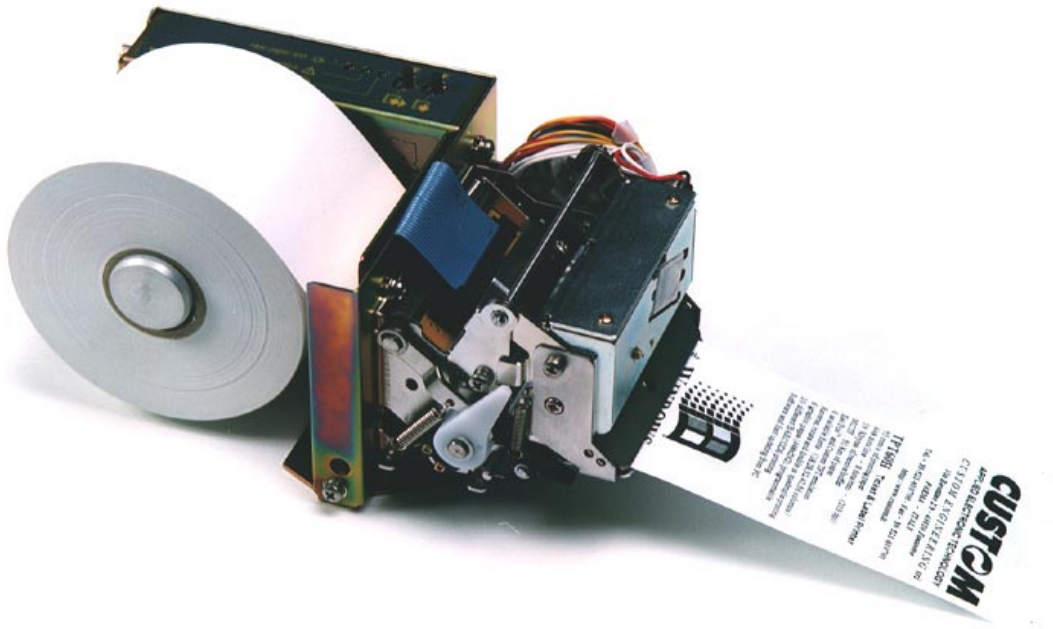
TPT 60

User's Manual



COD. DOME - TPT60 REV. 1.10

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"CE" Declaration of Conformity

In accordance with standards ISO/IEC Guide 22 and EN 45014

N°: DC0120196

Manufacturer's name: Custom Engineering s.r.l.

Manufacturer's address: Strada Berettine 2
Fontevivo (Parma)
Italy

Declares that the product:

Product name: Ticket dispenser

Product type: TPT

Model: TPT60

is in conformity with the following directives:

Electromagnetic Compatibility Directive 89/336/CEE; 92/31/CEE; 93/68/CEE

In accordance with the following standards:

EN 55022 Class B	Limits and methods of measuring the characteristics of radio disturbance produced by information technology equipment	1994
EN 50082-1	Electromagnetic compatibility - General immunity requirements. Part 1: Residential, commercial and light industry environments.	1992
EN 61000-4-2	Electrostatic discharge immunity tests. 4KVcontact discharge, 8KV air discharge	1995
EN 61000-4-4	Electrical fast transient/burstimmunity tests. Signal lines 0.5KV Power lines AC 1KV	1995
ENV 50140	Radio-frequency irradiated electromagnetic fields - Immunity test. 3V/m, 80MHz-1000MHz, 80% 1KHz AM	1993

January 1996

GENERAL INFORMATION REGARDING SAFETY

- Read and keep the following instructions.
- Observe all warnings and follow all instructions attached to the printer.
- Before cleaning the printer, disconnect the feed cable.
- Clean the printer with a damp cloth. Do not use liquid or spray products.
- Do not operate the printer near to water.
- Do not place the printer on unsteady surfaces. It could fall and get seriously damaged.
- Do not place the printer on soft surfaces or in poorly ventilated environments.
- Position the printer in such a way as to ensure that the cables connected to it will not be damaged.
- Use the type of electricity supply marked on the printer label. In the event of uncertainty, contact the seller.
- Ensure that the printer's electricity supply is grounded and that it is protected by a differential switch.
- If the printer is fed through an extension lead, ensure that the total absorption of the equipment connected to it does not exceed the maximum admissible current for that type of extension and that it does not, in any event, exceed 15 amperes.
- Do not obstruct the vents.
- Do not put objects of any kind inside the printer as they could cause a short circuit or damage parts which could affect its performance.
- Do not spill liquids on the printer.
- Do not carry out technical operations on the printer with the exception of the scheduled maintenance operations specifically indicated in the user's manual.
- Disconnect the printer from the electricity supply and have it repaired by a specialized technician should any of the following conditions occur:

    A. The feed connector has been damaged.
    B. LIQUID has penetrated to the inside of the printer;
    C. The printer has been exposed to rain or water;
    D. The printer is not operating normally despite the instructions in the user's manual having been followed.
    E. The printer has been dropped and its case damaged.
    F. The performance of the printer is poor.
    G. The printer does not work.

