard.

In loop active mode, the 20 mA current is supplied by a constant current generator requiring no adjustment.

6 Configuration

6.1 Software

The configurations of the speed and format of the serial link are done with the wiring only, "PRINTER PREPARATION", "INITIALIZATION", "PRINTER", "COMMUNICATION".

6.2 Equipment

The type of link with the printer:

- RS232/V24 link,
- RS422 link,
- current loop,

is configured by the wiring. See the wiring diagrams for the links in chapter 3 of this section.

6.2.1 Configuring voltage level links

By default the cassette is configured for operation in RS232/V24 (jumpers between TTYin+ and CLS and between TTYin- and 0V) as shown in figure 1. To change to RS422 operation, remove these 2 straps.

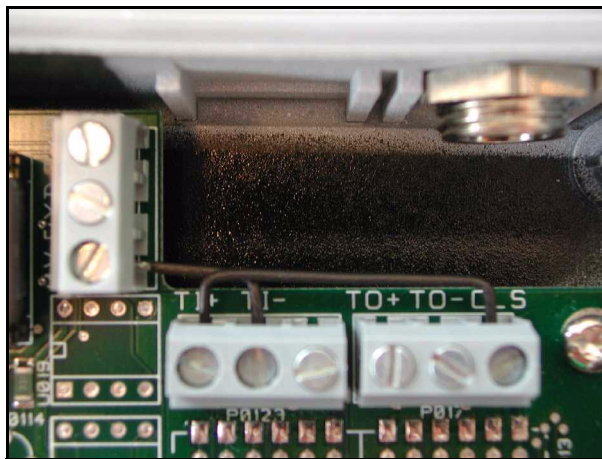


Figure 1

6.2.2 Current loop configuration

For the loop link the choice of active or passive mode is made with the SW013 and SW014 switches, holding the extension cassette with the stuffing boxes above to the right, as shown in Figure 1.

- Active mode : the two switches to the left.
- Passive mode: the two switches to the right.

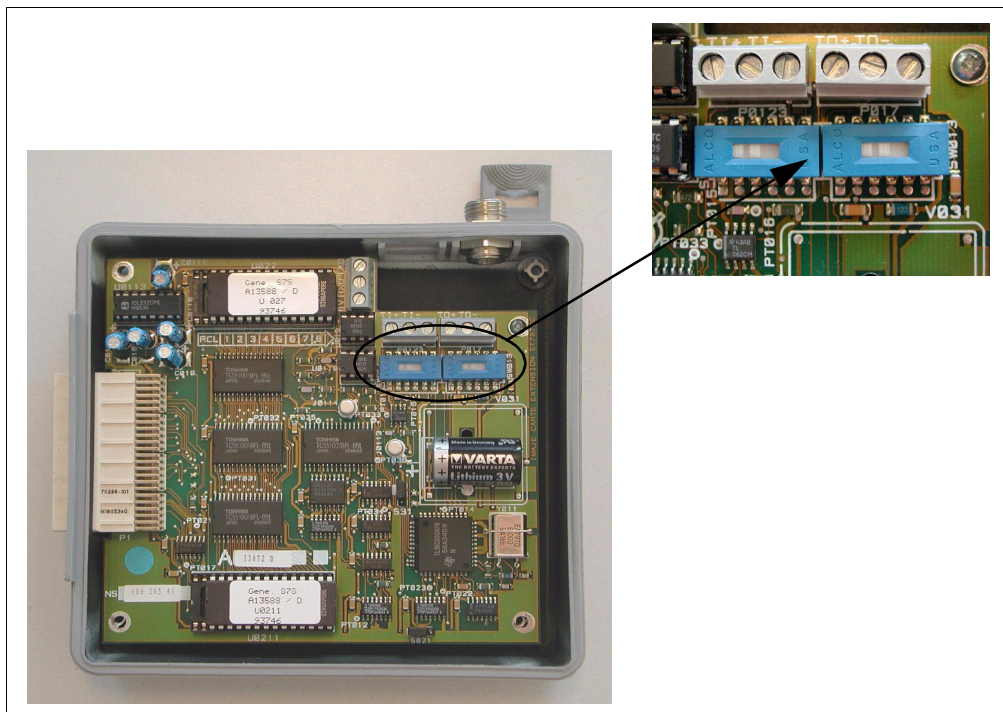
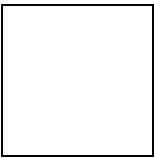


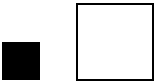
Figure 1

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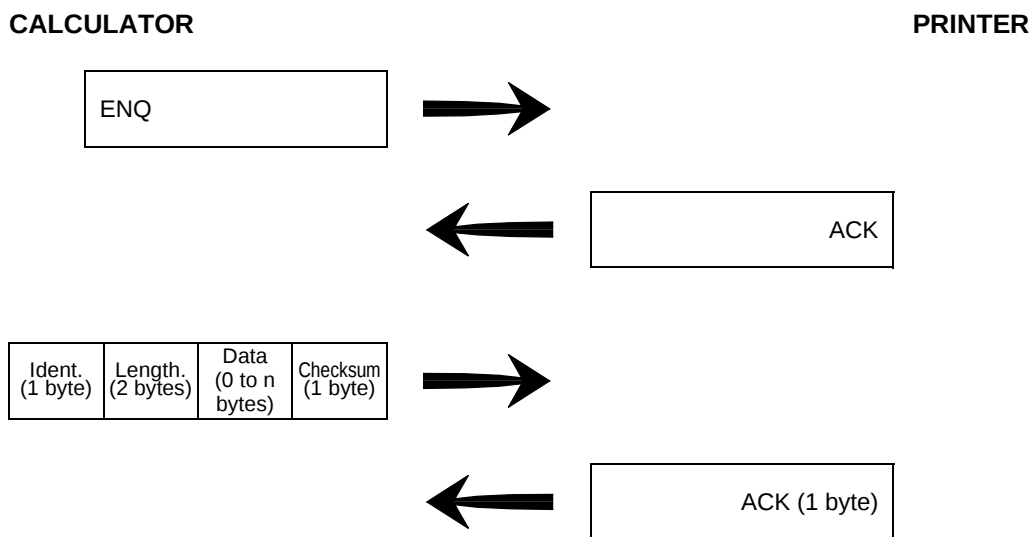


General principle of an exchange

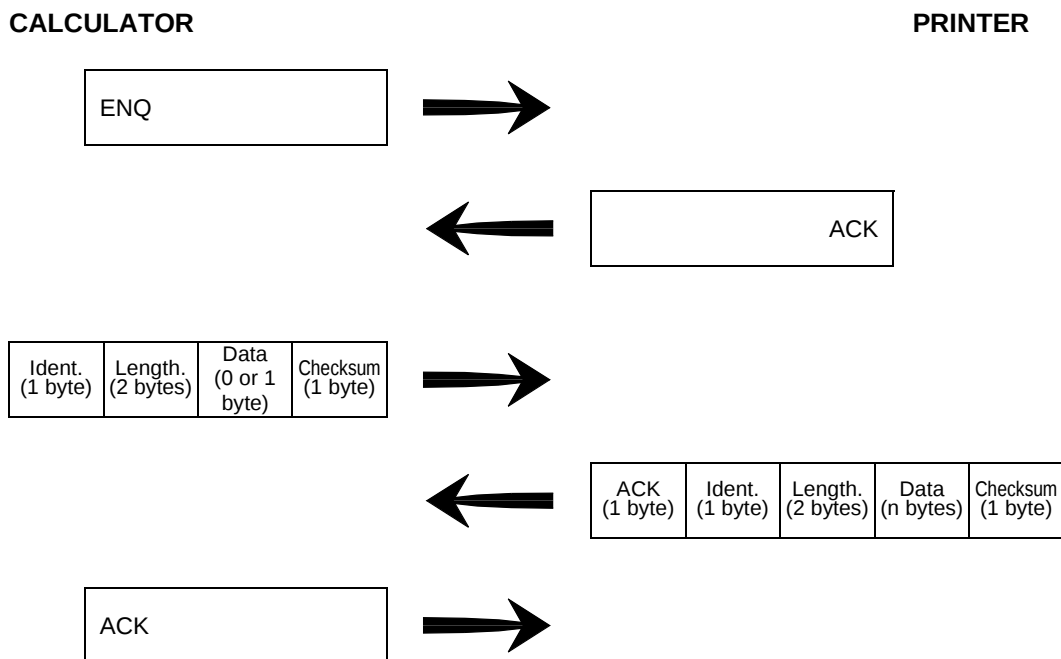


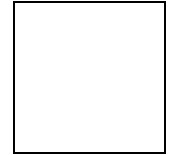
1 General principle of an exchange

Data sending from the computer to the printer

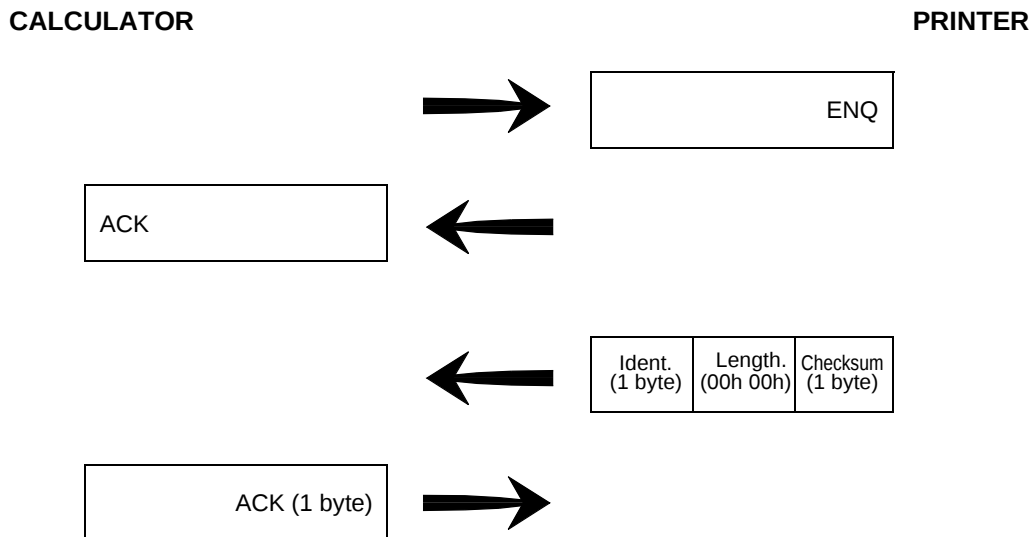


Data request from the computer to the printer





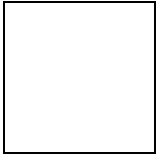
Sending data from the printer to the computer



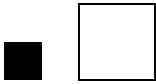
NOTE This case exists only for sending the print acknowledgement

Transmission protocol

- ENQ (05h) → Transmission request. If the printer does not reply ACK, ENQ is repeated.
- ← ACK (06h) Reply to transmission request accepted or control return validated.
- ← NACK (15h) Reply to transmission request rejected or control return not validated.
- ← ENQ (05h) Reply to transmission request rejected because the printer has to transmit information to the computer. The computer must pass to reception mode. If the computer does not reply ACK, the printer repeats ENQ.
- XOFF (13h) → The computer requests suspension of the dialog.
- XON (11h) → The computer asks to resume the dialog after an XOFF.

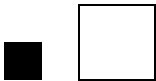


General principle of an exchange



2 Identification (1 byte in hexadecimal)

Specific for each command (see table following pages).

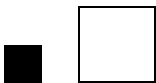


3 Length (2 bytes in hexadecimal)

The length is the number of bytes comprised between the length and the checksum byte.

The maximum value is in general 2044 bytes or 07h FCh.

In case of a sent to the printing, the maximum value is: 4092 bytes or 0Fh, FCh.



4 Data

Zero byte in case of request from the calculator to the printer.

n bytes representing the instructions required for defining a function.



5 Checksum

This represents an "OR" exclusive of all preceding bytes (identification, length and data bytes).

6 Management of the dialog and faults

6.1 In Reception

Through the Extension Cassette the printer can receive orders from the computer at any time.

6.2 In Transmission

If the computer cannot receive it transmits an XOFF (13h) code, the printer suspends transmission and awaits the XON (11H) signal to resume. If the printer receives the XON signal after more than two seconds it cancels the transmission, returns a NACK and the "time out V24" fault appears.

IMPORTANT	The maximum answering time for the printer, without taking the line transfer into account, is 5 ms.
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6.3 Fault

6.3.1 "TIME OUT V24" fault

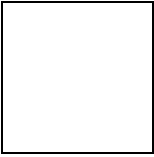
- During initialization of the dialog:

When the printer sends an ACK or an ENQ, if the computer does not reply within two seconds the printer stops the dialog, sends a NACK and indicates "**TIME OUT V24**" fault.

- During the dialog:
 - if the computer sending time between two bytes exceeds two seconds, the printer stops the dialog, returns a NACK AND INDICATES "**TIME OUT V24**" fault,
 - if the time between the computer XOFF and XON sending exceeds two seconds, the printer stops the dialog, returns a NACK AND INDICATES "**TIME OUT V24**" fault,
 - if at the end of the printer sending the computer does not reply within two seconds the printer stops the dialog, returns a NACK AND INDICATES "**TIME OUT V24**" fault.

6.3.2 "V24 DATA" fault

If the printer answers NACK at the end of the dialog, the control (checksum) is incorrect, and the message must be resumed from the beginning with ENQ. If after three trials resumption is impossible or if command identification is unknown the printer indicates "**V24 DATA**" fault.

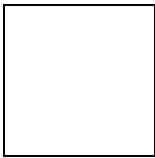


General principle of an exchange

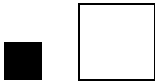
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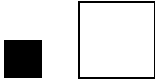
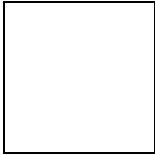


1 Sendings

TITLE OF THE COMMANDS	IDENT. COMMAND	IDENT. ANSWER
Stop/Start of the jet or the printer	C6h	
Acknowledgement of faults	E6h	
Sending a message to the library	9Fh	C5h
Sending a message for printing	E3h	
Sending a partial message for printing	E5h	
Sending the request for non doubled printing	E9h	
Sending a message selected according to its number	98h	
Print sending	94h	
Sending cancellation of a message	C7h	C5h
Sending an autodating table	DFh	
Counters initialization	97h	
Sending of external variables	99h	
Initialization of the autodating	C8h	
Sending the autodating parameters	ECh	
Languages of the month to be printed	C4h	
Sending request of the print acknowledgement by the computer	D8h	
Sending of the print acknowledgement by the printer	CEh	
Configuration of "ETAT" output	B8h	

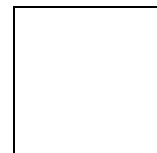
2 Requests

TITLE OF THE COMMANDS	IDENT. COMMAND	IDENT. ANSWER
Request printer status	A6h	E4h
Request of faults	DAh	D2h
Request for the history of the last thirty faults	CFh	D0h
Request for status of the tachometer pulse number/fly time offset output	B7h	B8h
Request for software version	B1h	B2h
Request for functions	ADh	B0h
Request for types of character generators available in the printer	A4h	A5h
Request for module amendment dates	C9h	CAh
Request for general parameters by default	CBh	CDh
Request for a message by number	92h	9Fh
Request for a free message number	A2h	A3h
Request for the number of the active message	DBh	91h
Request for autodating parameters	BBh	BCh
Request for the autodating	D6h	9Ch
Request for an autodating table	DEh	DFh
Request for the current value of the autodating elements	A9h	ABh
Request for the languages of the month to be printed	E0h	C4h
Request for the current value of the counters	95h	96h

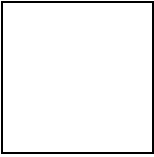


3 List of the commands

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92h	Request for a message by number	52	5.2
94h	Print sending	33	2.6
95h	Request for the current value of the counters	63	6.6
97h	Counters initialization	38	3.5
98h	Sending a message selected according to its number	30	2.3
99h	Sending of external variables	36	3.3
9Fh	Sending a message to the library	30	2.4
A2h	Request for a free message number	53	5.3
A4h	Request for types of character generators available in the printer	48	4.7
A6h	Request printer status	39	4.1
A9h	Request for the current value of the autodating elements	60	6.4
ADh	Request for functions	46	4.6
B1h	Request for software version	45	4.5
B7h	Request for status of the tachometer pulse number/fly time offset output	44	4.4
B8h	Configuration of ETAT output	44	4.4
BBh	Request for autodating parameters	55	6.1
C4h	Languages of the month to be printed	25	1.3
C6h	Stop/Start of the jet or the printer	24	1.1
C7h	Sending cancellation of a message	32	2.5
C8h	Initialization of the autodating	34	3.1
C9h	Request for module amendment dates	49	4.8
CBh	Request for general parameters by default	51	5.1
CEh	Sending of the print acknowledgement by the printer	26	1.4
CFh	Request for the history of the last thirty faults	43	4.3



IDENT.	TITLE OF THE COMMANDS	PAGE	§
D6h	Request for the autodating	58	6.2
D8h	Sending request of the print acknowledgement by the computer	26	1.4
DAh	Request of faults	41	4.2
DBh	Request for the number of the active message	54	5.4
DEh	Request for an autodating table	59	6.3
DFh	Sending an autodating table	37	3.4
E0h	Request for the languages of the month to be printed	62	6.5
E3h	Sending a message for printing	28	2.1
E5h	Sending a partial message for printing	29	2.2
E6h	Acknowledgement of faults	24	1.2
E9h	Sending the request for non doubled printing	27	1.5
ECh	Sending the autodating parameters	34	3.2

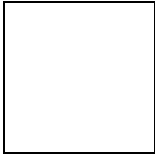


List of identification

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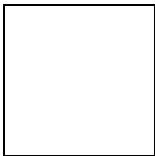
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4.5	Request for software version	45
4.6	Request for functions	46
4.7	Request for types of character generators available in the printer	48
4.8	Request for module amendment dates	49



5	Requests concerning messages	51
5.1	Request for general parameters by default	51
5.2	Request for a message by number	52
5.3	Request for a free message number	53
5.4	Request for the number of the active message	54
6	Request concerning variables	55
6.1	Request for autodating parameters	55
6.2	Request for the autodating	58
6.3	Request for an autodating table	59
6.4	Request for the current value of the autodating elements	60
6.5	Request for the languages of the month to be printed	62
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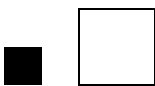
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This sections deals with all the commands, transmissions or requests, for dialoging with the printer.

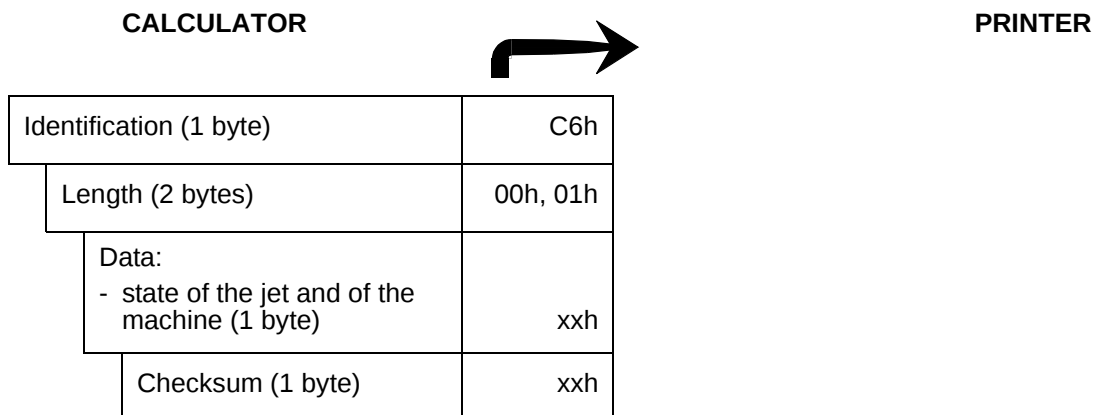
CAUTION

For the sake of clarity, the transmission protocol elements ENQ, ACK, etc. are not indicated - see the section "General Dialog Principles".



1 Sending concerning the printer

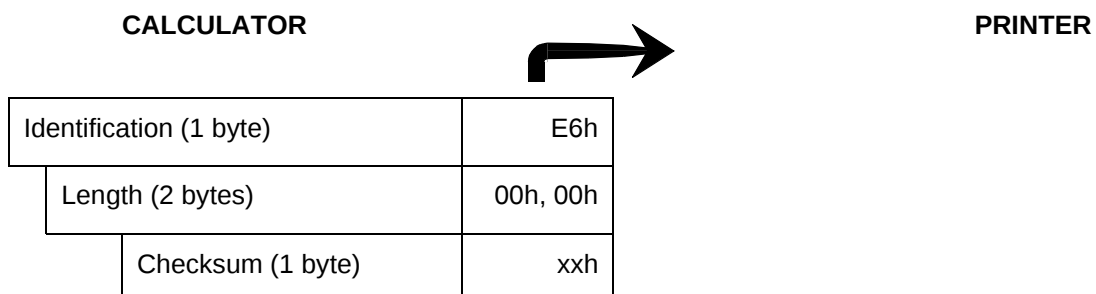
1.1 Stop/Start of the jet or the printer

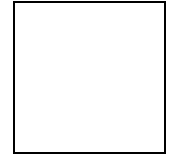


Detail of the data byte

- 00h Jet stop
- 01h Jet start
- 08h Machine stop
- 0Ch Machine restart during stop phase
- 0Dh Machine restart at end of stop phase or of maintenance function or in stand by state with power on.

1.2 Acknowledgement of faults





1.3 Command of the languages of the month to be printed

CALCULATOR



PRINTER

Identification (1 byte)	C4h
Length (2 bytes)	00h, 02h
Data:	
- number of the timer language 1 (1 byte)	xxh
- number of the timer language 2 (1 byte)	xxh
Checksum (1 byte)	xxh

Detail of the data bytes (for the language 1 and 2)

Depending on the command module, the languages in memory will be different.

Latin command module:

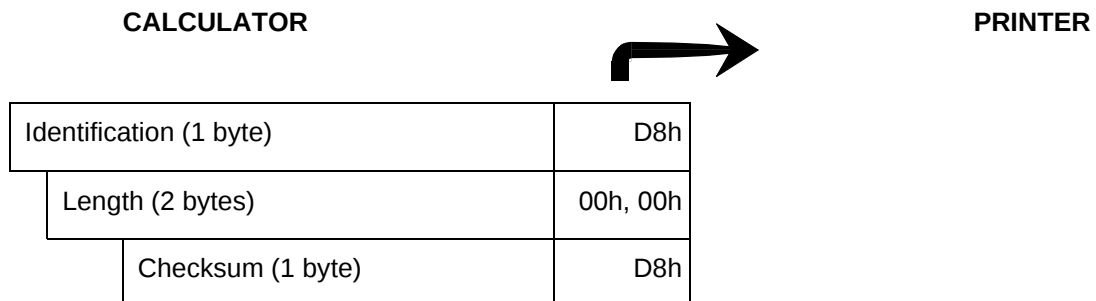
Number	Language
00h	French
01h	English
02h	German
03h	Italian
04h	Spanish
05h	Norsk
06h	Swedish
07h	Dutch
08h	Danish
0Ah	Portuguese
0Bh	Brasilian
0Ch	Hungarian
0Dh	Polish
0Fh	Czech

Number	Language
16h	Greek
17h	Finnish
18h	Croatian
19h	Slovenian

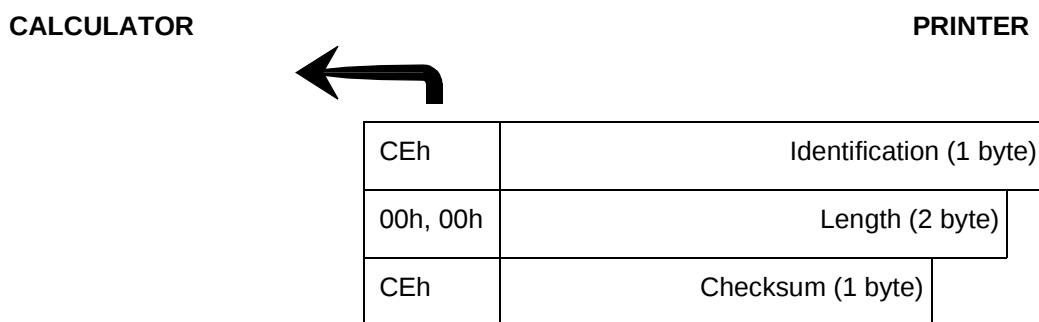
Non Latin command module:

Number	Language
00h	French
01h	English
09h	Japanese (Katakana)
10h	Arabic
11h	Chinese
12h	Korean
13h	Hebrew
14h	Russian
15h	Thai

1.4 Sending request of the print acknowledgement by the computer and sending of the print acknowledgement by the printer

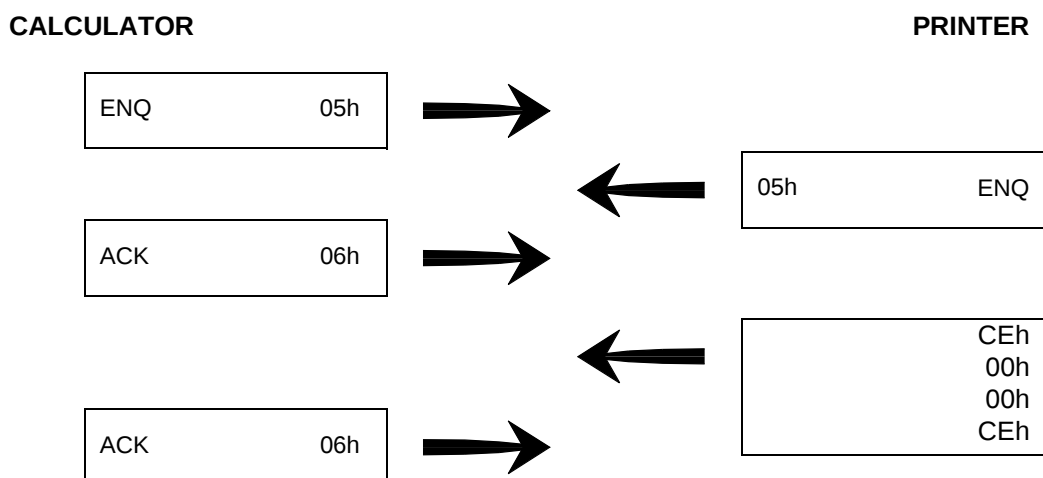


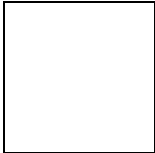
Sending is to be made once prior to the start of production, and remains effective until the printer comes to a stop. The printer sends a print acknowledgement at the end of the printing..



