

MCP8830 Infra-Red THERMAL PRINTER

Applications Datasheet



Features

- HP compatible IR interface
- IrDA and RS232 interfaces
- High speed, high resolution printing capability
- Quiet, non-impact system
- Maintenance-free
- Compact and light weight
- High reliability line head mechanism
- Versatile for use with text or graphics
- 24, 32 or 48 characters per line
- Barcode capability
- Low power mode
- Supports labels and dual ply paper

Introduction

The MCP8830 is a compact and lightweight thermal printer in a modern, elegant enclosure.

Designed for maximum flexibility, the printer is compatible with existing systems using HP infra-red communications whilst allowing many upgrades in terms of printing speed and functionality. IrDA and RS232 interfaces are also incorporated.

It is powered from Ni-Mh batteries and has maintenance free operation, only available with thermal printers. The standard unit may be continuously trickle charged from a mains power adapter, and a fast charge facility is incorporated. UK, Euro and US versions of the power adapter are available.

Many different modes of operation are possible, including numerous character sets, all selectable by software commands.

The MCP8830 is one of a family of thermal printers designed and manufactured in the UK by Martel. All units are built into robust ABS housings, with a choice of colours. We would be pleased to discuss the possibility of customising any aspect of the printer to specific requirements.



Specification	
Printing system Max Characters per line	Thermal line head system 48 (Default 24)
Character matrix Character size Horizontal dot pitch	24x16, 24x12 or 24x8 3mm x 2mm, 3mm x 1.5mm or 3mm x 1mm (Approx. 13, 17 or 25cpi) 0.125mm (Approx. 200dpi)
Vertical dot pitch Text line composition	0.125mm 24x384 dots
Printing width Average printing speed	48mm 10 lines per second (max)
Dimensions Weight Internal power supply Paper width Character set Country codes	91mm x 185mm x 58mm Approx. 425 grammes 4 x 1.2V NiMh 1600mAH, AA cells 58mm Roman 8, ECMA 94, Aerial USA, France, Germany, UK, Denmark I/II, Sweden, Italy, Spain & Japan
Interface	,,,,,,,,,
Data format	(a)RS232C (8 Data, 1 Stop, No Parity). (b) HP IR (1 start, 8 data, 4 error detection). (c) IrDA (V1.0 physical layer).
Buffer size	6 Kbytes
Environmental Conditions Operating range Storage range Charging range	0°C to +50°C -20°C to +60°C +10°C to +45°C
MIBF	Approx. 10 Million lines (20°C, print ratio = 25%)

Printer Mechanism

The printer mechanism comprises a 384 element, thin film head and stepper motor driven transport. Battery voltage and head temperature compensation is utilised to provide constant print quality across the range of operating conditions.

Paper out: The printer will automatically detect when the printer paper has run out. The Status indicator will flash repeatedly to denote that the paper has run out. Use the Mode button to feed through the last few centimetres of paper and fit a new roll as described on page 5.

Head thermal limit: After extensive printing the print head temperature may rise to an unusable level. If this occurs the Status indicator will flash twice repeatedly and printing will be suspended until the head temperature returns to normal levels.

Infra-red Interface

The transmit/receive requirements for interfacing with the MCP8830 are compatible with existing systems, however higher transmission speeds and printing speeds are possible due to the incorporation of a large 6Kbyte buffer and a high speed thermal fixed head printer mechanism.

Higher print speed can be achieved by minimising the inter-frame delays in the transmission software, previously required when using a slower printer mechanism. Maximum distance for reliable infra-red communication between printer and host equipment is 45cm (18in). The infra-red port at the rear of the printer should be pointed directly at, and horizontal to, the port on the host equipment and the beam should not be obstructed.

Serial Interface

The RS232C standard is used, and the baud rate is selectable via Configuration Option 2 (see page 4).

The printer is fitted with a 6-way RJ12 socket (Fig 1 illustrates the pin numbers for the connector), the pin assignments and interface signals are defined below.

PIN	Signal	I/O	Definition
1	GND	N/A	Signal ground
2	TxD	0	Transmitted data to host
3	RxD	1	Received data from host
4	CTS	0	Clear to Send
5	n/c	N/A	No connection
6	n/c	N/A	No connection





Power On Self Test

The self test procedure will check most of the printer functions, except for the serial Interface, i.e: Printer mechanism, Control circuitry, Firmware version, Print quality. When the printer is off, press and hold the Mode button depressed for approximately 2 seconds. Release the button, the printer will power on and print a self-test report.

Power Supply

Power is supplied to the printer from four Nickel-Metal Hydride AA cells. The Status indicator will flash three times repeatedly to show that the batteries are nearly exhausted and in need of re-charging. The mains adapter will trickle charge (16 hours) the printer when it is switched on, and will fast charge (up to 4 hours) the printer when it is switched off. Operation of the fast charge algorithm is indicated by a short flash of the Status indicator every second. There may be a delay before fast charging commences following switch off.

Power consumption

Sleep 4mA Off 50uA Standby 30mA Running - Min 0.4A Ave 1.3A Max 2.8A

Note: The peak current can reach a maximum of 4A.

Charge life Approx. 6000 lines (18m) of continuous printing

The MCP8850 should only be used in conjunction with an MPS101(UK), MPS102(EURO) or MPS103(US) power adapter. Users wishing to provide their own power source must contact Martel. *The use of an unapproved source may void the printer's warranty.*

Battery Charging

Connect the MCP8830 printer to the MPS power adapter and recharge the batteries as soon as the Status indicator flashes three times repeatedly during printing.

If the batteries in the MCP8830 become exhausted, printing will become faint, erratic or not possible at all. *Turn off* the MCP8830 and recharge the batteries for at least 15 minutes before attempting further printing. The MPS adapter cannot supply the full power requirements for the MCP8850 during printing, so the batteries must be partially charged before printing is possible.

When the MCP8830 is first delivered there may be little or no charge in the printer's batteries. The MCP8830 should be *turned off*, connected to the MPS adapter and allowed to charge for 16 hours before it is used for the first time.

It is permissible to leave the MCP8830 permanently connected to the MPS power adapter to trickle charge the batteries. If the printer is asleep it will wake up when the adapter is connected and will not sleep while it is connected. To fast charge the batteries, the printer must be off. The Status indicator will flash every second wile fast charge is operating.

Power on Procedure

Check the batteries are sufficiently charged or that the power supply is correctly fitted and operational. Open the paper cup lid and ensure that the roll is present and that there are no foreign objects inside the paper cup. Close the lid, ensuring that the paper passes through the paper exit slot.

When the Status indicator is off, the printer is off. A brief press of the Mode button turns the printer on, the Status indicator will illuminate and the printer mechanism will reset. A brief press of the Mode button will turn the printer off. When the printer is asleep, pressing the Mode button will wake up the printer.

Configuration Options

The printer incorporates a number of configurable *options*, each of which has a number of *settings*. The default settings of the standard printer are detailed in the table below in bold. To change the setting of any option, follow the procedure below:

- 1. Ensure the printer is OFF.
- 2. Press and hold the Mode button. After about five seconds, the Status light will flash five times to show that the printer is in *configuration mode*. Release the Mode button.
- 3. Press the Mode button the same number of times as the *option* that you wish to change (for example to change baud rate, press the Mode button twice).
- 4. After a short delay, the Status light will flash the same number of times as the option that you have chosen. If you have made a mistake at this stage, simply wait: after a delay, the printer will power-on without changing any options.
- 5. To proceed with configuration, press the Mode button the same number of times as the *setting* that you wish to make (for example, to set the baud rate to 19200, press the Mode button once).
- 6. After a short delay, the Status light will flash the same number of times as the setting that you have made.
- 7. After a further delay, the printer will power-on with the new setting.

