

Printer series

MCP6700

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Features

- Impact printer solution
- Compact and light-weight
- Power Supply Options
- Versatile, for use with text or graphics
- 12, 24, 20, 40, 21 or 42 characters per line
- Standard 57mm wide plain paper
- Manufactured in the UK

MCP6700 Series

MCP6701	24 cpl, rechargeable NiMH batteries
MCP6701X	24 cpl, external 5Vdc Power Supply
MCP6702	40 cpl, rechargeable NiMH Batteries
MCP6702X	40 cpl, external 5Vdc Power Supply
MCP6703	42 cpl, rechargeable NiMH batteries
MCP6703X	42 cpl, external 5Vdc Power Supply

Introduction

The MCP6700 Series incorporates either a 24, 40 or 42 column miniature impact mechanism capable of printing at 2.5, 1.5 or 1.0 l/s with an MTBF of 1.5M, 900K or 700K text lines, using a standard ERC-09 ink ribbon cartridge for back printing.

Power options include internal rechargeable Ni-MH batteries or an external 5Vdc Universal Power Supply. Rechargeable batteries may be continuously trickle charged from a mains power adapter but an optional fast charge version can be supplied. UK, Euro, US and Universal versions of the power adapter are available.

Designed for maximum versatility, the MCP670 Series are capable of many different modes of operation. These are controlled by a combination of switch settings and external software commands via an RS232C serial interface with an industry standard 25 pin D-type connector.

The MCP6700 Series is from a family of printers manufactured in the UK by Martel. The robust ABS housing is ideally suited for desktop applications. We would be pleased to discuss the possibility of customising any aspect of the printer to individual requirements.

1.1 Overall Specification

Printing system Impact dot matrix printer

Max characters per line

MCP6701	24
MCP6702	40
MCP6703	42

Character matrix 8x6 (8x12 double width)

Character size

MCP6701	3mm x 2mm (Approx. 13cip)
MCP6702	3mm x 1.22mm (Approx. 21cip)
MCP6703	2.6mm x 1.1mm (Approx. 23cip)

Vertical dot pitch 0.37mm

Text line composition

MCP6701	8x144 dots	MCP6702	8x240 dots	MCP6703	8x252 dots
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Average printing speed

MCP6701	2.5 lines per second	MCP6702	1.5 lines per second	MCP6703	1.0 lines per second
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Horizontal dot pitch

MCP6701	0.33mm (Approx. 77dpi)
MCP6702	0.2mm (Aprox. 127 dpi)
MCP6703	0.19mm (Approx 133dpi)

Ribbon cartridge ERC-09B

Dimensions 125mm x 193mm x 92mm

Weight Approx. 610 grammes

Power supply

MCP6701, 6702, 6703	4.8V (600mAH, NiMH battery pack)
MCP6701X, 6702X, 6703X	external 5Vdc

Paper width 57mm (+0mm -1mm) Printing width 48mm

Character set UK/United States (437)

Country codes USA, France, Germany, UK, Denmark I/II, Sweden, Italy, Spain & Japan

Interface

Input data format 7 or 8 bit RS232C (1 Stop, No, Even or Odd Parity)

Connector 25-way D-type socket

Baud rates 100, 300, 600, 1200, 2400, 4800, 9600 & 19200

Handshaking Hardware (DTR line) or Software (XON/XOFF)

Environmental Conditions

Operating range 0°C to +50°C Storage range -40°C to +60°C Charging range +10°C to +45°C

MTBF					
MCP6701	1.5M lines	MCP6702	900K lines	MCP6703	700K lines

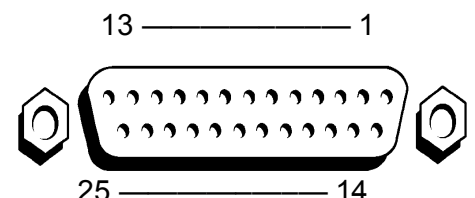
1.2 Serial Interface

The RS232C standard is used, and the baud rate is selectable from 110, 300, 600, 1200, 2400, 4800, 9600, and 19200 bits per second via the DIP switches.

The printer is fitted with a 25-way D-type 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	FGND	N/A	Frame Ground
2	TxD	0	Transmitted data to host
3	RxD	1	Received data from host
4	RTS	0	(+10V via 1K)
5	CTS	0	Clear to send
7	GND	N/A	Signal Ground
20	DTR	0	Data terminal ready
6, 8-19, 21-25	n/c	N/A	No connection

Fig 1: Pin Numbers for Serial Interface Connector



1.3 Printer Mechanism

The printer mechanism comprises an eight solenoid impact dot matrix head, and DC motor driven transport. Head position is derived from a home switch and tacho generator, allowing high accuracy printing independent of battery voltage.

Paper jam: The printer will automatically detect any paper jam which causes the head to stop moving. If a jam occurs, printing is aborted and the Status indicator will flash. Turn the printer off, remove the paper jam and turn the printer back on before continuing printing.