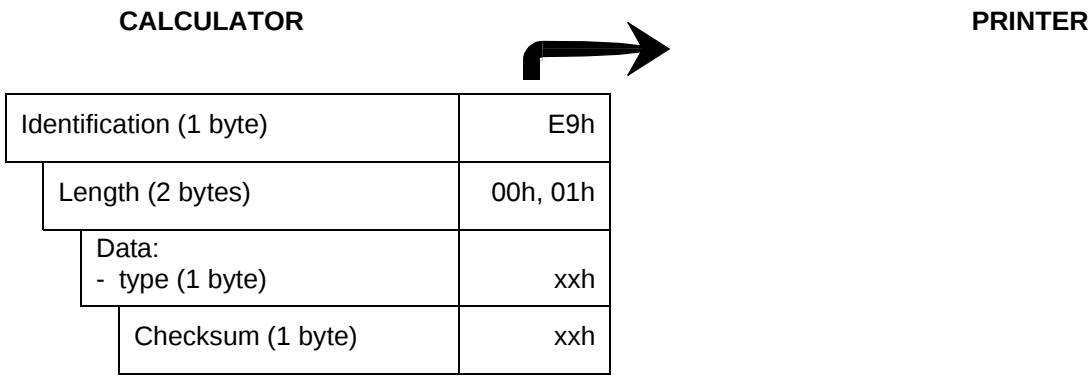
NOTE In case of a conflicting dialog at this moment, the printer has the priority.

Example:





1.5 Sending the request for non doubled printing

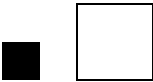
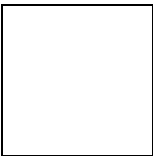


This sending is made once prior to the start of production. Non doubled printing can be disabled without stopping the machine.

Data details

- Type:
 - 00 unvalidate non doubled printing
 - 01 validate non doubled printing

NOTE	The role of this function is to prevent a message being printed twice in succession, without any modification.
-------------	---



2 Sending concerning the messages

2.1 Sending a message for printing

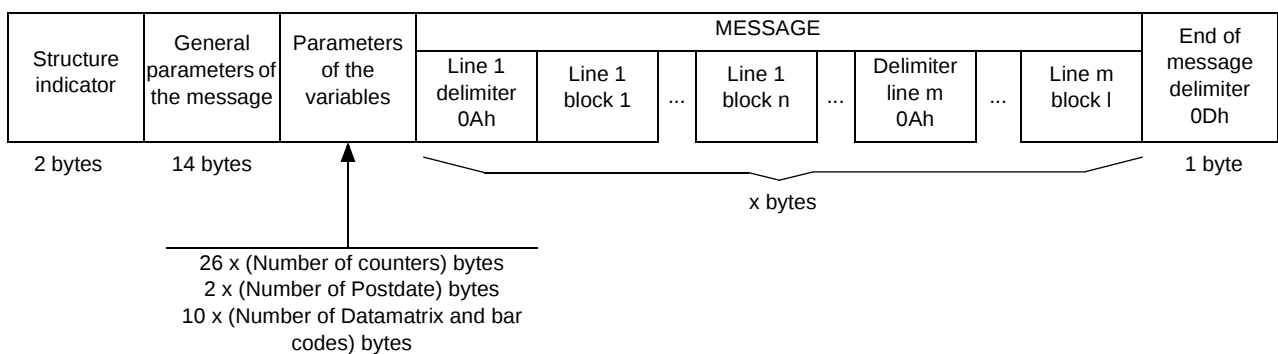
CALCULATOR



PRINTER

Identification (1 byte)	E3h
Length (2 bytes)	xxh, xxh
Data: - structure indicator - general parameters - variable element parameters - message to print	xxh - - - xxh
Checksum (1 byte)	xxh

Data details



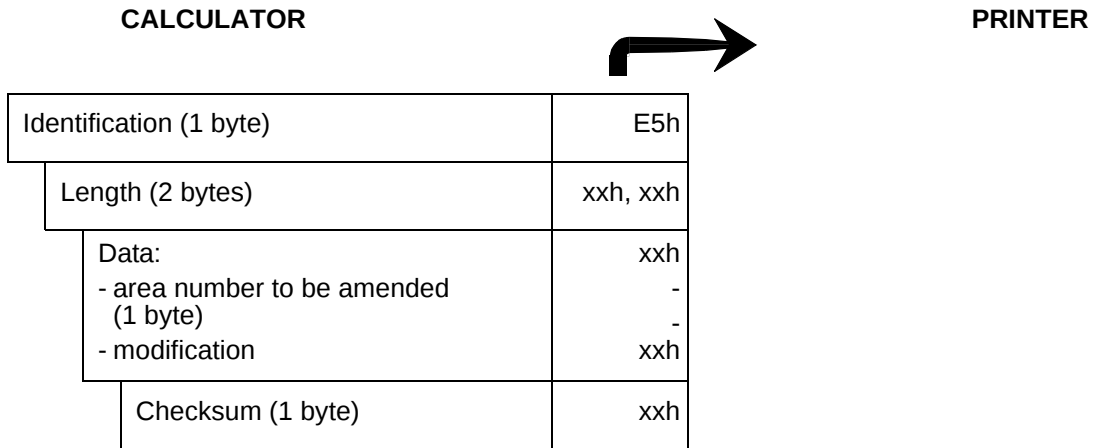
See chapters on "Message data precisions", and "Example"..

IMPORTANT

The size of the sending, from identifier to control, can be up to 4096 bytes.

2.2 Sending a partial message for printing

This sending allows amendment of the active message content on printing without altering its structure.

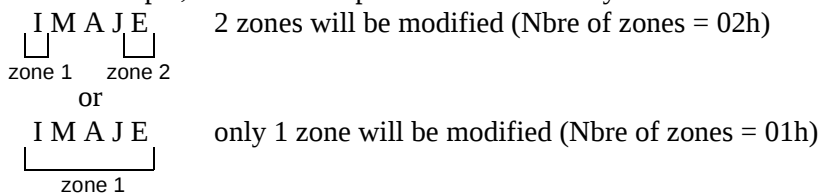


Data details

Number of areas to be amended	Line "k" number (from 0 to 15)	Position of the first characters to be amended in line (from 0 to x)	Number of characters to be amended in the area (from 1 to x)	SYMBOLS	...	Line "l" number (from 0 to 15)	...
1 byte	1 byte	2 bytes	2 bytes	P bytes		1 byte	

An area is a succession of continuous characters of the same block.

For example, there are two possibilities to modify the "I" and the "E" of IMAJE:



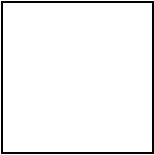
The line structure is not modified.

The first line corresponds to the number "0", the first byte after the line delimiter 0Ah corresponds to position "0".

See chapters "Message data precision" and "Examples" for the composition of a message.

IMPORTANT

The size of the sending, from the identifier to control, can be up to 2 kilobytes.



2.3 Sending a message selected according to its number

This sending consists in selecting for printing a message contained in the printer library.

CALCULATOR

PRINTER



Identification (1 byte)	98h
Length (2 bytes)	00h, 02h
Data: (2 bytes) - message number (001 to 999)	xxh xxh
Checksum (1 byte)	xxh

2.4 Sending a message to the library

CALCULATOR

PRINTER



Identification (1 byte)	9Fh
Length (2 bytes)	xxh, xxh
Data: - message number (001 to 999) - message heading, (8 characters ASCII) - message parameters and text (n bytes) - type of write (1 byte)	xxh, xxh
Checksum (1 byte)	xxh



C5h	Identification (1 byte)
00h, 01h	Length (2 bytes)
xxh	Data (1 byte): - report of memory recording of the message
xxh	Checksum (1 byte)

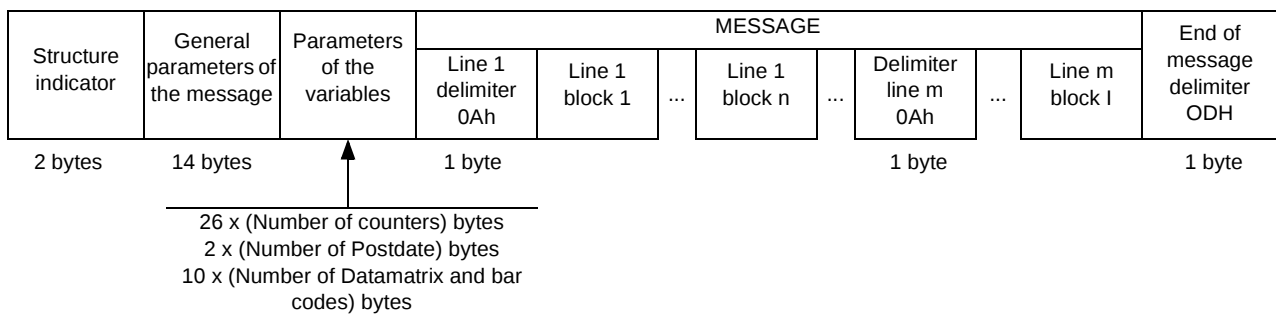
Data detail

- Sending:

Message number in library.

Message heading: the title chosen for the message, 8 numeric or alphabetic characters (upper case characters from the Latin alphabet only).

Message parameters and text.



All the details are to be found in the chapter on "Message data precisions".

- Type of write:

00 creation of a message
01 replacement of an existing message

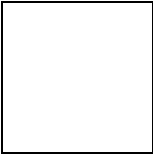
NOTE If the Type of Write byte is missing in the request, the printer creates or replaces the message depending on the number received.

- Reply: Report of memory recording of the message.

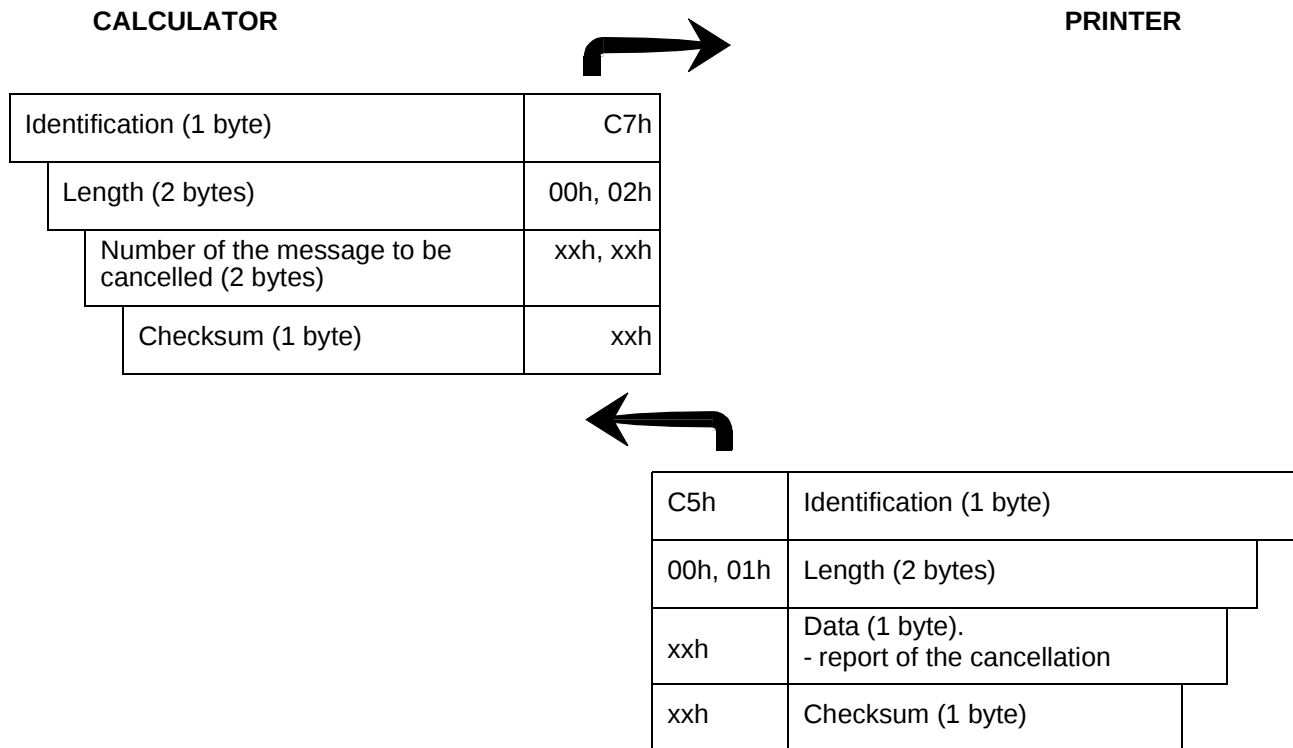
1 byte:

00 write with message replacement
01 write with message creation
02 message not recorded (library full)
03 message not recorded (no text in message received)
04 message not recorded (text contains elements of an invalid function in the printer)
05 message not recorded (library invalid)
06 reserved for cancellation of message
07 reserved for cancellation of message
08 message not written in library (heading of message not valid)

NOTE Before storing a message in memory it is necessary to check the free message numbers and the validity of the functions used.



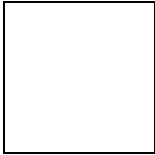
2.5 Sending cancellation of a message



Details of the reply data

- 00 to 05 Reserved for message writing
- 06 Message cancelled
- 07 Message not cancelled (library invalid or message active)

IMPORTANT **An active message cannot be cancelled when printing.**



2.6 Print sending

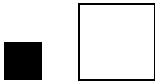
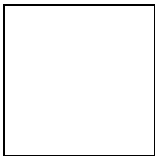
This command starts up the active message printing.

CALCULATOR



PRINTER

Identification (1 byte)	94h
Length (2 bytes)	00h, 00h
Checksum (1 byte)	94h



3 Sending of the variables

3.1 Initialization of the autodating

CALCULATOR



PRINTER

Identification (1 byte)	C8h
Length (2 bytes)	00h, 07h
Data: (7 bytes) - seconds in "bcd": 00 to 59 - minutes in "bcd": 00 to 59 - hours in "bcd": 00 to 23 - day in "bcd": 01 to 31 - month in "bcd": 01 to 12 - year in "bcd": 00 to 99 - 12/24 H mode in ASCII (A/P/SPACE)	xxd xxd xxd xxd xxd xxd xxh
Checksum (1 byte)	xxh

CAUTION

The data, seconds, minutes, hours, day, month, year are to be coded in BCD and the mode in ASCII characters.

3.2 Sending the autodating parameters

CALCULATOR



PRINTER

Identification (1 byte)	ECh
Length (2 bytes)	xxh, xxh
Data: - type of parameter to be modified (2 bytes) - parameters to be modified according to the type previously chosen (from 1 to 112 bytes)	xxh, xxh xxh, ..., ..., xxh
Checksum (1 byte)	xxh

Data details

The first two bytes allow choice of amendment parameters and the following bytes are the amended parameters.

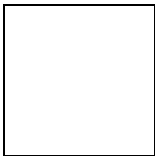
- TYPE 0000: postdate 1 modulo (2 bytes) 0000 to 9999
For details of these 2 bytes see chapter 6.1.
- TYPE 0001: shift code 1 parameters (5 bytes)

Starting time	00h to 17h	(1 byte)
Starting minute	00h to 3Bh	(1 byte)
Mode 12/24 H in ASCII	(A/P/SPACE)	(1 byte)
Number of hours of the interval	00h to 17h	(1 byte)
Number of minutes of the interval	00h to 3Bh	(1 byte)
- TYPE 0002: shift code 2 parameters (8 bytes)

Starting day	00h to 1Fh	(1 byte)
Starting month	00h to 0Ch	(1 byte)
Starting hour	00h to 17h	(1 byte)
Starting minute	00h to 3Bh	(1 byte)
Mode 12/24 H in ASCII	(A/P/SPACE)	(1 byte)
Number of days of the interval	00h to 1Fh	(1 byte)
Number of hours of the interval	00h to 17h	(1 byte)
Number of minutes of the interval	00h to 3Bh	(1 byte)
- TYPE 0003: first weekday for coding the day of the week (1 byte)

00	Monday
01	Tuesday
02	Wednesday
03	Thursday
04	Friday
05	Saturday
06	Sunday
- TYPE 0004: shift code 3 parameters (112 bytes)

Table number for Monday	(01 to 07)	(1 byte)
Table number for Tuesday	(01 to 07)	(1 byte)
Table number for Wednesday	(01 to 07)	(1 byte)
Table number for Thursday	(01 to 07)	(1 byte)
Table number for Friday	(01 to 07)	(1 byte)
Table number for Saturday	(01 to 07)	(1 byte)
Table number for Sunday	(01 to 07)	(1 byte)



Tables 1 to 7 (15 bytes * 7)

Starting hour	(00h to 17h)
Starting minute	(00h to 3Bh)
Mode 12/24H in ASCII	(A/P/Space)
Number of hours of the interval	(00h to 17h)
Number of minutes of the interval	(00h to 3Bh)
5 bytes reserved	00h, 00h, 20h, 00h, 00h
5 bytes reserved	00h, 00h, 20h, 00h, 00h

- TYPE 0005 (10 bytes)

postdate modulo 2	0000 to 9999	(2 bytes)
postdate modulo 3	0000 to 9999	(2 bytes)
postdate modulo 4	0000 to 9999	(2 bytes)
postdate modulo 5	0000 to 9999	(2 bytes)
postdate modulo 6	0000 to 9999	(2 bytes)

For details of these 2 bytes see chapter 6.1.

NOTE Only one type of parameter is to be amended per sending.

3.3 Sending of external variables

CALCULATOR



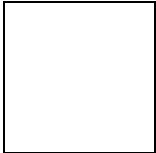
PRINTER

Identification (1 byte)	99h
Length (2 bytes)	xxh, xxh
Data: - start delimiter of external variable 1 - external variable text 1 (n bytes) - end delimiter of external variable 1 ... - start delimiter of external variable 10 - external variable text 10 (n bytes) - end delimiter of external variable 10	12h xxh 12h ... 12h xxh 12h
Checksum (1 byte)	xxh

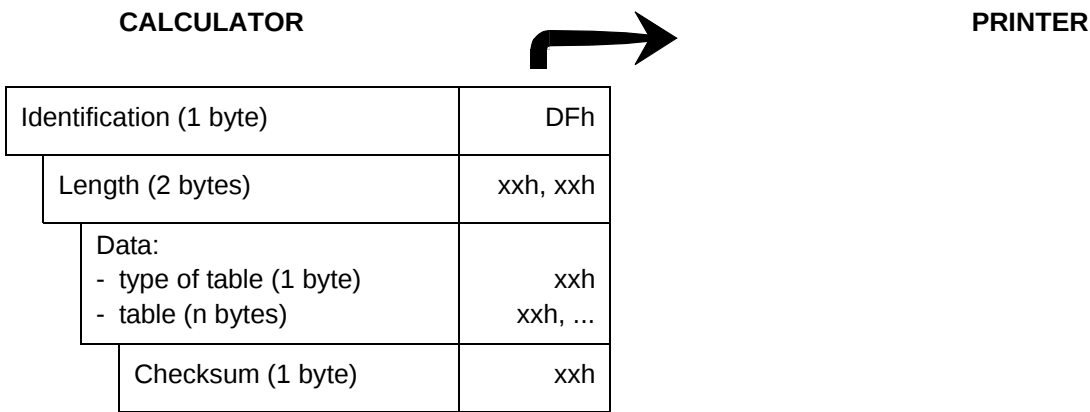
Data details

This command cannot be used unless the zones to be modified, separated by the 12h delimiter, are already in the active message.

If a zone should not be modified, it should be sent with text containing no characters.
10 variables maximum per message.



3.4 Sending an autodating table



Data details

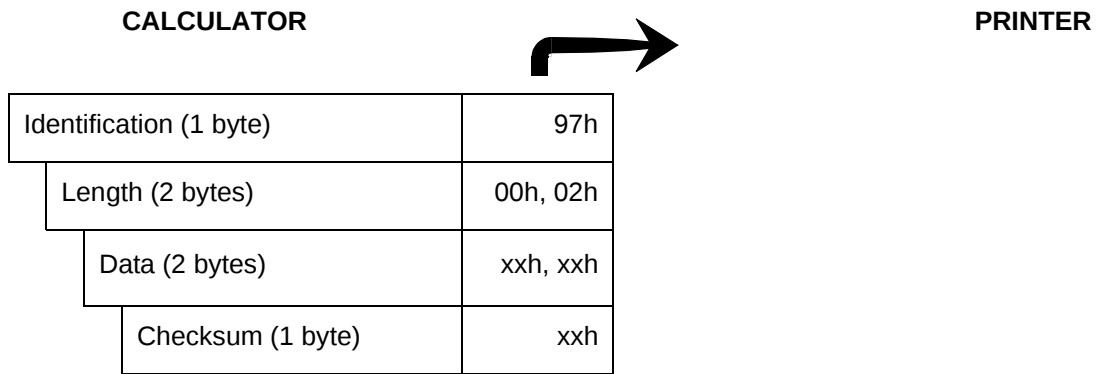
- Type of table:

00h	hours table
01h	minutes table
02h	day of the week table
03h	day of the year table
04h	day of the month table
05h	weeks table
06h	month of the year table
07h	year table
08h	shift code 2 table
0Ah	shift code 3 table

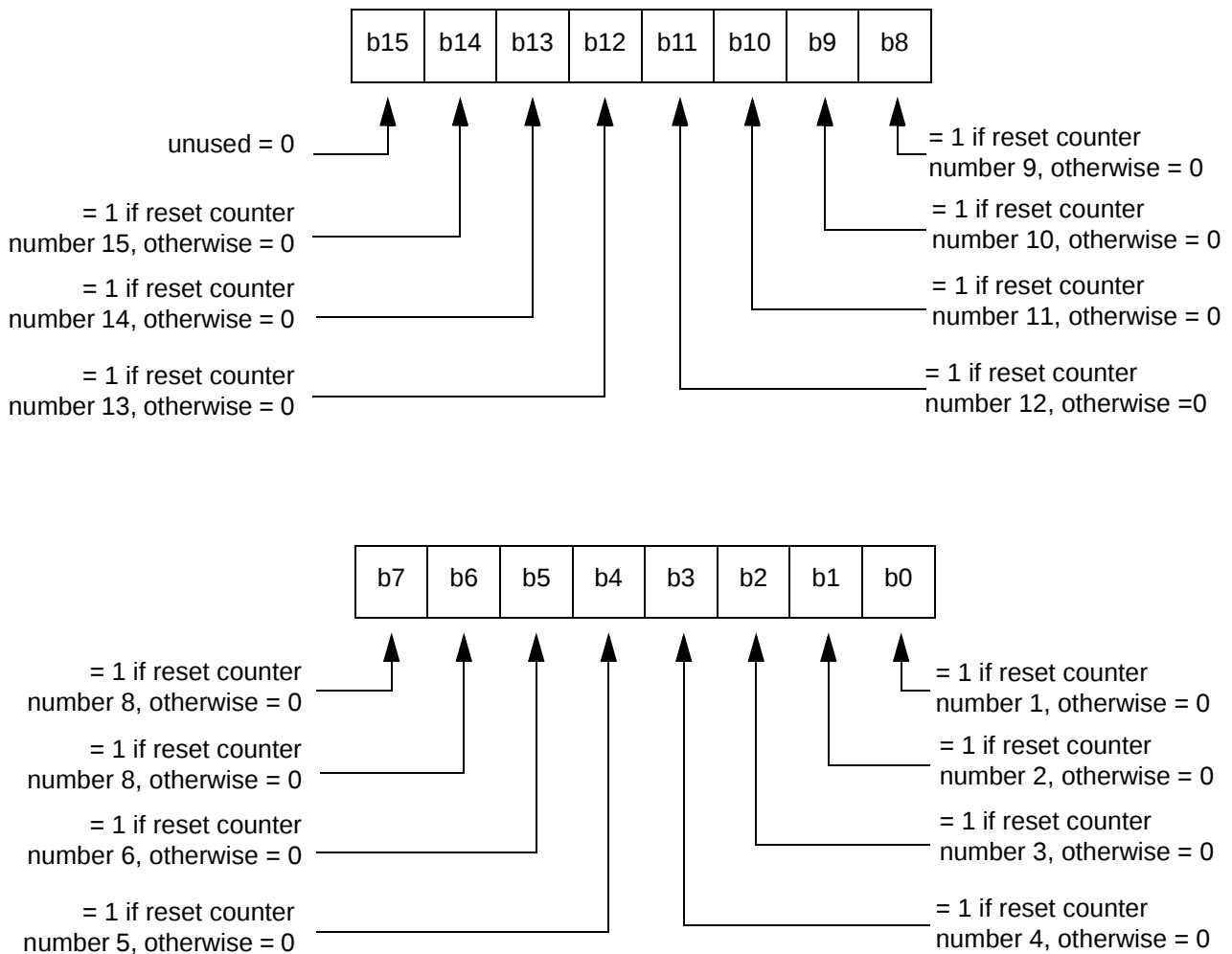
- Table:

hours table	24 x 3 characters ASCII
minutes table	60 x 3 characters ASCII
day of the week table	7 x 3 characters ASCII
day of the year table	366 x 3 characters ASCII
day of the month table	31 x 3 characters ASCII
week table	53 x 3 characters ASCII
month of the year table	12 x 3 characters ASCII
year table	10 x 3 characters ASCII
shift code 2 table	366 x 3 characters ASCII
shift code 3 table	(24 x 3 x 7) x 3 characters ASCII