0 No option 1 Communications Protocol 1 RS232 2 IrDA Physical Layer (9600 baud) 3 HPIR Mode 2 RS232 Baud Rate 0 No setting 1 19200 baud 2 9600 baud 2 9600 baud 2 9600 baud 2 9600 baud 3 4800 baud 4 2400 baud 5 1200 baud 6 600 baud 7 300 baud 3 Flow Control 0 No setting 1 No flow control 2 Software flow control 3 Hardware flow control 4 Font 0 No setting 1 Arial 22 CPL 3 Arial 32 CPL 3 Arial 42 CPL 5 Ecran94 24 CPL 5 Ecran94 24 CPL 6 Print Density 0 No setting 1 Double Width an	
1 Communications Protocol No setting 1 RS232 IrDA Physical Layer (9600 baud) 2 RS232 Baud Rate 0 No setting 2 RS232 Baud Rate 0 No setting 1 19200 baud 2 9600 baud 2 9600 baud 2 9600 baud 2 9600 baud 4 2400 baud 3 4800 baud 5 1200 baud 4 2400 baud 5 1200 baud 5 1200 baud 6 600 baud 7 300 baud 3 4800 baud 3 Flow Control 7 300 baud 4 Prime Control No setting 1 4 Font 0 No setting 4 Font 1 Arial 24 CPL 2 Arial 24 CPL 2 Arial 24 CPL 5 Character Scaling 1 Normal 6 Print Density 0 No setting	
2 RS232 I/DA Physical Layer (9600 baud) 3 2 I/DA Physical Layer (9600 baud) 3 HPIR Mode 2 PS232 Baud Rate 0 No setting 1 19200 baud 2 9600 baud 3 4800 baud 3 3 4800 baud 3 4800 baud 3 4 200 baud 3 4800 baud 3 3 Flow Control 0 No setting 1 4 Font 0 No setting 1 5 Character Scaling 0 No setting 1 6 Print Density 0 No setting 1 6 Print Density 0 No setting 1 7 Printer Current 0 No setting 1	
2 RS232 Baud Rate IrDA Physical Layer (9600 baud) HPIR Mode 2 RS232 Baud Rate 0 No setting 1 19200 baud 2 9600 baud 2 9600 baud 2 9600 baud 3 4800 baud 4 2400 baud 6 600 baud 5 1200 baud 6 600 baud 6 600 baud 7 300 baud 7 300 baud 2 Software flow control 2 Software flow control 2 Software flow control 3 Hardware flow control 2 Software flow control 4 Font 0 No setting 4 Font 0 No setting 5 Character Scaling 0 No setting 6 Print Density 0 No setting 6 Print Density 0 No setting 7 Printer Current 0 No setting	
2 RS232 Baud Rate No setting 1 19200 baud 19200 baud 2 9600 baud 3 3 4800 baud 4 3 4800 baud 5 4 2400 baud 5 7 300 baud 6 3 Flow Control 0 3 Flow Control 0 3 Flow control 2 3 Flow control 2 3 Flow control 2 3 Flow control 2 4 Font 0 No setting 4 Font 0 No setting 4 Font 0 No setting 5 Character Scaling No setting 1 6 Print Density 0 No setting 6 Print Density 0 No setting 6 Print Density 0 No setting 7 Printer Current 0 No setting	
2 RS232 Baud Rate 0 No setting 1 19200 baud 2 9600 baud 3 4800 baud 4 2400 baud 5 1200 baud 6 600 baud 7 300 baud 3 Flow Control 0 No setting 1 No flow control 2 Software flow control 2 Software flow control 4 Font 0 No setting 1 Arial 24 CPL 2 Arial 32 CPL 3 Arial 48 CPL 4 Roman8 24 CPL 5 Character Scaling 0 No setting 1 Arial 24 CPL 2 Arial 32 CPL 3 Arial 48 CPL 4 Roman8 24 CPL 5 Character Scaling 0 No setting 1 Normal 2 Double Width 3 Double Height 4 Double Width 3 Double Height 4 Double Width and Height 6 Print Density 7 Printer Current 0 No setting 1 Lowest 2 Double Width and Height 1 Lowest 2 No setting 1 No setting 1 No setting 1 Normal 2 Double Width and Height 4 Double Width and Height 1 Lowest 2 No setting 1 No setting 1 Lowest 2 No setting 1 No	
No setting 1 19200 baud 2 9600 baud 3 4800 baud 4 2400 baud 5 1200 baud 6 600 baud 7 300 baud 8 600 baud 7 300 baud 9 No setting 1 No setting 1 No flow control 2 Software flow control 3 Hardware flow control 3 Hardware flow control 4 Font 0 No setting 1 Arial 24 CPL 2 Arial 32 CPL 3 Arial 48 CPL 4 Roman8 24 CPL 5 Ecma94 24 CPL 5 Ecma94 24 CPL 6 Print Density 6 Print Density 7 Printer Current 0 No setting 1 Lowest 2 Aria 3 Highest 6 No setting 1 Lowest 2 Aria 3 Aria 4 Highest	
1 19200 baud 2 9600 baud 3 4800 baud 4 2400 baud 5 1200 baud 6 600 baud 7 300 baud 3 Flow Control 0 No setting 1 No flow control 2 Software flow control 2 Software flow control 4 Font 0 No setting 1 Arial 24 CPL 2 Arial 32 CPL 3 Arial 48 CPL 4 Roman8 24 CPL 5 Character Scaling 0 No setting 1 Normal 2 Double Width 3 Double Width 3 Double Width 3 Double Width and Height 6 Print Density 7 Printer Current 0 No setting 1 Lowest 3 Arial 48 CPL 4 Bouble Width 3 Double Width	
2 9600 baud 3 4800 baud 4 2400 baud 5 1200 baud 6 600 baud 7 300 baud 8 Flow Control 9 No setting 1 No flow control 2 Software flow control 3 Hardware flow control 3 Hardware flow control 3 Hardware flow control 4 Font 0 No setting 1 Arial 24 CPL 2 Arial 32 CPL 3 Arial 48 CPL 5 Ecma94 24 CPL 5 Ecma94 24 CPL 5 Ecma94 24 CPL 5 Double Width 3 Double Width 3 Double Width 3 Double Width and Height 6 Print Density No setting 1 Lowest 3 3 Highest 1 6 Printer Current 0 No setting	
3 4800 baud 4 2400 baud 5 1200 baud 6 600 baud 7 300 baud 3 Flow Control 0 No setting 1 No flow control 2 Software flow control 3 Hardware flow control 4 Font 0 No setting 1 Arial 24 CPL 2 Arial 24 CPL 2 Arial 24 CPL 2 Arial 24 CPL 5 Character Scaling 1 No setting 1 No setting 1 No setting 2 Double Width 3 Double Width 3 Double Width 3 Double Width and Height 6 Print Density 0 No setting 1 Lowest 2 3 4 Highest 7 Printer Current	
4 2400 baud 5 1200 baud 6 600 baud 7 300 baud 3 Flow Control 0 No setting 1 No flow control 2 Software flow control 3 Hardware flow control 4 Font 0 No setting 1 Arial 24 CPL 2 Arial 32 CPL 2 Arial 32 CPL 3 Arial 48 CPL 4 Roman8 24 CPL 5 Ecma94 24 CPL 5 Ecma94 24 CPL 6 Print Density 0 No setting 1 Normal 2 Double Width 3 Double Width and Height 6 Print Density 1 Lowest 3 4 4 Highest 7 Printer Current	
3 Flow Control 6 600 baud 3 Flow Control 0 No setting 1 No flow control 2 Software flow control 4 Font 0 No setting 5 Character Scaling 0 No setting 6 Print Density 0 No setting 6 Print Density 0 No setting 7 Printer Current 0 No setting 7 Printer Current 0 No setting	
3 Flow Control 7 300 baud 3 Flow Control 0 No setting 1 No flow control 2 Software flow control 4 Font 0 No setting 4 Font 0 No setting 1 Arial 24 CPL 2 Arial 32 CPL 3 Arial 32 CPL 3 Arial 48 CPL 4 Roman8 24 CPL 4 Roman8 24 CPL 5 Character Scaling 0 No setting 6 Print Density 0 No setting 6 Print Density 0 No setting 7 Printer Current 0 No setting	
3 Flow Control 9 No setting 1 No flow control 2 Software flow control 3 Hardware flow control 4 Font 9 No setting 1 Arial 24 CPL 2 Arial 32 CPL 3 Arial 48 CPL 4 Roman8 24 CPL 5 Character Scaling 9 No setting 1 Normal 2 Double Width 3 Double Width 3 Double Height 4 Double Width and Height 6 Print Density 9 No setting 1 Lowest 2 3 4 Highest 7 Printer Current 9 No setting 1 No setting 1 No setting 1 Highest 9 No setting 1 No setting 1 Lowest 2 3 3 4 1 Highest 9 No setting 1 No setting 1 Lowest 2 3 3 4 1 Highest 1 No setting 1 No set	
5 Prove Control 1 No setting 1 No flow control 2 Software flow control 3 Hardware flow control 4 Font 0 No setting 1 Arial 24 CPL 2 Arial 32 CPL 3 Arial 48 CPL 2 Arial 48 CPL 5 Character Scaling 0 No setting 1 Normal 2 Double Width 3 Double Width 3 Double Width 3 Double Width 4 Double Width 3 Double Width 4 Double Width 3 Double Width 4 Double Width 5 4 6 Print Density 0 No setting 1 Lowest 2 3 4 Highest 7 Printer Current	
4 Font 1 No flow control 3 Hardware flow control 4 Font 0 No setting 1 Arial 24 CPL 2 Arial 32 CPL 3 Arial 48 CPL 2 Arial 48 CPL 5 Character Scaling 0 No setting 5 Character Scaling 0 No setting 6 Print Density 0 No setting 6 Print Density 0 No setting 7 Printer Current 0 No setting	
4 Font 2 Software flow control 3 Hardware flow control 3 Hardware flow control 4 Font 0 0 No setting 1 Arial 24 CPL 2 Arial 32 CPL 3 Arial 48 CPL 4 Roman8 24 CPL 5 Character Scaling 0 No setting 1 Normal 2 Double Width 3 Double Width 3 Double Width 3 Double Width and Height 6 Print Density 7 Printer Current 0 No setting 1 Lowest 2 Arial 48 CPL 4 Highest 7 Printer Current	
4 Font 0 No setting 1 Arial 24 CPL 2 2 Arial 32 CPL 2 3 Arial 48 CPL 2 4 Roman8 24 CPL 5 5 Character Scaling 0 No setting 1 Normal 2 Double Width 2 Double Width 2 Double Width 6 Print Density 0 No setting 1 Lowest 2 2 7 Printer Current 0 No setting	
4 Font 0 No setting 1 Arial 24 CPL 2 Arial 32 CPL 3 Arial 48 CPL 4 Roman8 24 CPL 5 Ecma94 24 CPL 5 Ecma94 24 CPL 6 Print Density 0 No setting 1 Normal 2 Double Width 3 Double Height 4 Double Width and Height 6 Print Density 0 No setting 1 Lowest 2 3 3 G 7 Printer Current	
0 No setting 1 Arial 24 CPL 2 Arial 32 CPL 3 Arial 48 CPL 3 Arial 48 CPL 5 Character Scaling 5 Character Scaling 0 No setting 1 Normal 2 Double Width 3 Double Height 4 Double Width and Height 6 Print Density 0 No setting 1 Lowest 2 3 3 4 4 Highest 7 Printer Current	
1 Arial 24 CPL 2 Arial 32 CPL 3 Arial 48 CPL 4 Roman8 24 CPL 5 Character Scaling 5 Character Scaling 6 Print Density 6 Print Density 0 No setting 1 Lowest 2 July 24 CPL 5 Ecma94 24 CPL 6 Print Density 0 No setting 1 Lowest 2 July 24 CPL 6 Printer Current 0 No setting 1 Lowest 2 July 24 CPL 3 July 24 CPL 4 Highest	
2 Arial 32 CPL 3 Arial 48 CPL 4 Roman8 24 CPL 5 Character Scaling 5 Character Scaling 0 No setting 1 Normal 2 Double Width 3 Double Height 4 Double Width and Height 6 Print Density 0 No setting 1 Lowest 2 3 4 Highest 7 Printer Current 0 No setting	
Arial 48 CPL 4 Roman8 24 CPL 5 Ecma94 24 CPL 5 Ecma94 24 CPL 5 Character Scaling 6 Print Density 6 Print Density 7 Printer Current 7 Printer Current 0 No setting 1 Lowest 3 Just 2000 9 No setting 1 Lowest 3 Just 2000 9 No setting 1 Lowest 3 Just 2000 9 No setting 1 Lowest 9 No setting 1 No setting	
5 Character Scaling 5 Character Scaling 6 Print Density 7 Printer Current 6 Rest 7 Printer Current 4 Romans 24 CPL 5 Ecma94 24 CPL 0 No setting 1 Normal 2 Double Width 3 Double Height 4 Double Width and Height 1 Lowest 2 3 4 Highest 0 No setting	
5 Character Scaling 0 No setting 1 Normal 2 Double Width 3 Double Height 4 Double Width and Height 4 Double Width and Height 4 Double Width and Height 1 Lowest 2 3 4 Highest 7 Printer Current 0 No setting 1 Double Width and Height 1 Double Width and	
6 Print Density 7 Printer Current 0 No setting 1 Normal 2 Double Width 3 Double Height 4 Double Width and Height 1 Lowest 2 3 4 Highest 7 No setting 0 No setting 1 Lowest 2 3 4 Highest 0 No setting	
1 Normal 2 Double Width 3 Double Height 4 Double Width and Height 6 Print Density 0 No setting 1 Lowest 2 3 3 4 4 Highest 7 Printer Current 0 No setting	
6 Print Density 2 Double Width 3 Double Height 4 Double Width and Height 4 Double Width and Height 4 Double Width and Height 7 Printer Current 0 No setting 1 Lowest 2 3 4 Highest 7 Printer Current 0 No setting	
6 Print Density 7 Printer Current 7 Printer Current 3 Double Height 4 Double Width and Height 0 No setting 1 Lowest 3 Double Height 4 Double Width and Height 1 Highest 0 No setting 0 No setting	
6 Print Density 0 No setting 1 Lowest 2 3 7 Printer Current 0 No setting 1 Highest 0 Highest	
6 Print Density 0 No setting 1 Lowest 2 3 4 Highest 7 Printer Current 0 No setting	
7 Printer Current 0 No setting 1 Lowest 2 3 4 Highest 0 No setting	
7 Printer Current 0 No setting	
7 Printer Current 0 No setting	
7 Printer Current 0 No setting	
7 Printer Current 0 No setting	
0 No setting	
1 Maximum Current	
2	
3	
4 Minimum Current	
8 Feed Control	
0 No setting	
1 Standard paper, normal printing	
2 Standard paper, upside down prin	ng
4 Labels, normal printing	
9 Sleep Mode	
0 No setting	
1 Never Sleep	
2 Sleep after 1 minute	
3 Sleep after 2 minutes	
4 Sleep after 5 minutes	
5 Sleep after 10 minutes	
6 Ott atter 1 minute	
/ Uttratter 2 minutes	
0 Off after 10 minutes	