GENERAL FEATURES

The TPT60 is an extremely versatile receipt dispensing printer.
It is equipped with a thermal printing mechanism with a dedicated cutter for cutting the tickets, and uses rolls of 60 mm paper. It has a 4-Kbytes print buffer and uses a RS232 serial interface or CENTRONICS parallel interface for communication. It can print in 18,28 or 56 columns and in various modes.

The TPT60 printer consists of a stainless steel frame which houses the control card, the printing mechanism and the paper roll.The Form Feed **(FF)** and Line Feed **(LF)** keys and three signal LEDs are located in the upper part.If the Line Feed key is pressed, the paper continues to feed forward until pressure on the key is released.

If the Form Feed is pressed, the paper feeds forward until the photocell (optional) detects a nick in the paper. If there is no photocell, the paper feeds for a number of steps programmed in EEPROM.

GREEN LED : When the led is turned on, it means that printer power is on.
YELLOW LED : When the led is on it means printer status ok.
When the led is blinking it means paper end
RED LED : When the led is on it means near paper end

With the use of Flash memory technology, is possible :

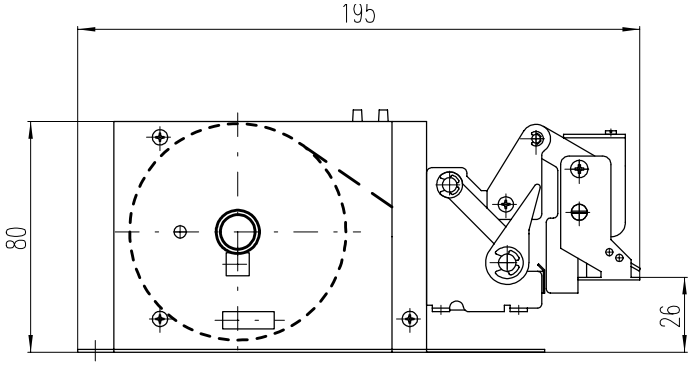
- Program 5 graphic pages, and print them quickly;
- Print 7 different kinds of barcode;
- Updating of fonts or release filmware with Custom Eng. Software.

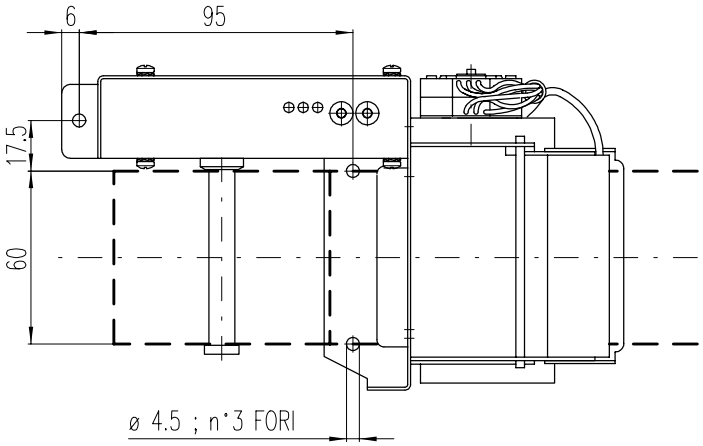
Microsoft Windows driver is available on request.

TECHNICAL SPECIFICATIONS

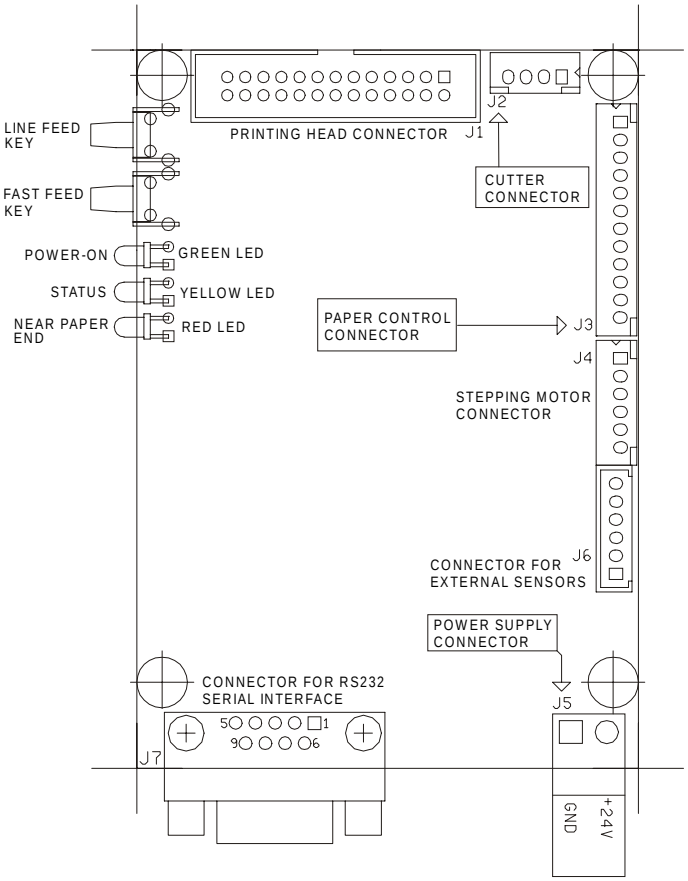
COLUMNS	Font 8x16 56 columns Font 16x24 28 columns Font 24x32 18 columns
GRAPHIC DOT	0.125 mm
DOTS PER LINE	448
PRINTING SPEED	50 mm/sec.
LINE BUFFER	56 bytes
PRINT BUFFER	4096 bytes
CHARACTER MATRIX	8x16, 16x24 or 24x32
PRINTING METHOD	Thermal
CHARACTER SET	Extended ASCII Arial style. Personalized fonts on request.
INTERFACE	Serial RS232 Parallel CENTRONICS
POWER SUPPLY	Single 24 Vdc
ABSORPTION	
Medium current	1.25 A
Current on standby	38 mA
Peak current	60 mA
ENVIRONMENTAL CONDITIONS	
Operating temperature	0°C - +50°C
Operating humidity	35% - 85%
Storage temperature /humidity	-35°C - +65°C / 10%-90%

