TELPAR.
Your Printer Solutions Company

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PRINTER SPECIFICATIONS

	M180	M190	M181	M191	M182	M192	M183
Paper width(mm)	57.5	57.5	57.5	57.5	57.5	57.5	57.5
width(in)	2.25	2.25	2.25	2.25	2.25	2.25	2.25
Dots per Line (ND)	144	144	180	192	216	240	252
Characters /Line(NC)	24	24	30	32	36	40	42
Lines per second	1.7	2.5	1.3	1.9	1.1	1.5	1.0

Units with the microprocessor labeled T5678 would operate M180 series printers ONLY and had a character set of 176 printable characters (subset of IBM *P/C* set). Units with the microprocessor labeled T189 Ver 1.00 or Ver 1.01 will operate M190 or M180 series printers (but not the M191 or M192) and have a character set of 224 printable characters (IBM *PIC* set). Units with the microprocessor labeled T189 Ver 2.00 will operate any of the M180 series or any of the M190 series printers but requires a DIP switch selection (PL1xxRMS or PL1xxRMS2) or STRAP selection (PL1xxRMP) to select between the M180 or M190 series of printers.

There have been 2 series of PC boards used in this product line. The T180RM series had connectors only for the M180 series of printers but the T189ro.1 series has connector locations for either the M180 or M190 series of printers.

STANDARD FEATURES

```
5 volt d.c. input power operation.        SERIAL RS232 INTERFACE (PL1xxRMS).
6912 character input buffer.              SERIAL RS422/485 INTERFACE (PL1xxRMS2).
Paper feed/self test input.               CENTRONICS PARALLEL INTERFACE (PL1xxRMP).
NORMAL or INVERTED print.                 Underline text.
```

Double wide, double high, or double wide AND double high. Normal and double wide characters may be mixed on any line but double high causes the entire line to be double high.
Bit image graphics mode using EPSON line printer ESC K protocol.
FAST PAPER FEED by the paper feed input or by using the "immediate feed command (ESC J +n)".

OPTIONAL FEATURES

12 Volt D.C. power input (Includes a linear regulator).
120 Volt A.C. power input. (Includes the linear regulator and a 12VAC, 19 VA wall mount transformer).

SELF TEST

SELF TEST is initiated by the ESC T command or by pressing the PAPER FEED switch while turning on power. SELF TEST reports the version of the software installed, the model of printer connected, and various set-up parameters (such as interface type). The entire alphabet is also printed.

ADJUSTMENTS

Rl- 1OOKohm pot allows print solenoid time to be shortened to allow for variations between printers.

PI -POWER connector

```
Molex# 09-74-1031 = 1x3 0.045" sq.post L/R.
pin   name   I/0   function
 1    gnd    I     common.
 2    +5     I     +5 volts.
 3    +v     I     Strapped via E2 to +5 volts. E2 can be cut and +V to power the mechanism
                    seperately from the +5 logic supply can be applied at this pin if user desires.
```

POWER REQUIREMENTS

```
VOLTAGE --Regulated +5 volts d.c.
CURRENT REQUIREMENT:
   STANDBY -- (ON but not printing) --- 25 ma. typical (CMOS logic).

   With M180 series printer   PRINTING --- 4.5 amps peak.
                                    1.0 amps average printing typical ASCII text.
   With M190 series printer   PRINTING --- 6.5 amps peak.
                                    1.3 amps average printing typical ASCII text.
NOTE-Average current varies depending on density of dots printed.
```

P3 -Paper Feed & Reset Connector

```
Molex# 22-03-2091 = 1x9 0.025"sq. post.
pin   name   I/0   function
 9    /PF    I     Low = paper feed. Low at power on = SELF TEST.
 7    --     -     no connection.
 6    /RST   I     Low pulse yields RESET.
 4    PE     I     Normally connected to gnd by strap at El. If the strap is cut, then a high
                    input at this pin means out of paper.
 1    IS     0     Current source for PE LED. Pins 2, 3, 5, & 8 are grounds.
```

No paper out sensor is furnished. If a paper out sensor is added by the user then the etch must be cut between the two pads at the jumper pad El. This allows pin 4 of connector P3 to be used as a paper out input signal from a paper out sensor supplied by the user.
A 12" cable assembly is furnished with all PLlxxRM printers which includes the mating connector for P3 on the pc board and a push button PAPER FEED switch which should be mounted in a convenient location on the front panel. THE PAPER FEED SWITCH IS REQUIRED FOR PAPER LOADING.

