



Features

- High reliability Epson mechanisms
- 5V and 10-35Vdc supply options
- Compact and lightweight
- 24, 40 and 42 characters per line
- Versatile, for use with text or graphics
- Parallel or Serial interface (TTL and RS232)
- Manufactured in the UK

Introduction

The MPP5370 series are compact printers setting new performance standards for impact panel-mount units.

Designed for maximum versatility, the MPP5370 series of printers are capable of many different modes of operation. Numerous international character sets are selectable and the printers are available in several configurations to accept Centronics parallel, RS232 serial or TTL serial data.

Power supply options include a single 5Vdc or a 10—35Vdc for ease of use and a self-test facility is incorporated.

Paper and ribbon changing is simplified by the use of a hinged front to the robust moulded enclosure and high reliability mechanisms are used throughout.

The MPP5370 series are part of a large family of printers manufactured in the UK by Martel. We would be pleased to discuss the possibility of customising any aspect of the printer to specific requirements.

1. PRINTER SPECIFICATIONS

1.1 Overall Specification

Printing System	Impact dot matrix system
Character set	UK/United States (437)
Country codes	USA, France, Germany, UK, Denmark I/II, Sweden, Italy, Spain & Japan
Interface	
Serial	
Input data format	RS232C/TTL (7 and 8 Data, Parity options selectable)
Baud rates	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, & 115200
Handshaking	Hardware (CTS line) or Software (XON/XOFF)
Buffer size	5KBytes
Parallel	
Input data format	8-Bit Centronics
Handshaking	STROBE and BUSY
Power supply	5 (+/-0.5)Vdc
Current consumption, operating	0.35 Amps peak
Power supply (V Suffix)	10-35 (+/-0.25)Vdc
Current consumption, operating	0.2A @ 10V, 0.18A @ 15V, 0.16A @ 20V, 0.14A @ 25V, 0.12A @30V, 0.1A @ 35V
Dimensions	
Bezel	112x66mm
Depth behind panel	85mm or 113mm for V model.
Panel cutout	107x60mm
Environmental Conditions	
Operating range	0°C to +50°C
Storage range	-20°C to +60

1.2 Model Types

Model Number	Chars/Line	Print Speed	Dots/Line	Paper Width	Mechanism	Mean Current	MTBF
MPP5371	24	0.7 lines/sec	144	57.5 mm	M160	0.2A	500,000 lines
MPP5376	42	1.0 lines/sec	252	57.5 mm	M183	0.2A	700,000 lines
MPP5377	24	2.5 lines/sec	144	57.5 mm	M190	0.35A	1,500,000 lines
MPP5378	40	1.5 line/sec	240	57.5 mm	M192	0.35A	900,000 lines

NB For 10—35Vdc models add suffix V after model number, e.g. MPP5378V

1.3 Printer Mechanism

The printer mechanism comprises a multiple 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.

1.4 Data Interface

Each model in the MPP5370 series is available with a choice of three data interface connections, denoted by the appropriate suffix:

- **16S** 16 way connector, serial RS232
- **16PS** 16 way connector, parallel or serial TTL RS232

2. MPP537X – 16S

SERIAL RS232

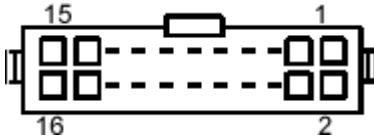
The baud rate of the RS232 interface is selectable from 300, 600, 1200, 2400, 4800, 9600 and 19200 bits per second.

Data Received from host (RxD) is pin 4.

Data Transmitted to host (TxD) is pin 2.

Clear to send (CTS) for hardware handshaking is pin 1.

2.1 Connections for 5Vdc models



Pin no.	Signal	I/O	Definition
1	CTS	0	RS232 Clear to send
3	NC		
5	NC		
7	NC		
9	+V		Mechanism +V supply
11	0V		Ground
13	0V		Ground
15	+V		Mechanism +V supply

Pin no.	Signal	I/O	Definition
2	TxD	0	RS232 Transmit data
4	RxD	I	RS232 Receive data
6	$\overline{\text{FEED}}$	I	Paper feed signal
8	$\overline{\text{RESET}}$	I	Initialisation signal
10	+5V		Logic +5V supply
12	0V		Ground
14	0V		Ground
16	+V		Mechanism +V supply

$\overline{\text{FEED}}$ (pin 6) allows paper feed to be controlled remotely when taken low.