Overall Dimensions

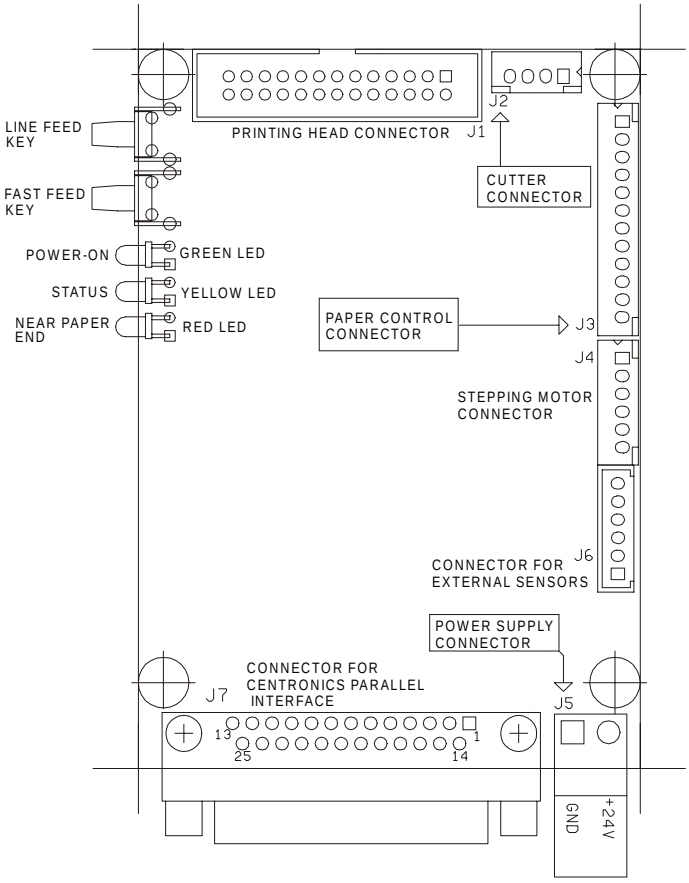




CONNECTORS LAYOUT



SERIAL VERSION



PARALLEL VERSION

N.B. The square pads indicate the pin 1 of connectors.

REAR

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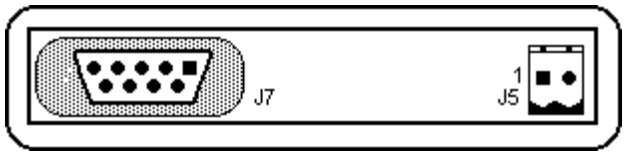
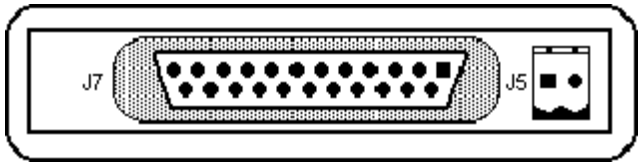


SERIAL PORT

N.B. The square pads indicate the pin 1 of connectors.