DIP SWITCH settings (PLIxxRMS and PLIxxRMS2 ONLY):

With the release of Telpar's first surface mount PL1XXRMS (RS-232) model series of printers during the summer of 2011, it was discovered that the 8 Position DIPSWITCH settings were exactly opposite from the settings of our original board. Therefore, it is necessary to show the setting tables for both the original, through-hole board, and the settings for the newer, Rev D, surface mount boards. If your board's silkscreen reads "**Rev D 10-29-08**" or shows a higher revision or date level (located to the left of center), then you must reference the "Rev D" tables below. For all other PL1XXRMS and PL1XXRMS**2** boards, you must reference the "ORIGINAL" Tables directly below.

ORIGINAL Through Hole Boards PL18XRMS Series DIPSWITCH Settings:

Switch Position 1	Switch Position 2	Switch Position 3	Baud Rate
OFF	OFF	OFF	19200
ON	OFF	OFF	9600
OFF	ON	OFF	4800
ON	ON	OFF	2400
OFF	OFF	ON	1200
ON	OFF	ON	600
OFF	ON	ON	300
ON	ON	ON	150

	Switch Position 4	Switch Position 5	Switch Position 6	Switch Position 7	Switch Position 8
ON	Enable Parity Checking	Odd Parity	7 Data Bits	PL190 Series Printer	Right side-up Printing
OFF	Disable Parity Checking	Even Parity	8 Data Bits	PL180 Series Printer	Upside-down Printing

_____

Rev D Surface Mount Boards PL18XRMS Series DIPSWITCH Settings:

Switch Position 6	Switch Position 7	Switch Position 8	Baud Rate
OFF	OFF	OFF	19200
OFF	OFF	ON	9600
OFF	ON	OFF	4800
OFF	ON	ON	2400
ON	OFF	OFF	1200
ON	OFF	ON	600
ON	ON	OFF	300
ON	ON	ON	150

	Switch Position 1	Switch Position 2	Switch Position 3	Switch Position 4	Switch Position 5
ON	Right side-up Printing	PL190 Series Printer	7 Data Bits	Odd Parity	Enable Parity Checking
OFF	Upside-down Printing	PL180 Series Printer	8 Data Bits	Even Parity	Disable Parity Checking

_____

STRAP option for MI80/MI90 selection or INVERTED PRINT mode
(PLIxxRMP Parallel Printers ONLY)

➢ SWI position MI90 must have a strap installed if an MI90 series printer is used.

➢ SWI position INV must have a strap installed to cause normal (not INVERTED) print.

CONTROL CODES

```
hex dec name function
OA  10  LF   PRINT contents of buffer without moving the column pointer. Clear DOUBLE HIGH mode.
OD  13  CR   PRINT contents of buffer, move the column pointer to LEFT MARGIN. Clear DOUBLE HIGH mode.
OE  14  SO   SET DOUBLE WIDE print for text. SINGLE WIDE and DOUBLE WIDE print can intermix on any print
             line. DOUBLE WIDE stays in effect until the CLEAR DOUBLE WIDE command is received.
OF  15  SI   SET DOUBLE HIGH print mode for text and/or BI graphics. DOUBLE HIGH printing is on a line by
             line basis. The line will be SINGLE HIGH or DOUBLE HIGH depending on the mode when a line is
             printed. DOUBLE HIGH print mode is cleared when the CLEAR DOUBLE HIGH command is received or
             whenever a line is printed.  The print can be due to any of the print commands or a print due to
             a line length overflow.
14  20  DC4  CLEAR DOUBLE WIDE print mode.
15  21  NAK  CLEAR DOUBLE HIGH print mode.
1B  27  ESC  ESCAPE header---see ESCAPE Sequences section.
```

ESCAPE SEQUENCES

An ESCAPE sequence is the ESC character immediately followed by the byte or bytes as defined below to complete the sequence. In the first column of the table below +n refers to another byte, +s refers to more than 1 byte to be sent to complete the command sequence. Abbreviations used: NC = Number Of Characters per line. ND = Number Of Dots per line. DL = Dot Line. CL = Character Line. LM = Left Margin (default = 1). RM = Right Margin (default = NC). BI = Bit Image graphics.