3.5 Counters initialization

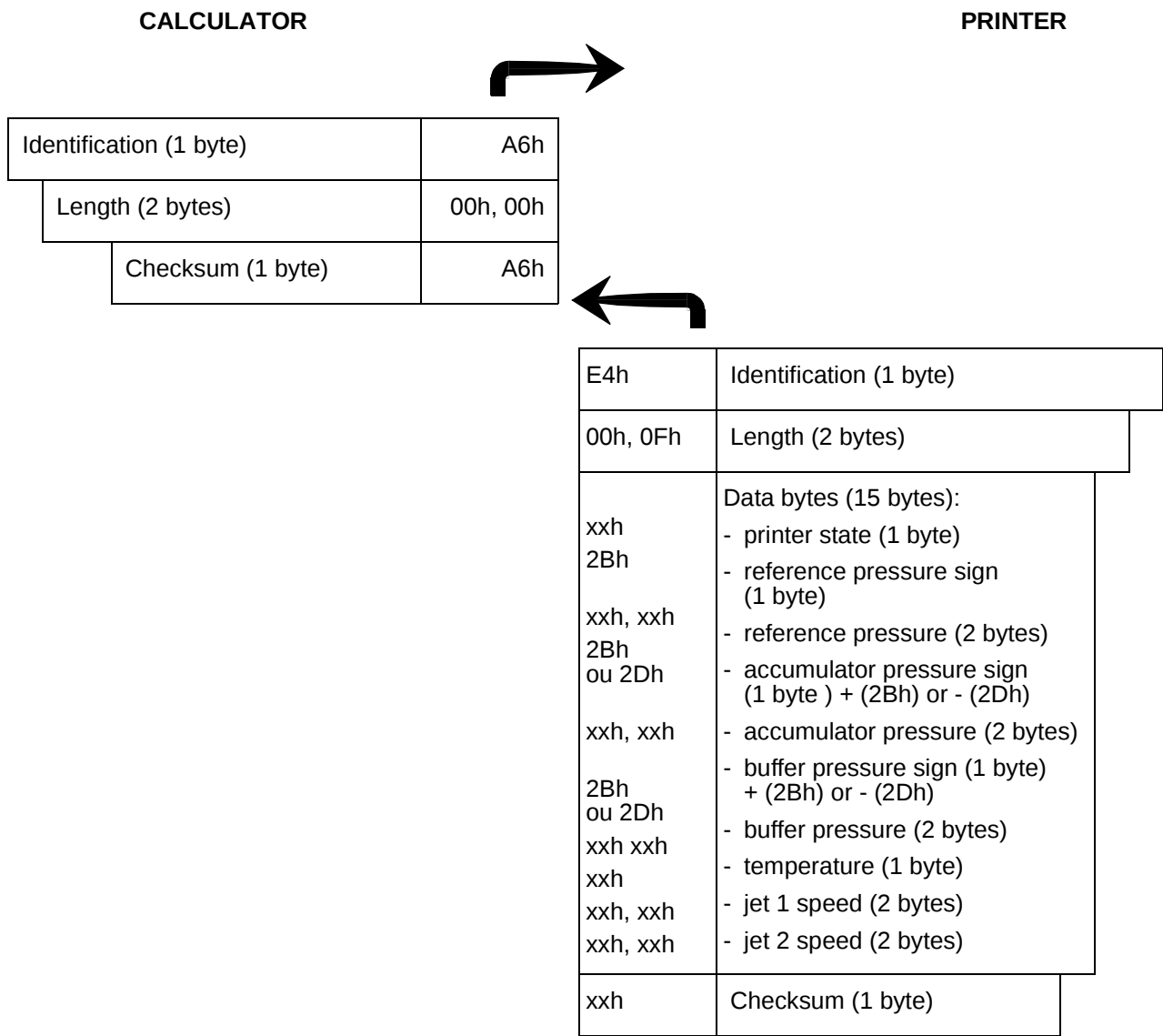


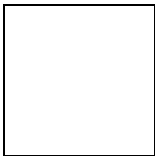
Détail des données



4 Request concerning the printer

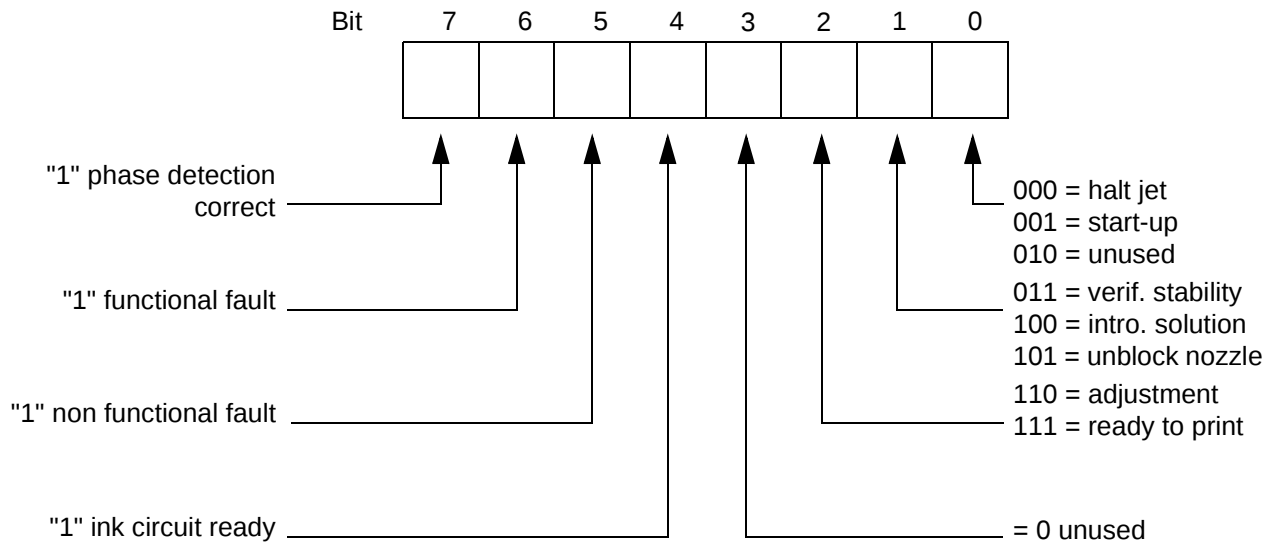
4.1 Request printer status





Data details

- Printer state:

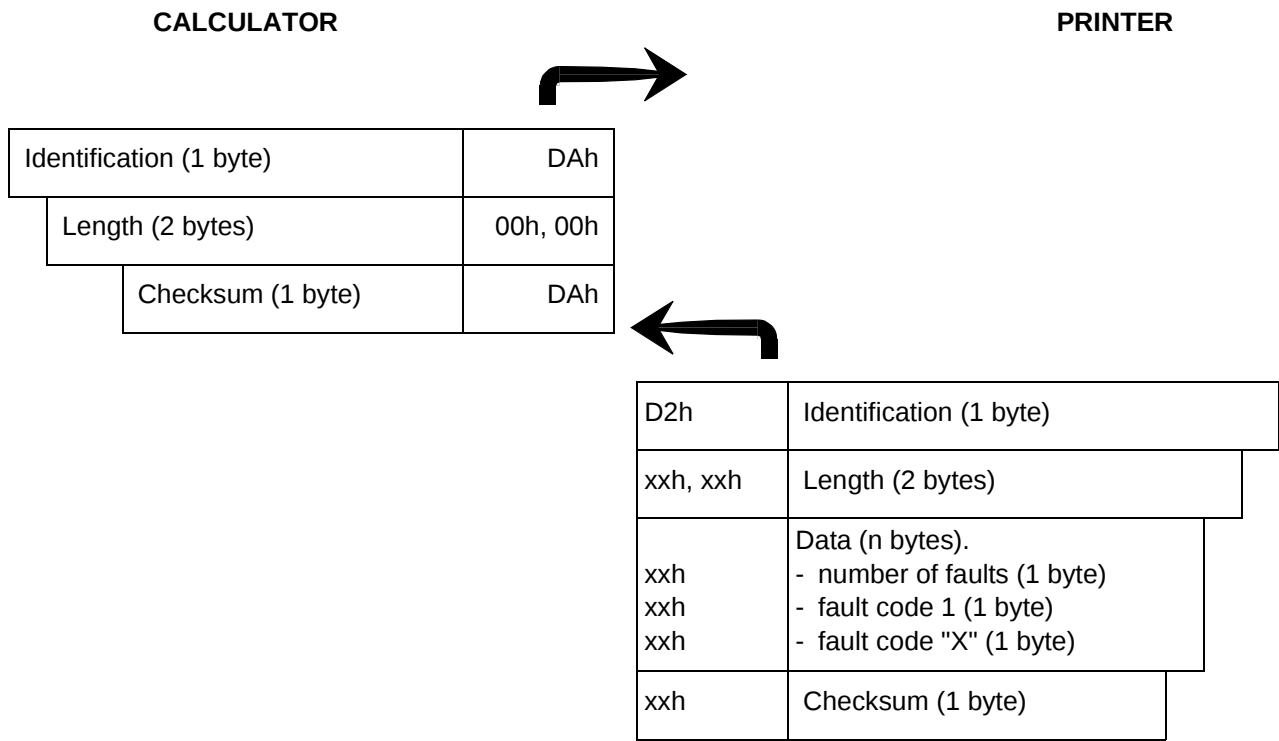


- Pressure reference sign (1 byte):
The pressure reference is always positive. The value is 2Bh.
- Reference pressure (2 bytes):
Value expressed in centibars.
- Accumulator pressure sign (1 byte):
For a positive pressure, the value is 2Bh.
For a negative pressure, the value is 2Dh.
- Accumulator pressure (2 bytes):
Value expressed in centibars.
- Buffer pressure sign (1 byte):
For a positive pressure, the value is 2Bh.
For a negative pressure, the value is 2Dh.
- Buffer pressure (2 bytes):
Value expressed in centibars.
- Temperature (1 byte):
Value expressed in Celsius degrees.
- Jet 1 speed (2 bytes):
Value expressed in centimetres per second.
- Jet 2 speed (2 bytes):
Value expressed in centimetres per second.

NOTE

If the printer has a monojet print head, the speed of Jet 2 equals 0 (1st and 2nd bytes at 00h).

4.2 Request of faults

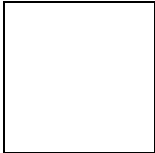


Data details

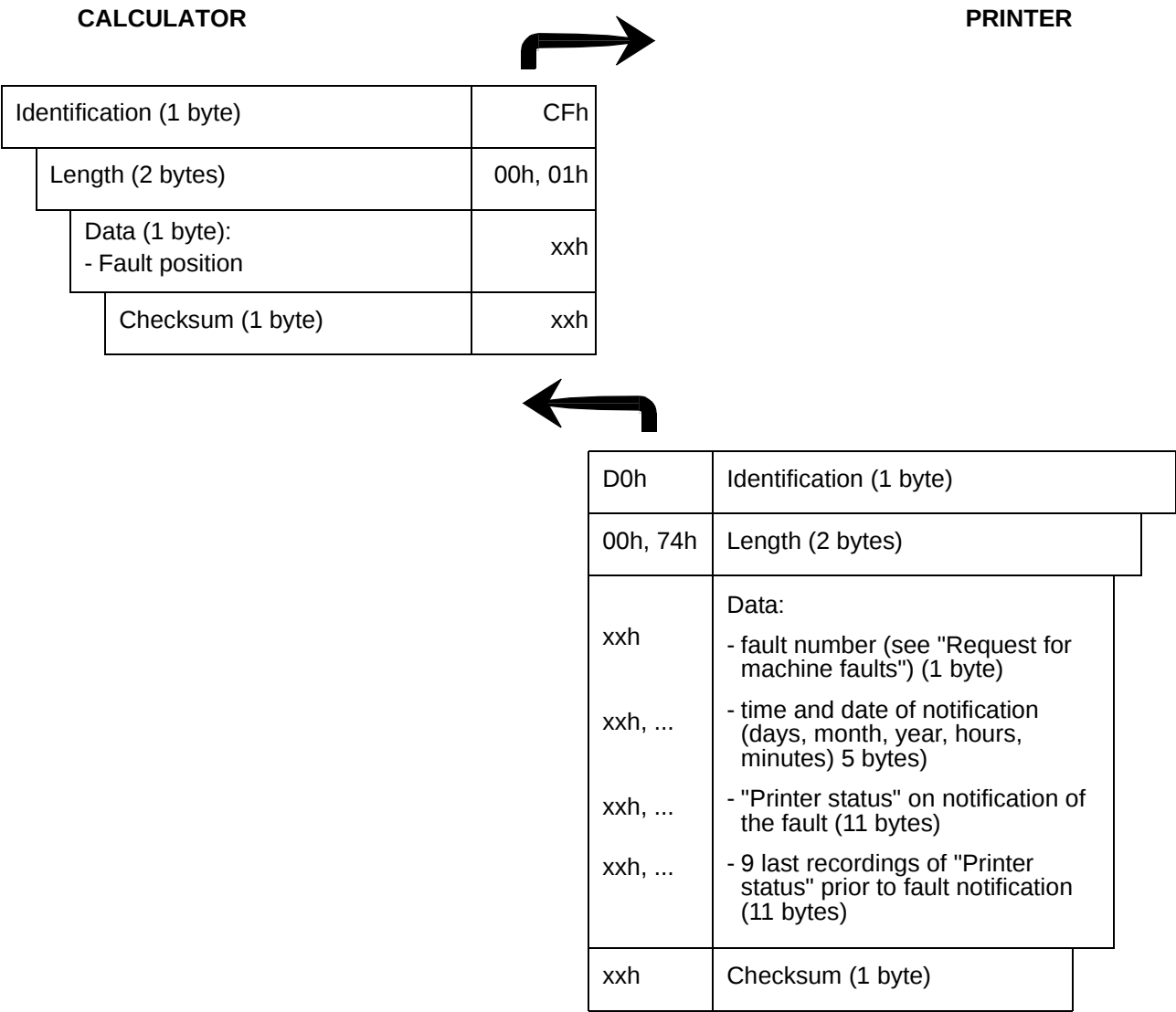
- Number of faults:
This value represents the number of faults appearing on the printer.

- Faults code (from 1 to X)
A hexadecimal code corresponds to each fault.

Number	Alarm or Fault	Fault displayed
01 to 03	D	Data memories
04 to 08	D	Data memories
46 - 47	D	Data memories
13 - 17 - 19	D	Data memories
22 - 26		Data memories
30 - 31		Data memories
09 and 11	A	Time out
10	A	V24 Time out
14	D	V24 Data
15	D	Data
18	D	Algo number not found
21	A	Doubled printing
27	A	Printing library size
28	A	Extension cassette disconnection
32	D	Auto-dating
33	A	Software versions
37	D	Reading/writing industrial interface eeprom
38 - 39	A	Reading/writing control and ink module eeprom
40	A	Conveyor speed
44	A	Corrupted data in extension cassette library
45	A	Function not available
48	D	Printing speed
49	D	Character generator
50 - 52	A/D	Ink level
51 - 53	A/D	Additive level
54	D	Cartridge full on draining
60	A	Ink Elv (u:0)
61	A	Additive Elv (u:1)
62	D	Buffer Elv (u:2)
63	D	Accumulator Elv (u:3)
64	A	Condensor Elv (u:4)
70	A	Concentration high
71	D	Pressure sensor init.
72	D	Stalling motor
73	D	Ink transfert time out
74	A	Air inflating time out
75	A	Air pocket
76	A	Jet purge time out
77	A	Compression rate
78	D	Machine empty
79	D	Condenser overflow
81 - 82	D	Drop detection (jet 1-2)
83	D	Concentration out of range
84	D	Open cover
85	D	Vacuum fault
86 - 87	D	EHT fault
88	D	Ink module
90	A	Temperature fault
92	D	Pressure servo.
93	D	Gutter closed



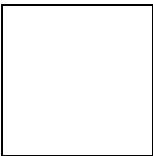
4.3 Request for the history of the last thirty faults



Data details

- "Printer status":
 - Reference pressure
 - Accumulator pressure
 - Buffer pressure
 - Jet 1 speed
 - Jet 2 speed
 - Temperature

Pressures are expressed in two bytes. Bit 15 is the sign bit (b15 to 1: -, b15 to 0: +).



Detail of the request data

- The faults are recorded in an L.I.F.O. file array. The request data are the fault position in this array:
first in the table : 00
following : 01
preceding : 02

Detail of the reply data

The printer gives information on the last six recording of the machine status (recording every minute), with the number, time and date of the fault.

4.4 Request for status of the tacho pulse number/fly time offset output

CALCULATOR

PRINTER

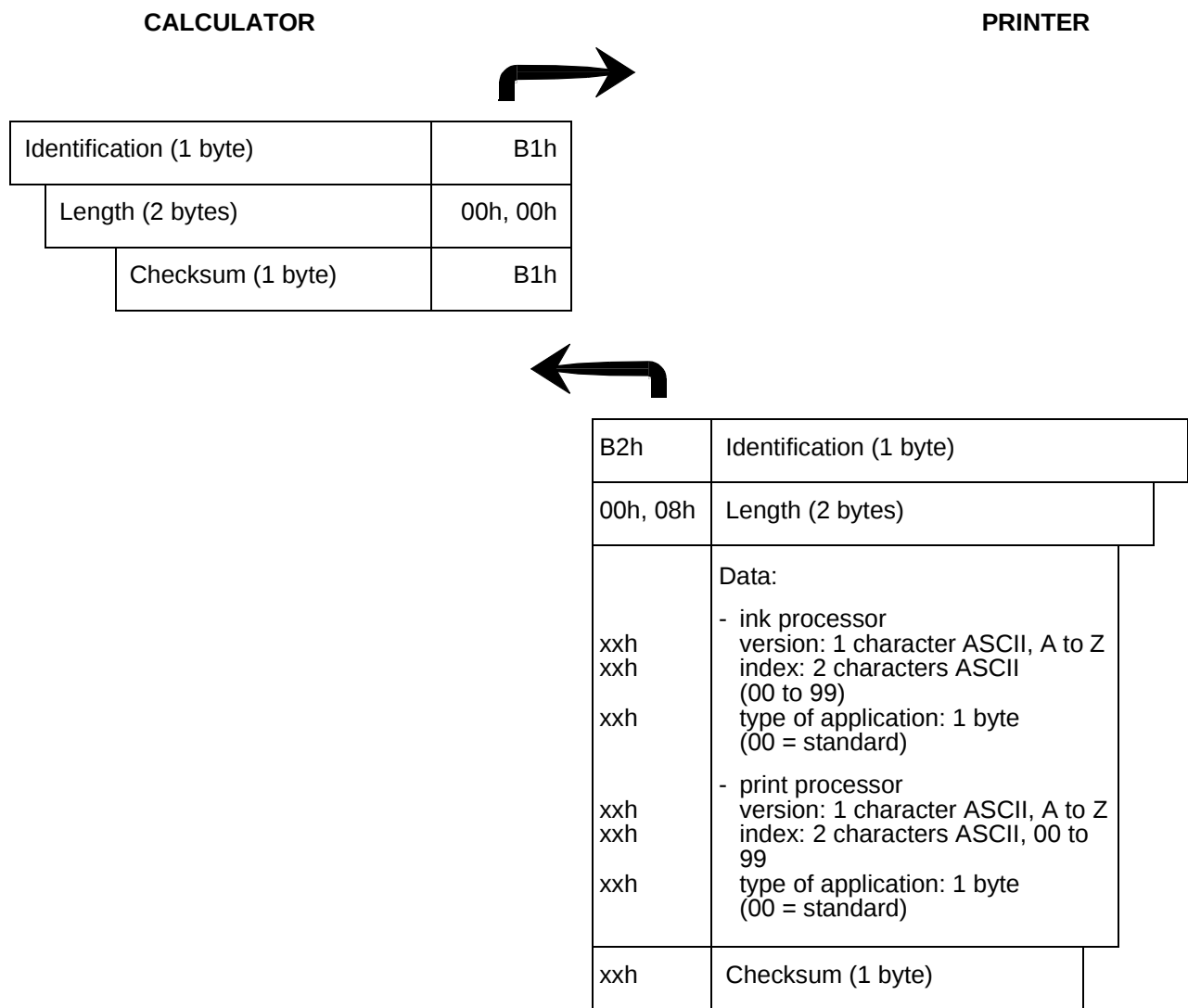
Identification (1 byte)	B7h
Length (2 bytes)	00h, 03h
Data (3 bytes): - current version A12 (3 characters ASCII)	41h, 31h 32h
Checksum (1 byte)	B7h

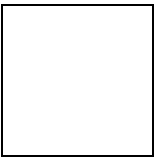
B8h	Identification (1 byte)
00h, 06h	Length (2 bytes)
	Data: - Measurement type (2 bytes) - Count value (4 bytes)
xxh	Checksum (1 byte)

Data details

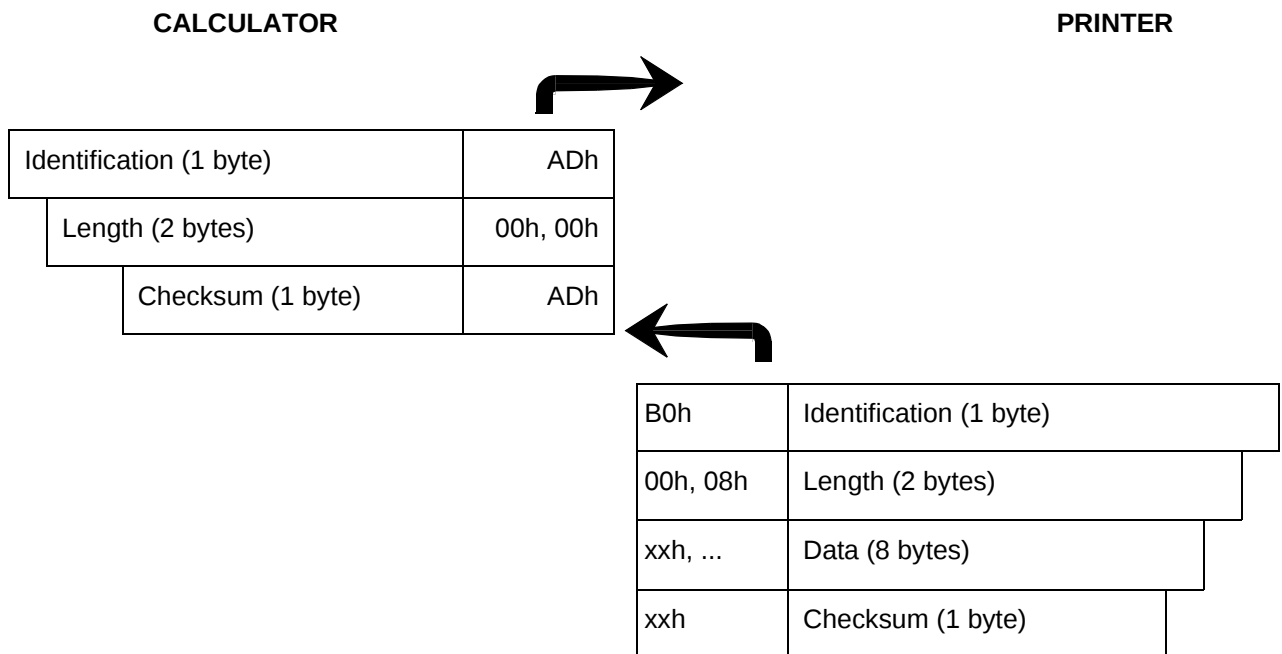
- Measurement type:
00 tacho pulse number output
01 inactive output
02 fly time offset output
- Count value:
If measurement type = 00 tacho pulse number (300 to 999999999)
If measurement type = 02 compensation time (0 to 2000 μ s)

4.5 Request for software version





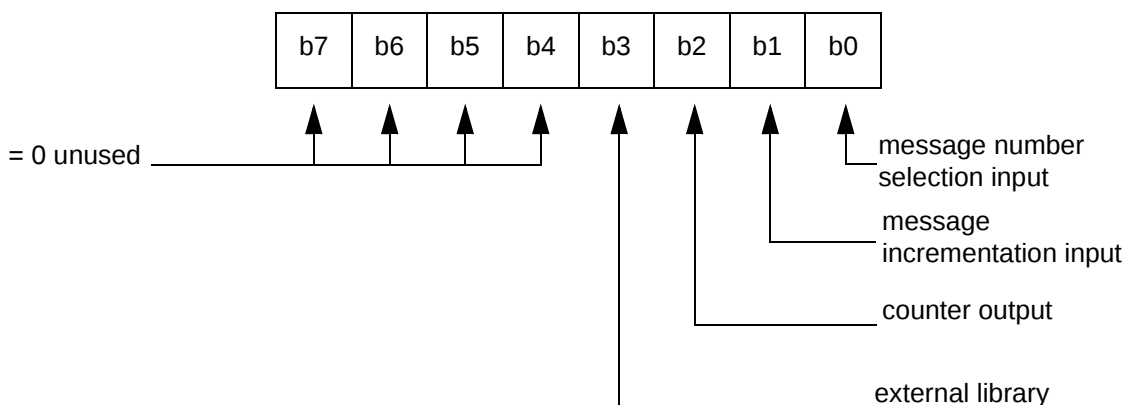
4.6 Request for functions



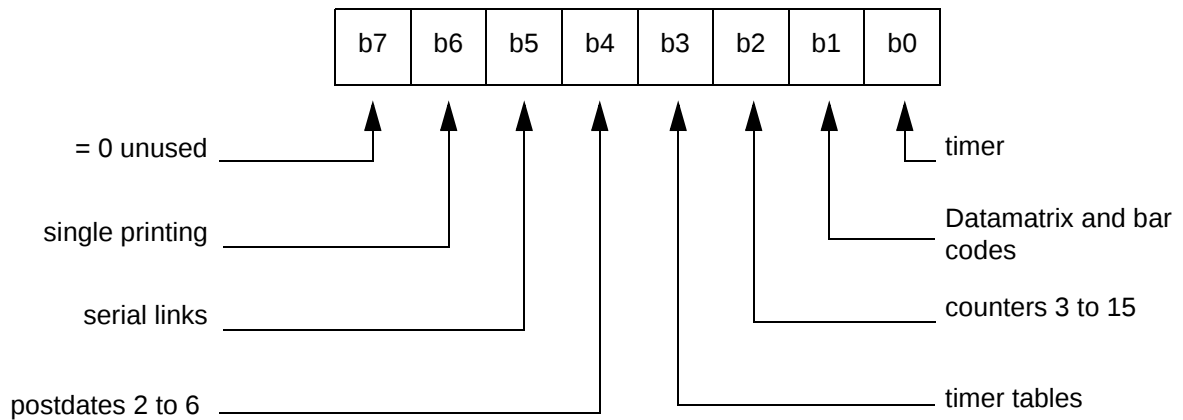
Data detail:

Function present if the corresponding bit is at 1.
The first five bytes are not used.