PARALLEL PORT

J5 POWER SUPPLY

NO.	SIGNAL	FUNCTION
1	GND	GND
2	VCC	Power 24 Vcc

J7 SERIAL PORT

NO.	SIGNAL	FUNCTION
1		
2	TX	RS-232 data output
3	RX	RS-232 data input
4		
5	GND	GND
6		
7		
8	RTS	Request to send
9		

J7 PARALLEL PORT

NO.	SIGNAL	FUNCTION
1	STROBE	Strobe input
2	D0	Data input bit 0
3	D1	Data input bit 1
4	D2	Data input bit 2
5	D3	Data input bit 3
6	D4	Data input bit 4
7	D5	Data input bit 5
8	D6	Data input bit 6
9	D7	Data input bit 7
10	ACK	Acknoledge
11	BUSY	Busy
12	PE	Paper End
13	VCC	VCC
14		
15	VCC	VCC
16	RESET	Printer reset
17	GND	GND
18		
19	GND	GND
20	GND	GND
21	GND	GND
22	GND	GND
23	GND	GND
24	GND	GND
25	GND	GND

J1 HEAD CONNECTOR

NO.	SIGNAL	FUNCTION	NO.	SIGNAL	FUNCTION
1	COM	Thermal head common	2	COM	Thermal head common
3	COM	Thermal head common	4	GND	GND
5	GND	GND	6	GND	GND
7	SI	Serial data input	8	SO	Serial data input
9	CLOCK	Synchronous data clock	10	GND	GND
11	LATCH	Data latch	12	GND	GND
13	STR5	Strobe 5	14	VDD	Thermal head power (+5v)
15	STR3	Strobe 3	16	STR4	Strobe 4
17	STR1	Strobe 1	18	STR2	Strobe 2
19	TM	Thermistor	20	TM	Thermistor
21	GND	GND	22	GND	GND
23	GND	GND	24	COM	Thermal head common
25	COM	Thermal head common	26	COM	Thermal head common

J4 MOTOR CONNECTOR

NO.	SIGNAL	FUNCTION	COLOUR
1	Φ 1	Phase 1	Black
2	Φ 2	Phase 2	Yellow
3	Φ 3	Phase 3	Brown
4	Φ 4	Phase 4	Orange
5	COM	Common	Red
6	COM	Common	Red

J6 SENSOR CONNECTOR

NO.	SIGNAL	FUNCTION	COLOUR
1	Collector	Paper end detection 1: Penetrative type	Red
2	Emitter	Paper end detection 1: Penetrative type	Yellow
3	Anode	Paper end detection 1: Penetrative type	Blue
4	Cathode	Paper end detection 1: Penetrative type	Green
5	Emitter	Paper end detection 2	Yellow
6	Cathode	Paper end detection 2	Green
7	Anode	Paper end detection 2	Blue
8	Collector	Paper end detection 2	Red
9	Switch	Head open detection switch	White
10	Switch	Head open detection switch	White
11	Switch	Head up detection switch	White
12	Switch	Head up detection switch	White

J2 CUTTER CONNECTOR

NO.	SIGNAL	COLOUR
1	MOTOR +	RED
2	MOTOR -	BLACK
3	SWITCH	WHITE
4	SWITCH	WHITE

PROGRAMMING AND SELF-TEST

When the printer is switched on, the two keys **LF** and **FF** have **SELF-TEST** and **PROGRAMMING** functions. If the **Form Feed** key is held down during reset, the printer prints any fonts examples, the head temperature, an example of barcode (EAN8) and the 5 graphic pages programmed in flash.
This function continues until the printer is turned off.
Hold down the **Line Feed** key to enter into **SETUP** mode. A heading will be printed indicating the printer model and firmware release, as well as a report on the current programming. At this point, press either LF to quit setup mode or FF to enter into setup mode.
The FF key is used to confirm the data entered, while the LF key is used to select one of the entries of an item. The table below shows all the available options. The default values are marked with an asterisk.

PROGRAMMING OPTION TABLE

BAUD RATE	19200 Baud 9600 * 4800 2400 1200 600	Serial communication speed
PROTOCOL	XON/XOFF* CTS	Mode by which the printer communicates to the PC that it is ready to receive
AUTOFEED	OFF* ON	If ON, the Carriage Return character (0Dh) is read as Line Feed
PAPER END	DISABLED* ENABLED	If enabled, the printer stops when the Paper Reserve photocell is not darkened
PAPER SENS.	HIGH NORM * MID LOW DOUBLE COPY PAPER	Selects paper sensitivity, that is, the duration of the strobe pulse applied to the printing head.
WIDTH	NORMAL * DOUBLE QUADRUPLE	Selects default printing width
HEIGHT	NORMAL * DOUBLE QUADRUPLE	Selects default printing height