Software Selectable Functions

Underline Double height Double width Graphics Horizontal tab, plus setting Form feed, plus setting 11 selectable international character sets Reverse printing Inverse printing Reset Barcodes

Control Codes and Escape Sequences (HP IR Mode)

Horizontal tab HT 9 09 Line feed LF 10 0A Form feed FF 12 0C Carrage return CR 13 0D Cancel CAN 24 18 Double width off Si 15 0F Set print mode ESC NULL ! n 27 0 36 n1 n2 1B 00 24 n1 n2 Set bit image (6 pin single density) ESC NULL * 0 n1 n2 [d] 27 0 42 0 n1 n2 [d] 1B 00 2A 00 n1 n2 [d] Set bit image (24 pin single density) ESC NULL * 1 n1 n2 [d] 27 0 42 0 n1 n2 [d] 1B 00 2A 20 n1 n2 [d] Set bit image (24 pin single density) ESC NULL * 32 n1 n2 [d] 27 0 42 3 n1 n2 [d] 1B 00 2A 20 n1 n2 [d] Underline on ESC NULL = 0 27 0 45 0 1B 00 2A 20 n1 n2 [d] Underline off ESC NULL C n 27 0 45 0 1B 00 43 n Set page length ESC NULL C n 27 0 75 n 1 B 00 43 n Set bage length ESC NULL C n 27 0 75 n 1 B 00 52 n Double width off ESC NULL R n 27 0 86 n 1B 00 57 01	Function	Code	Decimal	Hex
Line fead LF 10 0 0A Form fead FF 12 0C Carriage return CR 13 0D Cancel CAN 24 18 Double width off Si 15 0F Set print mode ESC NULL S n1 n2 27 0 36 n1 n2 [d] 18 00 24 n1 n2 Set bar code start position ESC NULL S n1 n2 [d] 27 0 42 0 n1 n2 [d] 18 00 24 n1 n2 [d] Set bar code start position ESC NULL S n1 n2 [d] 27 0 42 0 n1 n2 [d] 18 00 2A 0 0 n1 n2 [d] Set bit image (8 pin single density) ESC NULL '0 n1 n2 [d] 27 0 42 0 n1 n2 [d] 18 00 2A 0 0 n1 n2 [d] Set bit image (8 pin double density) ESC NULL '32 n1 n2 [d] 27 0 42 3 n1 n2 [d] 18 00 2A 0 0 n1 n2 [d] Set bit image (24 pin double density) ESC NULL '32 n1 n2 [d] 27 0 42 32 n1 n2 [d] 18 00 2A 0 1 n1 n2 [d] Set bit image (24 pin double density) ESC NULL '32 n1 n2 [d] 27 0 42 32 n1 n2 [d] 18 00 2A 0 2 n1 n2 [d] Set bit image (24 pin double density) ESC NULL -1 27 0 45 0 18 00 2A 0 2 n1 n2 [d] Set bit image (24 pin double density) ESC NULL -1 27 0 45 0 18 00 2A 0 2 n1 n2 [d] Underline off ESC NULL -0 27 0 45 0 18 00 2A 0 1 n1 n2 [d] Underline off ESC NULL Cn 27 0 67 n 18 00 44 n Set horizontal tabs ESC NULL N n 27 0 67 n 18 00 44 n Set horizontal tabs ESC NULL N n 27 0 87 n 18 00 44 n Set bit image (3 ESC NULL K n1 n2 [d] 27 0 75 n1 n2 [d] 18 00 45 n n 12 [d] Country select ESC NULL K n1 n2 [d] 27 0 75 n1 n2 [d] 18 00 55 n 1 Double width on ESC NULL K n1 n2 [d] 27 0 102 118 00 55 n 1 Double width on ESC NULL K n1 27 0 102 118 00 56 A n1 [d]mat [d] Pint & fed paper ESC NULL I n 27 0 105 1 18 00 69 01 Compressed bit image graphics ESC NULL I n 27 0 105 1 18 00 69 01 Set Set Set Set Set Set Set Set Set Set	Horizontal tab	HT	9	09
Form feed FF 12 OC Carriage return CR 13 0D Cancel CAN 24 18 Double width off Si 15 0F Set print mode ESC NULL 1 n 27 0 33 n 18 00 24 n1 n2 Set bit mage (8 pin single density) ESC NULL * 0 n1 n2 [d] 27 0 42 0 n1 n2 [d] 18 00 2A 00 n1 n2 [d] Set bit image (8 pin single density) ESC NULL * 0 n1 n2 [d] 27 0 42 0 n1 n2 [d] 18 00 2A 20 n1 n2 [d] Set bit image (24 pin single density) ESC NULL * 32 n1 n2 [d] 27 0 42 0 n1 n2 [d] 18 00 2A 20 n1 n2 [d] Set bit image (24 pin single density) ESC NULL - 1 27 0 42 0 n1 n2 [d] 18 00 2A 20 n1 n2 [d] Underline on ESC NULL - 1 27 0 45 0 18 00 2A 20 n1 n2 [d] Underline on ESC NULL - 0 27 0 45 0 18 00 43 n Set notizontal tabs ESC NULL N n 27 0 86 n 18 00 44 n Set horizontal tabs ESC NULL N n 27 0 87 n1 n2 [d] 18 00 5A n* [d] n=exters] Double width off ESC NULL N n 27 0 100 n* 18 00 5A n* [d] n=	Line feed	LF	10	0A
Carriage returnCR13ODCancelCAN2418CancelSO140EDouble width offSi150FSet print modeESC NULL 1 n27 0 33 n 1 n218 00 24 n nSet print modeESC NULL 1 n 1 n2 [d]27 0 42 0 n1 n2 [d]18 00 2A 00 n1 n2 [d]Set bit image (8 pin single density)ESC NULL 1 n1 n2 [d]27 0 42 0 n1 n2 [d]18 00 2A 00 n1 n2 [d]Set bit image (24 pin single density)ESC NULL 1 n1 n2 [d]27 0 42 0 n1 n2 [d]18 00 2A 01 n1 n2 [d]Set bit image (24 pin single density)ESC NULL 1 n1 n2 [d]27 0 42 3 n1 n2 [d]18 00 2A 01 n1 n2 [d]Underline onESC NULL - 127 0 45 3 n1 n2 [d]18 00 2A 01 n1 n2 [d]Underline ofESC NULL -027 0 45 018 00 2A 01 n1 n2 [d]Underline offESC NULL Q27 0 66 n18 00 2A 01 n1 n2 [d]Underline offESC NULL D27 0 66 n18 00 43 nSet horizontal tabsESC NULL N27 0 87 n18 00 52 nDouble width offESC NULL N27 0 87 n18 00 57 n0Country selectESC NULL N27 0 100 n18 00 57 n0Double width offESC NULL N27 0 10218 00 54 n1 n2 [d]Double width offESC NULL 1 n27 0 10218 00 54 n1 n2 [d]Double width offESC NULL N27 0 105 118 00 57 n0Comtry selectESC NULL N27 0 105 118 00 57 n0Comtry selectESC NULL N27 0 119 118 00 57 n0Double	Form feed	FF	12	0C
Cancel CAN 24 18 Double width off SO 14 OE Double width off Si 15 OF Set print mode ESC NULL \$ n1 n2 27 0 33 n 18 00 21 n Set barcode start position ESC NULL \$ n1 n2 [d] 27 0 42 0 n1 n2 [d] 18 00 2A 0 n1 n2 [d] Set bit image (8 pin double density) ESC NULL * 3 n1 n2 [d] 27 0 42 3 2 n1 n2 [d] 18 00 2A 0 1 n1 n2 [d] Set bit image (24 pin induble density) ESC NULL * 3 n1 n2 [d] 27 0 42 3 2 n1 n2 [d] 18 00 2A 0 1 n1 n2 [d] Set bit image (24 pin induble density) ESC NULL * 3 n1 n1 n2 [d] 27 0 43 3 n1 n2 [d] 18 00 2A 0 1 n1 n2 [d] Underline off ESC NULL - 0 27 0 44 0 18 00 2A 0 1 n1 n2 [d] 18 00 2A 0 1 n1 n2 [d] Set page length ESC NULL - 0 27 0 45 0 18 00 40 set page length 18 00 40 n Set page length ESC NULL R n1 n2 [d] 27 0 7 5 n1 n2 [d] 18 00 44 n set page length 18 00 57 01 Set Davide width off ESC NULL R n1 n2 [d] 27 0 17 n1 n2 [d] 18 00 57 00 set page length 18 00 57 00 <	Carriage return	CR	13	0D
Double width onSO140EDouble width offSi150FSet print modeESC NULL \$ n1 n227 0 33 n1B 00 24 n1 n2Set print modeESC NULL \$ n1 n2 [d]27 0 42 n1 n2 [d]1B 00 2A 00 n1 n2 [d]Set bit image (8 pin single density)ESC NULL * 1 n1 n2 [d]27 0 42 1 n1 n2 [d]1B 00 2A 00 n1 n2 [d]Set bit image (24 pin single density)ESC NULL * 3 n1 n2 [d]27 0 42 3 n1 n2 [d]1B 00 2A 20 n1 n2 [d]Set bit image (24 pin double density)ESC NULL * 3 n1 n2 [d]27 0 42 3 n1 n2 [d]1B 00 2A 20 n1 n2 [d]Underline onESC NULL * 3 n1 n2 [d]27 0 42 3 n1 n2 [d]1B 00 2A 20 n1 n2 [d]Underline offESC NULL = 027 0 45 01B 00 2D 00ResetESC NULL @27 0 76 641B 00 40 0Set bit imageESC NULL D n27 0 75 n1 n2 [d]1B 00 44 nSet bit imageESC NULL N n1 n2 [d]27 0 75 n1 n2 [d]1B 00 48 nSet bit imageESC NULL R n27 0 87 n1B 00 52 nDouble width offESC NULL R n1 n2 [d]27 0 75 n1 n2 [d]1B 00 5A nt [g]net [g]Country selectESC NULL Z m [g]net [g]27 0 100 n1B 00 5A nt [g]net [g]Double width offESC NULL I n27 0 1021B 00 65 nt [g]net [g]Label advanceESC NULL I n27 0 1021B 00 66Reversed offESC NULL I n27 0 1021B 00 66Reversed offESC NULL I n127 0 1021B 00 67 00Double height offESC NULL I n227 0 123 <td>Cancel</td> <td>CAN</td> <td>24</td> <td>18</td>	Cancel	CAN	24	18
Double width off Si 15 0F Set print mode ESC NULL ! n 27 0 33 n 1B 00 21 n Set barcode start position ESC NULL * n 1 n2 [d] 27 0 43 n 1 n2 1B 00 2A 00 n1 n2 [d] Set bit image (8 pin double density) ESC NULL * 1 n1 n2 [d] 27 0 42 0 n1 n2 [d] 1B 00 2A 00 n1 n2 [d] Set bit image (24 pin single density) ESC NULL * 3 n1 n2 [d] 27 0 42 32 n1 n2 [d] 1B 00 2A 20 n1 n2 [d] Set bit image (24 pin double density) ESC NULL * 33 n1 n2 [d] 27 0 42 32 n1 n2 [d] 1B 00 2A 20 n1 n2 [d] Underline on ESC NULL - 1 27 0 44 33 n1 n2 [d] 1B 00 2A 20 n1 n2 [d] Underline off ESC NULL - 0 27 0 45 0 1B 00 42 n Set page length ESC NULL C n 27 0 66 n 1B 00 43 n Set brizontal tabs ESC NULL K n1 n2 [d] 27 0 7 5 n1 n2 [d] 1B 00 44 n Set bit image (24 pin single density) ESC NULL K n1 n2 [d] 27 0 87 n 118 00 57 n0 20 00 nt [d] Country select ESC NULL K n1 n2 [d] 27 0 87 n 118 00 5A nt [d] 1B 00 5A nt [d] 20 00 nt [d] 20 00 nt [d] 20 00 nt [d] 20 00 nt [d]	Double width on	SO	14	0E
Set print modeESC NULL 1 n27 0 33 n1B 00 21 nSet barcode start positionESC NULL \$ n1 n227 0 36 n1 n21B 00 24 n1 n2Set bit image (8 pin single density)ESC NULL * 0 n1 n2 [d]27 0 42 0 n1 n2 [d]1B 00 2A 00 n1 n2 [d]Set bit image (24 pin double density)ESC NULL * 1 n1 n2 [d]27 0 42 32 n1 n2 [d]1B 00 2A 01 n1 n2 [d]Set bit image (24 pin double density)ESC NULL * 32 n1 n2 [d]27 0 42 32 n1 n2 [d]1B 00 2A 21 n1 n2 [d]Underline onESC NULL - 027 0 45 01B 00 2A 21 n1 n2 [d]Underline offESC NULL - 027 0 641B 00 40Set horizontal tabsESC NULL D n27 0 68 n1B 00 44 nSet horizontal tabsESC NULL N n27 0 75 n1 n2 [d]1B 00 44 nSet horizontal tabsESC NULL N n27 0 87 11B 00 57 01Double width offESC NULL N n27 0 87 11B 00 57 01Double width offESC NULL N n27 0 100 n1B 00 64 nLabel advanceESC NULL I27 0 100 n1B 00 66 nReversed offESC NULL I27 0 105 11B 00 66 nReversed offESC NULL I27 0 119 01B 00 70 0Double width offESC NULL I27 0 123 11B 00 70 0Double height offESC NULL I27 0 105 11B 00 66 nReversed offESC NULL I27 0 119 01B 00 70 0Inverse ofESC NULL I27 0 123 11B 00 70 0Inverse offESC AVULL W 027 0 119 01B 00 70 0Inverse offE	Double width off	Si	15	0F