- **6th byte:**

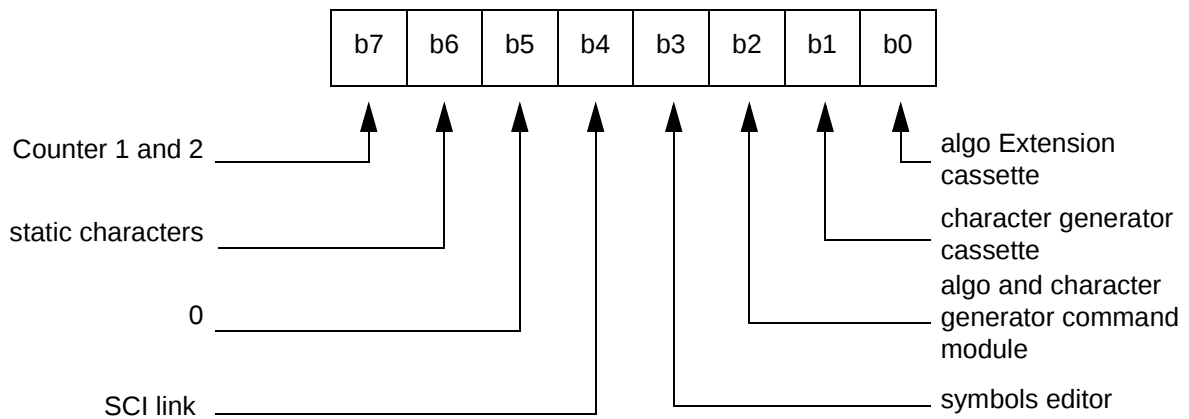


- **7th byte:**

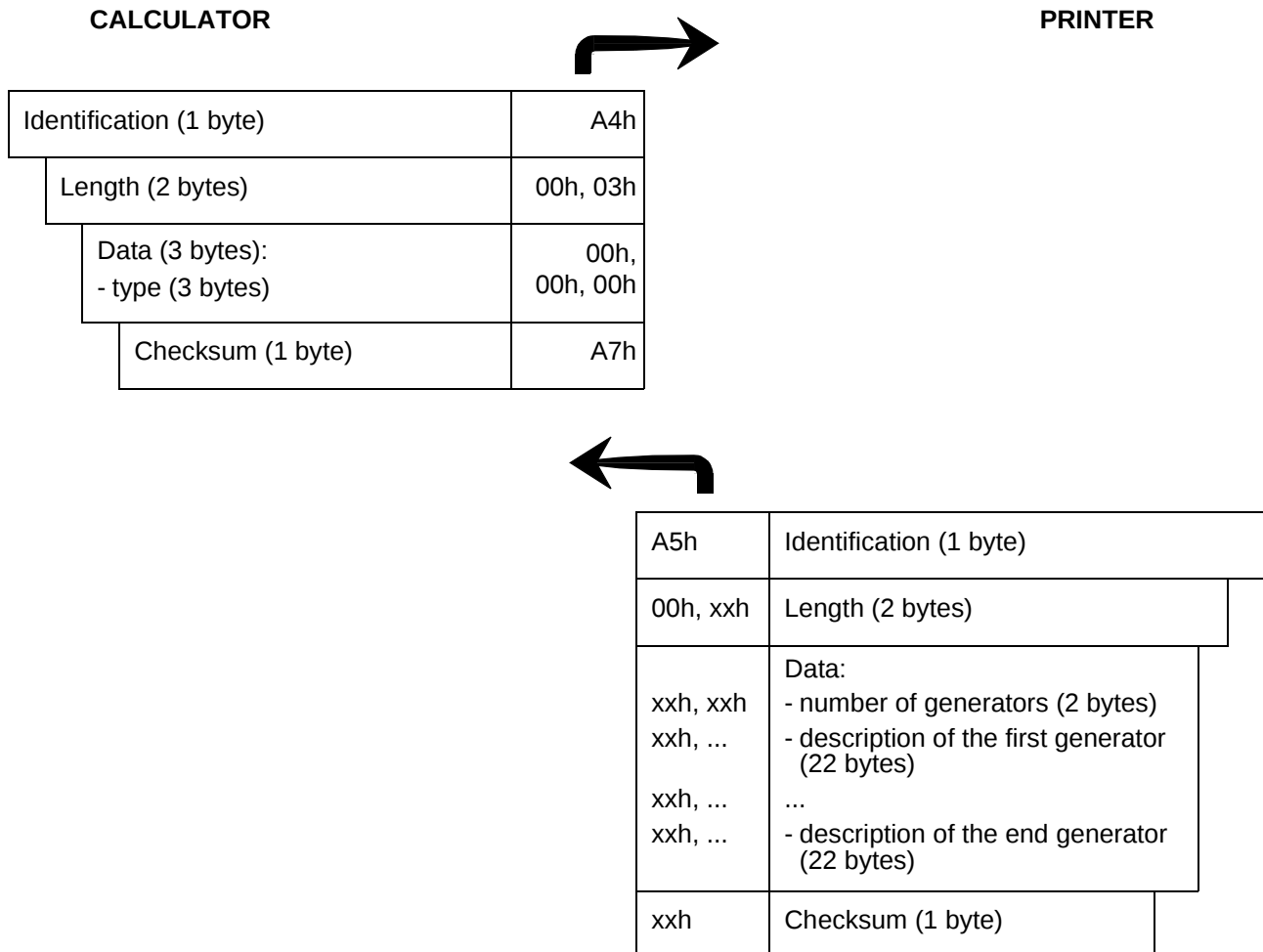


Counters 3 to 15: this function allows utilization of 15 counters, inputs of increment counters A and B, zeroing of counters A and B (only for S7 Supra).
 Postdates 2 to 6: This function allows utilization of 6 postdates.

- **8th byte:**



4.7 Request for types of character generators available in the printer



Data detail

- Description of a generator:

title of the generator	(16 ASCII characters)
reference number of the generator	(1 byte)
number of drops per trame	(1 byte)
number of trames per character	(2 bytes)
number of characters	(1 byte)
number of byte of the full trame	(1 byte)

See APPENDIX for the list of character generators.

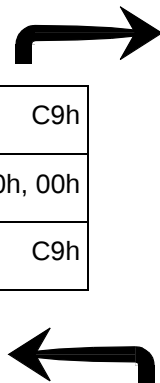
NOTE	If there is no character generator stored in the printer the length of the reply is 00h, 00h.
-------------	--

4.8 Request for module amendment dates

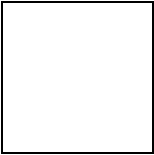
CALCULATOR

PRINTER

Identification (1 byte)	C9h
Length (2 bytes)	00h, 00h
Checksum (1 byte)	C9h



CAh	Identification (1 byte)
00h, 48h	Length (2 bytes)
xxh	Data (72 bytes): - ink management module (16 bytes) - print module (16 bytes) - supply module (16 bytes) - command module (16 bytes) - ink addition counter (4 bytes) - additive addition counter (4 bytes)
xxh	Checksum (1 byte)



Data details

- Ink management module (16 bytes):

Timer (number of hours of operation): from 000 to 999 (4 bytes)

Date of last change of module (day/month/year) (3 bytes)

The next three dates correspond to the former module exchange, the last date is the oldest.

- Print module (16 bytes):

Timer (number of hours of operation): from 000 to 999 (4 bytes)

Date of last change of module (day/month/year) (3 bytes)

The next three dates correspond to the former module exchange, the last date is the oldest.

- Supply module (16 bytes):

Timer (number of hours during which power has been supplied): from 000 to 999 (4 bytes)

Date of last change of module (day/month/year) (3 bytes)

The next three dates correspond to the former module exchange, the last date is the oldest.

- Command module (16 bytes):

Timer (number of hours during which power has been supplied): from 000 to 999 (4 bytes)

Date of last change of module (day/month/year) (3 bytes)

The next three dates correspond to the former module exchange, the last date is the oldest.

5 Requests concerning messages

5.1 Request for general parameters by default

CALCULATOR

PRINTER

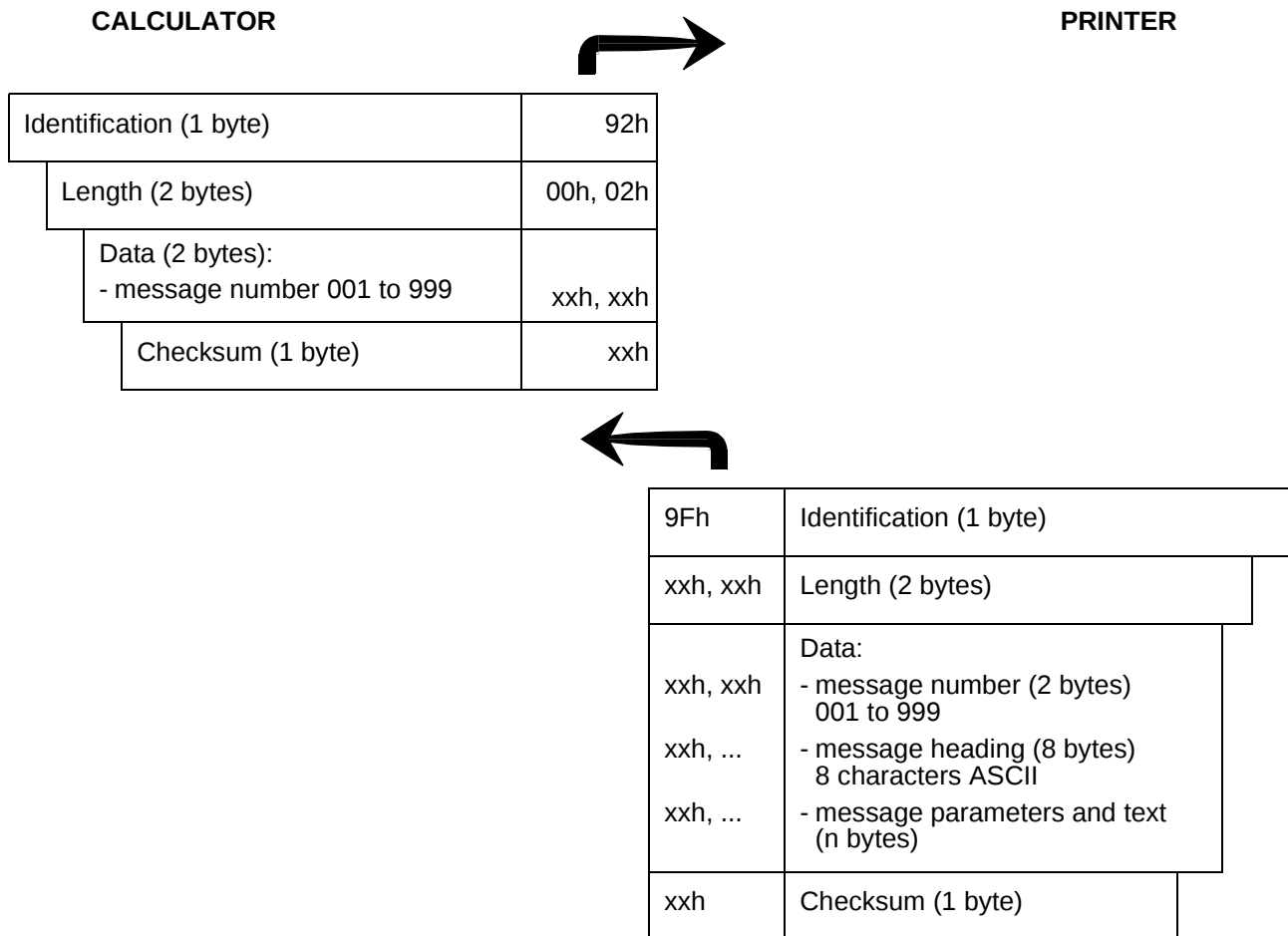
Identification (1 byte)	CBh
Length (2 bytes)	00h, 03h
Data (3 bytes): - current version A12 (3 characters ASCII)	41h, 31h 32h
Checksum (1 byte)	CBh



CDh	Identification (1 byte)
xxh, xxh	Length (2 bytes)
0Dh	Data: - structure indicator (2 bytes) - general parameters (14 bytes) - parameter counters 1 and 2 (52 bytes) - postdate 1 (2 bytes) - parameter counters 3 to 15 (338 bytes) - postdate 2 to 6 (10 bytes) - Datamatrix and bar codes 1 to 3 (30 bytes) - end of message indicator (1 byte)
xxh	Checksum (1 byte)

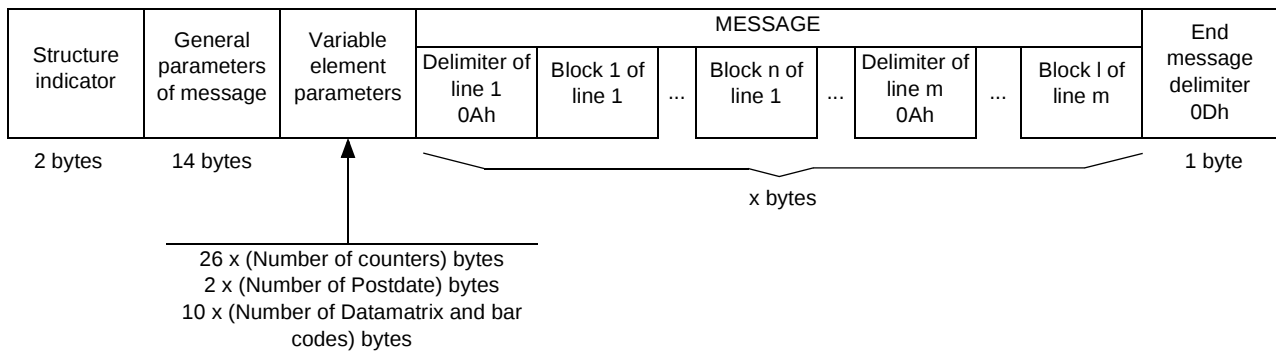
See chapter "Message data precisions" for details..

5.2 Request for a message by number



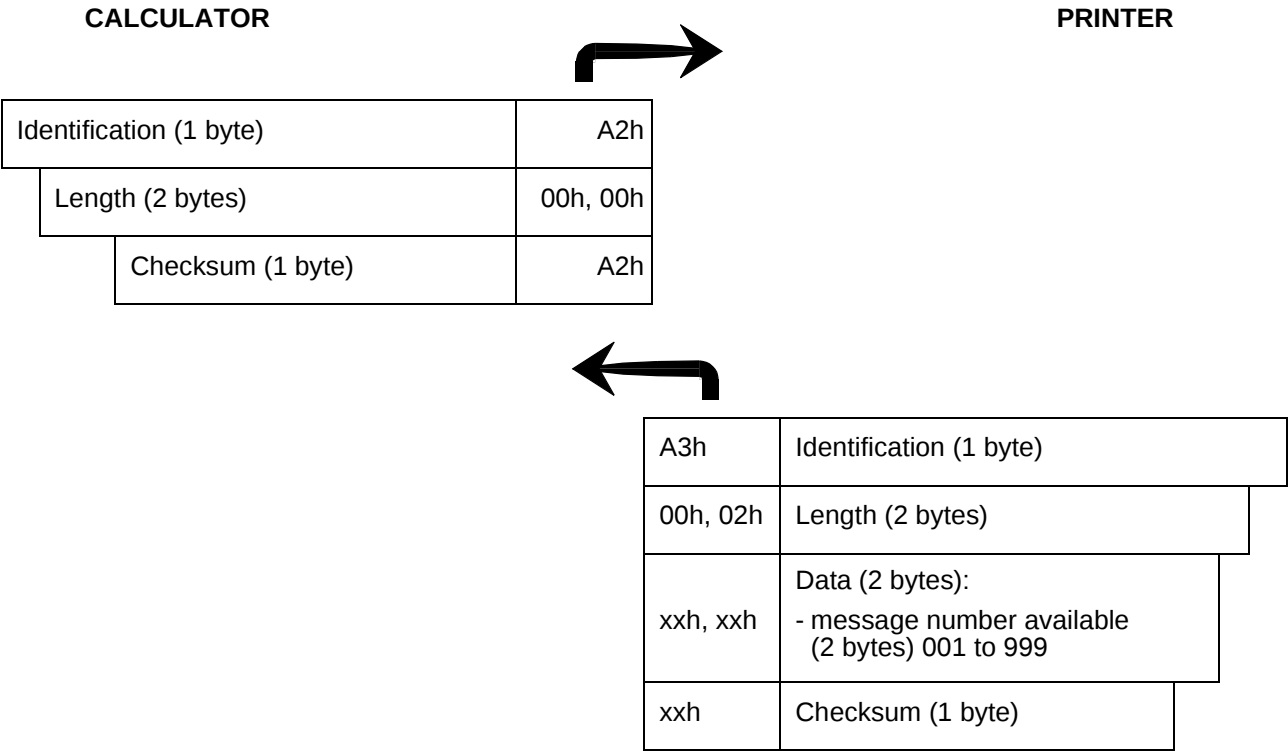
Data details

- Parameters and text of the message



See chapter "Message data precisions" for details.

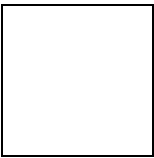
5.3 Request for a free message number



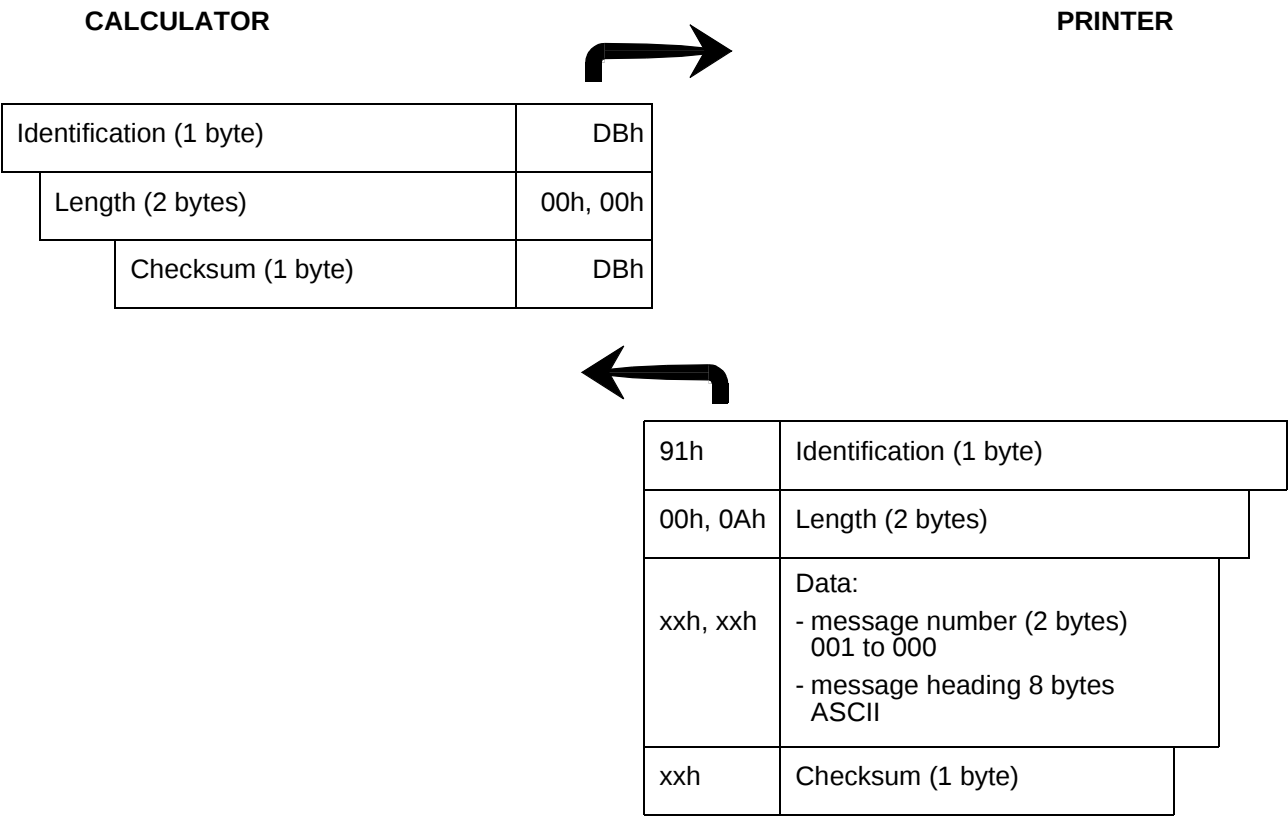
Data details

Message number available: the printer always gives the lowest number available.

NOTE	This request must only be used when storing a message in the library in order not to overwrite the existing messages. If the reply is 000 there are no more numbers available or the library is invalid.
------	--



5.4 Request for the number of the active message



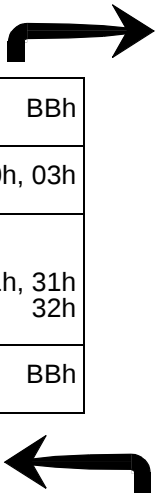
6 Request concerning variables

6.1 Request for autdating parameters

CALCULATOR

PRINTER

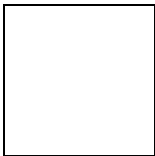
Identification (1 byte)	BBh
Length (2 bytes)	00h, 03h
Data (3 bytes): - current version A12 (3 characters ASCII)	41h, 31h 32h
Checksum (1 byte)	BBh



BCh	Identification (1 byte)
00h, 8Ch	Length (2 bytes)
xxh - - - xxh	Data (140 bytes): - postdate 1 modulo - first day of the week for coding the week-day - shift code 1 parameters - shift code 2 parameters - language 1 for months of the year - shift code 3 · shift code 3 parameters · table 1 to 7 - postdate 2 modulo - postdate 3 modulo - postdate 4 modulo - postdate 5 modulo - postdate 6 modulo - language 2 for months of the year
xxh	Checksum (1 byte)

Data details

- Postdate 1 modulo:
from 0000 to 9999 (2 bytes)
- First day of the week for
coding the week-day
(1 byte)
 - 00 Monday
 - 01 Tuesday
 - 02 Wednesday
 - 03 Thursday
 - 04 Friday
 - 05 Saturday
 - 06 Sunday



Protocols

- Shift code 1 parameters (5 bytes)

Starting time	00h to 17h	(1 byte)
Starting minute	00h to 3Bh	(1 byte)
Mode 12/24 H in ASCII	(A/P/SPACE)	(1 byte in ASCII)
Number of hours of the interval	00h to 17h	(1 byte)
Number of minutes of the interval	00h to 3Bh	(1 byte)

- Shift code 2 parameters (8 bytes)

Starting day	00h to 1Fh	(1 byte)
Starting month	00h to 0Ch	(1 byte)
Starting hour	00h to 17h	(1 byte)
Starting minute	00h to 3Bh	(1 byte)
Mode 12/24 H in ASCII	(A/P/SPACE)	(1 byte in ASCII))
Number of days of the interval	00h to 1Fh	(1 byte)
Number of hours of the interval	00h to 17h	(1 byte)
Number of minutes of the interval	00h to 3Bh	(1 byte)

- Language 1 for months of the year (1 byte):
Depending on the command module, the languages in memory will be different.

Latin command module:

Number	Language
00h	French
01h	English
02h	German
03h	Italian
04h	Spanish
05h	Norsk
06h	Swedish
07h	Dutch
08h	Danish
0Ah	Portuguese
0Bh	Brasilian
0Ch	Hungarian
0Dh	Polish
0Fh	Czech

Number	Language
16h	Greek
17h	Finnish
18h	Croatian
19h	Slovenian

Non Latin command module:

Number	Language
00h	French
01h	English
09h	Japanese (Katakana)
10h	Arabic
11h	Chinese
12h	Korean
13h	Hebrew
14h	Russian
15h	Thai

- Shift code 3 (112 bytes):

Shift code 3 parameters (7 bytes)

Table number for Monday	(01 to 07)	(1 byte)
Table number for Tuesday	(01 to 07)	(1 byte)
Table number for Wednesday	(01 to 07)	(1 byte)
Table number for Thursday	(01 to 07)	(1 byte)
Table number for Friday	(01 to 07)	(1 byte)
Table number for Saturday	(01 to 07)	(1 byte)
Table number for Sunday	(01 to 07)	(1 byte)

Tables 1 to 7 (15 bytes * 7)

Starting hour	(00h to 17h)
Starting minute	(00h to 3Bh)
Mode 12/24H in ASCII	(A/P/Space)
Number of hours of the interval	(00h to 17h)
Number of minutes of the interval	(00h to 3Bh)
5 bytes reserved	00h, 00h, 20h, 00h, 00h
5 bytes reserved	00h, 00h, 20h, 00h, 00h

- Postdate 2 to 6 modulo (10 bytes)

postdate 2 modulo	0000 to 9999	(2 bytes)
postdate 3 modulo	0000 to 9999	(2 bytes)
postdate 4 modulo	0000 to 9999	(2 bytes)
postdate 5 modulo	0000 to 9999	(2 bytes)
postdate 6 modulo	0000 to 9999	(2 bytes)

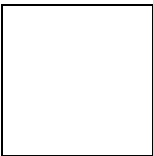
For the six postdates:

- b13 to b0 : value of modulo
- b15 to b14 :

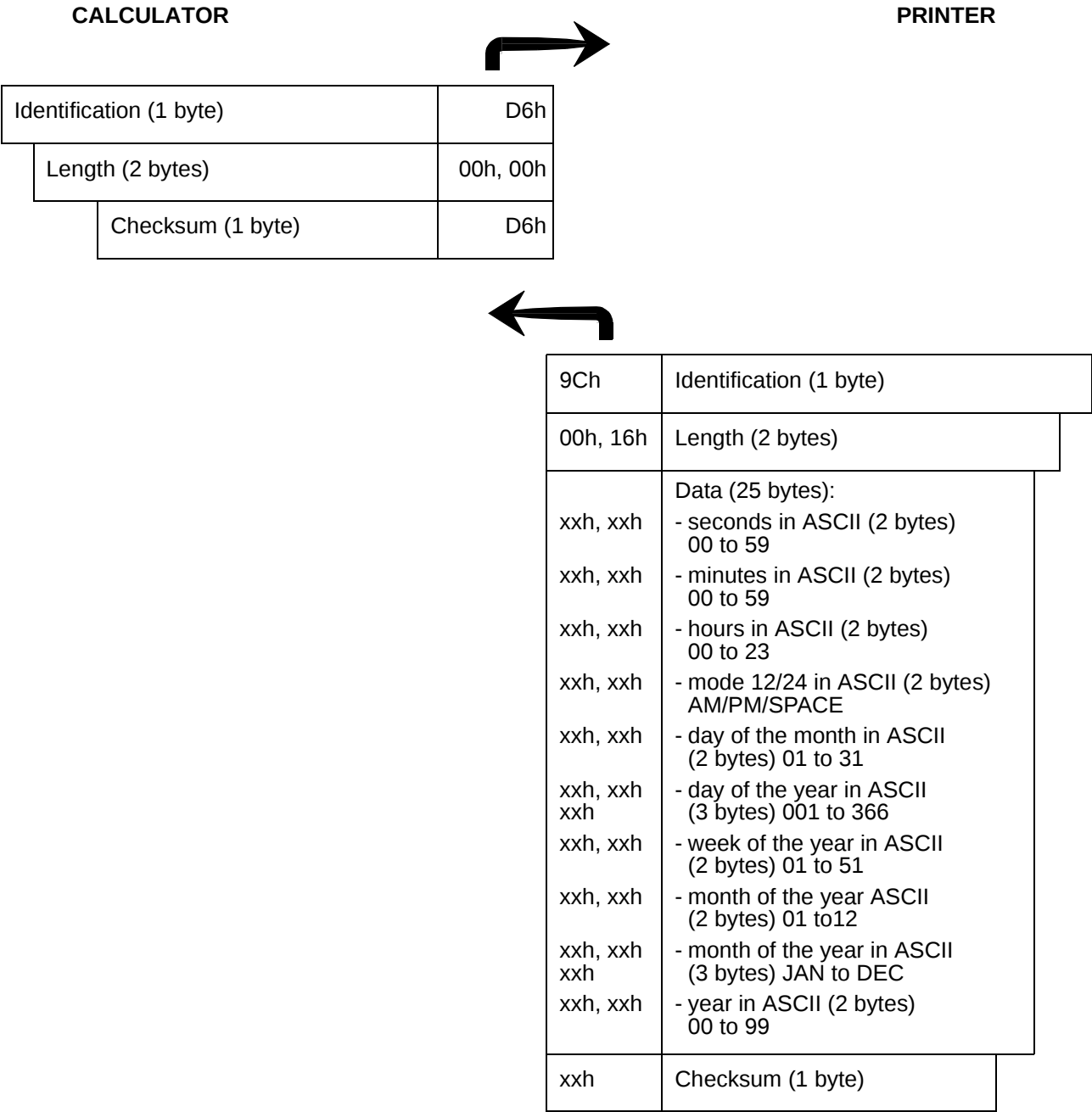
b15	b14	Unit
0	0	number of days
0	1	number of weeks
1	0	number of months

- Language 2 for months of the year (1 byte):

(the numbers are identical to month 1 of the year).