COMMAND SUMMARY TABLE

CR	0X0D	CARRIAGE RETURN
LF	0X0A	LINE FEED
FF	0X0C	FORM FEED
VT	0X0B	VERTICAL TAB
CAN	0X18	CANCELS LINE BUFFER
ESC + "!" +n	1Bh + 21h +n	SELECTS PRINTING MODE
ESC + "i"	1Bh +69h	CUTS PAPER COMPLETELY
ESC + "m"	1Bh + 6Dh	CUTS PAPER PARTIALLY
ESC + "d" + n	1Bh + 64h + n	FORWARD FEEDS "N" LINES
ESC + "@"	1Bh + 40h	RESETS THE MACHINE
ESC +"A"+n1+n2	1Bh+41h+n1+n2	MOVES STEPPING MOTOR
ESC +"z"+n	1Bh+1Ah+n	SETS V.TAB. VALUE
ESC +"Z"+n1+n2	1Bh+5Ah+n1+n2	SETS NUMBER OF STEPS PER FORM FEED
ESC + "c" + "4"+n	1Bh+63h+34h+n	ENABLES PAPER ALMOST OUT
ESC +"*"+m+n1+n2	1Bh+2Ah+m+n1+n2	SETS BIT IMAGE MODE
ESC + "+"n1+n2	1Bh+2Bh+n1+n2	PRINTS IN SEMI-GRAPHIC MODE
ESC + "W"	1Bh+57h	PRINTS A GRAPHIC DOTLINE
ESC +"{" + n	1Bh+7Bh+n	SETS REVERSE PRINT
ESC +"="+n1	1Bh+3Dh+n1	ENABLES FORM FEED KEY
ESC + "#"+n1..n8	1Bh+23h+n1..n8	RECEIVES DATE IN GRAPHIC PAGE
ESC + " | "	1Bh+7Ch	CANCEL GRAPHIC PAGE
ESC + "V"+n	1Bh+56h+ n	SETS PRINT MODE ROTATED BY 90°
ESC + "%"+n1+n2	1Bh+25h+n1+n2	PRINTS GRAPHIC PAGE
ESC + ">"+n1..n6+text	1Bh+3Eh+n1...n6+text	PRINTS A STRING IN GRAPHIC PAGE
ESC + "$"+n1+n2	1Bh+24h+n1+n2	SETS BAR CODE PRINT POSITION
ESC +"?"+n	1Bh+3Fh+n	REQUESTS PRINTER SETTING (only serial interface)
ESC +"v"	1Bh+76h+n	STATUS REQUEST (only serial interface)
ESC +"f"+n	1Bh+66h+n	SETS DEFAULT FONT
ESC +"R"+n	1Bh+52h+n	SETS FONT IN USE
ESC +"N"+n	1Bh+4Eh+n	SETS NEGATIVE MODE
ESC +"U"+n	1Bh+55h+n	SETS UNDERLINE MODE
ESC +"D"+n	1Bh+44h+n	SETS DEFAULT PAPER SENSITIVITY
ESC +"S"+n	1Bh+53h+n	SETS PAPER SENSITIVITY IN USE
ESC+"P"	1Bh+50h	FILL RAM BANK FROM PO RT (16384 BYTES)
ESC +"r"+n	1Bh+72h+n	COPY RAM BANK IN TO FLASH BANK
ESC +"F"+n	1Bh+46h+n	COPY FLASH BANK IN TO RAM BANK
ESC +"s"	1Bh+73h	SENDS RAM BANK TO PORT (only serial interface)
GS + "k"+n	1Dh+6Bh+n	PRINTS A BAR CODE
GS +"w"+n	1Dh+77h+n	SELECTS BAR CODE WIDTH
GS +"H"+n	1Dh+48h+n	SELECTS HRI PRINT POSITION
GS +"h"+n	1Dh+68h+n	SELECTS BAR CODE HEIGHT
GS +"I"+n	1Dh+46h+n	TRANSMIT PRINTER ID (only serial interface)

Ascii **CR**
Hex **0Dh**
Descrizione **Carriage Return**

When the AUTOFEED option is ON, it has the same effect as character LF; when it is OFF, it is ignored.

Ascii **LF**
Hex **0Ah**
Description **Line Feed**

When the printer receives this character, all the data in the line buffer are printed. If the buffer is empty, the paper simply forward feeds one line.

Ascii **FF**
Hex **0Ch**
Description **Form Feed**

If the buffer contains any characters, these are printed and the paper forward feeds until the detection of a reference mark on the paper, signalled by the NICK photocell. Alternatively the paper forward feeds by the number of dotlines preset by the command “ESC Z”.

Ascii **VT**
Hex **0Bh**
Description **Vertical Tab**

When this character is received, the paper forward feeds by “n” lines (default value: 4). This value can be modified by using the command “ESC z”. When the printer is next inizialized, the default value is reset.

Ascii **CAN**
Hex **18h**
Description **Cancel**

This character cancels the line buffer.

Ascii **ESC i**
Hex **1Bh + 69h**
Description **Paper complete cut**

This command enables cutter operation; if there is no cutter, a disabling flag is set and any subsequent cut commands will be ignored. If the cutter is the partial cut version, this command makes a partial cut. If the printer receives two paper cut command, it executes only one cut.

Ascii **ESC m**
Hex **1Bh + 6Dh**
Description **Paper partial cut**

This command enables cutter operation and the paper partial cut. If there is no cutter, a disabling flag is set and any subsequent cut commands will be ignored. This command makes partial cut only if the cutter is the total cut version.
If the printer receives two paper cut command, it executes only one cut.

