Features

- Easy open paper feature
- High resolution thermal printing
- Quiet, non-impact system
- Maintenance-free
- Compact and light weight
- High reliability
- Versatile, for use with text or graphics
- 12, 16, 24(default), 32, 42 or 48 characters per line
- Suitable for paper and label printing
- Windows driver for Win 7 (32) / Vista(32) / XP(32) and 2000
- Linux and WinCE 5.0 / 6.0 drivers available
- 48mm diameter paper roll support
- Interface—RS232 + flash update capability
- AA NiMh battery Operation, (Alkaline as backup option)
- Integral Magnetic Clamping
- USB
- Bluetooth

Optional

- Real Time clock with backup battery
- Non battery versions, 5V dc, or 10-35Vdc Input Power

Introduction

The MCP1880 (thermal printer), is from the latest range of Martel printers, comprising compact thermal handheld printers incorporating a fixed head mechanism with "Easy open" paper feature, setting new performance standards for handheld units, with a selection of standard options and customisable features.

Designed for maximum versatility, the unit is capable of many different modes of operation. Numerous international character sets and barcodes are selectable and the printer has RS232 and Bluetooth as standard, with USB, RS485, and TTL as factory fit options. With flash upgrade capability as standard, it provides a flexible method of remotely updating the printer firmware for new customer requirements or requests with minimal delay

Non battery options 5V dc, or 10-35Vdc, giving fast, high resolution printing, are also available.

Paper changing is simplified by the use of a hinged front to the robust moulded enclosure incorporating a detachable roller facilitating the "Easy open" functionality.

Martel manufactures a wide range of both cased and compact panel printers, and we would be pleased to discuss the possibility of customising any aspect of the printer to your specific requirements.

SPECIFICATION

General

Printing system	Direct thermal line head
Max Characters per line	48, 32, 24(default), 16 and 12
Character matrix	24x8, 24x9, 24x12 or 24x16
Character size	3mm x 2mm, 3mm x 1.5mm or 3mm x 1mm (Approx. 13, 17 or 25cpi)
Horizontal dot pitch	0.125mm (Approx. 200dpi)
Vertical dot pitch	0.125mm
Text line composition	24x384 dots
Printing width	48mm
Average printing speed	10 lines of text per second (max)

Charger for battery version

MCP1880	9V (Centre negative)

Power supply for non-battery versions

MCP1880X	5-8Vdc
MCP1880V	10-35Vdc

Current consumption

MCP1880/MCP1880X	4A Peak
MCP1880B	2A Peak
MCP1880V	2.7A @ 10V, 1.75A @ 15V, 1.5A @ 20V, 1.2A @ 25V, 1.1A @ 30V, 1A @ 35V peak

Paper and language support

Paper width	58mm
Paper capacity	48mm diameter
Character set	UK / United States (437)
Country codes	USA, France, Germany, UK, Denmark I/II, Sweden, Italy, Japan, Norway, Spain I/II

Data and Interface

RS232	Data format - Default, 1 Start, 8 Data, 1 Stop, No Parity).
	Baud rates - 300, 600, 1200, 2400, 4800, 9600 & 19200, 38400, 57600 & 115200
	Handshaking - Hardware (CTS line) or Software (XON/XOFF)
Bluetooth	Class 1 Bluetooth (SPP)

PIN	Signal	I/0	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

Fig 1: Pin Numbers for Serial Interface Connector

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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 whilst powering the printer ON. 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 four times).
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.

	Option	Setting Number (default in bold)	Setting (default in bold)
1	**RS232 Protocol**	**1**	**8, No parity**
		2	8, Odd parity
		3	8, Even parity
		4	7, Odd parity
		5	7, Even parity
2	**RS232 Baud Rate**	1	115200 baud
		2	57600 baud
		3	38400 baud
		4	19200 baud
		5	**9600 baud**
		6	4800 baud
		7	2400 baud
		8	1200 baud
		9	600 baud
		10	300 baud
3	**RS232 Handshake**	**1**	**None**
		2	Software
		3	Hardware
4	**Bluetooth Pairing**	**1**	**No password**
		2	Password is 1234

5	**Default Font**	**1**	**Arial 16, 24 CPL**
		2	Arial 12, 32 CPL
		3	Arial 9, 42 CPL
		4	Arial 8, 48 CPL
6	**Character Format**	**1**	**Normal**
		2	Double Width
		3	Double Height
		4	Double Width and Height
7	**Print Density**	**1**	**Lowest**
		2	
		3	
		4	Highest
8	**Printer Current**	**1**	**Highest**
		2	
		3	
		4	Lowest
9	**Print Format**	**1**	**Standard paper, normal printing**
		2	Standard paper, upside down printing
		3	Labels, normal printing
		4	Labels, upside down printing
10	**Sleep/Wake-up**	**1**	**Never Sleeps**
		2	Off after 1 minute
		3	Off after 2 minutes
		4	Off after 5 minutes
		5	Off after 10 minutes

