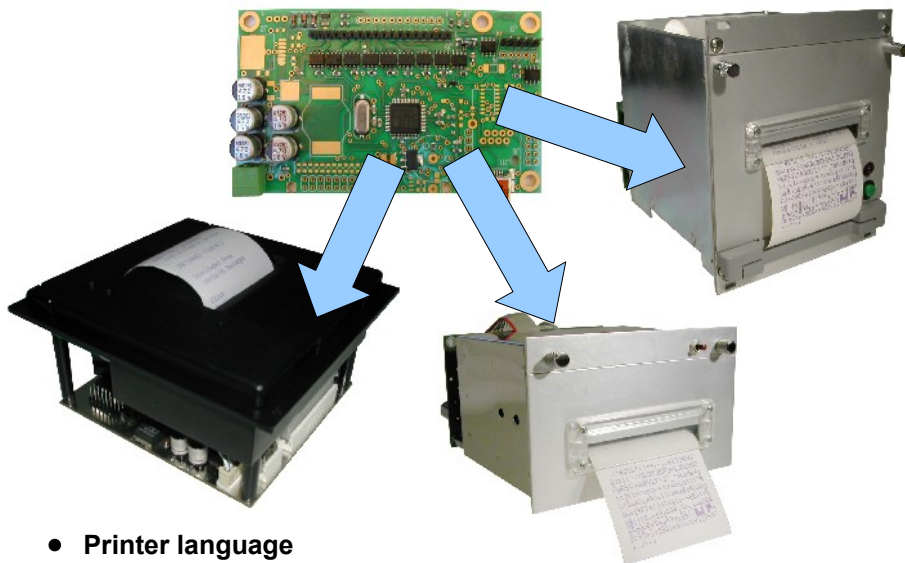


MRSi & MRTi Software manual



- **Printer language**
 - ESC/P Base
 - ESC/P 9 pins
 - PCL Raw
 - MRS & MP-181
- **Special function**
 - Status Led driving
 - Font download
 - Logo & Messages programming
 - Analog and Counting inputs

Version 1.0

MEGATRON

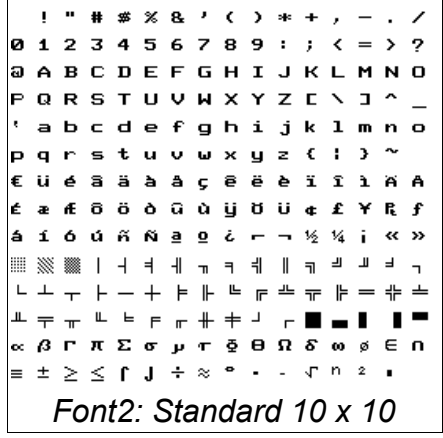
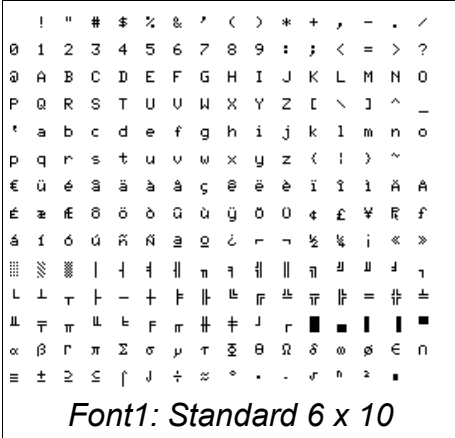
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1 FONTS

1.1 CHARACTER SETS

Two complete sets of 255 IBM-II characters are available in ROM as well as national characters. Characters exist in 6x10 and 10x10 matrix with uppercase and lowercase letters.



The selection of national characters is done by software or by the configuration menu.

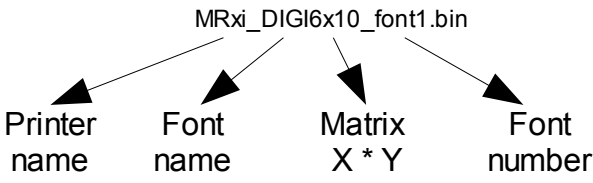
1.2 FONT UPLOAD

Other fonts are available for downloading on our Internet site in binary files. Just upload them to the printer to change your font. These new fonts replace one of two original fonts. Font matrix is possible up to 16 x 16 dots.