Set barcode start positionESC NULL \$ n1 n227 0 36 n1 n21B 00 24 n1 n2Set bit image (8 pin single density)ESC NULL * 0 n1 n2 [d]27 0 42 0 n1 n2 [d]1B 00 2A 00 n1 n2 [d]Set bit image (8 pin double density)ESC NULL * 1 n1 n2 [d]27 0 42 1 n1 n2 [d]1B 00 2A 01 n1 n2 [d]Set bit image (24 pin single density)ESC NULL * 32 n1 n2 [d]27 0 42 3 2n1 n2 [d]1B 00 2A 20 n1 n2 [d]Set bit image (24 pin double density)ESC NULL * 32 n1 n2 [d]27 0 42 3 2n1 n2 [d]1B 00 2A 20 n1 n2 [d]Underline onESC NULL - 027 0 45 11B 00 2D 00ResetESC NULL - 027 0 65 01B 00 43 nSet page lengthESC NULL C n27 0 67 n1B 00 43 nSet bit imageESC NULL N n27 0 87 n1B 00 48 n n2 [d]Country selectESC NULL N n27 0 87 n1B 00 52 nDouble width offESC NULL R n27 0 87 11B 00 57 01Double width offESC NULL R n [d] n n2 [d]1B 00 5A n [d] n n2 [d]Double width offESC NULL R n [d] n n2 [d] nd f n n2 [d]1B 00 5A n [d] n n2 [d]Double width offESC NULL R n [d] n n2 [d] nd f n n2 [d]1B 00 5A n [d] n n2 [d]Double width offESC NULL R n [d] n n2 [d]1B 00 5A n [d] n n2 [d]Double width offESC NULL N127 0 105 11B 00 65 0 nLabel advanceESC NULL [d] n 27 0 105 11B 00 69 01Reversed ofnESC NULL N127 0 105 11B 00 70 0Double height offESC NULL [d] 27 0 123 01B 00 77 00Double height	Set print mode	ESC NULL ! n	27 0 33 n	1B 00 21 <i>n</i>
Set bit image (8 pin single density)ESC NULL * 0 n1 n2 [d]27 0 42 0 n1 n2 [d]1B 00 2A 00 n1 n2 [d]Set bit image (24 pin indouble density)ESC NULL * 1 n1 n2 [d]27 0 42 3 n1 n2 [d]1B 00 2A 00 n1 n2 [d]Set bit image (24 pin indouble density)ESC NULL * 3 n1 n2 [d]27 0 42 3 n1 n2 [d]1B 00 2A 00 n1 n2 [d]Set bit image (24 pin indouble density)ESC NULL * 3 n1 n2 [d]27 0 42 3 n1 n2 [d]1B 00 2A 00 n1 n2 [d]Underline onESC NULL * 3 n1 n2 [d]27 0 45 01B 00 2A 00 n1 n2 [d]Underline offESC NULL * 3 n1 n2 [d]27 0 45 01B 00 2D 00ResetESC NULL 027 0 64 n1B 00 40Set page lengthESC NULL C n27 0 67 n1B 00 44 nSet brizontal tabsESC NULL N1 n2 [d]27 0 75 n1 n2 [d]1B 00 44 nSet brizontal tabsESC NULL N1 n2 [d]27 0 87 11B 00 57 n1Double width offESC NULL N1 n2 [d]27 0 87 11B 00 57 n1Double width offESC NULL N n27 0 87 11B 00 5A n1 [g1] a* [g2]Print & feed paperESC NULL I127 0 100 n1B 00 6A n1 [g1] a* [g2]Label advanceESC NULL I127 0 105 11B 00 69 00Reversed offESC NULL 127 0 119 01B 00 77 00Inverse offESC NULL [127 0 123 11B 00 78 01Inverse offESC NULL [127 0 123 11B 00 78 01Inverse offESC NULL [127 0 123 11B 00 78 01Inverse offESC NULL [127 0 123 11B 00 78 01<	Set barcode start position	ESC NULL \$ n1 n2	27 0 36 <i>n1 n2</i>	1B 00 24 <i>n1 n2</i>
Set bit image (8 pin double density)ESC NULL * 1 n1 n2 [d]27 0 42 1 n1 n2 [d]1B 00 2A 01 n1 n2 [d]Set bit image (24 pin single density)ESC NULL * 32 n1 n2 [d]27 0 42 33 n1 n2 [d]1B 00 2A 01 n1 n2 [d]Set bit image (24 pin single density)ESC NULL * 33 n1 n2 [d]27 0 42 33 n1 n2 [d]1B 00 2A 01 n1 n2 [d]Underline onESC NULL - 027 0 45 11B 00 2A 01 n1 n2 [d]Underline offESC NULL 027 0 641B 00 40ResetESC NULL 027 0 67 n1B 00 44 nSet page lengthESC NULL 0 n27 0 75 n1 n2 [d]1B 00 44 nSet brizontal tabsESC NULL N n n2 [d]27 0 75 n1 n2 [d]1B 00 44 nSet bit imageESC NULL N n n2 [d]27 0 75 n1 n2 [d]1B 00 57 n1Double width offESC NULL N n27 0 87 01B 00 57 n1Double width offESC NULL 1 127 0 105 11B 00 64 nLabel advanceESC NULL 127 0 105 11B 00 64 nReversed offESC NULL 1 127 0 105 11B 00 66Reversed offESC NULL 127 0 1021B 00 69 01Inverse offESC NULL 127 0 123 01B 00 77 00Inverse offESC NULL 127 0 123 11B 00 78 00GraphicsESC NULL 127 0 123 11B 00 78 00GraphicsESC NULL 127 0 123 01B 00 78 00GraphicsESC NULL 127 0 123 11B 00 78 00Inverse offESC NULL 127 0 123 11B 00 78 00GraphicsESC NULL 127 0 123 11B 00	Set bit image (8 pin single density)	ESC NULL * 0 <i>n1 n2 [d]</i>	27 0 42 0 n1 n2 [d]	1B 00 2A 00 <i>n1 n2 [d]</i>
Set bit image (24 pin single density)ESC NULL * $32 n1 n2[d]$ 27 0 42 $32 n1 n2[d]$ 1B 00 2A $20 n1 n2[d]$ Set bit image (24 pin double density)ESC NULL + $33 n1 n2[d]$ 27 0 42 $32 n1 n2[d]$ 1B 00 2A $20 n1 n2[d]$ Set bit image (24 pin double density)ESC NULL - 127 0 45 11B 00 2A $20 n1 n2[d]$ Underline offESC NULL - 027 0 45 01B 00 2D 00ResetESC NULL 027 0 67 n1B 00 43 nSet horizontal tabsESC NULL 027 0 67 n1B 00 44 nSet brizontal tabsESC NULL N n27 0 82 n1B 00 52 nDouble width onESC NULL W 127 0 87 11B 00 57 01Double width offESC NULL W 127 0 100 n1B 00 5A nf (n1)net (n2)Compressed bit image graphicsESC NULL M27 0 100 n1B 00 5A nf (n1)net (n2)Print & feed paperESC NULL f27 0 100 n1B 00 64 nLabel advanceESC NULL f27 0 1021B 00 69 00Double height onESC NULL in27 0 119 11B 00 77 01Double height onESC NULL in27 0 123 11B 00 77 01Double height offESC NULL (127 0 123 11B 00 78 001Inverse onESC NULL [127 n 123 11B 00 77 00Inverse offESC NULL (127 n 123 11B 00 77 00Inverse offESC NULL [127 n 123 11B 00 78 00GraphicsESC NULL [027 n 123 11B 00 78 00Roman & character setESC <26>27 2481B F8ECM 44 character setE	Set bit image (8 pin double density)	ESC NULL * 1 <i>n1 n2 [d]</i>	27 0 42 1 n1 n2 [d]	1B 00 2A 01 <i>n1 n2 [d]</i>
Set bit image (24 pin double density)ESC NULL * $33 n1 n2 [d]$ 27 0 42 $33 n1 n2 [d]$ 1B 00 2A 21 n1 n2 [d]Underline onESC NULL - 127 0 45 11B 00 2D 01Underline offESC NULL - 027 0 45 01B 00 2D 00ResetESC NULL (20)27 0 641B 00 44 nSet page lengthESC NULL C n27 0 75 n1 n2 [d]1B 00 44 nSet brizontal tabsESC NULL N n27 0 86 n1B 00 44 nSet brizontal tabsESC NULL N n27 0 87 n1B 00 57 01Double width onESC NULL N n27 0 87 11B 00 57 01Double width offESC NULL X nt n2 [d]27 0 90 nt [d1] n24 [d2]Compressed bit image graphicsESC NULL X nt [d1] n24 [d2]1B 00 57 01Print & feed paperESC NULL X nt [d1] n24 [d2]1B 00 64 nLabel advanceESC NULL X nt [d1] n24 [d2]1B 00 66Reversed offESC NULL 127 0 100 n1B 00 69 01Reversed offESC NULL i27 0 105 11B 00 69 00Double height offESC NULL w 127 0 119 01B 00 77 01Inverse offESC NULL [d1]27 0 123 01B 00 78 01Inverse offESC NULL [1]27 n [d2]1B n [d2]Roman & character setESC <20>27 2481B F8Underline onESC <25>27 2501B FAUnderline offESC <25>27 2531B FAUnderline offESC <25>27 2531B FESet brizontal tabsESC <255>27 2551B FFSet b	Set bit image (24 pin single density)	ESC NULL * 32 n1 n2 [d]	27 0 42 32 n1 n2 [d]	1B 00 2A 20 n1 n2 [d]
Underline onESC NULL - 127 0 45 11B 00 2D 01Underline offESC NULL -027 0 45 01B 00 2D 00ResetESC NULL Q 27 0 641B 00 40Set page lengthESC NULL D 27 0 67 n1B 00 43 nSet page lengthESC NULL D 27 0 68 n1B 00 44 nSet bargent labsESC NULL D 27 0 75 n1 n2 [d]1B 00 48 n1 n2 [d]Country selectESC NULL R n27 0 87 11B 00 57 01Double width onESC NULL V 127 0 87 11B 00 57 01Double width offESC NULL V 127 0 87 01B 00 57 00Compressed bit image graphicsESC NULL T ngr n24 [d2]1B 00 64 nPrint & feed paperESC NULL f27 0 100 nr [g1 n24 [d2]Label advanceESC NULL f27 0 105 11B 00 66 nReversed offESC NULL i127 0 105 11B 00 69 00Double height onESC NULL i127 0 119 01B 00 77 01Double height offESC NULL i127 0 123 11B 00 78 00Inverse offESC NULL {027 n 123 01B 00 78 00GraphicsESC n [d]27 n 22 n 2501B F8ECMA 94 character setESC <250 >27 2501B F8Linderline offESC <255 >27 2501B F8Normal width onESC <255 >27 2551B FFSel ftestESC <255 >27 2551B FFSet ftestESC <255 >27 2551B FFSet barcodeESK h [d] NULL29 107 1 [d]1D 680 1 [d]	Set bit image (24 pin double density)	ESC NULL * 33 <i>n1 n2 [d]</i>	27 0 42 33 n1 n2 [d]	1B 00 2A 21 <i>n1 n2 [d]</i>
Underline offESC NULL - 027 0 45 01B 00 2D 00ResetESC NULL @27 0 67 n1B 00 40Set page lengthESC NULL C n27 0 67 n1B 00 43 nSet horizontal tabsESC NULL D n27 0 68 n1B 00 44 nSet brizontal tabsESC NULL K n1 n2 [d]27 0 75 n1 n2 [d]1B 00 48 n1 n2 [d]Country selectESC NULL R n27 0 87 n1B 00 52 nDouble width onESC NULL W 127 0 87 11B 00 57 01Double width offESC NULL Z n1 [d1] n24 [d24]27 0 90 or [d1] n24 [d24]Print & feed paperESC NULL Z n1 [d1] n24 [d24]1B 00 5A or [d1] n24 [d24]Print & feed paperESC NULL I n27 0 100 n1B 00 66Reversed onESC NULL I 127 0 105 11B 00 69 01Reversed offESC NULL I 027 0 115 11B 00 69 00Double height onfESC NULL I 027 0 119 11B 00 77 01Double height offESC NULL V 027 0 123 11B 00 78 00Inverse offESC NULL {127 0 123 11B 00 78 00GraphicsESC r [d]27 n [d]1B n [d]Roman & character setESC <248>27 2481B F8ECM 494 character setESC <250>27 2501B FAUnderline onESC <252>27 2531B FDNormal width onESC <252>27 2531B FBNormal width onESC <255>27 2551B FFSet festESC <255>27 2551B FFResetESC <255>27 2	Underline on	ESC NULL – 1	27 0 45 1	1B 00 2D 01
ResetESC NULL @27 0 641B 00 40Set page lengthESC NULL C n27 0 67 n1B 00 43 nSet horizontal tabsESC NULL C n27 0 68 n1B 00 44 nSet bit imageESC NULL N n27 0 75 n1 n2 [d]1B 00 48 n1 n2 [d]Country selectESC NULL K n1 n2 [d]27 0 75 n1 n2 [d]1B 00 48 n1 n2 [d]Double width ofnESC NULL W 127 0 87 11B 00 57 01Double width offESC NULL W 027 0 87 01B 00 57 00Compressed bit image graphicsESC NULL d n27 0 100 n1B 00 57 n0Compressed onESC NULL d n27 0 100 n1B 00 64 nLabel advanceESC NULL i27 0 100 n1B 00 69 01Reversed onESC NULL i27 0 105 01B 00 69 00Double height onESC NULL w 127 0 119 11B 00 77 01Double height onESC NULL w 027 0 119 11B 00 77 00Inverse offESC NULL [127 0 123 11B 00 78 01Inverse offESC NULL [027 0 123 01B 00 78 00GraphicsESC n/d]27 n [d]1B n [d]Roman 8 character setESC <248>27 2481B F8ECMA 94 character setESC <250>27 2501B FAUnderline onESC <255>27 2531B FDSelf testESC <255>27 2551B FFSet feestESC <255>27 2551B FFSet feestESC <255>27 2551B FFSet feestESC <255>27 2551B FFNorm	Underline off	ESC NULL – 0	27 0 45 0	1B 00 2D 00
Set page lengthESC NULL C n27 0 67 n1B 00 43 nSet horizontal tabsESC NULL D n27 0 68 n1B 00 44 nSet bit imageESC NULL K n1 n2 [d]27 0 75 n1 n2 [d]1B 00 48 n1 n2 [d]Country selectESC NULL K n1 n2 [d]27 0 87 11B 00 57 n1Double width onESC NULL K n127 0 87 11B 00 57 01Double width offESC NULL W 127 0 87 11B 00 57 01Double width offESC NULL Z ntgrt)27 0 87 01B 00 56 nCompressed bit image graphicsESC NULL Z ntgrt)27 0 90 nt [dt]	Reset	ESC NULL @	27 0 64	1B 00 40