MARTEL INSTRUMENTS

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

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 n
Set barcode start position	ESC \$ $n1$ $n2$	27 36 $n1$ $n2$	1B 24 $n1$ $n2$
Set bit image (8 pin single density)	ESC * 0 $n1$ $n2$ [d]	27 42 0 $n1$ $n2$ [d]	1B 2A 00 $n1$ $n2$ [d]
Set bit image (8 pin double density)	ESC * 1 $n1$ $n2$ [d]	27 42 1 $n1$ $n2$ [d]	1B 2A 01 $n1$ $n2$ [d]
Set bit image (24 pin single density)	ESC * 32 $n1$ $n2$ [d]	27 42 32 $n1$ $n2$ [d]	1B 2A 20 $n1$ $n2$ [d]
Set bit image (24 pin double density)	ESC * 33 $n1$ $n2$ [d]	27 42 33 $n1$ $n2$ [d]	1B 2A 21 $n1$ $n2$ [d]
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 n
Set horizontal tabs	ESC D n	27 68 n	1B 44 n
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 $n1$ $n2$ [d]
Country select	ESC R n	27 82 n	1B 52 n
Set black line recognition	ESC L	22 76	1B 4C
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 n	1B 64 n
Reversed on	ESC i 1	27 105 1	1B 69 01
Feed to start of next label	ESC f	27 102	1B 66
Reversed off	ESC i 0	27 105 0	1B 69 00
Send Printer Status	ESC v	27 119	1B 76
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 $\leq$ n $\leq$ 255)	GS h n	29 104 n	1D 68 n
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
Print EAN8 barcode	GS k 3 [d] NULL	29 107 3 [d] 0	1D 6B 02 [d] 00
Print Code 39 barcode	GS k 4 [d] NULL	29 107 4 [d] 0	1D 6B 04 [d] 00
Print 2 of 5 barcode	GS k 5 [d] NULL	29 107 5 [d] 0	1D 6B 05 [d] 00
Print Codabar barcode	GS k 6 [d] NULL	29 107 6 [d] 0	1D 6B 06 [d] 00
Print CODE128 barcode	GS k 7 n [d]	29 107 7 n [d]	1D 6B 07 n [d]
Set barcode magnification (2 $\leq$ n $\leq$ 4)	GS w n	29 119 n	1D 77 n

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International Character Sets

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

Print Mode (ESC!)

Bit	Function	0	1
0	Character font		
1	(see below)		
2	Print density		
3	(see below)		
4	Double height	Cancelled	Set
5	Double width	Cancelled	Set
6	Undefined		
7	Underline	Cancelled	Set

Send Printer Status (ESC v)

Bit	Function	0	1
2	Paper Out	False	True

Print Density

		Bit 3	Bit 2
Light	1 (Default)	0	0
	2	0	1
	3	1	0
Dark	4	1	1

Character Font

	Bit 1	Bit 0
24 characters per line	0	0
48 characters per line	0	1
32 characters per line	1	0
42 characters per line	1	1

Mode Button and Status Operation

Power On Self Test

The self test procedure is initiated by supplying power to the printer while the mode button is depressed. When the mode button is released a test print will be produced.

The printer should be charged from the standard charger provided. Charger input voltage, centre pin –ve, 9VDC.

Battery Charging

The printer uses Ni-MH rechargeable AA cells, which will take up to 16 hours to recharge from fully discharged status. Low battery is indicated by a slow flash of the Status LED.

If the printer is left on charge, charging automatically stops to protect against overcharging or overheating. The printer circuitry will protect the battery from total and deep discharge. It is permissible to leave the printer 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. If the batteries in the printer become exhausted, printing will become faint, erratic or not possible at all. ***Turn off*** the printer and recharge the batteries for at least 15 minutes before attempting further printing. The MPS adapter cannot supply the full power requirements for the printer during printing, so the batteries must be partially charged before printing is possible. The printer should only be used in conjunction with an MPS101(UK), MPS102(EURO), MPS103(US) or MPS161(UNI) 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.***

Status LED

The printer incorporates an LED indicator to report its condition. If there is a fault, the LED will flash in sequence. The fault can be identified by counting the number of flashes.

LED Indication			Condition	Solution
On			Printer On	-
Off			Printer Off	-
*	*	*	Paper out or door open	Fit new paper
**	**	**	Thermal head too hot	Allow head to cool
***	***	***	Battery cut-out (no charge remaining)	Recharge batteries
****	****	****	Battery low (approx. 20% charge remaining)	Recharge batteries

Bluetooth

In order for the Master (Client) device to connect to the printer it must know the printer's unique 12-digit Bluetooth Address. This can be automatically found by a Master using the Service Discovery Protocol, or can be viewed on the Printer's self-test report and manually entered into the Master. Once the printer's Bluetooth Address is known, the Master can connect to the RFCOMM layer of the printer and then send data to be printed. At the end of each print session, the Master should drop the connection in order to conserve printer power.