2. PRINTER OPERATION

MCP6701, 6702 & 6703

2.1 Battery Charging

Power is supplied to the printer from a 4.8V internal Ni-MH battery pack.

The mains adapter will trickle charge the batteries when the printer is turned on or off (charge time approx. 16 hours). The Status indicator will light to show that the battery pack is nearly exhausted.

Power consumption

Standby		35mA
Running -	Min	300mA
	Ave	600mA
	Max	2A

Battery Pack

Capacity	600mAH
Charge current	60mA

Battery life Approx. 1 hour of continuous printing

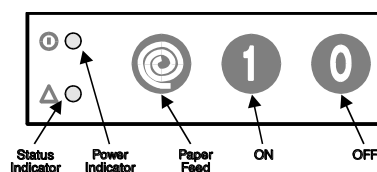
Note: The peak current can reach a maximum of 5A.

The MCP6700 Series should **only** be used in conjunction with an MPS101(UK), MPS102(EURO), MPS103(US), MPS160(UNI) 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.**

2.2 Power on Procedure

Check the power supply is connected and switched ON. Open the paper cup lid and ensure that paper 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. Switch on the printer using power switch located on the front panel of the printer. The Power indicator will light and the printer mechanism will reset.

Trickle charge will take place when the Printer is **OFF** or **ON**



MCP6701X, 6702X & 6703X

2.1 Power Supply

Power is supplied to the printer from an external 5Vdc supply.

5Vdc



Power consumption

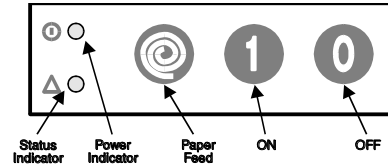
Standby		35mA
Running -	Min	300mA
	Ave	600mA
	Max	2A

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

The MCP6701X, MCP6702X and MCP6703X should only be used in conjunction with an MPS120 Universal 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.**

2.2 Power on Procedure

Check the power supply is connected and switched ON. Open the paper cup lid and ensure that paper 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. Switch on the printer using the power switch located on the front panel of the printer. The Power Indicator will light and the printer mechanism will reset.



2.3 Power on Self Test

The self test procedure is initialised by turning on the printer with the Paper Feed button pressed. Release the Paper Feed button and the self test procedure will start. This will check most of the printer functions, except for the serial interface, i.e.

- Printer mechanism
- Control circuitry
- Firmware version
- DIP switch settings
- Print Quality

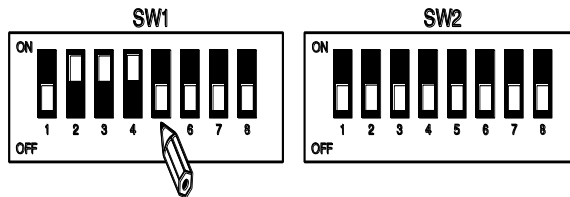
3. PRINTER CONFIGURATION

3.1 Hardware Selectable Functions

These are set using the DIP switches and are only read when the printer is turned on. See below for detailed explanation of the DIP switch settings (Fig. 2 illustrates the default DIP switch settings).

To change the DIP switch settings, (make sure the printer is off before making any changes), use a pencil or similar thin pointed object.

Fig 2:
DIP switch default settings



	SW 1 – 1	SW 1 – 2	SW 1 – 3	SW 1 – 4	SW 1 – 5	SW 1 – 6	SW 1 – 7	SW 1 – 8
Normal Printing	OFF							
Inverted printing	ON							
Software handshake		OFF						
Hardware handshake		ON						
110 Baud			OFF	OFF	OFF			
300 Baud			OFF	OFF	ON			
600 Baud			OFF	ON	OFF			
1200 Baud			OFF	ON	ON			
2400 Baud			ON	OFF	OFF			
4800 Baud			ON	OFF	ON			
9600 Baud			ON	ON	OFF			
19200 Baud			ON	ON	ON			
8 Data Bits						OFF		
7 Data Bits						ON		
No Parity							OFF	
With Parity							ON	
Even Parity								OFF
Odd Parity								ON

	SW2- 1	SW2- 2	SW2- 3	SW2- 4	SW2- 5	SW2- 6	SW2- 7	SW2- 8
<i>Normal height</i>	OFF							
Double height	ON							
<i>Normal width</i>		OFF						
Double width		ON						
<i>DTR normal</i>			OFF					
DTR inverted			ON					
<i>Text Mode</i>				OFF	OFF			
Hex mode				OFF	ON			
1000 emulation mode				ON	OFF			
Diagnostic mode				ON	ON			
<i>Auto wake up disabled</i>						OFF		
Auto wake up enabled						ON		
<i>Auto power off disabled</i>							OFF	
Auto power off enabled							ON	
<i>Power off delay 5 mins</i>								OFF
Power off delay 1 min								ON

Text mode is the default mode of operation for the printer. In this mode text characters can be printed in normal, double width, double height, inversed, reversed, and underlined format. Graphics can also be printed using the 'ESC K' sequence.