Example: To turn the printer's **UNDERLINE MODE** to **'ON'**, send the following Escape sequence:

```
Send    ESC – 1  (Character representation)
OR send 27 45 1  (decimal representation)
OR send 1B 2D 01 (hexadecimal representation)
```

```
   hex  dec  name  function
+n 20   32   (sp)  TAB to character position n. Range = 1 to RM. Command is ignored if n is out of range.
                   n is for SINGLE WIDE character positions even if DOUBLE WIDE mode is selected at the time.
+n 24   36   $     TAB to dot position "n". Range = I to RM*6. Command is ignored if n is out of range.
```

NOTE ---If the margins are changed with the ESC X +s command, either TAB command can still TAB back to position 1 but the RM sets the right limit of printing.

```
+n 2D   45   -   UNDERLINE MODE n=O is OFF, n=1 is ON.
   30   48   0   Set line spacing to 9 DL/CL. (Default)
   31   49   I   Set line spacing to 8 DL/CL. (no BI space).
   32   50   2   Set line spacing to 12 DL/CL.
   40   64   @   INITIALIZE PRINTER.
+n 41   65   A   Set line spacing to n DL/CL. n=O thru 8 is treated as n=8. n=9 thru 127 is treated as n. n
                 > 127 is treated as (n-128).
+n 43   67   C   Will cause a pause while the controller tries to activate an AUTOCUTTER.
                 These boards have no provision for driving an autocutter.
+n 4A   74   J   PRINT if needed then FAST feed paper n DL. The column counter is not changed.
+s 4B   75   K   BIT IMAGE MODE -------see BI section.
   54   84   T   SELF TEST is run.
+s 58        X   Set MARGINS. +s : two more bytes (nl & n2) which will define the leftmost and rightmost
                 character positions to be used for printing. Range = I to NC. Command is ignored if either
                 n=O. Command is ignored if nl=n2 and both are in range.
                 One byte > NC is treated as n=NC. Both bytes > NC sets right margin to NC and left margin
                 to NC-l.
```

I/0 CONNECTORS and TIMING

```
P4-PL1xxRMS I/0 c 2x13 0.025" sq. post -RS232 pinout compatible.
pin   name   I/0   function
 2    XD     0     RS232 transmitted data (no function).
 3    RD     I     RS232 received data.
 7    GND    -     Logic ground.
20    DTR    0     Hardware handshake line.


P4-PLlxxRMS2 I/0 c lx9 0.025" sq. post -RS422/RS485.

pin   name   I/0   function
 1    RD+    I     RS422 received data +.
 2    RD-    I     RS232 received data -.
 3    GND    -     Logic ground.
 4    DTR+   0     RS422 hardware handshake line +.
 5    DTR-   0     RS422 hardware handshake line -.
 7    XD+    0     RS422 transmitted data + (no function).
 8    XD-    0     RS232 transmitted data -(no function).
 9    pu     0     3.3 Kohm pullup resistor to +5 volts. .


P4-PLlxxRMP I/O=2x18 0.025" sq. post-CENTRONICS pinout compatible.
pin   name   I/0   function ,
 1    /stb   I     Active low pulse to send data to printer.
 2    Do     I     ASCII data bit 0 (lsb).
 3    Dl     I     ASCII data bit 1.
 4    D2     I     ASCII data bit 2.
 5    D3     I     ASCII data bit 3.
 6    D4     I     ASCII data bit 4.

 7    D5     I     ASCII data bit 5.
 8    D6     I     ASCII data bit 6.
 9    D7     I     ASCII data bit 7 (msb).
10    /ACK   0     Active low pulse when data is accepted.
11    BUSY   0     High level when printer cannot accept data.
12    PE     0     HIGH level when printer is out of paper.
                   (No paper out sensor is furnished.)
31    /INIT  I     Low pulse resets the PLlxxRMP.
32    /ERROR 0     Normally high, low = error condition.

      Pins 13 & 35 are pulled up to +5 volts.
      Pins 16, 17, 19 thru 30, and 33 are grounds.
      Pins 14, 15, 18, 34, & 36 are not connected.
```
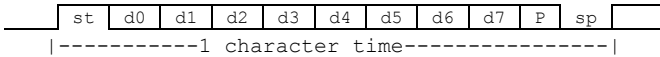
PLlxxRMS and PLlxxRMS2 SERIAL timing

```
     | st | d0 | d1 | d2 | d3 | d4 | d5 | d6 | d7 | P | sp |
    |----------1 character time----------------|
```
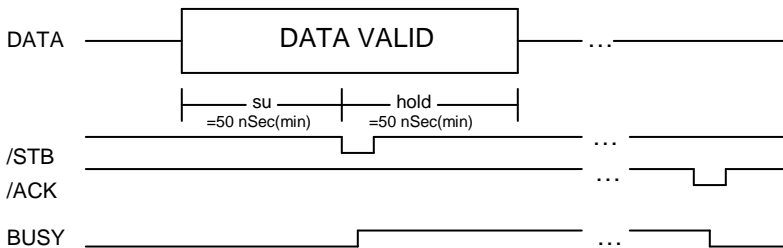
st=start bit. sp=stop bit. P =parity bit (optional).
dO thru D7= data bits, dl is optional unless needed for graphics. Width of each bit depends on baud rate.