Examples: Standard, Technic, Digit, Handy, Katakana, etc...

Ask us if you need other fonts...

The filename is build like this :



2 CONTROL CODES

2.1 CONTROL CODES PCL RAW

The compatibility PCL Raw has been implemented in order to allow the printer to work with computers. Only the graphic functions are implemented. The other control codes are ignored. The compression algorithms Run Length and Tiff are supported. Delta Row will be available as soon as possible.

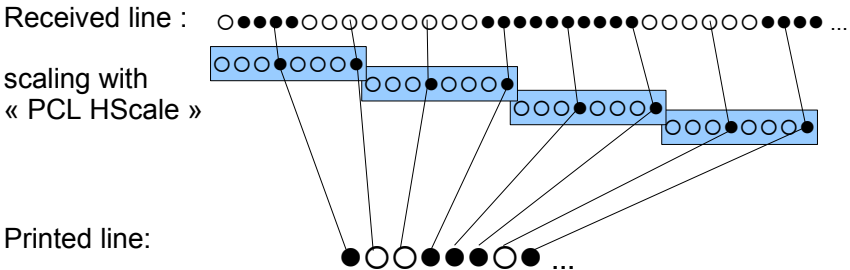
Mnenonics	Hex	PCL codes available
ESC "&"	1B 26	
ESC "&" a # H		Horizontal position
ESC "*"	1B 2A	
ESC "*" b # W		Graphics printing
ESC "*" b # M		Selection of compression algorithm : without compression, Run Length, Tiff, Delta Row
ESC "*" r # T		Page length
ESC "*" p # X		Page width
ESC "E"	1B 45	Soft reset

2.1.1 PCL SCALING

PCL printout is often used with laser printers with a large dot density and large paper width. Because MRSi and MRTi printers must print in a 58 mm paper width, it is not always possible to print all the dots.

So a special scaling function is implemented to allow large printouts to fit in the paper width (58 mm). Two virtual switches allow the user to select which dot columns ("PCL HScale") and dot lines ("PCL Vscale") have to be printed. Each of the 8 bits of the switch at 1 enabled the column or the line to be printed.

Example with "PCL HScale" = 17 (or 11h or 00010001b)

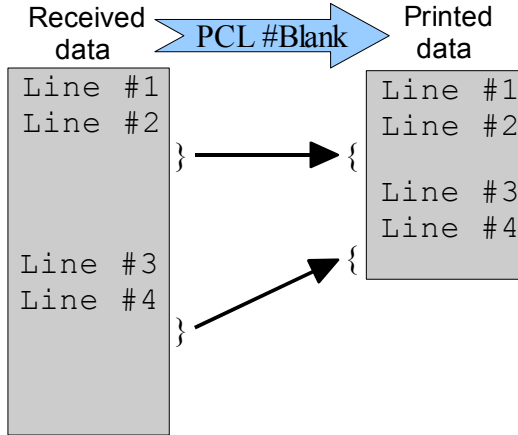


2.1.2 PCL CLEAR BLANK LINES

Some printouts of PCL have a lot of empty lines printed.

The virtual switch « PCL #Blank » limit the quantity of consecutive empty lines to this the value. This function is disabled when « PCL #Blank » = 0.

As soon a not empty line is received, the printing restart.



2.2 CONTROL CODES MRS OR MP-181

The compatibility MRS and MP-181 has been implemented in order to allow direct replacement of the older printers: MRS and MP-181.

Mnemo	Hex	Control codes
SOH	01	ASCII character set
STX	02	Graphic bar
EOT	04	French character set
ACK	06	Graphic bar pattern
BEL	07	Clock (set or display)
TAB	09	Tabulation
LF	0A	Line feed
FF	0C	White line
CR	0D	Carriage return

Mnemo	Hex	Control codes
SO	0E	Double width
SI	0F	Text mode
DLE	10	Data mode
DC3	13	Special characters
DC4	14	Single width
SYN	16	Black line
ETB	17	Feed n lines
SUB	1B	Cut paper
ESC	1B	Register mode

2.3 CONTROL CODES ESC/P 9 PINS

The compatibility ESC/P 9 PINS has been implemented in order to allow the printer to work with computers. Only the graphic functions are implemented. The other control codes are ignored. The codes implemented are shown with a mark in the column '9 Pin' of the table.