Ascii **ESC ! n**
Hex **1Bh + 21h + n**
Description **Selects print mode**

This command sets the print mode. Each bit of "n" is read as follows:

Bit	FUNCTION	0	1
0	n.u.		
1	n.u.		
2	Selects superscript or subscript (only for 8x16)	Superscript	Subscript
3	n.u.		
4	Double height	Cancel	Set
5	Double width	Cancel	Set
6	Quadruple height	Cancel	Set
7	Quadruple width	Cancel	Set

Height and width commands set the mode for a whole line.

Ascii **ESC d**
Hex **1Bh + 64h + n**
Description **Forward feeds "n" lines**

If the line buffer contains any characters, these are printed and the paper forward feeds by "n" lines.

Ascii **ESC @**
Hex **1Bh + 40h**
Description **Resets the printer**

When this command is received, the printer resets, restoring the default programming and erasing the RAM.The machine requires approx. 2 seconds from reception of the command to regain its full operating capacity.

Ascii **ESC A n1 n2**
Hex **1Bh + 41h + n1 + n2**
Description **Moves the step motor**

This moves the paper feeding step motor by a number of steps equal to (n1*256) + n2.

Ascii **ESC z n**
Hex **1Bh + 7Ah +n**
Description **Set the vertical tab value**

Sets the number of feed lines when a vertical tab. character is received.
The default value on switching on the printer is 4.
The set value is valid until the printer is next initialized.

Ascii **ESC Z n1 n2**
Hex **1Bh + 5Ah + n1 + n2**
Description **Sets the number of steps for form feed**

When the printer receives an FF (0Ch) character, or when the FF key is pressed, the paper forward feeds until the photocell finds a reference point or up to the distance preset in Eeprom. The default value, which is 240 (30 mm), can be modified by the user. The number of steps is given by (n1*256) +n2.
The value limit is 8000 steps (1000 mm).
The set value is stored in Eeprom, and continues to be stored even when the printer is switched off.

Ascii **ESC c 4 n**
Hex **1Bh + 64h + 34h + n**
Description **Paper reserve enable**

The paper almost out check is fixed according to bit “0” of “n”.
bit 0 = 0 Check disabled
bit 0 = 1 Check enabled

Ascii **ESC { n**
Hex **1 Bh + 7Bh + n**
Description **Sets reverse print mode**

This sets or cancels the reverse print flag according to “n”.
n = 0 Normal printing
n <> 0 Reverse printing

Ascii **ESC * m n1 n2**
Hex **1Bh + 2Ah + m + n1 + n2**
Description **Set bit image mode**

With **m = 21h** puts n2*256+n1 bytes in printer buffer ; the bits are placed in vertical mode, and new vertical column (total 448) is full every 3 bytes (24 dots).

Ascii **ESC + n1 n2**
Hex **1Bh + 2Bh + n1 +n2**
Description **Semi-graphic mode print**

The number of characters to be received is (n1*256) + n2. In this mode, the bytes received are input in the line buffer at the current position of the cursor and differently with respect to the previous command. Let's imagine that a print line consists of an array of 24 rows containing 56 bytes each: the characters received after this command will be input starting from the top line and proceeding towards the bottom line.
After 24 characters, the pointer increases and proceeds to the next position. At the 56th position the line is printed and filling continues on the next line. Thanks to this procedure, text and graphics can be combined. In fact, if, for example, there were any characters present in the print buffer, the bytes subsequent to this command would be input in the position immediately after. Figure 1 shows a line buffer: each box corresponds to 8 dots, which on paper correspond to 1 mm, both horizontally and vertically.
To fill the memory completely, 1344 bytes are required. For example, to print a filled bar 448 dot long and 24 dot high, send the following command:

1Bh + 2Bh + 05h + 40h + (1344* FFh)

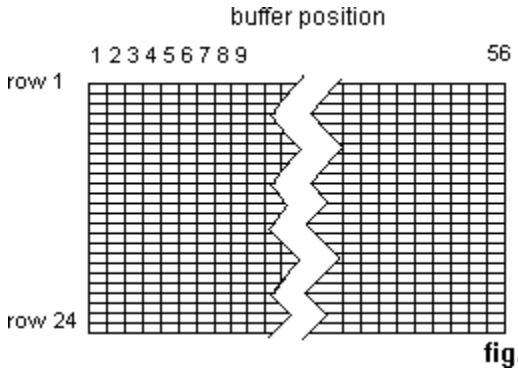


fig. 1

Ascii **ESC = n**
Hex **1Bh + 3Dh + n**
Description **Form Feed key Enable/Disable**

This command is used to control the Form Feed key. Normally, when this key is pressed, the paper forward feeds until a reference mark is detected or until the steps set by the ESC + 'Z' command have been completed.
When the key is released, a character FF (0Ch) is transmitted. In this way a controller can check the output of receipts with progressive number etc. directly.
n = 0 Disables the transmission - Enables the Form Feed key
n > 0 Enables the transmission when the Form Feed key is pressed.