Set horizontal tabsESC NULL D n27 0 68 n1B 00 44 nSet bit imageESC NULL K n1 n2 [d]27 0 75 n1 n2 [d]1B 00 4B n1 n2 [d]Country selectESC NULL R n27 0 82 n1B 00 52 nDouble width onESC NULL W 127 0 87 11B 00 57 01Double width offESC NULL W 027 0 87 01B 00 54 n1 [d1] n24 [d24]Print & feed paperESC NULL Z n1 [d1] n24 [d24]27 0 90 n1 [d1] n24 [d24]1B 00 66 nLabel advanceESC NULL I n27 0 100 n1B 00 69 01Reversed onESC NULL i 127 0 105 11B 00 69 00Reversed offESC NULL i 027 0 105 01B 00 77 01Double height onESC NULL i 127 0 103 01B 00 77 01Double height offESC NULL (127 0 123 11B 00 78 01Inverse offESC NULL {127 0 123 11B 00 7B 01Inverse offESC NULL {027 n [d]1B n [d]Roman 8 character setESC <248>27 2481B F8ECMA 94 character setESC <240>27 2501B FAUnderline offESC <250>27 2501B FAUnderline offESC <252>27 2531B FDSelf testESC <255>27 2551B FEResetESC <255>27 2551B FFSelf testESC <255>27 2551B FFSet barcode height (1 ≤ n ≤ 255)GS h n29 104 n1D 68 nPrint UPC-A barcodeGS k 0 [d] NULL29 107 0 [d] 01D 68 01 [d] 00Print UPC-A	Set page length	ESC NULL C n	27 0 67 <i>n</i>	1B 00 43 <i>n</i>
Set bit imageESC NULL K n1 n2 [d]27 0 75 n1 n2 [d]1B 00 4B n1 n2 [d]Country selectESC NULL R n27 0 82 n1B 00 52 nDouble width onESC NULL W 127 0 87 01B 00 57 01Double width offESC NULL W 027 0 87 01B 00 5A n1 [d1]n24 [d2d]Compressed bit image graphicsESC NULL Z n1 [d1]n24 [d2d]27 0 90 n1 [d1]n24 [d2d]1B 00 5A n1 [d1]n24 [d2d]Print & feed paperESC NULL Z n1 [d1]n24 [d2d]27 0 90 n1 [d1]n24 [d2d]1B 00 66 nLabel advanceESC NULL I27 0 105 11B 00 69 01Reversed onESC NULL i27 0 105 01B 00 69 00Double height onESC NULL W 127 0 105 01B 00 77 01Double height offESC NULL W 127 0 119 11B 00 77 01Double height offESC NULL V 027 0 123 01B 00 7B 00Inverse onESC NULL {027 0 123 01B 00 7B 00GraphicsESC n [d]27 n [d]1B n [d]Roman 8 character setESC <248>27 2481B F8ECMA 94 character setESC <250>27 2501B FAUnderline offESC <252>27 2511B FANormal width onESC <252>27 2531B FCDouble width onESC <255>27 2551B FFSelf testESC <255>27 2551B FFSet barcode height (1 ≤ n ≤ 255)GS h n29 107 n [d] 01D 68 0n [d] 00Print UPC-A barcodeGS k 0 [d] NULL29 107 1 [d] 01D 68 01 [d] 00Print	Set horizontal tabs	ESC NULL D n	27 0 68 <i>n</i>	1B 00 44 <i>n</i>
Country selectESC NULL R n27 0 82 n1B 00 52 nDouble width onESC NULL W 127 0 87 11B 00 57 01Double width offESC NULL W 027 0 87 01B 00 57 00Compressed bit image graphicsESC NULL Z nf [gr1]n24 [g24]27 0 90 nr [gr1]n24 [g24]1B 00 5A nr [gr1]n24 [g24]Print & feed paperESC NULL I nt 21n24 [g24]27 0 100 n1B 00 5A nr [gr1]n24 [g24]Label advanceESC NULL I nt 21n24 [g24]1B 00 66Reversed onESC NULL i 127 0 105 11B 00 69 00Double height onESC NULL i 127 0 105 01B 00 69 00Double height onESC NULL w 127 0 119 11B 00 77 01Double height offESC NULL w 027 0 119 01B 00 77 00Inverse onESC NULL { 127 0 123 11B 00 7B 01Inverse offESC NULL { 027 n [d]1B n [d]Roman & character setESC <248>27 2481B F8ECMA 94 character setESC <220>27 2501B FAUnderline offESC <25>27 2511B FBNormal width onESC <25>27 2531B FDSelf testESC <25>27 2551B FFSet barcode height ($1 \le n \le 25$)GS h n29 107 0 [d] 01D 68 0 [d] 00Print UPC-A barcodeGS k 0 [d] NULL29 107 0 [d] 01D 68 00 [d] 00Print UPC-A barcodeGS k 0 [d] NULL29 107 1 [d] 01D 68 01 [d] 00Print UPC-A barcodeGS k 2 [d] NULL29 107 2 [d] 01D 68 02 [d] 00 <td>Set bit image</td> <td>ESC NULL K n1 n2 [d]</td> <td>27 0 75 n1 n2 [d]</td> <td>1B 00 4B <i>n</i>1 <i>n</i>2 <i>[d]</i></td>	Set bit image	ESC NULL K n1 n2 [d]	27 0 75 n1 n2 [d]	1B 00 4B <i>n</i> 1 <i>n</i> 2 <i>[d]</i>
Double width onESC NULL W 127 0 87 11B 00 57 01Double width offESC NULL Z nt [ct]n24 [d24]27 0 87 01B 00 57 00Compressed bit image graphicsESC NULL Z nt [ct]n24 [d24]27 0 90 nt [ct]n24 [d24]1B 00 5A nt [ct]n24 [d24]Print & feed paperESC NULL d n27 0 100 n1B 00 64 nLabel advanceESC NULL i27 0 105 11B 00 69 01Reversed onESC NULL i27 0 105 01B 00 69 00Double height onESC NULL w 127 0 119 11B 00 77 01Double height offESC NULL w 127 0 123 01B 00 77 00Inverse onESC NULL { 127 n 123 11B 00 78 00Inverse offESC NULL { 027 n 123 01B 00 78 00GraphicsESC n [d]27 n [d]1B n [d]Roman 8 character setESC <248>27 2481B F8ECM 94 character setESC <25>27 2501B FAUnderline offESC <252>27 2531B FBNormal width onESC <255>27 2551B FFSelf testESC <255>27 2551B FFSet barcode height (1 ≤ n ≤ 255)GS h n29 107 0 [d] 01D 68 nPrint UCP-E barcodeGS k 1 [d] NULL29 107 1 [d] 01D 68 01 [d] 00Print UCP-E barcodeGS k 2 [d] NULL29 107 2 [d] 01D 68 02 [d] 00	Country select	ESC NULL R n	27 0 82 n	1B 00 52 <i>n</i>
Double width offESC NULL W 027 0 87 01B 00 57 00Compressed bit image graphicsESC NULL Z nt [att] n24 [at24]27 0 90 nt [att] n24 [at24]1B 00 5A nt [att] n24 [at24]Print & feed paperESC NULL d n27 0 100 n1B 00 64 nLabel advanceESC NULL i27 0 1021B 00 69 01Reversed onESC NULL i27 0 105 01B 00 69 00Double height onESC NULL w 127 0 105 01B 00 77 01Double height offESC NULL w 027 0 119 11B 00 77 01Double height offESC NULL w 027 0 123 11B 00 78 01Inverse onESC NULL { 027 0 123 01B 00 78 01Inverse offESC NULL { 027 0 123 01B 00 78 01GraphicsESC at [at]27 2 481B radECMA 94 character setESC <248>27 2491B F8Underline offESC <252>27 2501B FAUnderline offESC <252>27 2531B FBNormal width onESC <255>27 2541B FESelf testESC <255>27 2551B FFSet barcode height (1 ≤ n ≤ 255)GS h n29 107 0 [d] 01D 68 nPrint UPC-A barcodeGS k 0 [d] NULL29 107 1 [d] 01D 68 01 [d] 00Print UPC-A barcodeGS k 2 [d] NULL29 107 2 [d] 01D 68 02 [d] 00	Double width on	ESC NULL W 1	27 0 87 1	1B 00 57 01
Compressed bit image graphicsESC NULL $Z n [gr1] n^{24} [g24]$ $Z7 0 90 n [gr1] n^{24} [g24]$ 1B 00 5A n [gr1] n^{24} [g24]Print & feed paperESC NULL d n $Z7 0 100 n$ 1B 00 64 nLabel advanceESC NULL f $Z7 0 102$ 1B 00 66Reversed onESC NULL i 1 $Z7 0 105 1$ 1B 00 69 00Double height onESC NULL w1 $Z7 0 119 1$ 1B 00 77 01Double height offESC NULL w1 $Z7 0 119 1$ 1B 00 77 01Double height offESC NULL $\{1$ $27 0 123 1$ 1B 00 78 01Inverse onESC NULL $\{0$ $27 0 123 0$ 1B 00 78 00GraphicsESC nULL $\{0$ $27 n [d]$ 1B $n [d]$ Roman 8 character setESC <248> $27 249$ 1B F8ECMA 94 character setESC <250> $27 250$ 1B FAUnderline offESC <252> $27 252$ 1B FAUnderline onESC <252> $27 253$ 1B FENormal width onESC <255> $27 255$ 1B FFSet barcode height $(1 \le n \le 255)$ GS h n29 107 n [d] 01D 68 nPrint UPC-A barcodeGS k 0 [d] NULL29 107 1 [d] 01D 68 00 [d] 00Print UPC-E barcodeGS k 1 [d] NULL29 107 2 [d] 01D 68 02 [d] 00	Double width off	ESC NULL W 0	27 0 87 0	1B 00 57 00
Print & feed paperESC NULL d n27 0 100 n1B 00 64 nLabel advanceESC NULL f27 0 1021B 00 66Reversed onESC NULL i 127 0 105 11B 00 69 01Reversed offESC NULL i 027 0 105 01B 00 69 00Double height onESC NULL w 127 0 119 11B 00 77 01Double height offESC NULL w 127 0 119 01B 00 77 00Inverse onESC NULL { 127 0 123 11B 00 78 00Inverse offESC NULL { 027 0 123 01B 00 78 00GraphicsESC NULL { 027 0 123 01B n [d]Roman 8 character setESC <248>27 2481B F8ECMA 94 character setESC <250>27 2501B FAUnderline offESC <251>27 2511B FBNormal width onESC <252>27 2521B FCDouble width onESC <255>27 2551B FFSelf testESC <255>27 2551B FFSet barcode height ($1 \le n \le 255$)GS h n29 107 1 [d] 01D 68 01 [d] 00Print UCP-E barcodeGS k 1 [d] NULL29 107 2 [d] 01D 68 02 [d] 00Print UCP-E barcodeGS k 2 [d] NULL29 107 2 [d] 01D 68 02 [d] 00	Compressed bit image graphics	ESC NULL Z $n1$ $id11$ $n24$ $id241$	27 0 90 n1 id11 n24 id241	1B 00 5A n1 [d1] n24 [d24]
Label advanceESC NULL f27 0 1021B 00 66Reversed onESC NULL i 127 0 105 11B 00 69 01Reversed offESC NULL i 027 0 105 01B 00 69 00Double height onESC NULL w 127 0 119 11B 00 77 01Double height offESC NULL w 027 0 119 01B 00 78 01Inverse onESC NULL { 127 0 123 11B 00 7B 01Inverse offESC NULL { 027 0 123 01B 00 7B 00GraphicsESC n [d]27 n [d]1B n [d]Roman 8 character setESC <248>27 2481B F8ECMA 94 character setESC <250>27 2501B FAUnderline offESC <251>27 2511B FBNormal width onESC <255>27 2531B FDSelf testESC <255>27 2531B FFResetESC <255>27 2551B FFSelf testESC <255>27 2551B FFSet barcode height ($1 \le n \le 255$)GS h n29 107 0 [d] 01D 68 00 [d] 00Print UPC-A barcodeGS k 1 [d] NULL29 107 1 [d] 01D 68 01 [d] 00Print UPC-E barcodeGS k 1 [d] NULL29 107 1 [d] 01D 68 02 [d] 00	Print & feed paper	ESC NULL d n	27 0 100 <i>n</i>	1B 00 64 <i>n</i>
Reversed onESC NULL i27 0 105 11B 00 69 01Reversed offESC NULL i 027 0 105 01B 00 69 00Double height onESC NULL w 127 0 119 11B 00 77 01Double height offESC NULL w 027 0 119 01B 00 77 00Inverse onESC NULL { 127 0 123 11B 00 78 01Inverse offESC NULL { 027 0 123 01B 00 78 01Inverse offESC NULL { 027 0 123 01B 00 78 00GraphicsESC n [d]27 n [d]1B n [d]Roman 8 character setESC <248>27 2481B F8ECMA 94 character setESC <250>27 2501B FAUnderline offESC <251>27 2511B FBNormal width onESC <252>27 2521B FCDouble width onESC <255>27 2531B FFSelf testESC <255>27 2551B FFSet ftestESC <255>27 2551B FFSet barcode height ($1 \le n \le 255$)GS h n29 107 0 [d] 01D 68 00 [d] 00Print UPC-A barcodeGS k 0 [d] NULL29 107 1 [d] 01D 68 01 [d] 00Print UPC-B barcodeGS k 1 [d] NULL29 107 1 [d] 01D 68 01 [d] 00Print EAN13 barcodeGS k 2 [d] NULL29 107 2 [d] 01D 68 02 [d] 00	Label advance	ESC NULL f	27 0 102	1B 00 66