$\overline{\text{RESET}}$ (pin 8) initialises the printer. All input data will be cleared and the paper advanced by one line when $\overline{\text{RESET}}$ is low.

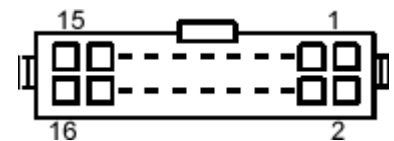
2.2 Connections for 10-35Vdc models

Pin no.	Signal	I/O	Definition
1	0V		Ground
2	10-35V		+V supply

J1



J2



Pin no.	Signal	I/O	Definition
1	CTS	0	RS232 Clear to send
3	NC		
5	NC		
7	NC		
9	NC		
11	0V		Ground
13	0V		Ground
15	NC		

Pin no.	Signal	I/O	Definition
2	TXD	0	RS232 Transmit data
4	$\overline{\text{RXD}}$	I	RS232 Receive data
6	$\overline{\text{FEED}}$	i	Paper feed signal
8	$\overline{\text{RESET}}$	I	Initialisation signal
10	NC		
12	0V		Ground
14	0V		Ground
16	NC		

3.1 Serial Interface

Serial TTL data is input to pin 1.
Nc = no connection

3.2 Parallel Interface

8 bit data (pins 1, 3, 5, 7, 9, 11, 13, 15 corresponding to D7 – D0) is read into the printer by the $\overline{\text{STROBE}}$ signal (pin 16) and BUSY (pin 2) handshaking and is stored in the data memory.

One line of data is printed following receipt line of data and a CR or LF code.

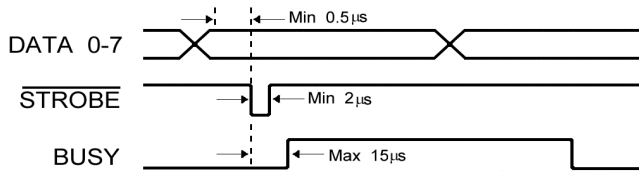
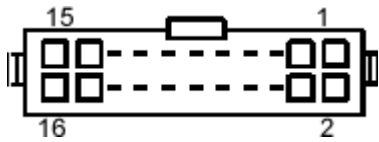


Fig 2: Parallel Data Transfer Timing Diagram

3.3 Connections for 5Vdc models



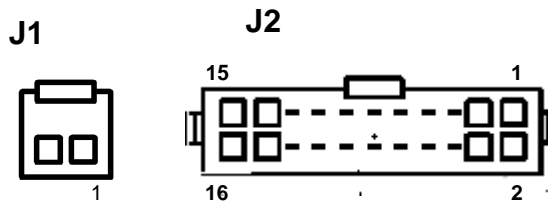
Pin no.	Signal	I/O	Definition
1	DATA 7/SI	I	Data input 7/Serial in
3	DATA 6	I	Data input 6
5	DATA 5	I	Data input 5
7	DATA 4	I	Data input 4
9	DATA 3	I	Data input 3
11	DATA 2	I	Data input 2
13	DATA 1	I	Data input 1
15	DATA 0	I	Data input 0 (LSB)

Pin no.	Signal	I/O	Definition
2	BUSY	O	Busy output
4	NC		
6	Ground		Ground 0V
8	Ground		Ground 0V
10	POWER		+5VDC (Mechanism)
12	POWER		+5VDC (Controller)
14	$\overline{\text{RESET}}$	I	Printer reset
16	$\overline{\text{STROBE}}$	I	$\overline{\text{STROBE}}$

$\overline{\text{RESET}}$ (pin 14) initialises the printer. All input data will be cleared and the paper advanced by one line when $\overline{\text{RESET}}$ is low.