2.4 CONTROL CODES ESC/P BASE

These codes are less compatible with ESC/P, but they give some functions more specific to the printer. Most of these codes work the same way as 9 pins. Only the ESC/P Base is detailed in the next chapters.

Attention, Major difference in graphic:

The graphic modes are very similar, but the function of the CR at the end of the graphic is different :

- for ESC/P Basic, the code CR makes a line feed like a LF code.
- for ESC/P 9 pins, the code CR makes only a carriage return without any line feed.

The characters with their ASCII values between 01 hex and 1F hex are control characters and are not printable. These characters allow to modify the behaviour of the interface (control characters).

Mnemo	Hex	Control codes	Base	9Pins	Page
HT	09	Tabulation	x	x	9
LF	0A	Line feed	x	x	9
FF	0C	Page feed	x	x	9
CR	0D	Carriage return	x	x	9
SO	0E	Double width	x	x	8
DC4	14	Normal width	x	x	8
ESC "!"	1B 21	Master mode		x	
ESC "\$"	1B 24	Horizontal position: nL nH		x	
ESC " ' "	1B 27	Graphic Printing	x		11
ESC ")"	1B 29	Advance of n lines of characters	x	x	9
ESC "*"	1B 2A	Graphic Printing : 8 points per column (ESC "*" n with $0 \leq n \leq 3$)	x	x	10
ESC "-"	1B 2D	Underscore ON:OFF	x	x	
ESC "2"	1B 32	Sets interlining to 0	x	x	9
ESC "3"	1B 33	Sets interlining to n	x	x	9
ESC "@"	1B 40	Soft reset	x	x	
ESC "C"	1B 43	Page length	x	x	9
ESC "D"	1B 44	Sets tabulations	x	x	9
ESC "F"	1B 46	Font selection	x		8
ESC "J"	1B 4A	Advance of n lines of dots	x	x	9

Mnemo	Hex	Control codes	Base	9Pins	Page
ESC "K"	1B 4B	Graphic Printing : 8 dots/columns	x	x	10
ESC "L"	1B 4C	Graphic Printing : 8 dots/columns	x	x	10
ESC "M"	1B 4D	Selection of the font 1 (6x10)		x	
ESC "P"	1B 50	Selection of the font 2 (10x10)		x	
ESC "R"	1B 52	Selection of national characters	x	x	8
ESC "S"	1B 53	Control of status DEL	x		17
ESC "V"	1B 56	Synchronisation character (RS232 only)	x		14
ESC "W"	1B 57	Character widening	x	x	8
ESC "Y"	1B 59	Graphic Printing : 8 dots/columns	x	x	10
ESC "Z"	1B 5A	Graphic Printing : 8 dots/columns	x	x	10
ESC "a"	1B 61	Selection of the alignment	x	x	
ESC "f"	1B 66	Printing of 1 line of dots	x		10
ESC "g"	1B 67	Selection of the font 1 (6x10)		x	
ESC "j"	1B 6A	Prints but do not go back		x	
ESC "t"	1B 74	Selection of the table of the characters codes		x	
ESC "x"	1B 78	Selects the printing NLQ or Draft		x	
ESC "w"	1B 77	Elongation of the characters	x	x	8
ESC "{"	1B 7B	Selection of the direction of the printout : Text or Data	x	x	8
GS "V"	1D 56	Advances to the cutting bar, then n/2 lines of dots	x		
GS "I"	1D 5B	Switch acquisition (RS232 only)	x		17
GS "\	1D 5C	Adjustment of the external inputs (ADC & CPT)	x		18
GS "J"	1D 5E	Configuration of the switches	x		16
GS "^"	1D 5E	Activation of the timer	x		13
GS "a"	1D 61	External inputs printing (ADC & CPT)	x		14
GS "c"	1D 63	Date stamping & clock setting	x		15
GS "m"	1D 6D	Printing of a pre-stored message	x		13
GS "p"	1D 70	Printing of the logo	x		13
GS "s"	1D 73	Messages or Logo programming	x		13
GS "u"	1D 75	Transmission of data through the serial. (RS232 only)	x		
GS "v"	1D 76	Return of data towards the emitter. (RS232 only)	x		14

2.5 CONTROL CHARACTERS

The characters with their ASCII values between 01 hex and 1F hex are control characters and are not printable. These characters allow to modify the behaviour of the interface (control characters).