Paper Out

The printer will automatically detect when the printer paper has run out, and report this using the Status LED. Use the Mode button to feed through the last few centimetres of paper and fit a new roll.

Head Thermal Limit

After extensive printing the print head temperature may rise to an unusable level. The Status LED will report when this occurs, and printing will be suspended until the head temperature returns to normal levels.

Paper Tear Procedure

When removing printout from the printer, pull the printout toward the tear bar and tear from one side to the other across the serrated edge. Note: paper can be torn in either direction as this printer has a double faced tear bar.

How To Open Lid

Pull the lever until the lid is released from its locked position. To avoid damage do not use excessive force.
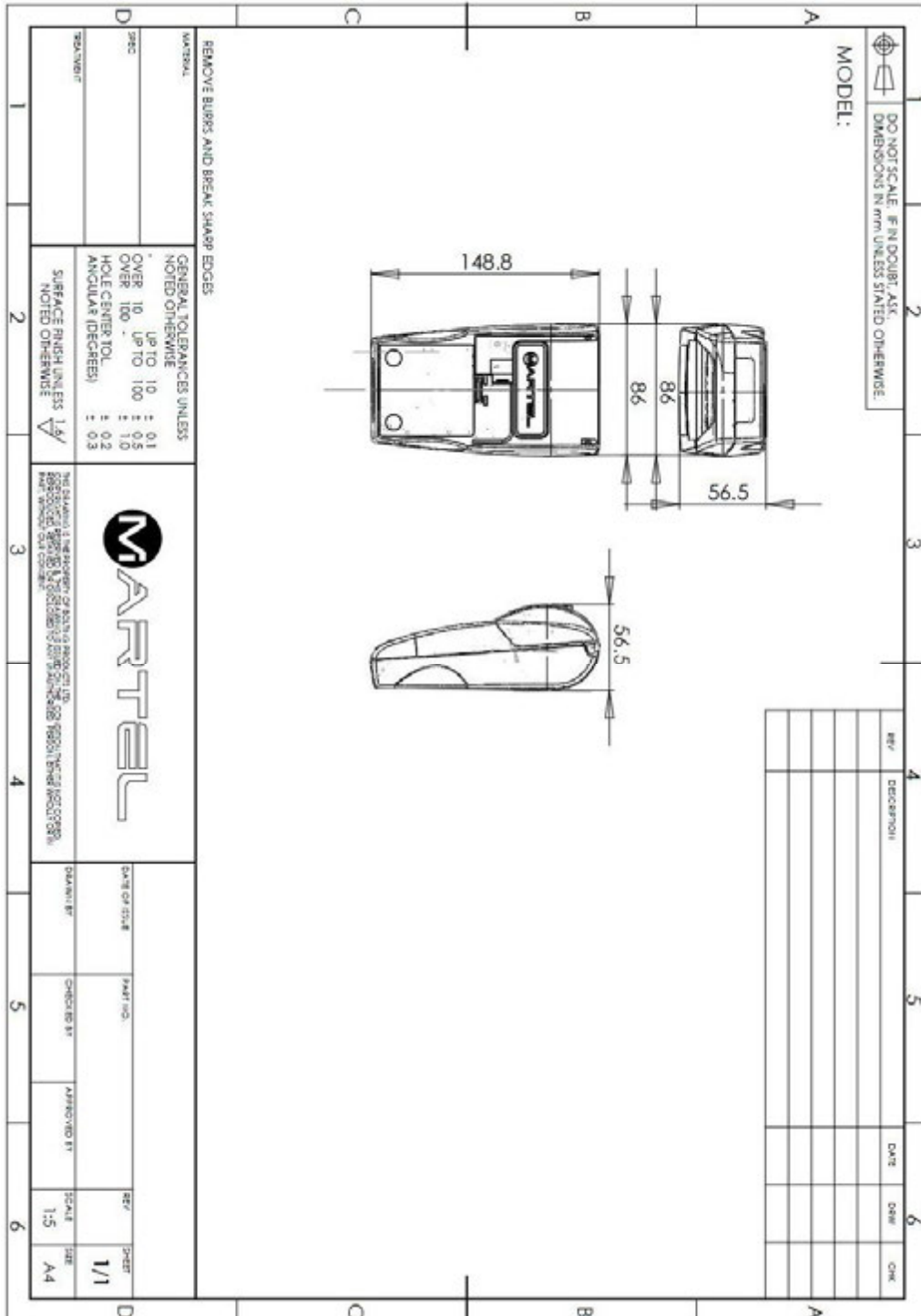

Replacing Paper Roll

If the paper roll needs replacing, open the paper cup lid and remove the remaining paper. Reel off a few centimetres from a new roll of paper. Hold approximately 5cm of paper outside the device as you place the new roll into the reservoir. Close the lid by applying equal amounts of pressure on each side ensuring the lid is in the locked position. Now tear the spare paper away.

Paper Feed

Depressing the mode button will allow paper to be fed through the printer.

MCP1880/AD/B