3.4 Connections for 10-35Vdc models

Pin no.	Signal	I/O	Definition
1	0V		Ground
2	10-35V		+V supply



Pin no.	Signal	I/O	Definition
1	DATA 7/SI	I	Data input 7/Serial in
3	DATA 6	I	Data input 6
5	DATA 5	I	Data input 5
7	DATA 4	I	Data input 4
9	DATA 3	I	Data input 3
11	DATA 2	I	Data input 2
13	DATA 1	I	Data input 1
15	DATA 0	I	Data input 0 (LSB)

Pin no.	Signal	I/O	Definition
2	BUSY	O	Busy output
4	NC		
6	NC		
8	NC		
10	NC		
12	NC		
14	$\overline{\text{RESET}}$	I	Printer reset
16	$\overline{\text{STROBE}}$	I	$\overline{\text{STROBE}}$

RESET (pin 14) initialises the printer. All input data will be cleared and the paper advanced by one line when **RESET** is low.

5. PRINTER CONFIGURATION

5.1 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 paperfeed button and power 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 feed button.
3. Press the feed button the same number of times as the *option* that you wish to change (for example to change baud rate, press the feed button once).
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 feed 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 feed 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.

Option Number	Option	Setting Number (default in bold)	Setting (default in bold)
1	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
2	RS232 Protocol	1	8, No parity
		2	8, Odd parity
		3	8, Even parity
		4	7, Odd, parity
		5	7, Even Parity
3	RS232 Handshake	1	None
		2	Software
		3	Hardware
4	Character Format	1	Normal
		2	Double Width
		3	Double Height
		4	Double Width and Height
5	Print Format	1	Standard paper, normal printing
		2	Standard paper, upside down printing

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

5.3 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>
Set 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
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

5.4 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

5.5 Print Mode (ESC!)

Bit	Function	Value	
		0	1
0	Undefined		
1	Undefined		
2	Undefined		
3	Undefined		
4	Double height	Cancelled	Set
5	Double width	Cancelled	Set
6	Undefined		
7	Underline	Cancelled	Set

6. PRINTER OPERATION

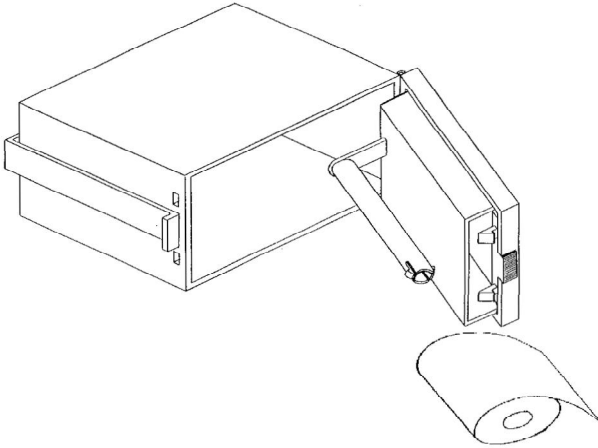
6.1 Power On Self Test

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

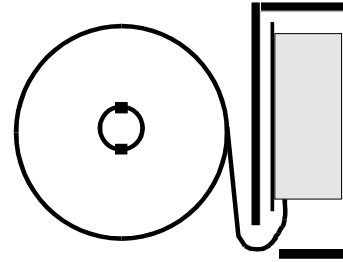
6.2 Replacing Paper Roll

Access to the printer for changing the paper roll is provided by a hinged front panel. The spring-loaded catch on the left hand side of the printer front panel should be depressed to release the front panel.