2.5.1 CHARACTERS SELECT

- ◆ **ESC F n (1B 54 Hex = 27 84 Dec)**
Select one of the 2 character fonts.
Only the lowest bit of n allow to select the font
- ◆ **ESC R n (1B 52 Hex = 27 82 Dec)**
Select national characters.
Default choice is selectable by the configuration menu.

2.5.2 CHARACTERS ENRICHMENT

- ◆ **SO (0E Hex = 14 Dec)**
Double width of characters
- ◆ **DC4 (14 Hex = 20 Dec)**
Simple width of characters
- ◆ **ESC - n (1B 2D Hex = 27 45 Dec)**
Beginning / End of underline
n = 1 (01 Hex) ou '1' (31 Hex) Beginning of underline.
n = 0 (00 Hex) ou '0' (30 Hex) End of underline
- ◆ **ESC W n (1B 57 Hex = 27 87 Dec)**
Widening of the characters
The default value of n is 0 (normal size).
The maximum value depends on the connected head : 24, 32 or 40
- ◆ **ESC w n (1B 77 Hex = 27 119 Dec)**
Lengthening of the characters
The default value of n is 0 (normal size).
The maximum value of n is 9 (10 x the normal height)
- ◆ **ESC { n (1B 7B Hex = 27 123 Dec)**
Setting of the mode Text/Data
n = 1 (01 Hex) ou '1' (31 Hex) Data Mode
n = 0 (00 Hex) ou '0' (30 Hex) Text Mode (default setting)
The text or data default mode is set-up by the configuration menu.

2.5.3 HORIZONTAL SPACES

◆ **TAB (09 Hex = 9 Dec)**

Tabulation

Move the next printing position to the next tabulation.

◆ **ESC D x1...xi NUL (1B 44 ... 00 Hex = 27 68 ... 0 Dec)**

Tabulations setting.

You can define as many tabulations positions x_i than the number of characters that can be defined in the line of characters. This command must end with the NULL character (00 Hex).

By default, tabulations are positioned every 6 characters in 6, 12, 18, etc...).

2.5.4 VERTICAL SPACES

◆ **LF (0A Hex = 10 Dec)**

Starting a new line.

The LF (LineFeed) and CR (Carriage Return) characters act the same way by triggering the printing of the current line. Some word processing softwares use LF, others CR and a few others both commands to trigger a line printing. In order to avoid non required double interline spacing, in case a sequence including these two consecutive characters is received, only the first character received will trigger the printing, the other one will be ignored.

◆ **FF (0C Hex = 12 Dec)**

Starting a new page. See ESC C command

◆ **CR (0D Hex = 13 Dec)**

Carriage return.

Starting a new line. See LF command above.

◆ **ESC) n (1B 29 Hex = 27 41 Dec)**

Advancing for n character lines

◆ **ESC 2 (1B 32 Hex = 27 50 Dec)**

Return to the default space between the lines. (default value = 0)

◆ **ESC 3 n (1B 33 Hex = 27 51 Dec)**

Setting the space between two character lines to n dot lines

◆ **ESC C n (1B 43 Hex = 27 67 Dec)**

Setting the page length in lines of characters.

The default value is set to 66 lines.

◆ **ESC J n (1B 4A Hex = 27 74 Dec)**

Advancing for n dot lines

2.5.5 GRAPHIC MODE

◆ ESC f (1B 66 Hex = 27 102 Dec)

Printing a black line.

◆ ESC K $n_1 n_2 x_1 \dots x_{(n_1+256x_2)}$ (1B 4B ... Hex = 27 75 ... Dec)

ESC L $n_1 n_2 x_1 \dots x_{(n_1+256x_2)}$ (1B 4C ... Hex = 27 76 ... Dec)

ESC Y $n_1 n_2 x_1 \dots x_{(n_1+256x_2)}$ (1B 59 ... Hex = 27 89 ... Dec)

ESC Z $n_1 n_2 x_1 \dots x_{(n_1+256x_2)}$ (1B 5A ... Hex = 27 90 ... Dec)

8 dot lines graphic printing

$n_1 + 256 \times n_2$ represents the number of characters of the graphic chain.