NOTE ...The data byte must be 10 bits minimum length. 7 DATA bits, NO parity, and 1 STOP bit is NOT a valid combination to send to the printer.

NOTE ...Polarity shown (START BIT high and STOP BIT low) is for RS232 voltage levels of serial data stream.

PLlxxRMP PARALLEL timing

su=setup time DATA VALID to /STB LOW = 50 nanoseconds(min).
hold=hold time /STB LOW to DATA can change = 50 nanoseconds(min).
/STB width = 20 nanoseconds(min). /ACK width = 0.5 microseconds(typical)
/STB LOW to BUSY high = 40 nanoseconds(typical).

OPTIONAL REAR COVER

        If the rear cover is used with a parallel interface printer, a 36 pin centronics connector will be provided as the I/0. If the rear cover is used with a serial interface printer, either a DB25S or an RJll connector can be provided as the I/0.
        The rear cover option is specified by adding the option designator to the end of the model number.
        /RC(DB25) -For serial version with a DB25 connector.
        /RC(RJll) -For serial version with an RJll connector.
        /RC--------For parallel version with a 36 pin centronics connector.
Example part number to order: PL180RMS/5DC/RC(DB25).
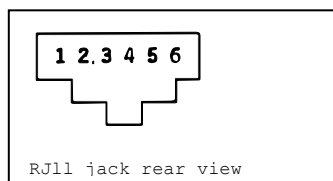See pages A4 and A5 for dimension.

I/O CONNECTORS IF REAR COVER (RC OPTION) IS ORDERED

/RC(DB25) OPTION - DB25S CONNECTOR for RS232 operation.

pin	name	I/O	function
2	XD	O	No function -always negative voltage
3	RD	I	RS232 received data.
7	GND	-	Logic ground.
20	DTR	O	Hardware handshake line.

/RC(RJ11) OPTION - RJ11 CONNECTOR for RS232 operation.

pin	name	I/O	function
2	RD	I	RS232 received data.
4	DTR	O	Hardware handshake line.
5	GND	-	Logic ground.

RJll jack rear view

/RC(DB25) OPTION - DB25S CONNECTOR for RS422/485 operation

pin	name	I/0	function
15	RDA	I	RS422 received data non-inverting input.
17	RDB	I	RS422 received data inverting input.
7	GND	-	Logic ground.
19	DTRA	0	RS422 BUSY signal non-inverting output.
25	DTRB	0	RS422 BUSY signal inverting output.

/RC(RJ11) OPTION - RJ11 CONNECTOR for RS422/485 operation.

pin	name	I/0	function
1	RDA	I	RS422 received data non-inverting input.
2	RDB	I	RS422 received data inverting input.
3	GND	-	Logic ground.
4	DTRA	0	RS422 BUSY signal non-inverting output.
5	DTRB	0	RS422 BUSY signal inverting output.

/RC OPTION - CENTRONICS type connector for PARALLEL operation.

pin	name	I/0	function
1	/stb	I	Active low pulse to send data to printer.
2	DO	I	ASCII data bit O (lsb).
3	D1	I	ASCII data bit 1.
4	D2	I	ASCII data bit 2.
5	D3	I	ASCII data bit 3.
6	D4	I	ASCII data bit 4.
7	D5	I	ASCII data bit 5.
8	D6	I	ASCII data bit 6.
9	D7	I	ASCII data bit 7 (msb).
10	/ACK	0	Active low pulse when data is accepted.
11	BUSY	0	High level when printer cannot accept data.
12	PE	0	HIGH level when printer is out of paper. (No paper out sensor is furnished.)
31	/INIT	I	Low pulse resets the PL1xxRMP.
32	/ERROR	O	Normally high, low = error condition.

Pins 13 & 35 are pulled up to +5 volts.

Pins 16, 17, 19 thru 30, and 33 are grounds.

Pins 14, 15, 18, 34, & 36 are not connected.