Reversed offESC NULL i27 0 105 01B 00 69 00Double height onESC NULL w 127 0 119 11B 00 77 01Double height offESC NULL w 027 0 119 01B 00 77 00Inverse onESC NULL { 127 0 123 11B 00 7B 01Inverse offESC NULL { 027 0 123 01B 00 7B 00GraphicsESC n [d]27 n [d]1B n [d]Roman 8 character setESC <248>27 2481B F8ECMA 94 character setESC <249>27 2501B FAUnderline offESC <250>27 2501B FAUnderline onESC <252>27 2521B FDNormal width onESC <252>27 2531B FDSelf testESC <255>27 2551B FEResetESC <255>27 2551B FFSet barcode height (1 \le n \le 255)GS h n29 104 n1D 68 nPrint UPC-A barcodeGS k 0 [d] NULL29 107 0 [d] 01D 6B 00 [d] 00Print UCP-E barcodeGS k 1 [d] NULL29 107 1 [d] 01D 6B 01 [d] 00Print EAN13 barcodeGS k 2 [d] NULL29 107 2 [d] 01D 6B 02 [d] 00	Reversed on	ESC NULL i 1	27 0 105 1	1B 00 69 01
Double height onESC NULL w 1 $27 \ 0 \ 119 \ 1$ $1B \ 00 \ 77 \ 01$ Double height offESC NULL w 0 $27 \ 0 \ 119 \ 0$ $1B \ 00 \ 77 \ 00$ Inverse onESC NULL { 1 $27 \ 0 \ 123 \ 1$ $1B \ 00 \ 7B \ 01$ Inverse offESC NULL { 0 $27 \ 0 \ 123 \ 0$ $1B \ 00 \ 7B \ 00$ GraphicsESC NULL { 0 $27 \ 0 \ 123 \ 0$ $1B \ 00 \ 7B \ 00$ GraphicsESC NULL { 0 $27 \ 0 \ 123 \ 0$ $1B \ 00 \ 7B \ 00$ GraphicsESC $n \ [d]$ $27 \ n \ [d]$ $1B \ n \ [d]$ Roman 8 character setESC <248> $27 \ 248$ $1B \ F8$ ECMA 94 character setESC <220> $27 \ 250$ $1B \ F9$ Underline offESC <250> $27 \ 250$ $1B \ FA$ Underline onESC <252> $27 \ 252$ $1B \ FC$ Normal width onESC <253> $27 \ 253$ $1B \ FD$ Self testESC <255> $27 \ 254$ $1B \ FE$ ResetESC <255> $27 \ 255$ $1B \ FF$ Set barcode height ($1 \le n \le 255$)GS h n $29 \ 104 \ n$ $1D \ 68 \ n$ Print UPC-A barcodeGS k 0 \ [d] NULL $29 \ 107 \ 0 \ [d] \ 0$ $1D \ 68 \ 01 \ [d] \ 00$ Print UPC-E barcodeGS k 1 \ [d] NULL $29 \ 107 \ 1 \ [d] \ 0$ $1D \ 68 \ 02 \ [d] \ 00$ Print EAN13 barcodeGS k 2 \ [d] NULL $29 \ 107 \ 2 \ [d] \ 0$ $1D \ 68 \ 02 \ [d] \ 00$	Reversed off	ESC NULL i 0	27 0 105 0	1B 00 69 00
Double height offESC NULL w 027 0 119 01B 00 77 00Inverse onESC NULL { 127 0 123 11B 00 7B 01Inverse offESC NULL { 027 0 123 01B 00 7B 00GraphicsESC n [d]27 n [d]1B n [d]Roman 8 character setESC <248>27 2481B F8ECMA 94 character setESC <249>27 2501B FAUnderline offESC <250>27 2501B FAUnderline onESC <251>27 2511B FBNormal width onESC <252>27 2521B FCDouble width onESC <254>27 2541B FEResetESC <255>27 2551B FFSelf testESC <255>27 2551B FFSet barcode height ($1 \le n \le 255$)GS h n29 107 0 [d] 01D 6B 00 [d] 00Print UPC-A barcodeGS k 0 [d] NULL29 107 0 [d] 01D 6B 00 [d] 00Print UPC-E barcodeGS k 1 [d] NULL29 107 1 [d] 01D 6B 01 [d] 00Print EAN13 barcodeGS k 2 [d] NULL29 107 2 [d] 01D 6B 02 [d] 00	Double height on	ESC NULL w 1	27 0 119 1	1B 00 77 01
Inverse onESC NULL { 127 0 123 11B 00 7B 00Inverse offESC NULL { 027 0 123 01B 00 7B 00GraphicsESC n [d]27 n [d]1B n [d]Roman 8 character setESC <248>27 2481B F8ECMA 94 character setESC <249>27 2491B F9Underline offESC <250>27 2501B FAUnderline onESC <251>27 2511B FBNormal width onESC <252>27 2521B FDDouble width onESC <253>27 2531B FESelf testESC <254>27 2541B FFResetESC <255>27 2551B FFSet barcode height ($1 \le n \le 255$)GS h n29 104 n1D 68 nPrint UPC-A barcodeGS k 0 [d] NULL29 107 0 [d] 01D 6B 00 [d] 00Print UCP-E barcodeGS k 1 [d] NULL29 107 1 [d] 01D 6B 01 [d] 00Print EAN13 barcodeGS k 2 [d] NULL29 107 2 [d] 01D 6B 02 [d] 00	Double height off	ESC NULL w 0	27 0 119 0	1B 00 77 00
Inverse offESC NULL {If of a bound of a bo	Inverse on	ESC NULL { 1	27 0 123 1	1B 00 7B 01
GraphicsESC $n [d]$ $27 n [d]$ $1B n [d]$ Roman 8 character setESC $< 248 >$ $27 248$ $1B F8$ ECMA 94 character setESC $< 249 >$ $27 249$ $1B F9$ Underline offESC $< 250 >$ $27 250$ $1B FA$ Underline onESC $< 251 >$ $27 252$ $1B FB$ Normal width onESC $< 252 >$ $27 252$ $1B FC$ Double width onESC $< 253 >$ $27 253$ $1B FD$ Self testESC $< 255 >$ $27 254$ $1B FE$ ResetESC $< 255 >$ $27 255$ $1B FF$ Set barcode height ($1 \le n \le 255$)GS h n $29 107 0 [d] 0$ $1D 68 00 [d] 00$ Print UPC-A barcodeGS k 0 [d] NULL $29 107 1 [d] 0$ $1D 68 01 [d] 00$ Print UCP-E barcodeGS k 2 [d] NULL $29 107 2 [d] 0$ $1D 6B 02 [d] 00$	Inverse off	ESC NULL { 0	27 0 123 0	1B 00 7B 00
Roman 8 character setESC <248 27 2481B F8ECMA 94 character setESC <249 27 2491B F9Underline offESC <250 27 2501B FAUnderline onESC <251 27 2511B FBNormal width onESC <252 27 2521B FCDouble width onESC <253 27 2531B FDSelf testESC <254 27 2541B FEResetESC <255 27 2551B FFSet barcode height ($1 \le n \le 255$)GS h n29 104 n1D 68 nPrint UPC-A barcodeGS k 0 [d] NULL29 107 0 [d] 01D 6B 00 [d] 00Print UCP-E barcodeGS k 1 [d] NULL29 107 2 [d] 01D 6B 02 [d] 00Print EAN13 barcodeGS k 2 [d] NULL29 107 2 [d] 01D 6B 02 [d] 00	Graphics	ESC n Idl	27 n [d]	1B <i>n [d]</i>
ECMA 94 character setESC $<249>$ 27 2491B F9Underline offESC $<250>$ 27 2501B FAUnderline onESC $<251>$ 27 2511B FBNormal width onESC $<252>$ 27 2521B FCDouble width onESC $<253>$ 27 2531B FDSelf testESC $<254>$ 27 2541B FEResetESC $<255>$ 27 2551B FFSet barcode height ($1 \le n \le 255$)GS h n29 104 n1D 68 nPrint UPC-A barcodeGS k 0 [d] NULL29 107 0 [d] 01D 6B 00 [d] 00Print UCP-E barcodeGS k 1 [d] NULL29 107 1 [d] 01D 6B 01 [d] 00Print EAN13 barcodeGS k 2 [d] NULL29 107 2 [d] 01D 6B 02 [d] 00	Roman 8 character set	ESC <248>	27 248	1B F8
Los of the following of	FCMA 94 character set	ESC <249>	27 249	1B F9
Underline onESC <251> $27\ 251$ $1B\ FR$ Normal width onESC <252> $27\ 252$ $1B\ FC$ Double width onESC <252> $27\ 253$ $1B\ FD$ Self testESC <253> $27\ 254$ $1B\ FE$ ResetESC <255> $27\ 255$ $1B\ FF$ Set barcode height ($1 \le n \le 255$)GS h n $29\ 104\ n$ $1D\ 68\ n$ Print UPC-A barcodeGS k 0 [d] NULL $29\ 107\ 0$ [d] 0 $1D\ 6B\ 00$ [d] 00Print UCP-E barcodeGS k 1 [d] NULL $29\ 107\ 2$ [d] 0 $1D\ 6B\ 02$ [d] 00Print EAN13 barcodeGS k 2 [d] NULL $29\ 107\ 2$ [d] 0 $1D\ 6B\ 02$ [d] 00	Underline off	ESC <250>	27 250	1B FA
Normal width onESC <252> $27 252$ $1B FC$ Double width onESC <253> $27 253$ $1B FD$ Self testESC <253> $27 253$ $1B FD$ ResetESC <254> $27 254$ $1B FF$ Set barcode height ($1 \le n \le 255$)GS h n $29 104 n$ $1D 68 n$ Print UPC-A barcodeGS k 0 [d] NULL $29 107 0 [d] 0$ $1D 6B 00 [d] 00$ Print UCP-E barcodeGS k 1 [d] NULL $29 107 1 [d] 0$ $1D 6B 01 [d] 00$ Print EAN13 barcodeGS k 2 [d] NULL $29 107 2 [d] 0$ $1D 6B 02 [d] 00$	Underline on	ESC <251>	27 251	1B FB
Normal width onESC <252 $27\ 253$ $1B\ FO$ Double width onESC $<253>$ $27\ 253$ $1B\ FD$ Self testESC $<254>$ $27\ 254$ $1B\ FE$ ResetESC $<255>$ $27\ 255$ $1B\ FF$ Set barcode height $(1 \le n \le 255)$ GS h n $29\ 104\ n$ $1D\ 68\ n$ Print UPC-A barcodeGS k 0 [d] NULL $29\ 107\ 0$ [d] 0 $1D\ 6B\ 00$ [d] 00Print UCP-E barcodeGS k 1 [d] NULL $29\ 107\ 1$ [d] 0 $1D\ 6B\ 01$ [d] 00Print EAN13 barcodeGS k 2 [d] NULL $29\ 107\ 2$ [d] 0 $1D\ 6B\ 02$ [d] 00	Normal width on	ESC <252>	27 252	1B FC
SourceECO 4200-ECO 4200-ECO 4200-ECO 4200-Self testESC <254>27 2541B FEResetESC <255>27 2551B FFSet barcode height $(1 \le n \le 255)$ GS h n29 104 n1D 68 nPrint UPC-A barcodeGS k 0 [d] NULL29 107 0 [d] 01D 6B 00 [d] 00Print UCP-E barcodeGS k 1 [d] NULL29 107 1 [d] 01D 6B 01 [d] 00Print EAN13 barcodeGS k 2 [d] NULL29 107 2 [d] 01D 6B 02 [d] 00	Double width on	ESC <253>	27 253	1B FD
ResetESC <255> $27 255$ $1B FF$ Set barcode height (1 \le n \le 255)GS h n $29 104 n$ $1D 68 n$ Print UPC-A barcodeGS k 0 [d] NULL $29 107 0 [d] 0$ $1D 6B 00 [d] 00$ Print UCP-E barcodeGS k 1 [d] NULL $29 107 1 [d] 0$ $1D 6B 01 [d] 00$ Print EAN13 barcodeGS k 2 [d] NULL $29 107 2 [d] 0$ $1D 6B 02 [d] 00$	Self test	ESC <254>	27 254	18 FE
Set barcode height $(1 \le n \le 255)$ GS h n29 104 n1D 68 nPrint UPC-A barcodeGS k 0 [d] NULL29 107 0 [d] 01D 6B 00 [d] 00Print UCP-E barcodeGS k 1 [d] NULL29 107 1 [d] 01D 6B 01 [d] 00Print EAN13 barcodeGS k 2 [d] NULL29 107 2 [d] 01D 6B 02 [d] 00	Reset	ESC <255>	27 255	18 FE
Print UPC-A barcode GS k 0 [d] NULL 29 107 0 [d] 0 1D 6B 00 [d] 00 Print UCP-E barcode GS k 1 [d] NULL 29 107 1 [d] 0 1D 6B 01 [d] 00 Print EAN13 barcode GS k 2 [d] NULL 29 107 2 [d] 0 1D 6B 02 [d] 00	Set barcode beight $(1 < n < 255)$	GS h n	29104p	1D 68 n
Print UCP-E barcode GS k 0 [d] NULL 29 107 0 [d] 0 1D 0B 00 [d] 00 Print UCP-E barcode GS k 1 [d] NULL 29 107 1 [d] 0 1D 6B 01 [d] 00 Print EAN13 barcode GS k 2 [d] NULL 29 107 2 [d] 0 1D 6B 02 [d] 00	Print LIPC-A barcode		29 107 0 101 0	1D 6B 00 M 00
Print EAN13 barcode GS k 2 [d] NULL 29 107 2 [d] 0 1D 6B 02 [d] 00	Print LICP-E barcode		29 107 1 101 0	1D 6B 01 60 00
	Print EAN13 barcode		29 107 1 [0] 0	1D 6B 02 60 00
Print EAN8 barcode GS k 3 /d1 NUU 20 107 3 /d1 0 1D 6B 02 /d1 00	Print EANS barcode		29 107 2 [0] 0	1D 6B 02 [d] 00
Print Code 39 barcode $GS k 4 IdI NI II I 20 107 4 IdI 0 10 68 04 IdI 00$	Print Code 39 barcode		20 107 3 [d] 0	1D 6B 02 [0] 00
Print 2 of 5 barcode $GS k 5 M NI II I$ $29 107 4 [u] 0$ $10 0B 04 [u] 00$ Print 2 of 5 barcode $GS k 5 M NI II I$ $20 107 5 M I 0$ $10 6B 05 M I 00$	Print 2 of 5 barcode		20 107 - [0] 0 20 107 5 [d] 0	1D 6B 05 1d1 00
Print Codebar barcode GS k 6 /d1 NULL 20 107 5 /d1 0 1D 0D 05 /d1 00	Print Codabar barcode		20 107 6 [d] 0	
Print Couldar barcode Correction $C_{[0]}$ NOLL 28 107 0 [u] 0 1D 0B 00 [u] 00 Print CODE128 barcode CS k 7 n [d] 20 107 7 n [d] 1D 6P 07 n [d]	Print CODE128 barcode	GS k 7 n [d]	20 107 0 [u] 0 20 107 7 n [d]	1D 6B 07 n [d]
Set barcode magnification ($2 \le n \le 4$) GS w n 29 119 n 1D 77 n	Set barcode magnification $(2 < n < 4)$	GS w n	29 119 n	1D 77 n