The characters chain x_1 to $x_{(n_1+256x_2)}$ represents the desired printed pattern.

All the bits of received characters are printed on the same line.

Only Text and Data mode enrichment (ESC 'n) has an effect in graphic mode. In Text mode, the line is printed from left to right with the higher weight's bits to the far left. In Data mode, the line is printed from right to left with the higher weight's bits to the far right. Characters and graphics cannot be printed on the same line.

Graphical sequences must be terminated by one of the paper feed sequences (CR, LF, ESC J, etc... sequences). Consecutive graphical sequences are appended together.

Because the printer mechanism has not a lot of dots by line, the density uses to print the graphic is the same in these four graphic modes. If you want to change the print density, you have to set the virtual switch GR.Hor_Res to no_zoom, Zoom x 1 (all dot columns are printed twice), Zoom x 2 (all dot columns are printed 4 times)

◆ ESC * m $n_1 n_2 x_1 \dots x_{(n_1+256x_2)}$ (1B 4B ... Hex = 27 75 ... Dec)

Dot lines graphic printing

This graphic mode is similar as the previous one.

Only the character m is added. It allows to select the graphical mode; only values of m between 0 and 3 are supported (8 dot lines graphic mode). All other values are identical to the « 8 dots lines graphic printing ».

◆ **ESC 'm n₁ .. n_m (1B 27 Hex=27 39 Dec)**

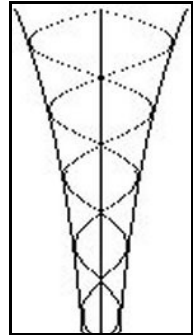
Printing graphic curves with external inputs included

This command allows for easy printing of curves along the paper (vertically).

- The m value represents the number of curves (points) to be printed for the current graphic line, and must be included between 1 and the maximum number of printable points per line (144, 192 or 240).

- The n₁ .. n_m values represent the position of these m curves (or points); the number of points (n₁ .. n_m) must be equal to m. Each point must be included between 1 and the maximum number of printable points per line, otherwise it will not be printed. As horizontal lines printing progresses, the vertical curves will show on the paper.

The vertical lengthening (ESC 'w' n) act on the graphic curves.



Example: Basic software to print 4 curves and a central axis.

$$y = 72 + e^{-0,1x}$$

$$y = 72 - e^{-0,1x}$$

$$y = 72 + e^{-0,1x} * \sin(x/10)$$

$$y = 72 + e^{-0,1x} * \sin(x/10)$$

$$y = 72$$

```
10 OPEN "COM1:9600, N, 8, 1, CS60000, DS, CD" AS #1
20 FOR X=0 TO 200
30 PRINT #1, CHR$(27); CHR$(39); CHR$(5);
40 Y=INT(72*EXP(-.01*X)); YY=INT(Y*SIN(X/10))
50 PRINT #1, CHR$(72-YY);
60 PRINT #1, CHR$(72-Y);
70 PRINT #1, CHR$(72);
80 PRINT #1, CHR$(72+Y);
90 PRINT #1, CHR$(72+YY);
100 NEXT X
110 CLOSE #1
120 END
```

The two external inputs can be added or not to the curves thanks to the « GS a » command.

2.5.6 LOGO & MESSAGES

A memory area of 16K-bytes of Flash is reserved for downloadable messages. This area can be used at your choice for:

- Store a logo (e.g.: a unique great message of 16 Kb)
- Store 30 messages of 512 bytes to make the watching of 15 different events (the beginning and the end) by positioning a value on 4 bits on the connector CN2. The return of this binary value to 0 indicates the end of event.

These two modes can not coexist.

Logo: If the value stored in the first 2 bytes of the memory area is greater than 0 and lower than 16382, the logo mode is active and the following 16382 bytes contain the data of the logo. This logo can be printed by a software command (ESC P), a close on one of 4 binary entries (BIN0 to BIN3), the timer or by the 'Logo Stamp' mode.