Ascii **ESC # n1..n8**
Hex **1Bh + 23h + n1..n8**
Description **Receives data in graphic page**

This receives an array of data and arranges them in a graphic page at the given coordinates. The coordinates define the vertices of a window in which the data are stored.

x1=(n1 * 256) + n2
y1=(n3 * 256) + n4
x2=(n5 * 256) + n6
y2=(n7 * 256) + n8

The values of coordinates x1 and x2 are aligned with the byte.

Ascii **ESC |**
Hex **1Bh + 7Ch**
Description **Cancels the graphic page**

This cancels the graphic page.

Ascii **ESC V n**
Hex **1Bh + 56h + n**
Description **Sets the print mode rotated by 90°**

Sets or cancels the 90° rotation print flag according to “n”.
n = 0 Normal print
n <> 0 Rotated print
The direction of the rotation depends on the reverse bit.

Ascii **ESC % n1 n2**
Hex **1Bh + 25h + n1 + n2**
Description **Prints the graphic page**

This prints the graphic page starting from the beginning for a number of lines equal to (n1 * 256) + n2; if the number is higher than the lines available (292), it prints the entire page.

Ascii **ESC $ n1 n2**
Hex **1Bh + 24h + n1 n2**
Description **Sets the print position of the Bar Code**

The bar code is printed at position (n1*256) + n2.If the value exceeds 448, it is rejected.

Ascii **ESC > n1..n6 text**
Hex **1Bh + 3Eh + n1 + + n6 + text**
Description **Prints a string in graphic page**

It receives a string and arranges it in graphic page at the coordinates and in the direction given. The string must be completed by a NULL. If the string is too long, it is cut.
The font is 16x24.
(n1 * 256) + n2 = Horizontal position
(n3 * 256) + n4 = Vertical position

n5 = Printing direction

00h = Normal direction
01h = Print rotated by 90°
02h = Print rotated by 180°
03h = Print rotated by 270°

n6 = Printing dimension

00h = Normal dimension
01h = Double height
02h = Double width
03h = Double height + Double width

Ascii **ESC R n**
Hex **1Bh + 52h + n**
Description **Sets font**

It sets the font currently being used. This setting is maintained until a new command is given or the machine is reset.

n = 01h Font 8x16
n = 02h Font 16x24
n = 03h Font 24x32

Ascii **ESC f n**
Hex **1Bh + 66h + n**
Description **Sets the default font**

This sets the default font. The font currently in use is also changed.

n = 01h Font 8x16
n = 02h Font 16x24
n = 03h Font 24x32

Ascii **ESC W** *<56 bytes>*
Hex **1Bh + 57h** *<56 bytes>*
Description **Prints a graphic dotline**

This command prints a dotline after the 56 bytes and feeds.

Ascii **ESC v**
Hex **1Bh + 76h**
Description **Status request (only serial interface)**

This transmits a byte, the bits of which indicate the status of the machine, to the serial port.

Bit	FUNCTION
0	Paper Almost Out Photocell
1	Nick photocell
2	Paper Presence
3	Line Feed key
4	Form Feed key
5	Over-Heat flag
6	Motor ON
7	Error due to Paper End, Head Up etc.

Ascii **ESC N n**
Hex **1Bh + 4Eh + n**
Description **Sets negative mode**

Sets or cancels negative mode printing.
n = 0 Normal print
n <> 0 Negative print

Ascii **ESC U n**
Hex **1Bh + 55h + n**
Description **Sets underline mode**

Sets or cancels underline mode printing.
n = 0 Normal print
n <> 0 Underline mode

Ascii **ESC F n**
Hex **1Bh + 46h + n**
Description **Copy flash bank into ram bank (16kbytes)**

The value of “n” determines the flash bank :

n = 1	1st bank	(08000h-0BFFFh)
n = 2	2nd bank	(0C000h-0FFFFh)
n = 3	3rd bank	(10000h-13FFFh)
n = 4	4th bank	(14000h-17FFFh)
n = 5	5th bank	(18000h-1BFFFh)

If n = 0 or n > 5 the command is ignored.

Ascii **ESC P**
Hex **1Bh + 50h + *16384 bytes***
Description **Fill ram bank from port (serial or parallel)**

This command can transfer graphic page into ram.
56 bytes is an orizzontal dotline of 448 dots ; for 292 dotlines.
The number of bytes that make graphic page are 56x292 = 16352, the other 32 bytes must be send, but don’t have importance.

Ascii **ESC r n**
Hex **1Bh + 72h + n**
Description **Copy ram bank into flash bank (16kbytes)**

The value of “n” determines the flash bank :

n = 1	1st bank	(08000h-0BFFFh)
n = 2	2nd bank	(0C000h-0FFFFh)
n = 3	3rd bank	(10000h-13FFFh)
n = 4	4th bank	(14000h-17FFFh)
n = 5	5th bank	(18000h-1BFFFh)

If n = 0 or n > 5 the command is ignored.
For about 1 sec. the printer don’t receive character or command.
The serial version return :
77h if flash memory is not programmed
88h if flash memory is not erased
AAh if flash memory is programmed.
The parallel version set paper_end at start routine.
On the end, the routine changes busy status and if paper_end is set, then flash memory is programmed, else if paper_end is clear then flash is failure (must replace).