Control Codes and Escape Sequences (IrDA/RS232 Mode)

Function	Code	Decimal	Hex
Horizontal tab	HT	9	09
Line feed	LF	10	0A
Form feed	FF	12	0C
Carriage return	CR	13	0D
Double width on	SO	14	0E
Double width off	SI	15	0F
Cancel	CAN	24	18
Set print mode	ESC ! n	27 33 n	1B 21 <i>n</i>
Set barcode start position	ESC \$ n1 n2	27 36 n1 n2	1B 24 <i>n1 n2</i>
Set bit image (8 pin single density)	ESC * 0 <i>n1 n2 [d]</i>	27 42 0 n1 n2 [d]	1B 2A 00 <i>n1 n2 [d]</i>
Set bit image (8 pin double density)	ESC * 1 <i>n1 n2 [d]</i>	27 42 1 n1 n2 [d]	1B 2A 01 <i>n1 n2 [d]</i>
Set bit image (24 pin single density)	ESC * 32 n1 n2 [d]	27 42 32 n1 n2 [d]	1B 2A 20 <i>n1 n2 [d]</i>
Set bit image (24 pin double density)	ESC * 33 n1 n2 [d]	27 42 33 n1 n2 [d]	1B 2A 21 <i>n1 n2 [d]</i>
Underline on	ESC – 1	27 45 1	1B 2D 01
Underline off	ESC-0	27 45 0	1B 2D 00
Reset	ESC @	27 64	1B 40
Set page length	ESC C n	27 67 n	1B 43 <i>n</i>
Set horizontal tabs	ESC D n	27 68 n	1B 44 <i>n</i>
Bold on	ESC G	27 71	1B 47
Bold off	ESC H	27 72	1B 48
Set bit image	ESC K n1 n2 [d]	27 75 n1 n2 [d]	1B 4B <i>n1 n2 [d]</i>
Country select	ESC R n	27 82 n	1B 52 <i>n</i>
Double width on	ESC W 1	27 87 1	1B 57 01
Double width off	ESC W 0	27 87 0	1B 57 00
Compressed bit image graphics	ESC Z n1 [d1] n24 [d24]	27 90 n1 [d1] n24 [d24]	1B 5A n1 [d1] n24 [d24]
Print & feed paper	ESC d n	27 100 <i>n</i>	1B 64 <i>n</i>
Label advance	ESC f	27 102	1B 66
Reversed on	ESC i 1	27 105 1	1B 69 01
Reversed off	ESC i 0	27 105 0	1B 69 00
Double height on	ESC w 1	27 119 1	1B 77 01
Double height off	ESC w 0	27 119 0	1B 77 00
Inverse on	ESC { 1	27 123 1	1B 7B 01
Inverse off	ESC { 0	27 123 0	1B 7B 00
Set barcode height (1 <u><</u> n <u><</u> 255)	GS h n	29 104 <i>n</i>	1D 68 <i>n</i>
Print UPC-A barcode	GS k 0 <i>[d]</i> NULL	29 107 0 <i>[d]</i> 0	1D 6B 00 <i>[d]</i> 00
Print UCP-E barcode	GS k 1 <i>[d]</i> NULL	29 107 1 <i>[d]</i> 0	1D 6B 01 <i>[d]</i> 00
Print EAN13 barcode	GS k 2 [d] NULL	29 107 2 <i>[d]</i> 0	1D 6B 02 <i>[d]</i> 00
Print EAN8 barcode	GS k 3 <i>[d]</i> NULL	29 107 3 <i>[d]</i> 0	1D 6B 02 <i>[d]</i> 00
Print Code 39 barcode	GS k 4 <i>[d]</i> NULL	29 107 4 <i>[d]</i> 0	1D 6B 04 <i>[d]</i> 00
Print 2 of 5 barcode	GS k 5 <i>[d]</i> NULL	29 107 5 <i>[d]</i> 0	1D 6B 05 <i>[d]</i> 00
Print Codabar barcode	GS k 6 <i>[d]</i> NULL	29 107 6 <i>[d]</i> 0	1D 6B 06 <i>[d]</i> 00
Print CODE128 barcode	GS k 7 <i>n [d]</i>	29 107 7 <i>n</i> [d]	1D 6B 07 <i>n [d]</i>
Set barcode magnification $(2 \le n \le 4)$	GS w n	29 119 <i>n</i>	1D 77 n