Messages: If the value stored in the first 2 bytes of the memory area equals 0, the « messages » mode is active.

The area is then divided into 32 parts of 512 bytes:

- The parts 0 and 16 are empty.
- The parts 1 to 15 contain the data of messages to print during the writing of a binary value 1 to 15 on the connector CN2. They are the beginning event messages
- The parts 17 to 31 contain the data of messages to print when binary value returns in 0. They are the ending event messages.

A software (ProgMess) is available on our Internet site to help you in the preparation and in the programming of messages.

Note: The logo and messages can contain all the characters and control sequences of the printer: enrichments, texts, graphs, graphic lines, barcodes, etc..... Only the saving, logo or messages calling and software reset commands must not be used.

Timer: A timer can be used to print periodically the logo or the message 15. Period is fixed by 3 values "second", "minute" and "hour" in the configuration menu and varies from 0 seconds to 12h 59mn 59sec. This function allows for example to draw automatically a curve with the analogical entries. A value "n" named "Alt Print" when it is greater than 0, allows to print n times the message 15 then one time the message 14. This possibility allows for example to print graduations on the time axis.

◆ **GS s m_L m_H n₁ n₂ n₃.. n_m (1D 73 Hex=29 115 Dec)**

Storing the messages in the Flash memory.

m (transmitted on 2 bytes) contains the number of bytes of the messages.

n₁ .. n_m are the n bytes constituting the messages.

The m value is m_L + 256 x m_H and must not exceed 16 K-bytes - 2 bytes (reserved for the memory size) !

- ◆ For the logo, bytes n₁ et n₂ contain the size of the logo (m-2 bytes). They must be followed by the n₁ + 256 * n₂ bytes of the logo
- ◆ For the messages, it is necessary to send the 32 messages constituted of 2 bytes for the size followed by 510 bytes of data. Messages 0 and 16 are constituted only of 0.
Warning: all the messages must be programmed together

◆ **GS p (1D 70 Hex=29 112 Dec)**

Print the logo or message 1.

◆ **GS m n (1D 6D Hex=29 109 Dec)**

Print the logo or message n.

◆ **GS ^ n (1D 5E Hex=29 94 Dec)**

Activate or not the printer timer.

If n is even, timer is disable

If n is odd and timer period is greater than 0, timer is enable. Each time, the delay is elapsed, logo or message 15 or 14 are printed.

The timer can be activated at the power on with the « Timer Use » menu. A value "n" named "Alt Print" when it is greater than 0, allows to print n times the message 15 then one time the message 14. This possibility allows for example to print graduations on the time axis.

Tips: To realize a **drawing of analogical curves**, it is enough to program 3 messages

- Message 15: prints a graphic curve with some pixels for X axis
- Message 1: Prints a ticket header, set the timer interval and enable the timer
- Message 2: Disable the timer and prints a ticket footer
Messages 1 and 2 can contains date and time.

You will have taken care previously to have put in the scale the 2 analogical or counting entries EXT0 and EXT1 with the function" ESC \ " and to store these values with the command " ESC] NUL ".

It remains only to cable a button among BIN0 and GND to start the graph and another one among BIN1 and GND to stop the graph.

2.5.7 SPECIAL COMMANDS

◆ ESC V n (1B 56 Hex=27 86 Dec)

Synchronisation character

This command is treated only after the previous data are printed. The character 'n', chosen by the user is send back to the serial line. When you received back this character, you are sure that the previous data are printed.

◆ GS v n (1D 76 Hex=29 118 Dec)

Printer interrogation on serial interface.

When receiving this sequence, the printer sends one of the six parameters corresponding to the n value back on the serial interface. The string is ended by a « Carriage Return » or CR (Ascii value 13 or 0Dh)

n	Parameter	Answer example
0	Product name	Prod.: MRTi-2400
1	Software name and version	Soft.: F196v1.0
2	Manufacturer name	Maker: MEGATRON
3	Printer Date and Time	Clock: JJMMAAHHMNSS
4	External entry ADC (with scale)	ADC: 1023
5	External entry CPT (with scale)	CPT: 65535
6	Paper status	19h (Present) or 17h (Absent)
7	Serial number	S.N.: 00000000

◆ GS a n (1D 61 Hex=29 97 Dec)

Formatted text printing of the external entries ADC and counting CPT.