Ascii **ESC s**
Hex **1Bh + 73h**
Description **Sends RAM bank to port (16kbytes) (only serial interface)**

This command sends the 16384 RAM bytes to serial port.

Ascii **ESC ? n**
Hex **1Bh + 3Fh + n**
Description **Setting request (only serial interface)**

This transmits two bytes, the bits of which indicate the print setting, to the serial port. The meaning of these two bytes depend on the parameter **n**:

n= 0

byte 1	Bit	FUNCTION	
	0	H Mode	00 = Normal
	1	"	01 = Double
	2	V Mode	02 = Quadruple
	3	"	for both Hmode and Vmode
	4	Font Size	00 = Font 24x32 pix.
			01 = Font 8x16 or 16x24 pix.
	5	Superscr./Subscr.	00 = Superscript
			01 = Subscript
	6	Reverse	00 = Reverse OFF
	7	Rotate	00 = Rotate OFF

byte 2	Bit	FUNCTION
	0	Cutter Status
	1	Paper End enable
	2	Form Feed enable
	3	Autofeed
	4	Normal or large font
	5	
	6	
	7	

n = 1
byte 1 Number of line feeds for VTAB

byte 2 Analog value read on the thermal head

n = 2
byte 1+2 Number of dot feeds per FORM FEED

n = 3

byte 1	Bit	FUNCTION
	0	Bar Code size
	1	"
	2	"
	3	HRI
	4	"

These bits correspond to the coding assigned with the commands **GS w** and **GS H**.

byte 2 Bar Code height

Ascii **ESC S n**
Hex **1Bh + 53h + n**
Description **Sets paper sensitivity**

It sets the paper sensitivity currently being used. This setting is maintained until a new command is given or the machine is reset.

n = 00h High
n = 01h Normal
n = 02h Middle
n = 03h Low
n = 04h Double copy

Ascii **ESC D n**
Hex **1Bh + 44h + n**
Description **Sets the default paper sensitivity**

This sets the default paper sensitivity. The paper sensitivity currently in use is also changed.

n = 00h High
n = 01h Normal
n = 02h Middle
n = 03h Low
n = 04h Double copy

Ascii **GS k n** *<HRI>* **CR**
Hex **1Dh + 6Bh + n +** *<HRI>* **+ 0Dh**
Description **Prints a Bar Code**

The value of “n” determines the type of bar code to be printed.

n = 1 UPC-E
n = 2 EAN 13
n = 3 EAN 8
n = 4 CODE 39 (max 12 char)
n = 5 ITF (Interleaved 2 of 5) (max 22 char)
n = 6 CODEBAR (max 16 char)
n = 7 UPC-A

Rotate command don’t have effect on bar code print.

Ascii **GS w n**
Hex **1Dh + 77 + n**
Description **Selects Bar Code width**

The value of “n” determines bar code width.
The value of “n” must range between 2 and 4. Any other value annuls the command.
The value of “n” indicates the number of dots which compose the narrowest module of the bar code.

Ascii **GS H n**
Hex **1Dh + 48h + n**
Description **Selects the HRI print position**

The value of “n” determines the print position of the Human Readable Interpretation of the bar code.
n= 0 Not printed
n = 1 Prints over the Bar Code
n = 2 Prints under the Bar Code
n = 3 Prints both over and under the Bar Code.

Ascii **GS h n**
Hex **1Dh + 68h + n**
Description **Selects Bar Code height**

The value of “n” determines bar code height in 1/8 mm units.
The minimum value is 8 (1 mm) and the maximum value is 255 (31.8 mm).

Ascii **GS I n**
Hex **1Dh + 49h + n**
Description **Transmit printer ID (only serial interface)**

[Range] 1 ≤ n ≥ 3, 49 ≤ n ≥ 51.

n	Printer ID	Specification	ID (hexadecimal)
1, 49	Printer model ID		00
2, 50	Type ID	Refer to table below.	
3, 51	ROM version ID	ROM Version (4 bytes)	

if n = 1	Return printer model ID = 00 (hexadecimal).			
If n = 2	Return printer Type ID suck is specified in the follow table :			
Bit	**Off/On**	**Hex**	**Decimal**	**Function**
0	-	00	0	Not used.
1	On	01	1	Autocutter equipped.
2	Off	00	0	Non-label thermal paper
3	Off	00	0	Not used.
4	Off	00	0	Not used.
5	Off	00	0	Not used.
6	Off	00	0	Not used.
7	Off	00	0	Not used.
if n = 3	Return printer release firmware (4 byte) Example : ‘1’ ‘.’ ‘0’ ‘1’.			