6.2 Request for the autodating



6.3 Request for an autodating table

CALCULATOR

PRINTER

Identification (1 byte)	DEh
Length (2 bytes)	00h, 01h
Data (1 byte): - type of table 00h to 0Bh	xxh
Checksum (1 byte)	xxh



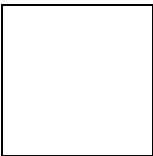
DFh	Identification (1 byte)
xxh, xxh	Length (2 bytes)
xxh xxh, ...	Data: - type of table (1 byte) - table (n bytes)
xxh	Checksum (1 byte)

Data details

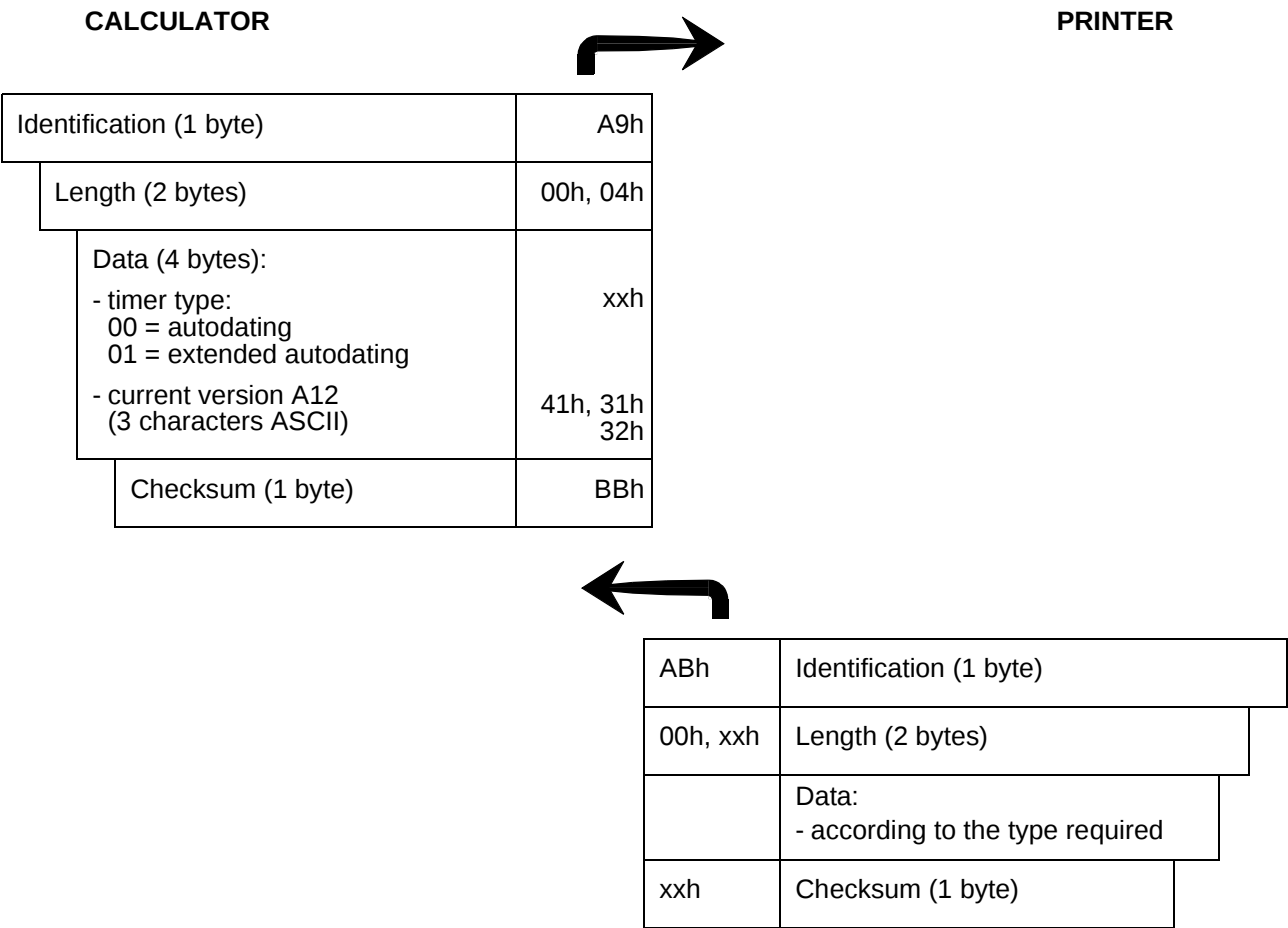
- Request: Type of table: (1 byte)

00h	Hours table	24 x 3 characters ASCII
01h	Minutes table	60 x 3 characters ASCII
02h	Day of the week table	7 x 3 characters ASCII
03h	Day of the year table	366 x 3 characters ASCII
04h	Day of the month table	31 x 3 characters ASCII
05h	Weeks table	53 x 3 characters ASCII
06h	Month of year table	12 x 3 characters ASCII
07h	Year table	10 x 3 characters ASCII
08h	Shift code 2 table	366 x 3 characters ASCII
09h	Month of year table in prom - language 1	12 x 3 characters ASCII
0Ah	Shift code 3 table	(24 x 3 x 7) x 3 characters ASCII
0Bh	Month of year table in prom - Language 2	12 x 3 characters ASCII
- Answer: Autodating table (n bytes):

Hours table	24 x 3 characters ASCII
Minutes table	60 x 3 characters ASCII
Day of the week table	7 x 3 characters ASCII
Day of the year table	366 x 3 characters ASCII
Day of the month table	31 x 3 characters ASCII
Weeks table	53 x 3 characters ASCII
Month of year table	12 x 3 characters ASCII
Year table	10 x 3 characters ASCII
Shift code 2 table	366 x 3 characters ASCII
Month of year table in prom - language 1	12 x 3 characters ASCII
Shift code 3 table	(24 x 3 x 7) x 3 characters ASCII
Month of year table in prom - language 2	12 x 3 characters ASCII



6.4 Request for the current value of the autodating elements

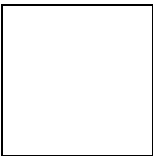


Détail sur les données

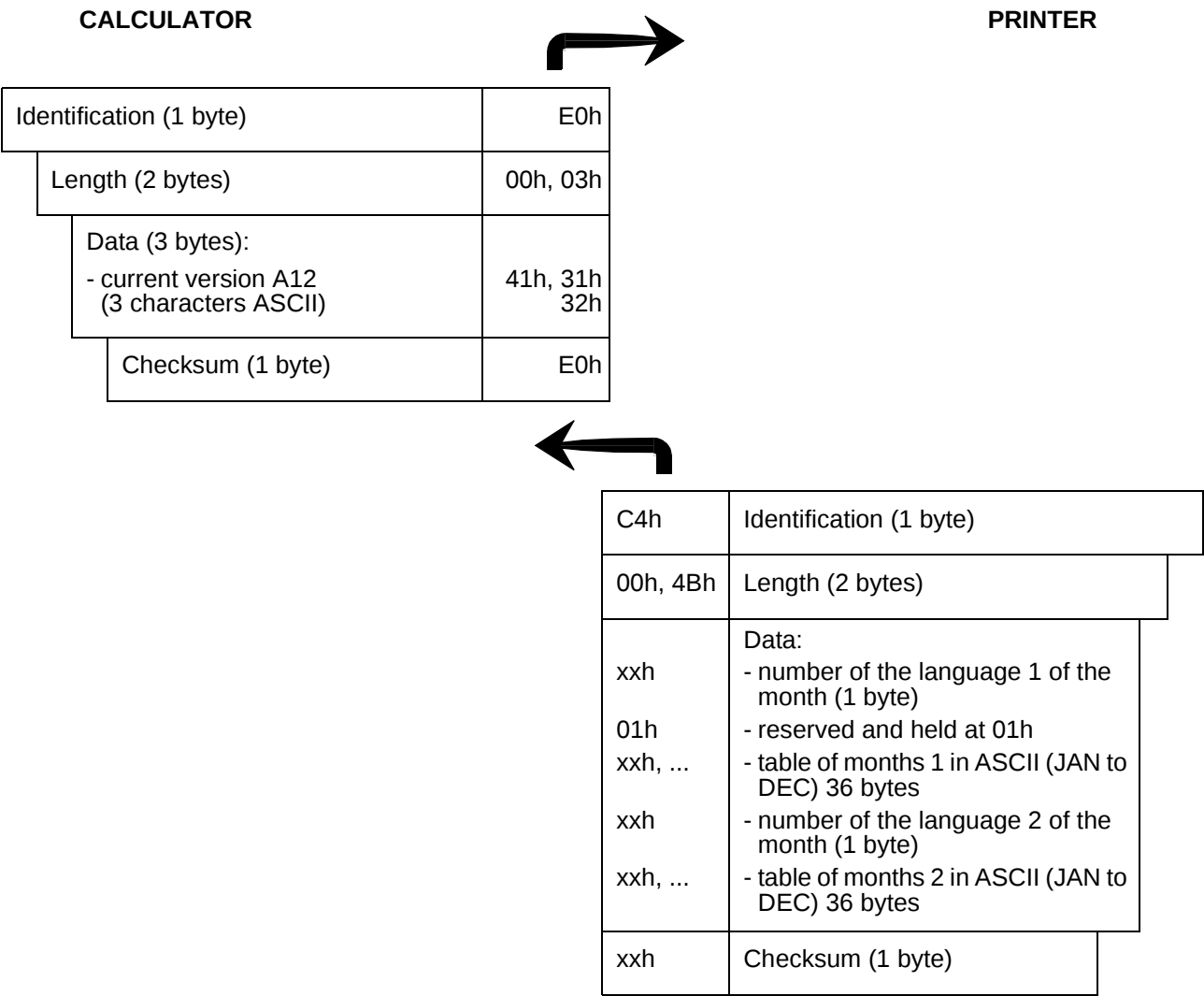
- Autodating:

Seconds	from 00 to 59	(2 characters ASCII)
Minutes	from 00 to 59	(2 characters ASCII)
Hours	from 00 to 23	(2 characters ASCII)
Mode 12/24 H	AM/PM/SPACE	(2 characters ASCII)
Day of month	from 1 to 31	(2 characters ASCII)
Day of year	from 001 to 36631	(2 characters ASCII)
Week of year	from 01 to 53	(2 characters ASCII)
Month of year	from 01 to 12	(2 characters ASCII)
Month of year in letters (language 1)	JAN à DEC	(2 characters ASCII)
Year on 2 digits	from 00 to 99	(2 characters ASCII)
Postday of month	from 01 to 31	(2 characters ASCII)
Postday of year	from 001 to 366	(2 characters ASCII)
Postweek of year	from 01 to 52	(2 characters ASCII)
Postmonth of year	from 01 to 12	(2 characters ASCII)
Postmonth of year in letters (language 1)	JAN à DEC	(2 characters ASCII)
Postyear	from 00 to 99	(2 characters ASCII)
Shift code 1 in letter	A à Z	(1 characters ASCII)
Shift code 1 in number	from 01 to 99	(2 characters ASCII)
Shift code 1 in letter	A à Z -O -I	(1 characters ASCII)
Day of week	from 1 to 7	(1 characters ASCII)
Posday of year modulo programmable	from 1 to 999	(3 characters ASCII)
Delimiter ":"	3Ah	(1 characters ASCII)
Delimiter "/"	2Fh	(1 characters ASCII)
Delimiter "."	2Eh	(1 characters ASCII)
Delimiter " "	20h	(1 characters ASCII)
Month of year in letters (language 2)	JAN to DEC	(3 characters ASCII)
Postmonth of year in letters (language 2)	JAN to DEC	(3 characters ASCII)
- Extended autodating:

For each postdate (2 to 6):		
Postday of month	01 to 31	(2 characters ASCII)
Postday of year	001 to 366	(3 characters ASCII)
Postday of year modulo programmable		(3 characters ASCII)
Postweek of year	01 to 52	(2 characters ASCII)
Postmonth of year	01 to 12	(2 characters ASCII)
Postyear	00 to 99	(2 characters ASCII)
Postday of week in letters	LUN to DIM	(3 characters ASCII)
Postmonth of year in letters	JAN to DEC	(3 characters ASCII)
Hours table		(3 characters ASCII)
Minutes table		(3 characters ASCII)
Month of year table		(3 characters ASCII)
Day of week table		(3 characters ASCII)
Day of month table		(3 characters ASCII)
Day of year table		(3 characters ASCII)
Week of year table		(3 characters ASCII)
Years table		(3 characters ASCII)
Shift code 2 table		(3 characters ASCII)
Shift code 3 table		(3 characters ASCII)
Delimiter ":"	3Ah	(1 characters ASCII)
Delimiter "/"	2Fh	(1 characters ASCII)
Delimiter "."	2Eh	(1 characters ASCII)
Delimiter " "	20h	(1 characters ASCII)



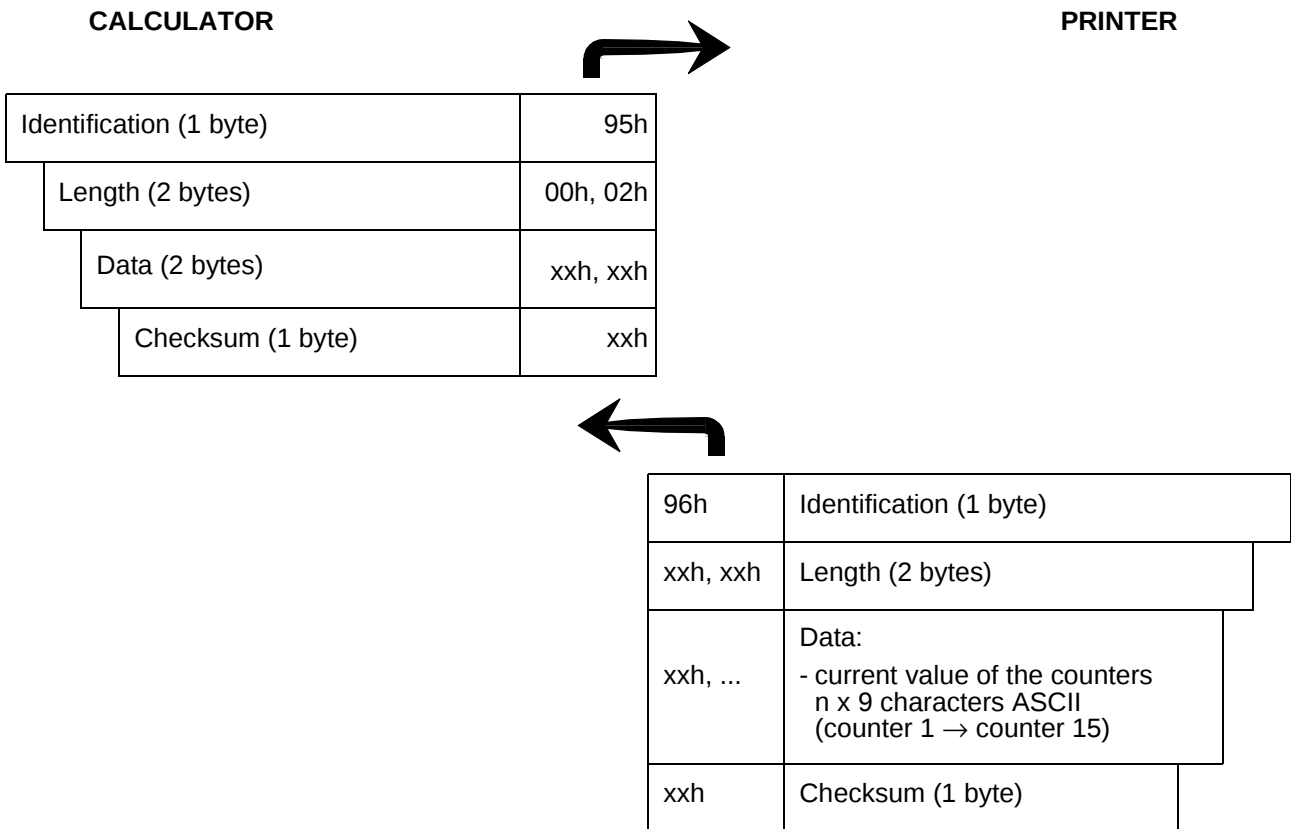
6.5 Request for the languages of the month to be printed



Data details

See chapter 1.3 (Command of the languages of the month to be printed) of this section.

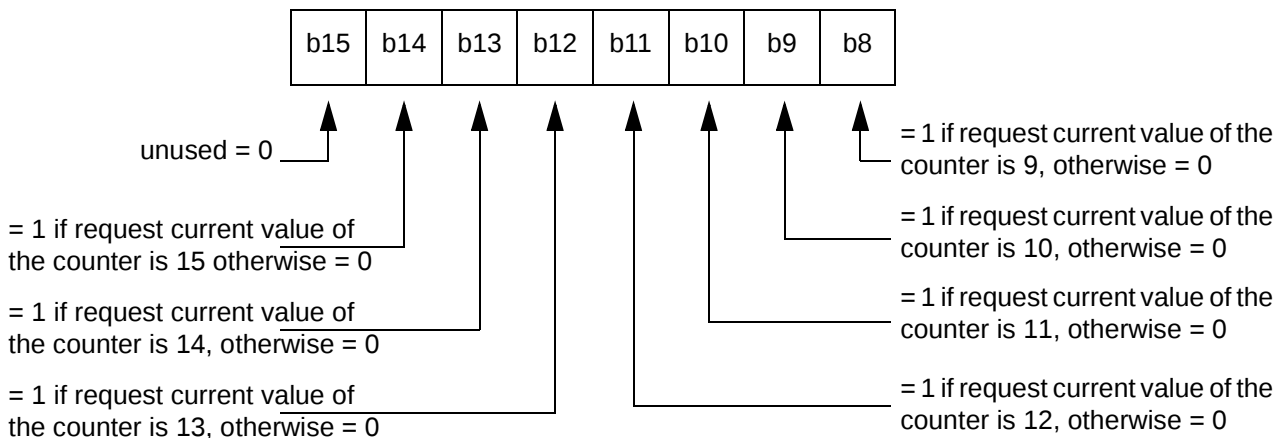
6.6 Request for the current value of the counters

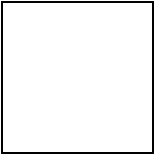


Data details

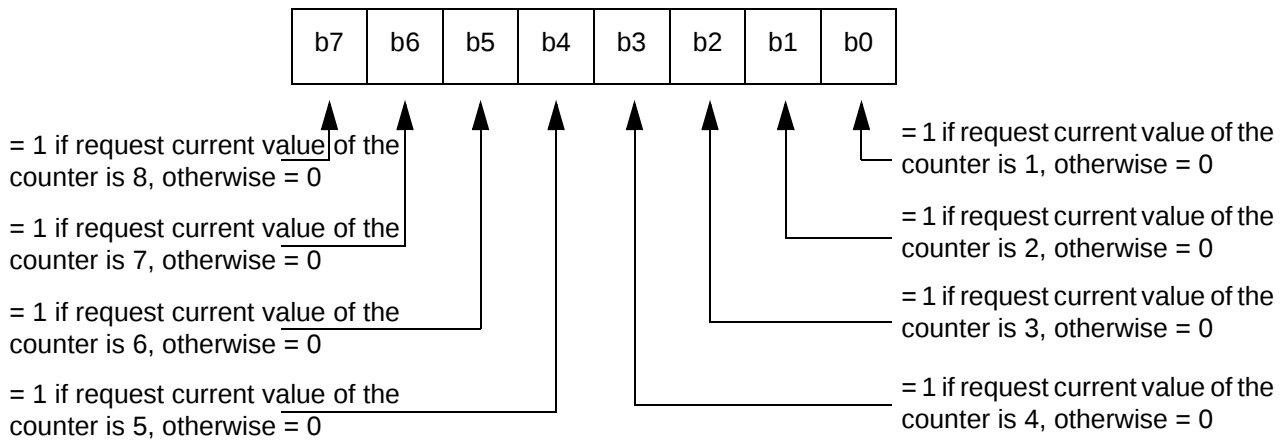
Request: counter list

- **High-order byte**





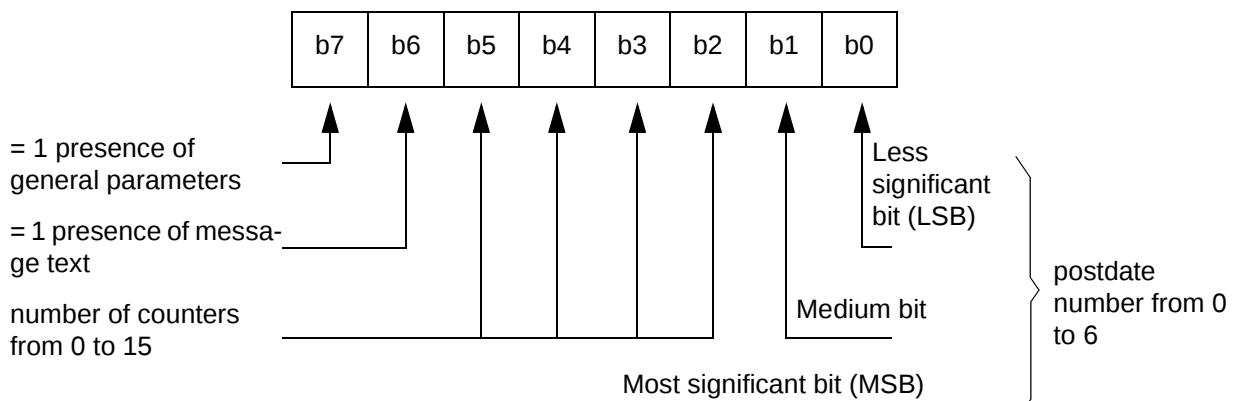
- Least significant byte



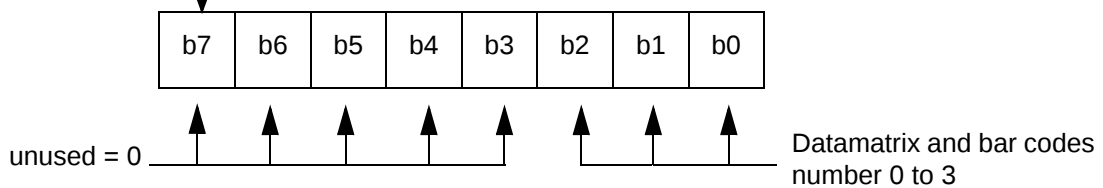
7 Message data precisions

7.1 Structure indicator

- First byte:



- Second byte:

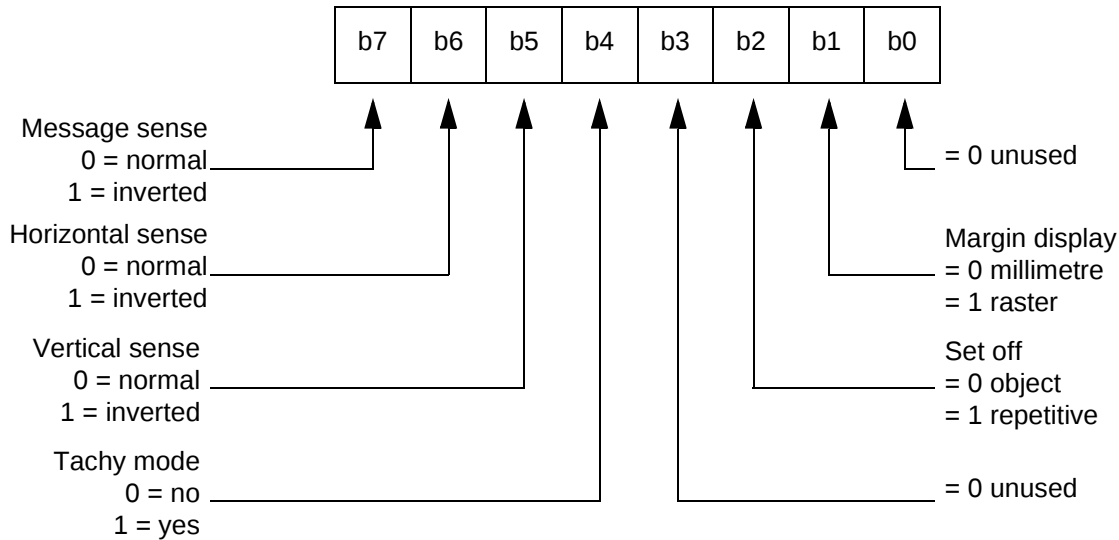


IMPORTANT

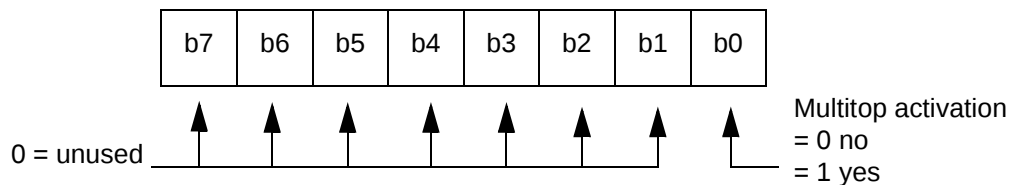
If the structure indicator is defined with variable elements (counter, Datamatrix and bar codes, postdate) the variable elements parameters must be inserted (refer to "Variable elements parameters" chapter).