In reception of this command the analogical value (acquired on 10 bits) or the counting value (on 16 bits) of the entry selected by the least significant bit of the character 'n' is printed.

A scaling formula like $y=a*X+b$ is used before printing the result. See commands « GS \ 0 » to « GS \ 3 »

Each value is printed by using the string format set by commands « GS \ 4 » and « GS \ 5 ».

2.5.8 CLOCK OPTION

To obtain the printing of date and hour, it is possible to install a real time clock, with a backup battery. The interface part number will contain the -C extension. For example : MRTi-2421-C. the clock can be set over the computer interface, or thanks to the configuration menu.

Tips: - Date and hour can be sent back on the computer liaison with the **GS v 3** command !

- An automatic date and time can be added to your printout thanks to « Add date » menu

◆ **GS c 0 x1... x12 (1D 63 30 ... Hex = 29 99 48 ... Dec)**

Setting the real time clock.

With x_1, \dots, x_{12} ASCII code between 30 and 39 Hex (characters 0 to 9)

At the reception of this command, the clock switches to the set-up mode and the twelve bytes x_1, \dots, x_{12} represent the chain DDMMYYHHMMSS (Day, Month, Year, Hour, Minute and Second). The clock can only be set-up at the beginning of a line.

◆ **GS c n (1D 63 n Hex = 29 99 n Dec)**

Printing the date.

At the reception of this command, the date is stored in the printing buffer at its current position.

The format of the date depends on the character n :

n	Format	Description
1	HH:MN	Hour, Minute
2	HH:MN'SC	Hour, Minute, Second
3	JJ.MM	Day, Month
4	JJ.MM.AA	Day, Month, Year (2 digits)
5	MM/JJ	Month, Day
6	MM/JJ/AA	Month, Day, Year
7	JJ.MM.AA HH:MN'SC	Day, Month, Year (2 digits), Hour, Minute, Second
8	JJ.MM.AAAA	Day, Month, Year (4 digits)
9	MM/JJ/AAAA	Month, Day, Year (4 digits)
:	JJ.MM.AAAA HH:MN'SC	Day, Month, Year (4 digits), Hour, Minute, Second

2.5.9 CONFIGURATION COMMANDS

◆ **GS] n₁ n₂ n₃ (1D 5D Hex = 29 93 Dec)**

Configuration command followed by 3 bytes n₁ n₂ n₃.

- n₁ :
 - if n = 0 (00 hex) or n >= 127 (7F hex)
Backup configuration in Flash memory.
The two bytes n₂ and n₃ are not necessary.
 - between 1 (01 hex) and the number of groups
Select the configuration group
- n₂ : Select the configuration field
between 1 (01 hex) and the number of fields
- n₃ : Set the new value for the selected field.
 - if there are several choices:
between 1 (01h) and the number of choices
 - if it is a number: a number in the authorized range

See the **menu summary table** for the different choices of **Groups, Fields and Values**.

Warning: The time setting is not allowed with this command !
Use **GS c** command for the clock setting.

For an easier setting, the configuration information are sent by the printer on the serial line followed by a “carriage return” character (0D hex).

Example: **GS] 03h 01h 08h** set, in the group: Serial,
the Field Baud at the 8th choice: 9600 Baud.
The printer send on the serial line:
Serial ->Baud =9600 Baud

GS] 00h asks the backup in the Flash memory.
The printer send on the serial line:
FLASH CONFIGURATION

If a value is false, a specific error message is sent on the serial line by the printer:

GROUP Out of range !
FIELD Out of range !
VALUE Out of range !
NOTHING TO FLASH !
Clock ->xxxxx =Not allowed !

◆ **GS [n₁ n₂ (1B 5B Hex = 27 91 Dec)**

Send back the actual configuration for group n₁ and field n₂.

In reception of this command, the current parameter setting for the group n1 and the field n2 is sent back in text format on the serial line

- n₁ : Select the configuration group
between 1 (01 hex) and the number of groups
- n₂ : Select the configuration field
between 1 (01 hex) and the number of fields

Returned information sent are the same that those returned by the configuration command.