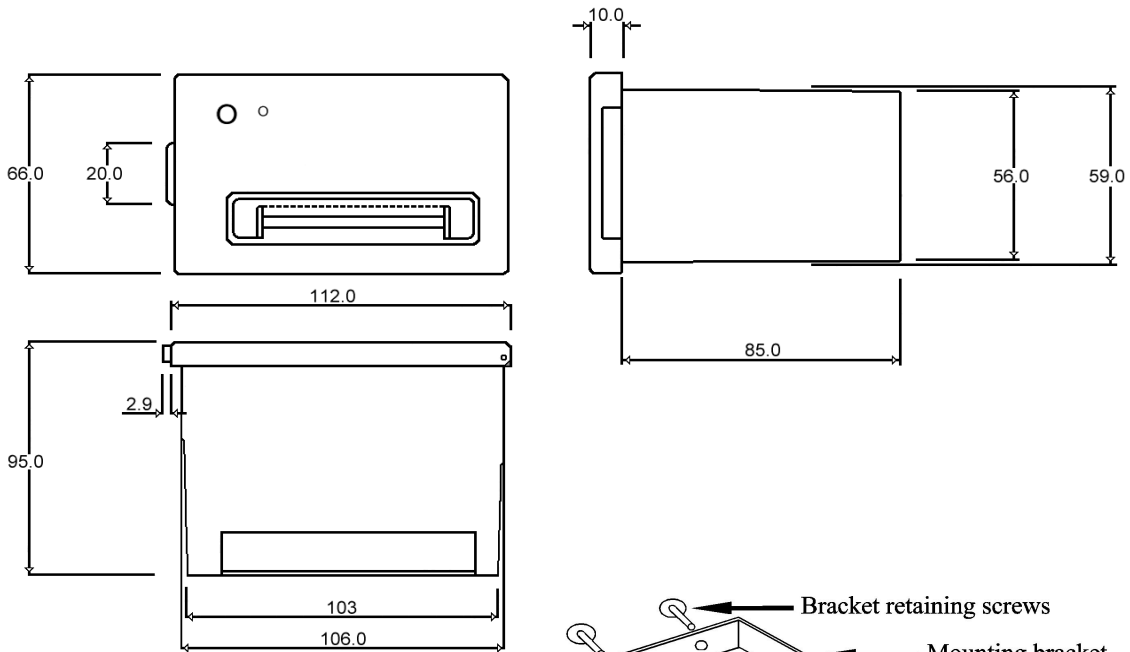
The paper roll carrier is mounted on the rear of the printer front panel and will swing out from the main body for ease of roll changing.



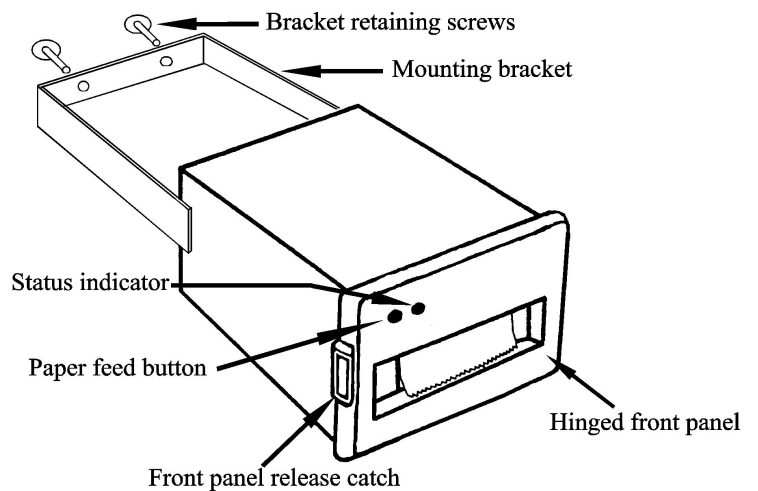
Correct paper path



6.3 Dimensions



Panel Cutout 107x60



7. ACCESSORIES & CONSUMABLES

7.1 Power & Data Cables

Description	For Use with	Part Number
Power & Data Cable, 150mm, 16pin IDC plus bare end	-16S, -16PS	MGK88
Power Cable, 150mm, 2pin Molex KK plus bare end	10-35Vdc Printers	MGK90

7.2 Paper & Ribbons

Description	For Use with	Part Number
Impact Paper Roll, 57mm x 19m	MPP5371, 5376, 5377, 5378	MP57
Ribbon, Black	MPP5371, 5376, 5377, 5378	ERC09-B

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MPP5370/AD/L

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