7.2 General parameters of the message

- **First byte:**

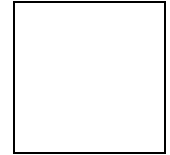


- **Second byte:**



When multitop mode is enabled (= 1), bit b2 in the first byte is inhibited.

- **3rd and 4th bytes:** tacho division (from 0001 to 9999, step of 1).
- **5th and 6th bytes:** forward margin (0003 to 910 mm for head M, 1492 mm for head G, or 0009 to 4096 rasters).
- **7th and 8th bytes:** return margin (0003 to 910 mm for head M, 1492 mm for head G, or 0009 to 4096 rasters).
- **9th and 10th bytes:** interval margin (0002 to 910 mm for head M, 1492 mm for head G, or 0009 to 4096 rasters).
- **11th and 12th bytes:** printing speed in mm/s.
- **13th and 14th bytes:** this parameter, coded in hexadecimal, is used to control parameters for a quick multi-line algorithm (see table in appendix) or to enable Curved mode (CurvePrint). CurvePrint corresponds to algorithm 100.

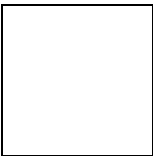


7.3 Variable element parameters

• Parameters of counter 1	26 bytes
• Parameters of counter 2	26 bytes
• Postdate 1	2 bytes
• Parameters of counter 3	26 bytes
• Parameters of counter 4	26 bytes
• Parameters of counter 5	26 bytes
• Parameters of counter 6	26 bytes
• Parameters of counter 7	26 bytes
• Parameters of counter 8	26 bytes
• Parameters of counter 9	26 bytes
• Parameters of counter 10	26 bytes
• Parameters of counter 11	26 bytes
• Parameters of counter 12	26 bytes
• Parameters of counter 13	26 bytes
• Parameters of counter 14	26 bytes
• Parameters of counter 15	26 bytes
• Postdate 2	2 bytes
• Postdate 3	2 bytes
• Postdate 4	2 bytes
• Postdate 5	2 bytes
• Postdate 6	2 bytes
• Datamatrix or bar code 1	10 bytes
• Datamatrix or bar code 2	10 bytes
• Datamatrix or bar code 3	10 bytes

IMPORTANT

The order of the different parameters is forzen, but their presence on the other hand is optional: it is defined by the structure indicator.

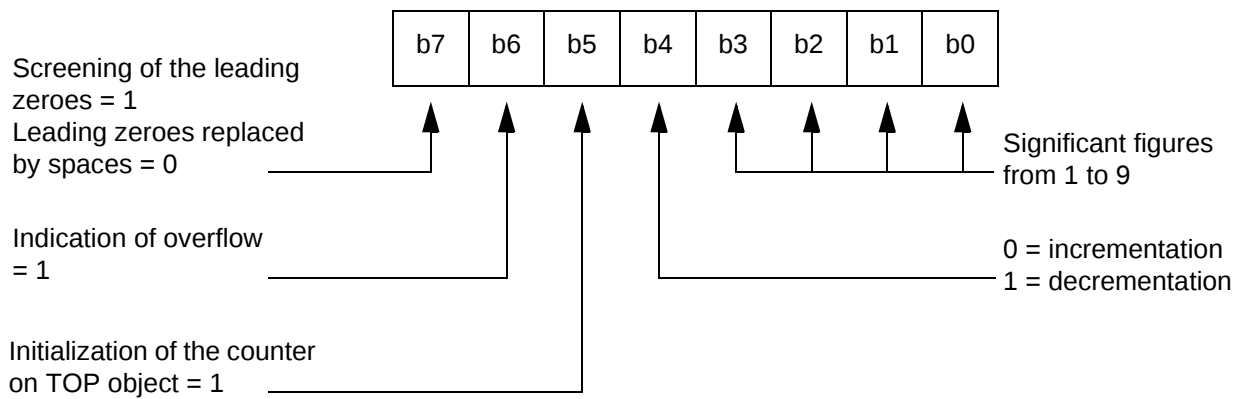


7.3.1 Parameters of a counter

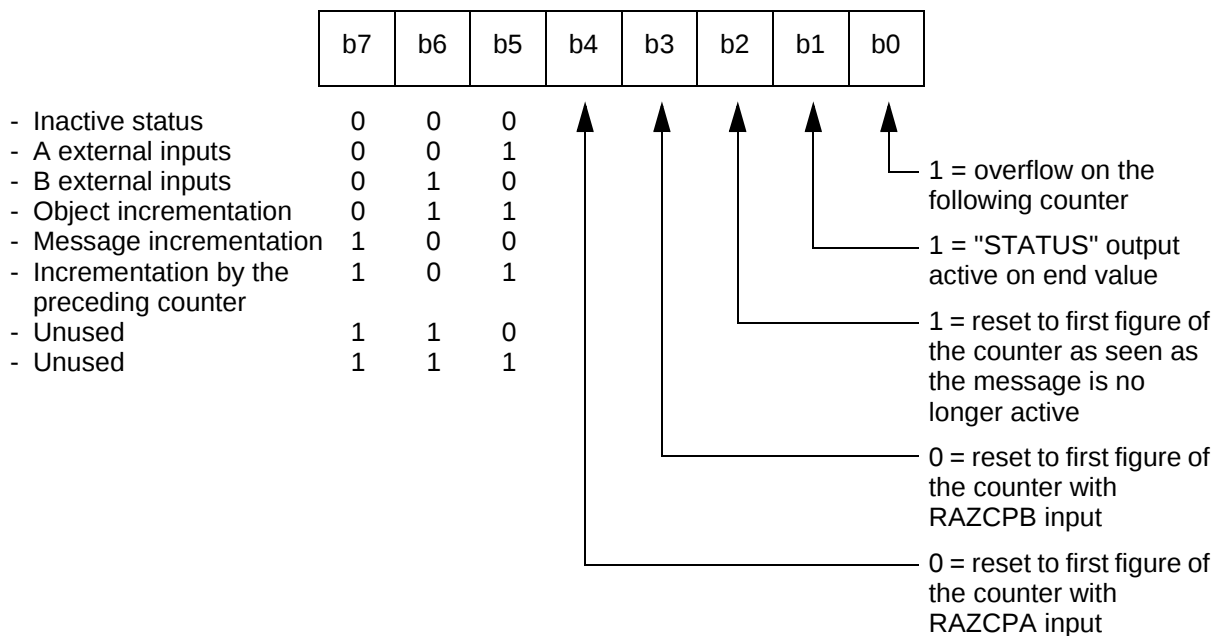
IMPORTANT

The following 26 bytes are configured in order to use a counter.
A configuration of 26 bytes corresponds to each counter.

- **First byte**



- **Second byte:**



The following 24 bytes:

Start value in 9 ASCII characters

End value in 9 ASCII characters

Counter step in 2 ASCII characters

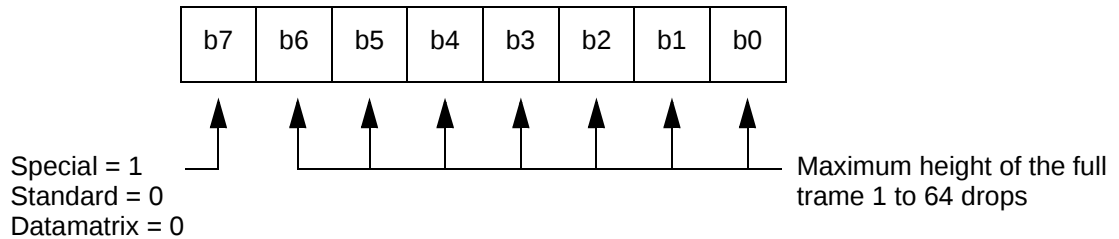
Incrementation divider (batch counter) in 4 bytes

7.3.2 Postdates parameter (2 bytes)

- Postdate interval coded on 2 bytes. Value from 0 to 9999 days.

7.3.3 Datamatrix and bar codes parameters (10 bytes)

- **1er byte:**



- Standard: the bar code will be printed with the height defined by bits b0 to b6 (code example: 2/5, code 39).
- Special: the bar code will be printed with a height defined of 24 drops or 18h.
- Datamatrix: the height must be an even number of points, between 8 and 24. If an odd height is selected, the last drop selected will be empty.

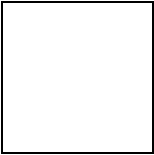
NOTE

For standard and Datamatrix, the height must correspond to a font height present in the printer.

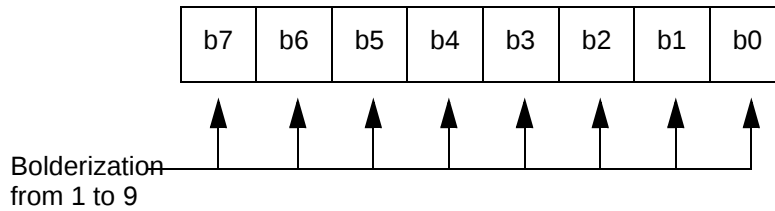
- **2nd byte:** identification of the code

xx	Code
00h	2/5 interleaved
01h	Code 39
02h	EAN13
03h	EAN13 with plain text
04h	EAN8
05h	EAN8 with plain text
06h	UPCA
07h	UPCA with plain text
08h	UPCE
09h	UPCE with plain text
0Eh	EAN128
0Fh	EAN 128 with plain text
10h	Code 128
11h	Code 128 with plain text
14h	HIBC
17h	Datamatrix

Identification of the code allows the printer the choice of the law governing the code. This rule also contains the raster structures used by the code.



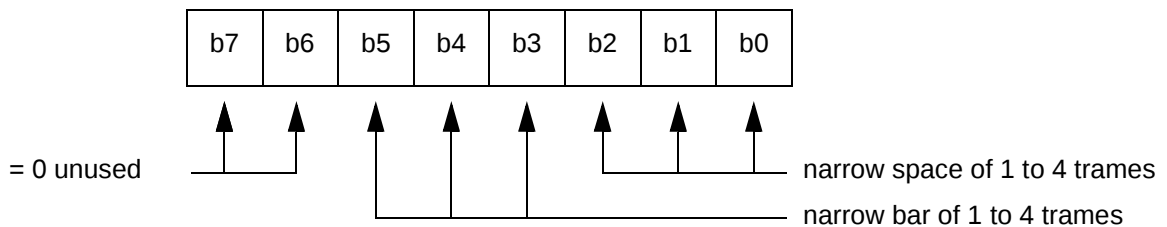
- **Third byte:**



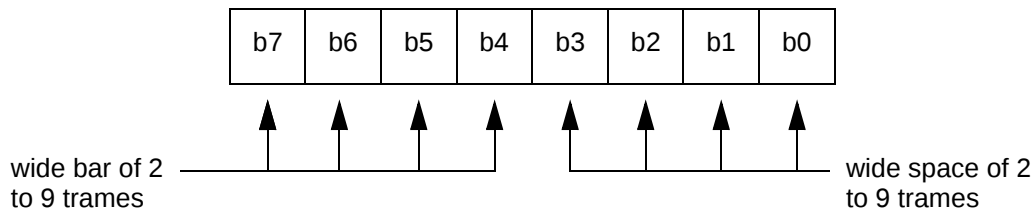
IMPORTANT

- For industrial codes, this value is always equal to 1.
 - For Datamatrix codes, bolderization may only vary between 1 and 2. Bolderization 2 may only be used with a height of 16 drops or more.
-

- **Fourth byte:**



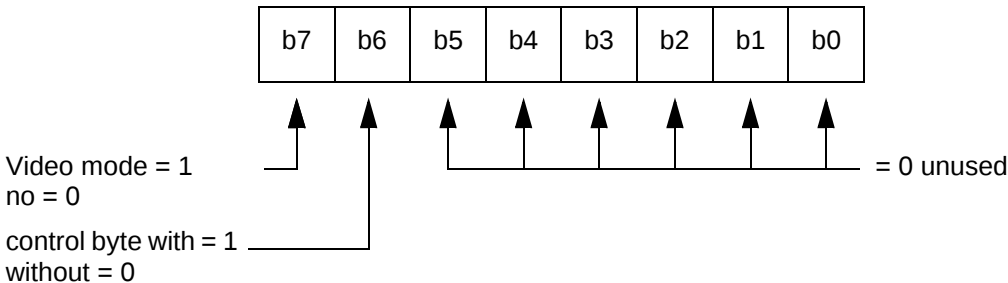
- **Fifth byte:**



IMPORTANT

- A narrow element is strictly inferior to a wide one.
 - For distribution and Datamatrix codes, the value of narrow elements is set to 1 (09h) and the value of wide elements is set to 2 (22h).
-

- **Sixth byte:**

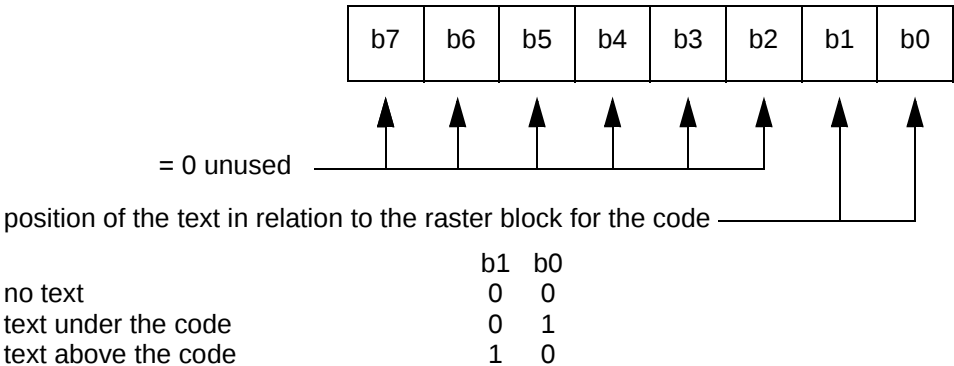


For the Datamatrix code, this byte is set to 40h.

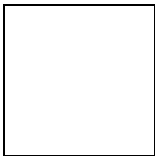
IMPORTANT

If the control byte is used its position must be reserved in the text of the code. A control byte may never be the last character of a variable element.

- **Seventh byte:**



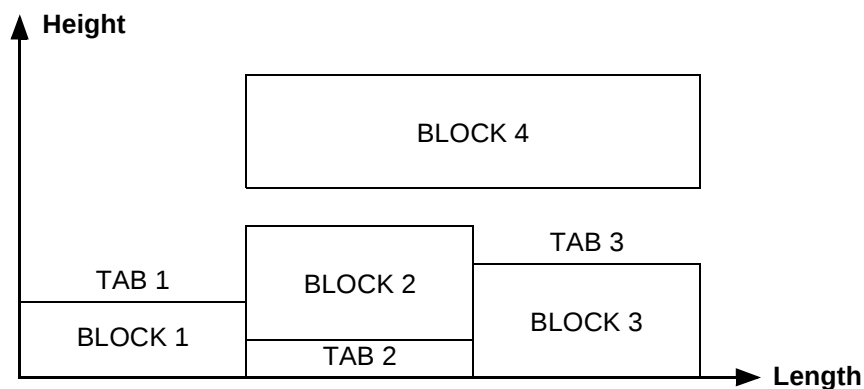
- **The following three bytes are reserved and held at 00h.**



7.4 Definition of lines

A line is an assembly of blocks. The start line delimiter 0ah is used for each line. The end of message delimiter Odh is used at the end of the message.

Example of message:



The message can be split up in three different ways:

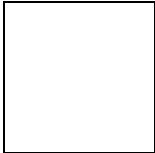
- Either: line 1 consists of BLOCK1, BLOCK2, BLOCK3.
line 2 consists of TAB1 and BLOCK4.
- Or: line 1 consists of BLOCK1, BLOCK4.
line 2 consists of TAB1 and BLOCK2, BLOCK3.
- Or: line 1 consists of TAB1 and BLOCK4.
line 2 consists of TAB1, BLOCK2 and TAB3.
line 3 consists of BLOCK1, TAB2 and BLOCK3.

The number of variable lines is limited to 16 per message.

7.5 Definition of blocks

A block is an assembly of elements made up of the same character generator, the same bolderization and the same vertical position.

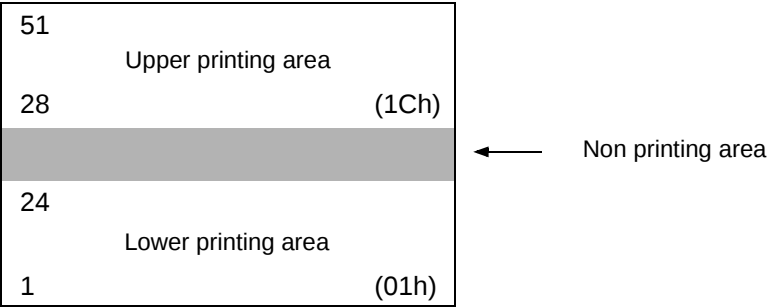
2 bytes position 8xh, xxh	Characters generator 1 byte	Bolderi- zation 1 byte	Identification 1 byte 10h	TEXT	Identification 1 byte 10h	Bolderi- zation 1 byte	Characters generator (1 byte)	2 bytes position 8xh, xxh
---------------------------------	-----------------------------------	------------------------------	---------------------------------	------	---------------------------------	------------------------------	-------------------------------------	---------------------------------



7.5.1 Position

These two bytes give the vertical position of the block, in number of drops, in relation to the first drop at the base of the character.

An area of 24 dots by jet is available. The first position of the lower area is 80h 01h and the first position of the upper area is 80h 1Ch.



7.5.2 Character generator

Number of the character generator coded on 1 byte.

To enable CurvePrint fonts to be used:

- connect an extension cassette containing CurvePrint data,
- set algorithm 100 in the general message parameters,
- enter a Curveprint font number.

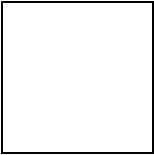
The list of character generator numbers is to be found in the APPENDIX;

7.5.3 Bolderization

This is the bolderization of the complete block from 1 to 9 in hexadecimal.

7.5.4 Identification

This is the identification of the start and end of 10h text.



7.6 Detail of the text

The text can be made of the following elements:

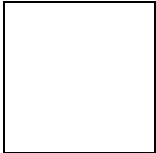
- alphanumeric characters,
- and/or counter,
- and/or autodating,
- and/or Datamatrix and bar codes,
- and/or tabulation,
- external variables,
- graphic block.

7.6.1 Alphanumeric characters

Characters coded in ASCII.

7.6.2 Counter

Delimiter 1 byte 1Ch	NUMBER OF COUNTER 01 to 15 1 byte - xxh	Delimiter 1 byte 1Ch
----------------------------	--	----------------------------



7.6.3 Autodating

Delimiter 1Ah	1 or more elements of autodating	Delimiter 1Ah
------------------	-------------------------------------	------------------

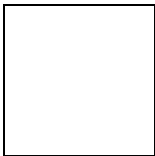
Autodating elements:

Autodating 1

41h	= seconds (00 to 59)	(2 bytes hexa)
42h		
43h	= minutes (00 to 59)	(2 bytes hexa)
44h		
45h	= hours (00 to 23)	(2 bytes hexa)
46h		
47h	= mode 12/24 H (AM/PM/SPACE)	(2 bytes hexa)
48h		
49h	= day of month (01 to 31)	(2 bytes hexa)
4Ah		
4Bh	= day of year (001 to 366)	(3 bytes hexa)
4Ch		
4Dh		
4Eh	= week of year (01 to 53)	(2 bytes hexa)
4Fh		
50h	= month of year (01 to 12)	(2 bytes hexa)
51h		
52h	= month of year in letters of language 1 (JAN to DEC)	(3 bytes hexa)
53h		
54h		
55h	= year (00 to 99)	(2 bytes hexa)
56h		

Postdate 1

57h	= postday of month (01 to 31)	(2 bytes hexa)
58h		
59h	= postday of year (001 to 366)	(3 bytes hexa)
5Ah		
5Bh		
5Ch	= postweek of year (01 to 53)	(2 bytes hexa)
5Dh		



Protocols

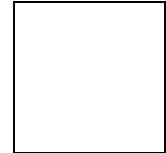
5Eh	= postmoonth of year (01 to 12)	(2 bytes hexa)
5Fh		
60h	= postmonth of year in letters of language 1 (JAN to DEC)	(3 bytes hexa)
61h		
62h		
63h	= postyear (00 to 99)	(2 bytes hexa)
64h		
65h	= shift code 1 in letters (A to Z)	(1 byte hexa)
66h	= shift code 1 in numbers (01 to 99)	(2 bytes hexa)
67h		
68h	= shift code 1 in letters (A to Z - O - I)	(1 byte hexa)
69h	= day of week in numbers 1 to 7	(1 byte hexa)
6Ah	= postday of year modulo programmable	(3 bytes hexa)
6Bh		
6Ch		
6Dh	= delimiter ":"	(1 byte hexa)
6Eh	= delimiter "/"	(1 byte hexa)
6Fh	= delimiter "."	(1 byte hexa)
70h	= delimiter " "	(1 byte hexa)
71h	= month of year in letters of language 2 (JAN to DEC)	(3 bytes hexa)
72h		
73h		
74h	= postmonth of year in letters of language 2 (JAN to DEC)	(3 bytes hexa)
75h		
76h		

The elements are received as bytes; these bytes are used to address a table containing the autodating elements to be printed.

NOTE

The months of the year are in serveral languages (see paragraph "Sending in the language of the month to be printed"). The default language is French.

The four delimiters (/ : .) are included in the timing elements to avoid a large number of blocks. These delimiters are fixed.



Extended autodatting (see designation in Printer Manual)

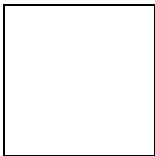
Delimiter 1 byte 1Bh	One or more elements of autodatting	Delimiter 1 byte 1Bh
----------------------------	--	----------------------------

Postdate 2

41h-42h	= postday of month (01 to 31)	(2 bytes hexa)
43h-44h-45h	= postday of year (001 to 366)	(3 bytes hexa)
46h-47h-48h	= postday of year modulo programmable (001 to 999)	(3 bytes hexa)
49h-4Ah	= postweek of year (01 to 52)	(2 bytes hexa)
4Bh-4Ch	= postmonth of year (01 to 12)	(2 bytes hexa)
4Dh-4Eh	= postyear (00 to 99)	(2 bytes hexa)
4Fh-50h-51h	= postday of week in letters (MON to SUN)	(3 bytes hexa)
52h-53h-54h	= postmonth of year in letters (JAN to DEC)	(3 bytes hexa)

Customisable tables

55h-56h-57h	= hours of the optional autodatting	(3 bytes)
58h-59h-5Ah	= minute of the optional autodatting	(3 bytes)
5Bh-5Ch-5Dh	= month of the optional autodatting	(3 bytes)
5Eh-5Fh-60h	= day of week of the optional autodatting	(3 bytes)
61h-62h-63h	= day of month of the optional autodatting	(3 bytes)
64h-65h-66h	= day of year of the optional autodatting	(3 bytes)
67h-68h-69h	= week of year of the optional autodatting	(3 bytes)
6Ah-6Bh-6Ch	= year of the optional autodatting	(3 bytes)
6Dh-6Eh-6Fh	= shiftcode 2 of the optional autodatting	(3 bytes)
70h	= delimiter (:)	(1 byte)
71h	= delimiter (/)	(1 byte)
72h	= delimiter (.)	(1 byte)
73h	= delimiter ()	(1 byte)
74h-75h-76h	= shiftcode 3 of the optional autodatting	(3 bytes)

Postdate 3

77h-78h	= postday of month (01 to 31)	(2 bytes hexa)
79h-7Ah-7Bh	= postday of year (001 to 366)	(3 bytes hexa)
7Ch-7Dh-7Eh	= postday of year modulo programmable	(3 bytes hexa)
7Fh-80h	= postweek of year (01 to 52)	(2 bytes hexa)
81h-82h	= postmonth of year (01 to 12)	(2 bytes hexa)
83h-84h	= postyear (00 to 99)	(2 bytes hexa)
85h-86h-87h	= postday of week in letters (MON to SUN) (customisable table of weeks of the year)	(3 bytes hexa)
88h-89h-8Ah	= postmonth of year in letters (JAN to DEC) (customisable table of months of the year)	(3 bytes hexa)

Postdate 4

8Bh-8Ch	= postday of month (01 to 31)	(2 bytes hexa)
8Dh-8Eh-8Fh	= postday of year (001 to 366)	(3 bytes hexa)
90h-91h-92h	= postday of year modulo programmable	(3 bytes hexa)
93h-94h	= postweek of year (01 to 52)	(2 bytes hexa)
95h-96h	= postmonth of year (01 to 12)	(2 bytes hexa)
97h-98h	= postyear (00 to 99)	(2 bytes hexa)
99h-9Ah-9Bh	= postday of week in letters (MON to SUN) (customisable table of weeks of the year)	(3 bytes hexa)
9Ch-9Dh-9Eh	= postmonth of year in letters (JAN to DEC) (customisable table of months of the year)	(3 bytes hexa)

Postdate 5

9Fh-A0h	= postday of month (01 to 31)	(2 bytes hexa)
A1h-A2h-A3h	= postday of year (001 to 366)	(3 bytes hexa)
A4h-A5h-A6h	= postday of year modulo programmable	(3 bytes hexa)
A7h-A8h	= postweek of year (01 to 52)	(2 bytes hexa)
A9h-AAh	= postmonth of year (01 to 12)	(2 bytes hexa)
ABh-ACH	= postyear (00 to 99)	(2 bytes hexa)
ADh-AEh-AFh	= postday of week in letters (MON to SUN) (customisable table of months of the year)	(3 bytes hexa)
B0h-B1h-B2h	= postmonth of year in letters (JAN to DEC) (customisable table of months of the year)	(3 bytes hexa)

Postdate 6

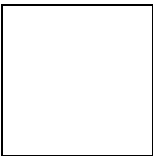
B3h-B4h	= postday of month (01 to 31)	(2 bytes hexa)
B5h-B6h-B7h	= postday of year (001 to 366)	(3 bytes hexa)
B8h-B9h-BAh	= postday of year modulo programmable	(3 bytes hexa)
BBh-BCh	= postweek of year (01 to 52)	(2 bytes hexa)
BDh-BEh	= postmonth of year (01 to 12)	(2 bytes hexa)
BFh-C0h	= postyear (00 to 99)	(2 bytes hexa)
C1h-C2h-C3h	= postday of week in letters (MON to SUN) (customisable table of weeks of the year)	(3 bytes hexa)
C4h-C5h-C6h	= postmonth of year in letters (JAN to DEC) (customisable table of months of the year)	(3 bytes hexa)
1Bh	delimiter of autodating	(1 byte hexa)

NOTE

The elements are received as bytes; these bytes are used to address a table containing the autodating elements to be printed.