Example: **GS [03h 01h**

asks parameter for the 'Serial' group
and the field 'Baud';

The printer send back on the serial line:

Serial ->Baud =9600 Baud

◆ **ESC S n (1B 53 Hex= 27 83 déc)**

Drive the Status LED

The user has the possibility to drive himself the status LED with the command « ESC 'S' n » . The byte n is used to light or not the LED. Each bit of this byte, examined cyclically, drive the LED for a period of 80 milli-seconds (1: LED ON; 0:LED OFF).

See the chapter 'Status Led'

Warning: 'system' status are priority and can't be inhibited.

Examples of n values:

n	Hex	Dec	Description	Binary	LED
'U'	55	85	Blinking	01010101	●○●○●○●○
NUL	00	0	OFF	00000000	●●●●●●●●
	FF	255	ON	11111111	○○○○○○○○
ENQ	05	5	2 flashes	00000101	●●●●●○●○

◆ **ESC <FC> <data> (1B FC Hex=27 252 Dec)**

Firmware programming (reserved command)

◆ **ESC <FD> <area> <Low> <High> <data> (1B FD Hex=27 253 Dec)**

Flash area programming (reserved command)

◆ **GS \ n₁ s₂ (1D 5C Hex = 29 92 Dec)**

Adjustment for analogical and counting entries ranks according to n₁

'0'...'3': Settings for the scaling functions of the external entries

This command allows to seize the scaling values of the 2 external entries analogical ADC and counting CPT. This scaling is done thanks to 2 formulas $y_0 = a_0 * ADC + b_0$ and $y_1 = a_1 * CPT + b_1$.

- n₁ allows to select value to seize ('0' for a₀, '1' for b₀, '2' for a₁ and '3' for b₁)
- s₂ is this value in a floating point number shape (can be positive or negative, with or without decimal part). This command must be necessarily ended by a character «CR» (Carriage Return) or «LF» (Line Feed).

These values are stored in Flash memory at the same time as the values of the configuration menu (see « GS] 00h » command).

'4'...'5': Settings of the format strings

Two format strings of 15 characters + 1 NUL respecting the syntax of the C language C allow to format the two external entries.

- n₁ allows to select the string to set ('4' for ADC entry, '5' for CPT entry)
- s₂ is the content of the format string and must be ended by CR, LF or NUL.

An overflow will print « Overflow »

example for the string ADC:

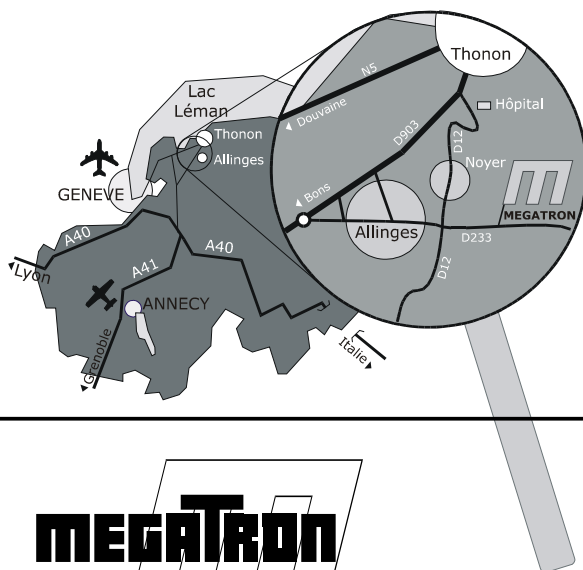
GS \4%10.3f CR	10 characters with 3 decimals, left alignment
GS \4%-5.2f CR	5 characters with 2 decimals, right alignment
GS \4%g CR	Automatic format
etc...	

'6'...'7': Initialise the counting value

- n₁ allow to select the counter to initialise ('6' or '7' for CPT).
- s₂ is the initialisation value in an integer number shape (must be positive and slower than 65535). This command must be necessarily ended by a character «CR» (Carriage Return) or «LF» (Line Feed).

example :

GS \70 CR	Init CPT to 0
GS \73245 CR	Init CPT to 3245



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