International Character Sets

(HP IR Mode)

(IrDA/RS232 Mode)

Country	Code	Decimal	Hex	Country	Code	Decimal	Hex
USA	ESC NULL R 0	27 0 82 0	1B 00 52 00	USA	ESC R 0	27 82 0	1B 52 00
France	ESC NULL R 1	27 0 82 1	1B 00 52 01	France	ESC R 1	27 82 1	1B 52 01
Germany	ESC NULL R 2	27 0 82 2	1B 00 52 02	Germany	ESC R 2	27 82 2	1B 52 02
UK	ESC NULL R 3	27 0 82 3	1B 00 52 03	UK	ESC R 3	27 82 3	1B 52 03
Denmark I	ESC NULL R 4	27 0 82 4	1B 00 52 04	Denmark I	ESC R 4	27 82 4	1B 52 04
Sweden	ESC NULL R 5	27 0 82 5	1B 00 52 05	Sweden	ESC R 5	27 82 5	1B 52 05
Italy	ESC NULL R 6	27 0 82 6	1B 00 52 06	Italy	ESC R 6	27 82 6	1B 52 06
Spain	ESC NULL R 7	27 0 82 7	1B 00 52 07	Spain	ESC R 7	27 82 7	1B 52 07
Japan	ESC NULL R 8	27 0 82 8	1B 00 52 08	Japan	ESC R 8	27 82 8	1B 52 08
Norway	ESC NULL R 9	27 0 82 9	1B 00 52 09	Norway	ESC R 9	27 82 9	1B 52 09
Denmark II	ESC NULL R 10	27 0 82 10	1B 00 52 0A	Denmark II	ESC R 10	27 82 10	1B 52 0A

Print Mode (ESC!)

				Character Font	Bit 1	Bit 0
Bit	Function	Valu 0	e 1	24 characters per line	0	0
0	Character font			48 characters per line	0	1
1	(see below)			32 characters per line	1	0
2	Print density			Undefined	1	1
3	(see below)					
4	Double height	Cancelled	Set	Print Density	Bit 3	Bit 2
5	Double width	Cancelled	Set	Light 1 (Default)	0	0
6	Undefined			2	0	1
7	Underline	Cancelled	Set	3 (Label Default)	1	0
				Dark 4	1	1

Low Power Mode

The MCP8830 incorporates a low-power mode which minimises the printer's power consumption after approximately ten minutes of inactivity. Further data transmitted to the printer will be ignored. If the host instrument transmits a NULL character one second before any report, the printer will wake-up in time to print the report.

The printer can be re-activated by pressing the Mode button. Printer mode settings and any data stored in the buffer will not be lost during this procedure. Low power mode will not be activated while the mains adapter is used.

Replacing Paper Roll

If the paper roll needs replacing, open the paper cup lid and remove the remaining paper using the Mode button, **do not** *pull paper through the printer mechanism.* Reel off a few centimetres from a new roll of paper and check that the end has a clean straight edge. Slide the leading edge of the paper through the paper entry slot, with the leading edge of the paper feeding forwards from the bottom of the roll, until you feel resistance. Press the Mode button and feed the paper through the printer mechanism. Keep the Mode button depressed until enough paper is fed through the printer mechanism to pass through the paper exit slot. Sit the new paper roll in the paper cup and close the lid.

Should the paper become creased or out of line when feeding in a new roll, cut the end off the paper roll, feed out the creased paper using the Mode button, and reload ensuring the paper has a clean straight edge.

Paper Tear Procedure

When removing printout from the printer, pull the printout toward the front of the printer and tear from one side to the other across the serrated edge.



Martel Instruments Limited

Stanelaw Way, Tanfield Lea Industrial Estate, Stanley, Durham DH9 9XG, UK Tel: +44 (0) 1207 290266 Fax: +44 (0) 1207 290239 Email: sales@martelinstruments.com

USA Sales Office: 14892 Trojan Circle, Huntington Beach, CA 92647 Tel: (714) 892-0086 Fax: (714) 892-0096 Email: martelusa@earthlink.net MCP8830/AD/A

© MARTEL INSTRUMENTS

All instruments designed and manufactured in Great Britain. The manufacturer reserves the right to alter specifications without prior notice