Hex mode causes all incoming characters to be printed as their hexadecimal value. Printing occurs after eight characters have been received or when the paper feed button is pressed. Seven data bit parity errors are indicated by the hexadecimal value being underlined.

1000 Emulation mode causes the printer to emulate the native mode of the 1000 series printers. This mode is only offered to provide backward computability with these printers and is not recommended for new designs.

Diagnostic mode is used to perform various tests on the printer hardware using a terminal device connected to the serial port. This mode is only intended for use by Martel.

3.3 Software Selectable Functions

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

3.4 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 ! <i>n</i>	27 33 <i>n</i>	1B 21 <i>n</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 <i>n</i>	27 67 <i>n</i>	1B 43 <i>n</i>
Set horizontal tabs	ESC D <i>n</i>	27 68 <i>n</i>	1B 44 <i>n</i>
Define bit image	ESC K <i>n1 n2 [d]</i>	27 75 <i>n1 n2 [d]</i>	1B 4B <i>n1 n2 [d]</i>
Country select	ESC R <i>n</i>	27 82 <i>n</i>	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
Print & feed paper	ESC d <i>n</i>	27 100 <i>n</i>	1B 64 <i>n</i>
Reversed on	ESC i 1	27 105 1	1B 69 01
Reversed off	ESC i 0	27 105 0	1B 69 00
Status request	ESC v	27 118	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
Delete	DEL	127	7F

3.5 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

4. PRINTER MAINTENANCE

4.1 Replacing Paper Roll

If the paper roll needs replacing, open the paper cup lid (squeeze cup lid as shown in Fig 3) and remove the remaining paper using the Paper Feed button, **do not pull paper out of the rear of the printer mechanism**. Reel off a few centimetres from a new roll of paper and check that the end has a clean straight edge (see Fig 4). 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 paper feed button and feed the paper through the printer mechanism (see Fig 5). Keep the paper feed 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.

Fig 3: Cut the end off the paper so that the end has a clean straight edge

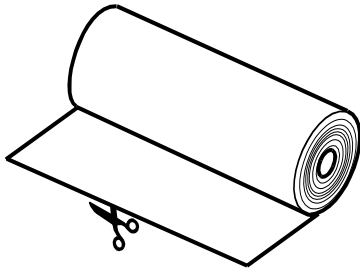
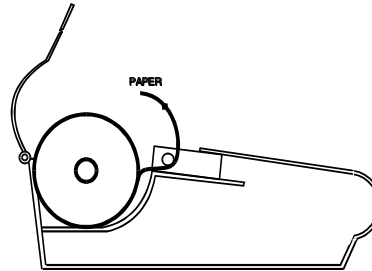
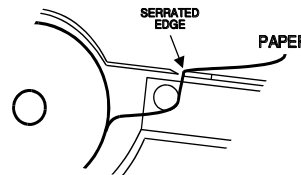


Fig 4: Position of paper roll in printer



4.2 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



4.3 Disposal

At the end of its working life the printer should be disposed of in accordance with The Waste Electrical and Electronic Regulations ("the WEEE Regulations), if in use within the EU, and in accordance with national requirements in other countries.

The MCP6701, MCP6702 and MCPMCP6703 printers contain batteries that should be disposed of by a qualified recycler or hazardous material handler.

5. ACCESSORIES & CONSUMABLES

5.1 Power Adaptors

Description	Use with	Part Number
Adaptor with UK plug	MCP6701, MCP6702, MCP6703	MPS101
Adaptor with Euro plug	MCP6701, MCP6702, MCP6703	MPS102
Adaptor with US plug	MCP6701, MCP6702, MCP6703	MPS103
Universal Power Adaptor	MCP6701, MCP6702, MCP6703	MPS160
Universal Power Adaptor with detachable plugs, UK, US and European	MCP6701, MCP6702, MCP6703	MPS161
Universal Power Supply	MCP6701X, MCP6702X, MCP6703X	MPS120

5.2 Mains Leads

Description	Use with	Part Number
Mains Lead with US style plug	MPS120, MPS160	MGK50
Mains Lead with UK style plug	MPS120, MPS160	MGK51
Mains Lead with Euro style plug	MPS120, MPS160	MGK52

5.3 Paper

Description	Part Number
Impact Paper Roll, 19m	MP57

5.4 Data Cables

Description	Part Number
Serial Cable, D25/D9	MGK06
Serial Cable, D25/D25	MGK07

5.5 Replacement Battery

Description	Use with	Part Number
Battery Pack, NiMH	MCP6701, MCP6702, MCP6703	MJ12.01

5.6 Replacement Ribbon

Description	Use with	Part Number
Black	All models	ERC-09B



MCP6700/AD/M

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