Use of tables:

- Each parameter has an associated table of 1 to 3 characters. The number of characters printed depends on the message elements.
- If an element of the table = 00, it is not printed.



7.6.4 Datamatrix and bar codes

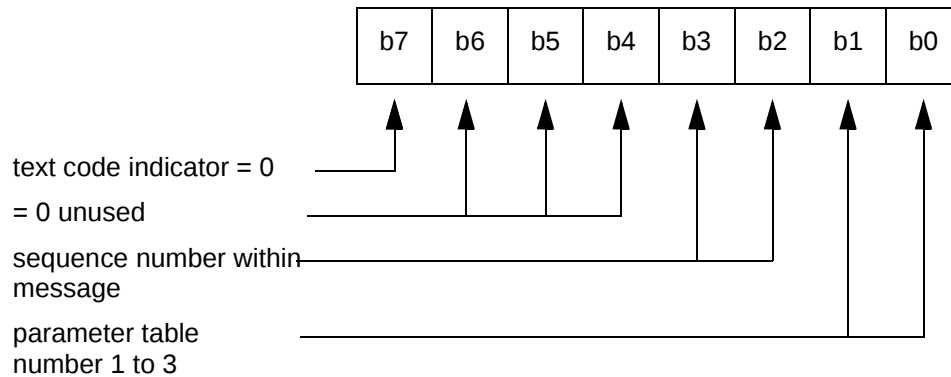
- **Code to be printed in cipher:**

Delimiter 1Fh	definition of the code 1 byte 1 to 3	Element to be encoded	Delimiter 1Fh
------------------	--	-----------------------	------------------

- Definition of the code:

A maximum of 3 codes may be printed per message.

These three codes are parametered in the section "Variable Element Parameters, in order fo code 1, code 2, code 3. This code number allows choice of a code together with its characteristics (height, width, etc).



- Element to be encoded:

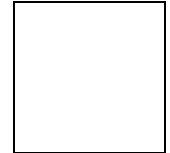
- . symbols:

SYMBOLS in characters ASCII

- . timer elements:

Delimiter 1Ah	autodating	Delimiter 1Ah
------------------	------------	------------------

See previous paragraph
"Autodating"



- or extended timer elements:

Delimiter 1Bh	EXTENDED AUTODATING	Delimiter 1Bh
------------------	---------------------	------------------

See previous paragraph
"Autodating"

- counters:

Delimiter 1Ch	Counter number from 01 to 15 1 byte xxh	Delimiter 1Ch
------------------	---	------------------

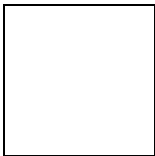
- external variables:

Delimiter 12h	Text to be modified n bytes	Delimiter 12h
------------------	--------------------------------	------------------

See next paragraph "External variables"

- Maximum encoding capacity of Datamatrix code

Bolderization	1 droplet cell					2 droplet cell		
Code height (dots)	9		11	16	24	16		24
Print Matrix	8 x 18	8 x 32	10 x 10	16 x 48	24 x 24	8 x 18	8 x 26	12 x 36
Number of encoded numeric characters	10	20	6	98	72	10	20	44
Number of encoded alphanumeric	6	13	3	72	52	6	11	31
Number of encoded 8-bit ASCII characters	3	8	1	47	34	3	13	20



- **Code to be printed in plain text;**

Delimiter 1Fh	Definition of the code 1 byte 1 to 3	Element of code to be printed in plain text n bytes	Delimiter 1Fh
------------------	--	---	------------------

This code to be printed unencoded may only be used for distribution codes

Bit b7 of the code definition byte (text code indicator) is set to 1. The contents is identical to the encoded code printed, with an additional element to be encoded: the tabulation.

The text may contain fixed or variable elements.

The location of the control byte is reserved at the end of the text.

Spaces between characters must be replaced by tabulation blocks.

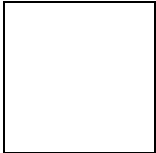
CAUTION	For EAN 128 and code 128, add 20h to the characters to be encoded (except for the 4 delimiters).
----------------	---

7.6.5 Tabulation

Horizontal block position is allowed by the tabulations, made with empty rasters. Please refer to the sub-chapter "Lines definition" and the example "Sending a message for printing"..

Delimiter 1Eh	Number of empty raster 1 to 255 1 byte	Delimiter 1Eh
------------------	--	------------------

NOTE	No limitation in the number of tabulations and bolderization is not taken into account.
-------------	--



7.6.6 External variables

This block is used to mark a portion of text to be modified from the serial link. To use an external variable block, it must first be defined in the current message. The text to be modified may comprise any printable elements.

If a variable element is contained in an external variable, this must be complete.
The structure of the message may not be modified.
There may be a maximum of 10 variables in a message.

If a block is defined and is not to be modified, the text to modify zone must be zero bytes.

Delimiter 12h	Text to be modified n bytes	Delimiter 12h
------------------	--------------------------------	------------------

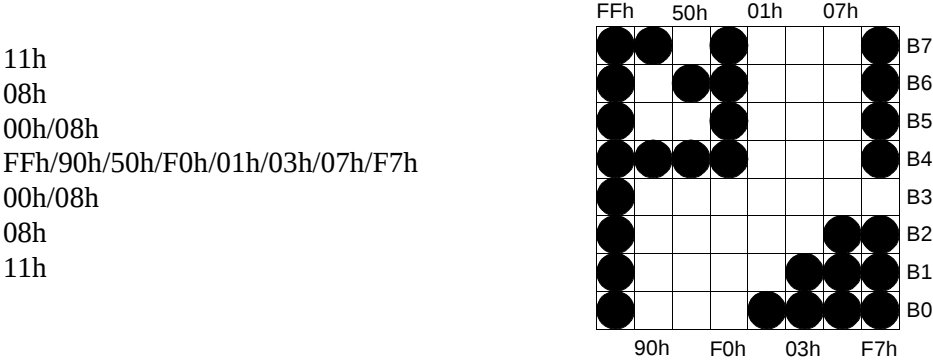
NOTE When a bar code with unencoded text is printed, containing external variable zones, it is essential to separate these zones by fixed elements.

7.6.7 Graphic block

This block may be used to insert graphics in a message to be printed.
The block may not be edited on the terminal.
The current bolderization is not taken into account when printing this block.

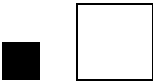
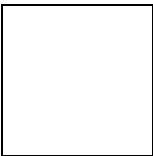
Delimiter 11h	Number of drops for the graph (height) 1 byte	Number of descriptors (width) 2 bytes	Descriptor to be printed n bytes	Number of descriptors (width) 2 bytes	Number of drops for the graph (height) 1 byte	Delimiter 11h
------------------	--	--	--	--	--	------------------

Example: protocol to send a graphic block with a height of eight points



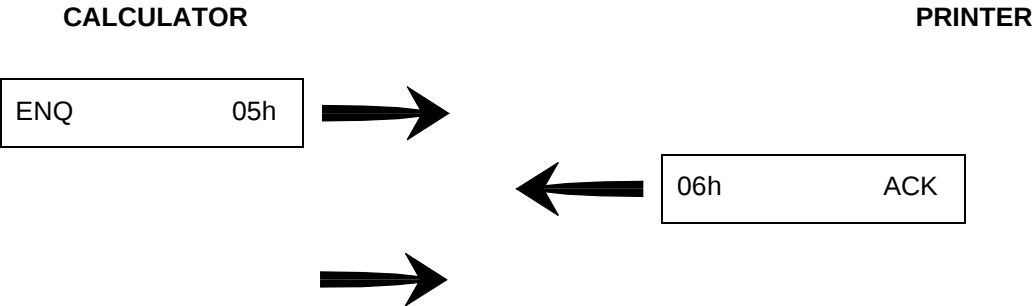
7.7 End of message

The end of message delimiter is 0Dh.



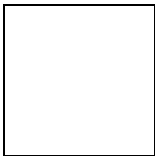
8 Examples

8.1 Sending a complete message



Identification		E3h
Length		00h 62h
Data:		
- <u>Structure indicator:</u>		
(presence of general parameters)		C0h 00h
(presence of message text)		
- <u>General parameters:</u>		
message sense	normal	} 10h
horizontal sense	normal	
vertical sense	normal	
tacho mode	yes	
set off	object	
unit	mm	
- Multitop start mode:	no	00h
- Tacho division	05	00h 05h
- Forward margin	16	00h 10h
- Return margin	3	00h 03h
- Interval	2	00h 02h
- Printing speed	256 mm/s	01h 00h
- Reserved	0	00h 00h

- <u>Text</u>	
Identification of line 1	0Ah
First block position	80h 01h
Character generator 018 (d)	12h
Bolderization 1	01h
Text delimiter	10h
P	50h
R	52h
O	4Fh
D	44h
U	55h
I	49h
T	54h
	20h
L	4Ch
E	45h
	20h
Auto-dating delimiter	1Ah
day of month	49h 4Ah
Separator	6Eh
month	50h 51h
Separator	6Eh
years	55h 56h
Autodating delimiter	1Ah
Text delimiter	10h
Bolderization 1	01h
Characters generator 018 (d)	12h
First block position	80h 01h
Second block position	80h 01h
Characters generator 013 (d)	0Dh
Bolderization 2	02h
Text delimiter	10h
	20h
P	50h
O	4Fh
I	49h
D	44h
S	53h
	20h
2	32h
	20h
K	4Bh
G	47h
Text delimiter	10h



Protocols

Bolderization 2	02h
Characters generator 013 (d)	0Dh
Second block position	80h 01h
Identification of second line	0Ah
First block position	80h 0Ah
Characters generator 013 (d)	0Dh
Bolderization 1	01h
Text delimiter	10h
Tabulation delimiter	1Eh
Rasters number: 240	F0h
Tabulation delimiter	1Eh
M	4Dh
A	41h
D	44h
E	45h
	20h
I	49h
N	4Eh
	20h
F	46h
R	52h
A	41h
N	4Eh
C	43h
E	45h
Text delimiter	10h
Bolderization 1	01h
Characters generator 013 (d)	0Dh
First block position	80h 0Ah
End message delimiter	0Dh
Checksum	B8h



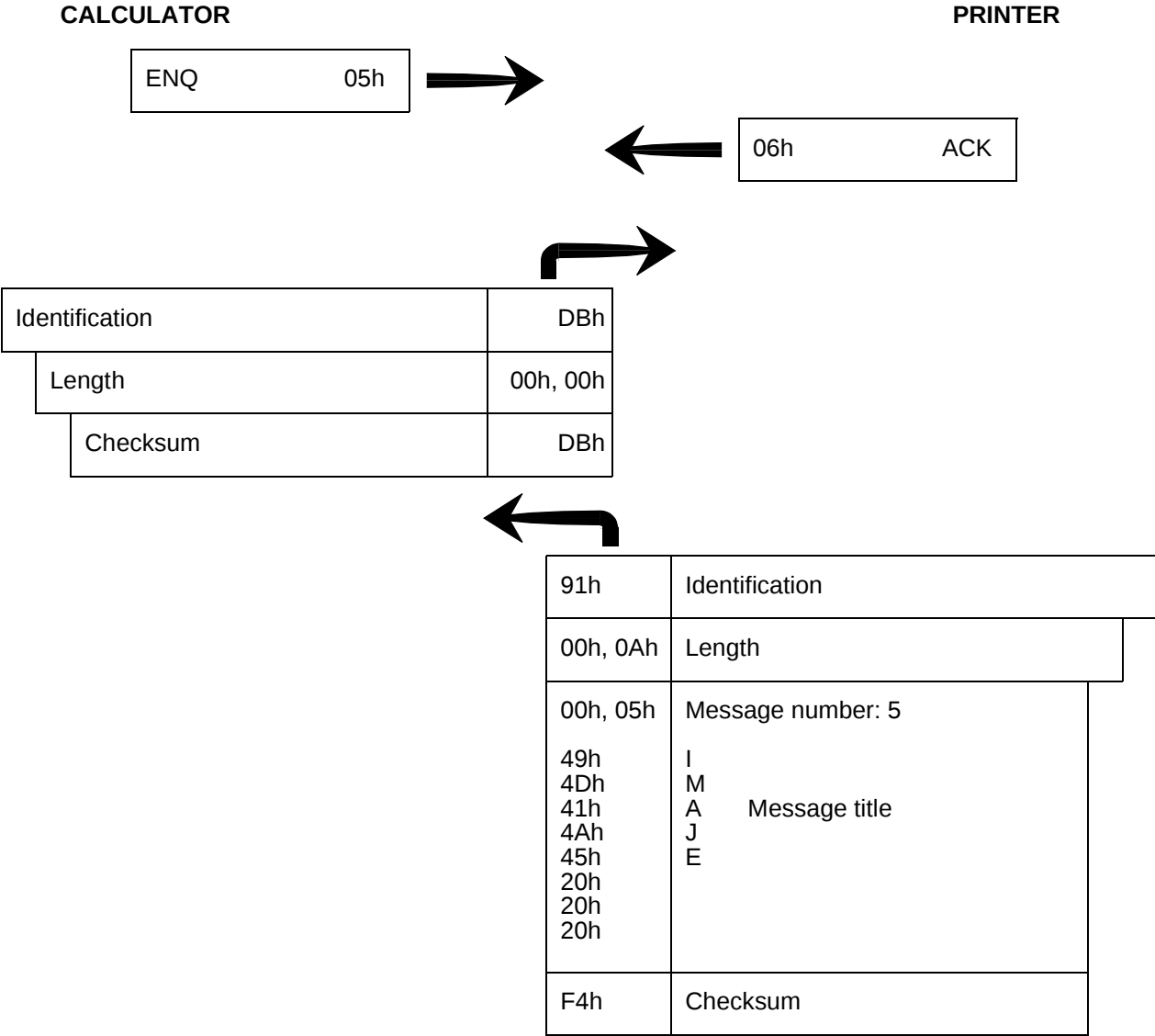
06h

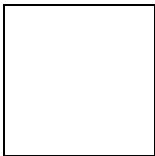
ACK

Printing message is:

PRODUIT LE 30/09/00 MADE IN FRANCE
POIDS 2 KG

8.2 Request for a message active number





8.3 Sending a partial message

- Last printing message

**PRODUIT LE 14/01/00 MADE IN FRANCE
POIDS 2 KG**

- Modification of the message by sending a partial message.

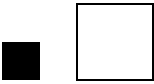
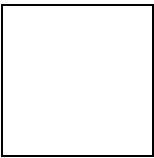
Identifiant	E5h
Length	00h 1Eh
Number of area to be amended	03h
Line number	00h
Position in line	00h 05h
Number of characters to be amended	00h 07h
E	45h
M	4Dh
B	42h
A	41h
L	4Ch
L	4Ch
E	45h
Line number	00h
Position in line	00h 2Bh
Number of characters to be amended	00h 01h
3	33h
Line number	01h
Position in line	00h 10h
Number of characters to be amended	00h 06h
S	53h
U	55h
I	49h
S	53h
S	53h
E	45h
Checksum	B0h

- New printing message:

**EMBALLE LE 14/01/00 MADE IN SUISSE
POIDS 3 KG**

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1 Reminder

Binary, decimal, hexadecimal conversion

Decimal	Binary	Hexadecimal
0	0000	0
1	0001	1
2	0010	2
3	0011	3
4	0100	4
5	0101	5
6	0110	6
7	0111	7
8	1000	8
9	1001	9
10	1010	A
11	1011	B
12	1100	C
13	1101	D
14	1110	E
15	1111	F

7	6	5	4	3	2	1	0
0	0	1	1	1	0	1	0
3				A			

soit 3Ah

A byte (8 bits) is made of two hexadecimal figures.

The symbol "h" refers to hexadecimal notation.

The ASCII standard allows association of an alphanumeric symbol with each byte.

41h corresponds, for example, to "A" in ASCII.

2 ASCII table of characters and symbols used for a message

	0	1	2	3	4	5	6	7	8	9	A
0	NUL		SP	0	@	P	\	p	Ç	É	á
1			!	1	A	Q	a	q	ü	æ	í
2			"	2	B	R	b	r	é	Æ	ó
3			#	3	C	S	c	s	â	ô	ú
4			\$	4	D	T	d	t	ä	ö	ñ
5			%	5	E	U	e	u	à	ò	Ñ
6			&	6	F	V	f	v	å	û	œ
7			'	7	G	W	g	w	ç	ü	¿
8			(	8	H	X	h	x	ê	ù	š
9			)	9	I	Y	i	y	ë	œ	
A			*	:	J	Z	j	z	è	Ö	
B			+	;	K	[	k	{	ï	Ü	
C	FF		,	<	L	\	l		î	¢	
D	CR		-	=	M	]	m	}	ì	£	
E			.	>	N	^	n	~	Ä	Ø	
F			/	?	O	_	o		Å	ø	

Example:

ASCII character	I	M	A	J	E
Code hex	49h/	4Dh/	41h/	4Ah/	45h

3 Fonts list

3.1 Standard fonts

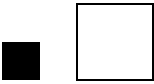
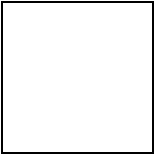
Characters generators	Number	Size of the matrix	Latin command module	Non latin command module	Extension cassette
Latin Ind. 5	81	5 x 6	*	*	
Latin Ind. 7	13	7 x 6	*	*	
Latin Ind. 9	96	9 x 6	*	*	
Latin Ind. 11	39	11 x 8	*	*	
Latin Ind. 16	18	16 x 12	*	*	
Latin Ind. 24	20	24 x 21			*
Latin Ind. 48	168	48 x 37			*
Latin Ind. 48C	169	48 x 39			*
Cheminée 5	21	5 x 6			*
Cheminée 7	23	7 x 8			*
Cheminée 11	85	7 x 11			*
Cheminée 16	87	11 x 18			*
Arabic 7	199 (latin)	7 x 6		*	
Arabic 7	198 (koranic)	7 x 6		*	
Arab 7 (✳)	179	7 x 6		*	
Arabic 16	189 (latin)	16 x 12		*	
Arabic 16	188 (koranic)	16 x 12		*	
Arab 16 (✳)	177	16 x 12		*	
Arabic 24	184	24 x 20			*
Chinese 11	195	11 x 11		*	
Chinese 16	194	16 x 16		*	
Chinese 24	193	24 x 22			*
Cyrillic 7	35	7 x 7		*	
Cyrillic 16	37	16 x 13		*	
Cyrillic 24	38	24 x 18			*
Greek 7	88	7 x 6		*	
Greek 16	90	16 x 12		*	
Greek 24	91	24 x 21			*
Hebrew 5	97	5 x 6			*
Hebrew 7	183 (latin)	7 x 6		*	
Hebrew 7	182 (hebrew)	7 x 6		*	
Hebr 7 (✳)	178	7 x 6		*	
Hebrew 16	181 (latin)	16 x 12		*	
Hebrew 16	180 (hebrew)	16 x 12		*	
Hebr 16 (✳)	176	16 x 12		*	

Characters generators	Number	Size of the matrix	Latin command module	Non latin command module	Extension cassette
Hebrew 24	95	24 x 20			*
Japanese 7	187	7 x 19		*	
Japanese 11	186	11 x 27		*	
Japanese 24	185	24 x 50			*
Korean 7	192	7 x 8		*	
Korean 9	191	9 x 7		*	
Korean 11	190	11 x 8		*	
Thai mono	185	7 x 6		*	
Thai bijet	184	7 x 6		*	

(*) These character generators must be used to enable Arabic and Hebrew characters to be printed when the language used is not Arabic or Hebrew respectively.

3.2 CurvePrint fonts

Characters generators	Number	Size of the matrix	Latin command module	Non latin command module	CurvePrint extension cassette
CurvePrint 7	128 / G	7 x 6			*
CurvePrint 1 x 8	121 / G	8 x 6			*
CurvePrint 2 x 8	120 / G	8 x 6			*
CurvePrint 11	125 / G	11 x 8			*
CurvePrint 16	124 / G	16 x 12			*
CurvePrint 7	144 / M	7 x 6			*
CurvePrint 1 x 8	137 / M	8 x 6			*
CurvePrint 2 x 8	136 / M	8 x 6			*
CurvePrint 11	141 / M	11 x 8			*
CurvePrint 16	140 / M	16 x 12			*

**4 High speed algorithms for multi-line printing**

Type of head	Number of algorithms	Characteristics
G	30	3 lines of 5 points high
	40	3 lines of 7 points high
	41	4 lines of 5 points high
	47	2 lines of 7 points high
	48	2 lines of 5 points high
	50*	4 lines of 7 points high
M	35	3 lines of 5 points high
	36	3 lines of 7 points high
	37	4 lines of 5 points high
	49	2 lines of 5 points high

* Single-jet only.

5 Performance

The performance of the serial link of the printer is measured over a sample of ten messages:

- Message 01: 1 line of 20 static characters
- Message 02: 2 line of 20 static characters
- Message 03: 3 line of 20 static characters
- Message 04: 4 line of 20 static characters
- Message 05: 5 line of 20 static characters
- Message 06: 6 line of 20 static characters
- Message 07: 1 line with a 9-digit counter
+ 1 line with 3 timer elements
- Message 08: 1 line with a 9-digit counter
+ 1 line with 3 timer elements
+ 1 bar code 2/5 of 10 static characters
- Message 09: 1 line with a 9-digit counter
+ 1 line with 3 timer elements
+ 1 bar code 2/5 of 10 static characters
+ 1 line with a EAN 13 code
- Message 10: 1 line with a EAN 13 code

The serial link configuration is as follows:

- 19 200 bauds,
- 1 start bit, 8 bits, 1 stop bit without parity.

Time to send a message from the computer to the printer:

$$T = \frac{\text{Nbr of bytes transmitted} \times \text{Nbr of bits per bytes transmitted}}{\text{Transmission speed}} \text{ in seconds}$$

6 Result

	WITH EXTENDED LIBRARY OPTION		
	Message sent to library	Message sent to print	Message number selection
Message 01	47 ms	39 ms	15 ms
Message 02	64 ms	56 ms	16 ms
Message 03	81 ms	73 ms	16 ms
Message 04	91 ms	89 ms	17 ms
Message 05	115 ms	106 ms	18 ms
Message 06	132 ms	123 ms	19 ms
Message 07	67 ms	58 ms	16 ms
Message 08	87 ms	77 ms	17 ms
Message 09	97 ms	89 ms	19 ms
Message 10	75 ms	67 ms	16 ms

- Message sent to library:

The time covers reception, library writing, and processing of the data prior to authorization of the TOP object.

NOTE

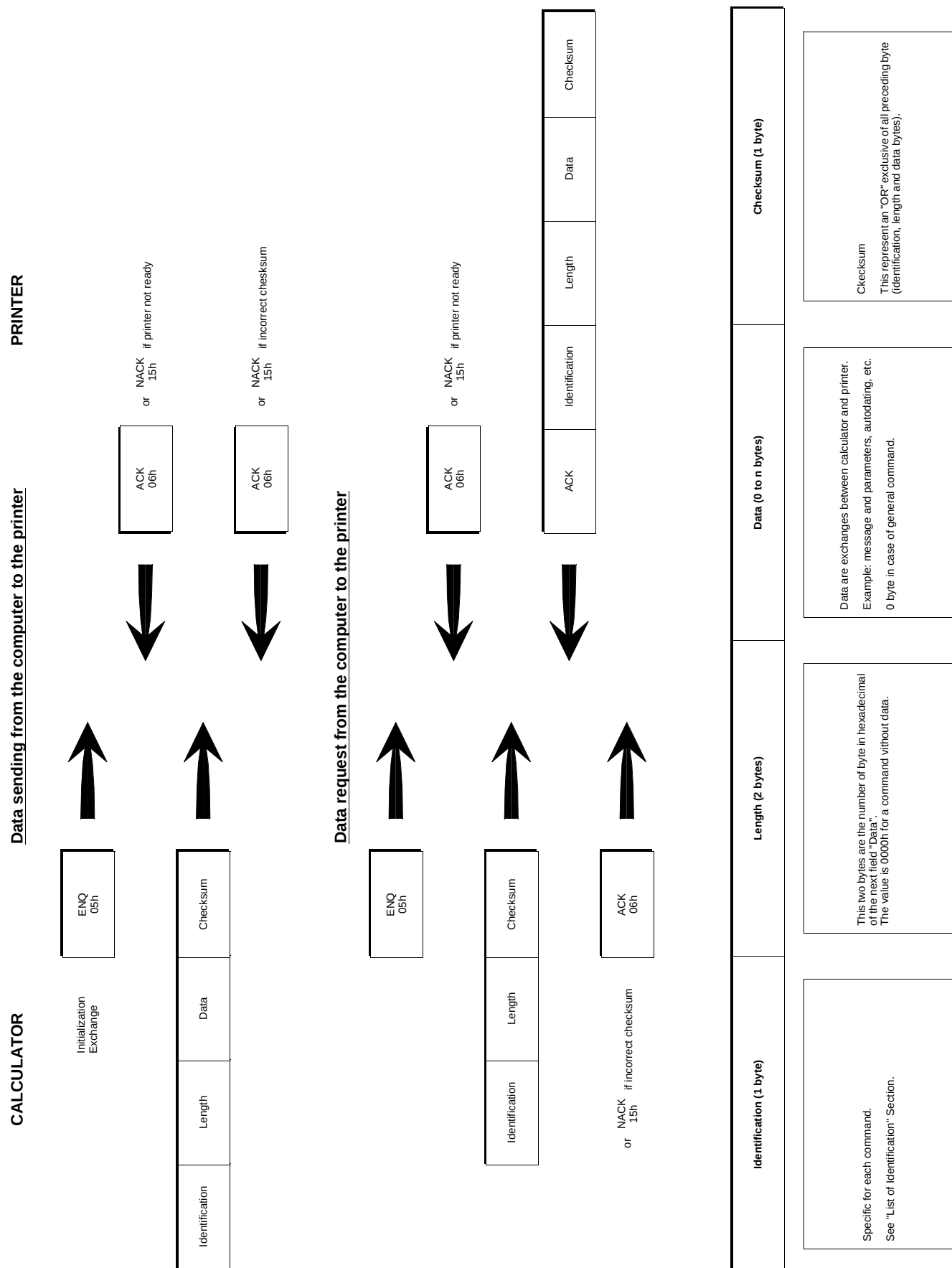
If the message sent to the library by serial link is the active message, the next print will be that of the new message.

- Message sent to print:

The time covers reception and processing of the data prior to authorization of the TOP object. The message is stored in the library.

- Selection of message number:

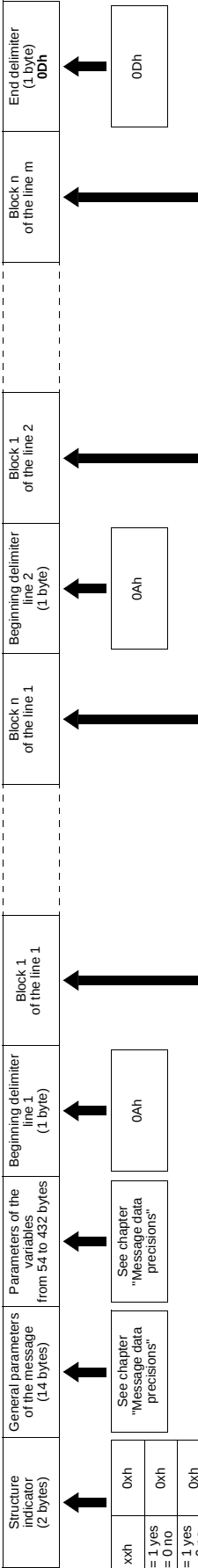
The time covers the selection of a message number, library reading, and processing of the data prior to authorization of the TOP object.



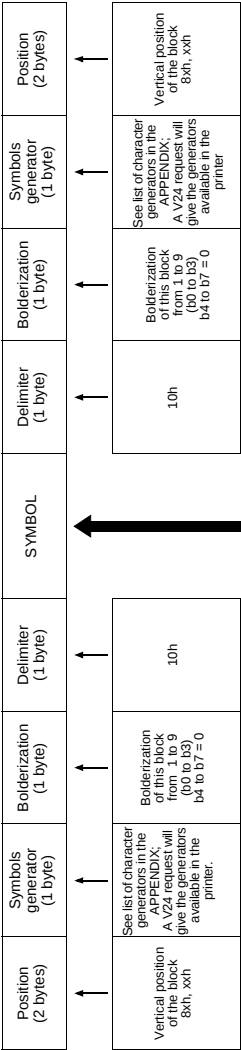
Sending of a complete message



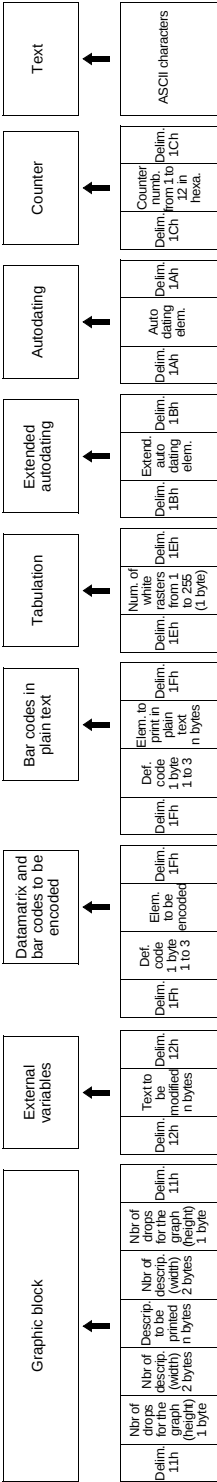
DEFINITION OF THE DATA BYTES



DEFINITION OF A BLOCK



DEFINITION OF A SYMBOL

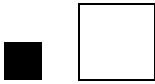
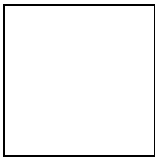


See chapter "Message data precisions" of the section "PROTOCOLS"

MESSAGE SELECTION BY EXTERNAL INTERFACE - PRESENTATION

Contents

1	External interface - Introduction	100
2	Characteristics	101
2.1	Inputs	101
2.2	Outpus	101
3	Connection	102
3.1	Connection terminals of the industrial interface cassette	103
3.2	Connection of the parallel interface to a SIGEA head movement	104



1 External interface - Introduction

Parallel interface is only available with S7 SUPRA printer.

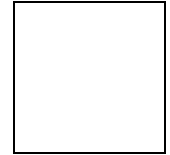
It allows selection of messages contained in the printer library to be selected for printing by PARALLEL INTERFACE or by MESSAGE INCREMENT.

Both types of message selection are connected to the printer with the Complete Industrial Interface Cassette.

IMPORTANT

The type of message selection used is to be configured in the "Printer Preparation" menu, "Initialization" sub-menu, "Message" function, "Miscellaneous" sub-function, "Operation" stage:

- std message: message selection by Operator Interface or Terminal Unit.
 - select n mes: message selection by PARALLEL INTERFACE.
 - library: message selection by MESSAGE INCREMENT.
 - S7: operation with Serie 7 printer message structure.
-



2 Characteristics

2.1 Inputs

- All input circuits are carried out with the help of the high speed photocoupler.
- Voltage used: from 10 to 24 volts.
- Input current regulated in the operational voltage field.
- The D0 to D7 inputs have a common connection "COM".
- The inputs are active at high level.

2.2 Outputs

- Two outputs are used:
 - "SYNC" message synchronization output,
 - "ETAT" counter status output.
- These outputs are carried out with the help of open collector rapid photocoupler.
- Maximum output current: 16 mA.
- Maximum operational voltage: 24 V.
- The outputs are active at low level.

3 Connection

Connection of the two types of message selection on the Industrial Interface Cassette is made as follows:

- unscrew the four cassette securing screws,
- pass the link layer through one of the stuffing boxes provided,
- connect the wires to their corresponding terminals according to the type of message selection used.

IMPORTANT The shielding of the link cable used must be connected throughout the length of the metallic stuffing box of the industrial interface cassette and a similar connection must be made on the computer.

Figure 1 : The industrial interface cassette and terminals

- 1 Stuffing box
- 2 Connecting bars

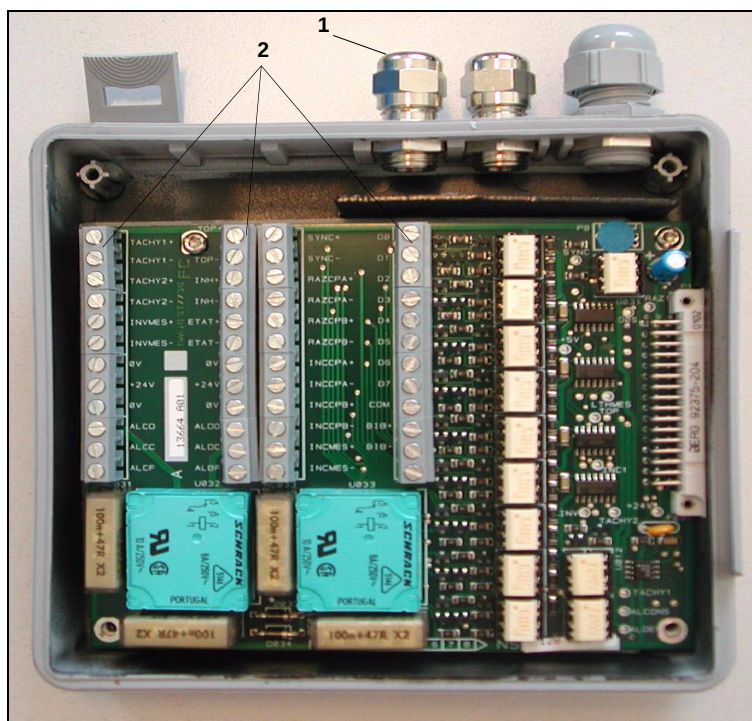
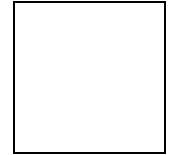


Figure1



3.1 Connection terminals of the industrial interface cassette

- **Parallel Interface:**

INCMES+ Top print
INCMES-

D0	Parallel Interface Data
D1	
D2	
D3	
D4	
D5	
D6	
D7	
COM	

SYNC+ Message Synchronization Output
SYNC-

ETAT+ Counter status Output
ETAT-

- **Message Increment:**

INCMES+ Message increment
INCMES-

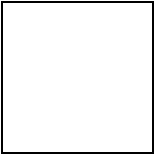
BIB+ Message increment or decrement flow
BIB-

TOP+ Print start
TOP-

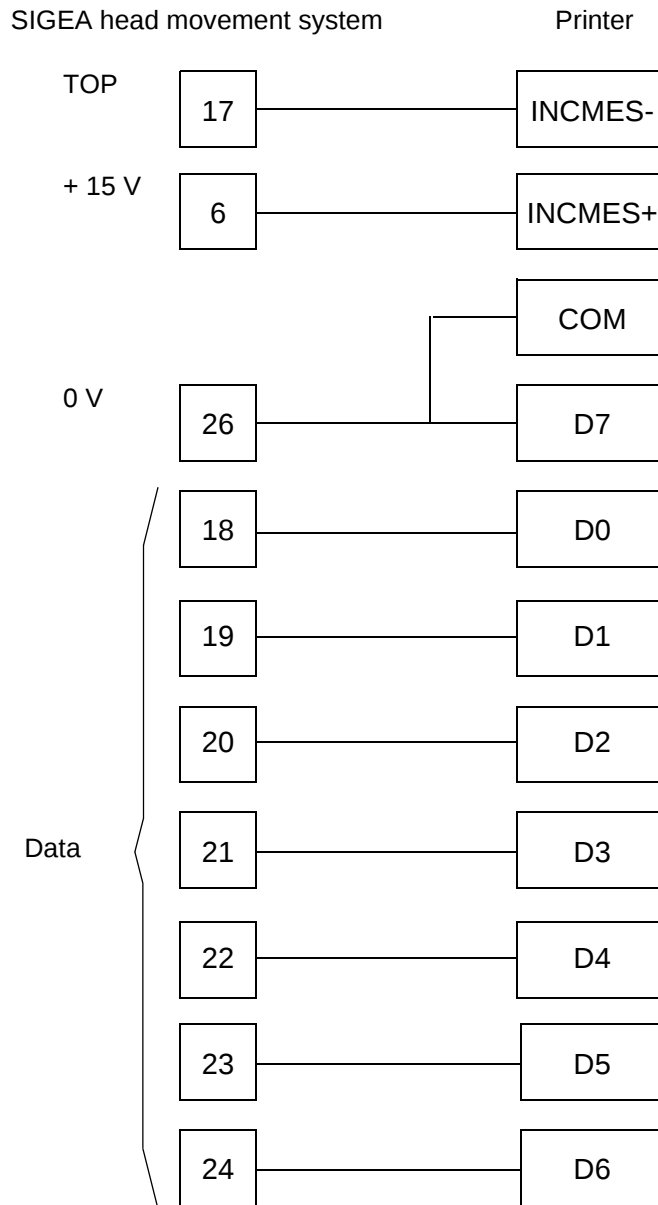
SYNC+ Message synchronization output
SYNC-

- **Supply:**

0 V
24 V



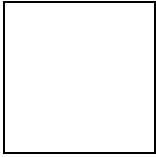
3.2 Connection of the parallel interface to a SIGEA head movement



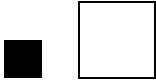
MESSAGE SELECTION BY PARALLEL INTERFACE

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1.2	Output	106
2	Signals Diagram	107



Message selection by Parallel interface



1 Fonctionnement

1.1 Inputs

INCMEs: This input allows validation of the message number present on the data D0 to D7 and to start printing the message (this input is not filtered).

D0 to D7: Data for addressing the message number to be printed.

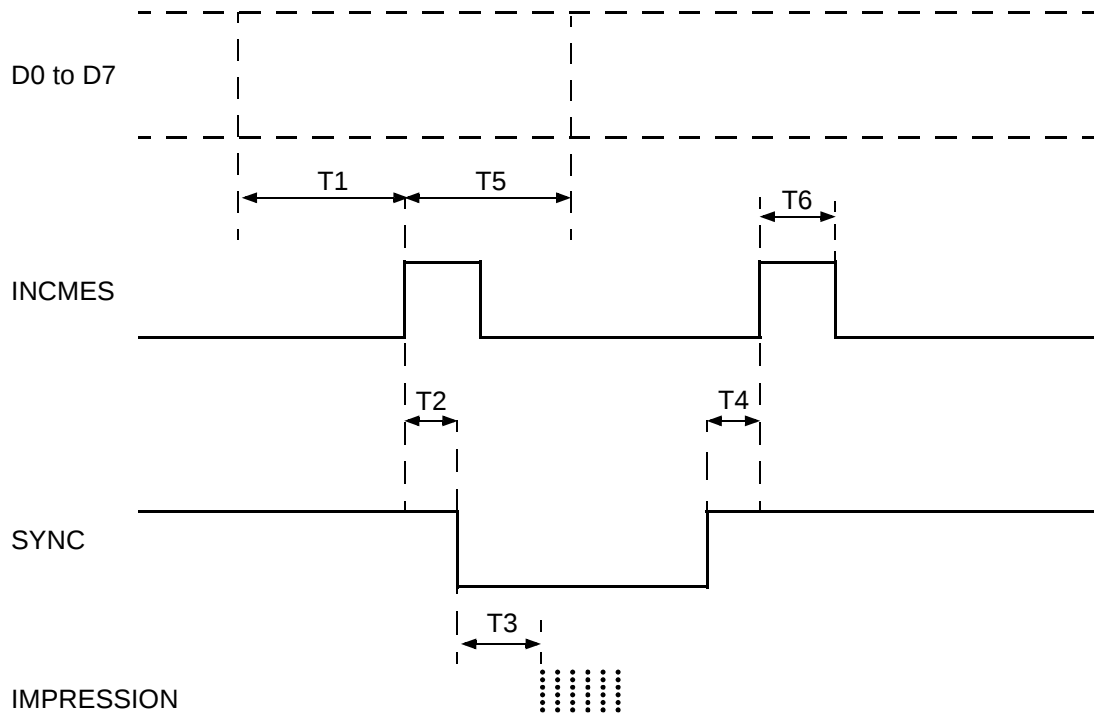
D7 = 1 the addresses are coded in BCD (up to 79 messages).

D7 = 0 the addresses are coded in hexadecimal (up to 127 messages).

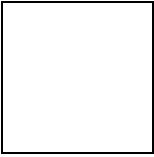
1.2 Output

SYNC: This output is active during printing of the selected message.

2 Signals Diagram



- T1:** Minimum time of presence of data D0 to D7 before the rise of the signal INCMES = **30 μ s**.
- T2:** Maximum time between the rise of the INCMES signal and the active state of the signal SYNC = **10 ms** (this time depends on the message content).
- T3:** Time between the activation of the SYNC signal and start of the message printing. (this time depends on the type of head, the printing speed and delay of the selected message).
- T4:** Minimum time between the end of printing (SYNC signal inactive) and a new message selection = **10 ms**.
- T5:** Minimum hold time for data D0 to D7 after the rise signal INCMES = **30 μ s**.
- T6:** Minimum width of the INCMES = **100 μ s**.



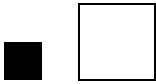
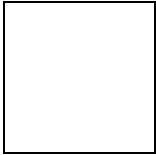
Message selection by Parallel interface

Notes

MESSAGE SELECTION BY MESSAGE INCREMENT INTERFACE

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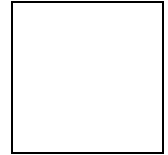
1 Operation

There are two operational modes with this type of Message Selection according to the signal present on the D7 bit:

- D7 to 0: Parallel Interface Mode,
- D7 to 1: Message Increment Mode.

IMPORTANT	The role of the Parallel Interface Mode corresponds above all to the initialization of the first of a series of messages during the Message Selection by Message Increment.
------------------	--

NOTE	These two operational modes can be used in conjunction depending on the D7 input level.
-------------	--



2 Parallel Interface Mode

2.1 Inputs

DATA D0 to D6:

Message number to be printed in hexadecimal.

INCMES:

This input allows validation of the message number present on the D0 to D6 data.

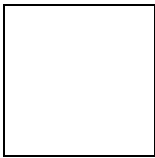
TOP:

This input permits print start up of the message selected by the D0 to D6 data and validated by the INCMES input.

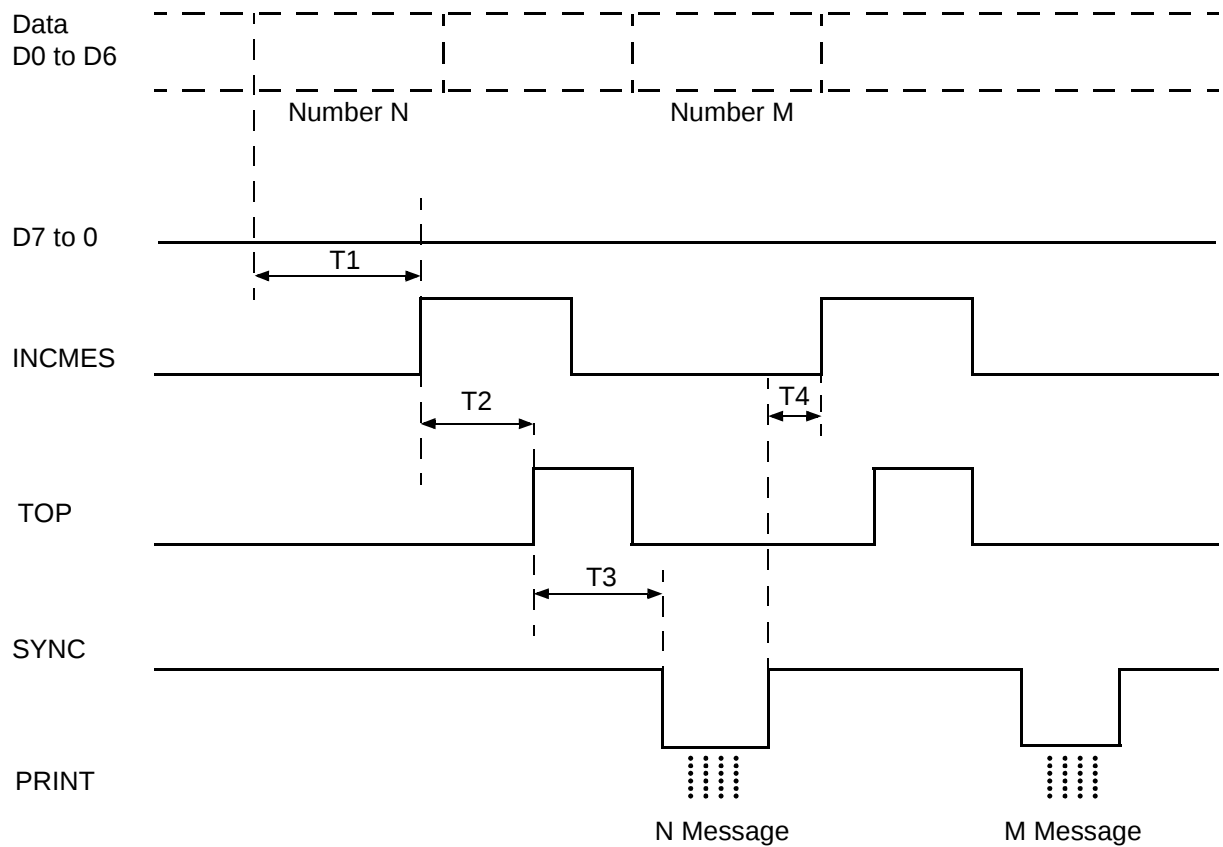
2.2 Output

SYNC:

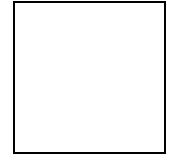
This output is active during printing of the selected message.



2.3 Signals Diagram



- T1:** Minimum presence time between the D0 to D7 data and the rise of the INCMES input = **30 μs**.
- T2:** Minimum time between the rise of INCMES and that of the TOP input = **10 ms** (this time depends on the message content).
- T3:** Time between the rise of the TOP signal and printing of the first frame of the selected message. This time depends on the type of head and on the speed or delay in printing the selected message.
- T4:** Minimum time between the end of printing (return of the SYNC signal to rest) and a new rise of the INCMES input = **10 ms**.



3 Message Increment Mode

A first active message must be initialized either by the Operator Interface, or by the Terminal unit, or by the serial link, or by the preceding Parallel Interface Mode.

3.1 Inputs

INCMES:

Each pulse on this input develops the active message number to print depending on the BIB input level.

BIB:

The BIB input at low level allows increments of the message number. The BIB input at high level allows decrementation of the message number.

After a change of status of the BIB input, the first impulse of the INCMES signal does not modify the number of the selected message on printing.

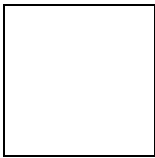
TOP:

A pulse on this input starts up printing of the selected message.

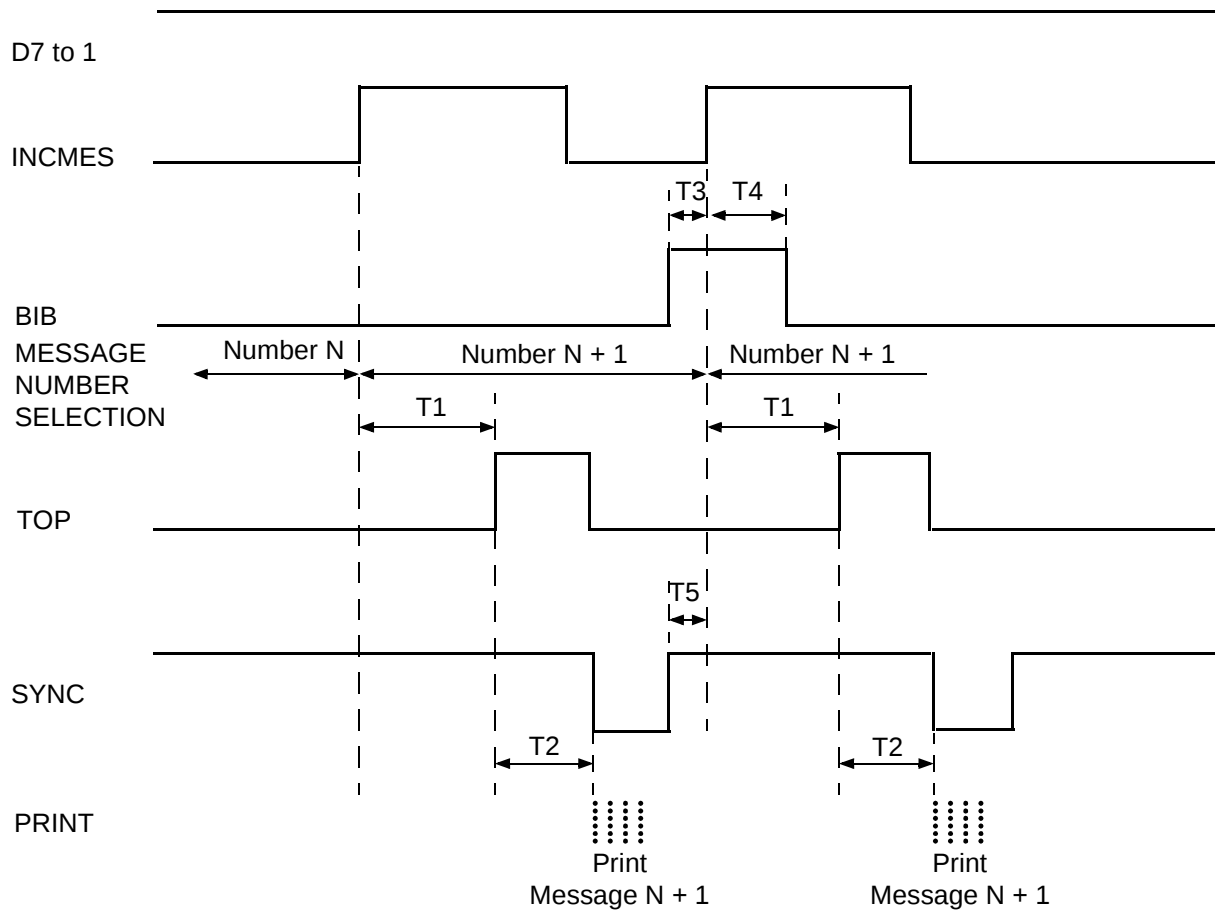
3.2 Output

SYNC:

This output is active during printing of the selected message.



3.3 Signals Diagram



- T1:** Minimum time between the rise of INCMES and that of the TOP input = **10 ms** (this time depends on the message content).
- T2:** Time between the rise of the TOP signal and printing of the first frame of the selected message. This time depends on the type of head and on the speed or delay in printing the selected message.
- T3:** Minimum presence time of the BIB input before rise of the INCMES input = **30 μ s**.
- T4:** Minimum hold time of the BIB signal after rise of the INCMES input = **1 ms**.
- T5:** Minimum time between the end of printing (return of the SYNC signal to rest) and a new rise on the INCMES input = **10 ms**.

REVISION

Update of the manual

- Revision index A corresponds to the initial edition of this manual.
- The revision index changes with every modifications.
The modified pages are mentioned in the following table. This one indicates all updating since the first edition.

Date of edition	Document revision index	Software index	Modified pages
03/2000	A	A10	Initial edition
04/2000	A1	A10	14, 16, 17, 19, 20, 33, 34, 35, 36, 113
11/2001	B	A11	All
09/2002	C	A12	All

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