(BI) BIT IMAGE GRAPHICS mode

The ESC K protocol is similar to EPSON line printers with limitations due to the fact that the printers used have a fixed number of dot positions (ND). If more data is specified than the printer being used is capable of printing, the first ND (Left part) wiII be printed and the remaining columns of data wiII be ignored (truncated to ND). If the margins are changed with the ESC X +s command then the effective ND is also changed.

Protocol: ESC K n1 n2 (n2*256 + n1 bytes of data) PRINT.
Example: IBhex K 16dec Idec (272 bytes of data) ODhex
will print 272 columns of BIT IMAGE graphics
(truncated at ND columns).

If the number of bytes = N, the values of nl and n2 are:
n1 (lsb) = the remainder of dividing N by 256 (N MOD 256).
The range is Odec thru 255dec but any number larger than the number of dots per line wi II be truncated.
n2 (msb) = the integer quotient of dividing N by 256 (INT(N/256)).
Any data for n2 > Odec wi II be truncated.

The character line spacing remains in effect so if the graphics is desired to be printed on adjacent character lines with no blank dot lines between the graphics lines, the line spacing must be set by sending ESC 1 (8 DL/CL). ,

The first byte of data wiII be printed in the current dot position as a vertical group of 8 dots as defined by the data byte. The most significant bit of the byte wiII be printed at the top of the group of dots and the least significant bit wiII be printed at the bottom of the group of dots (If the appropriate bit is a logical 1, a dot wiII be printed. If the bit is a 0, nothing wiII print at that position). The second byte wiII be printed in the next dot position etc., etc, until byte n1 + (n2x256) is printed. Printing does not occur until a PRINT command is received or until more than ND bytes of data are received.
Graphics data and ASCII text data can be printed on the same line by not printing until all required data is in the printer's input buffer. Printing wiII occur if a PRINT command is received or if the ND counter gets greater than the ND for the printer.
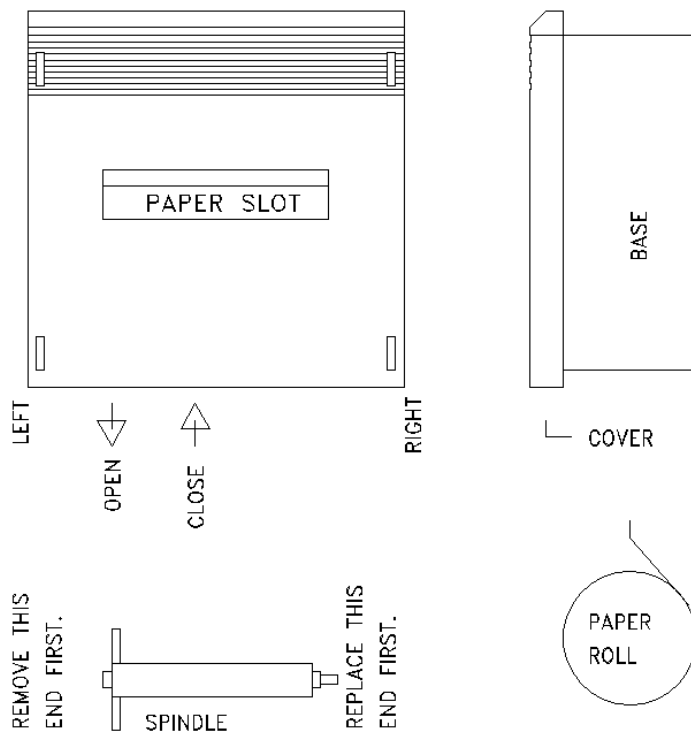
This family of printers has solenoids mounted horizontally with each printing part of the dot positions for each dot line. Paper is automatically advanced one dot line as each dot line is printed. The motor is turned off anytime the next line of data is not ready to be printed when the printer completes the previous character line. The motor must be turned on for one shuttle to get back in sync before any printing can be done which causes the paper to feed one dot line. For graphics mode this means that DATA MUST BE SENT AT A FAST ENOUGH RATE THAT IT STAYS AHEAD OF THE PRINTER TO AVOID BLANK DOT LINES FROM OCCURING between each 8 dot lines of 81 data.
An IBM PC/XT (8088 at 4.8 Mhz.) running a BASICA program does not send data fast enough enough (even to the parallel port). Sending a few PRINT commands before a routine to print BI data can keep the printer busy long enough for the PC to send several lines of BI data to the printer's buffer.

MS Windows Driver Information: Although Telpar has not developed a Windows driver specific to the PL1xxRMx Series of printers, most versions of MS Windows have a standard "Generic / Text Only" printer driver which can be installed for direct use with this printer model (see sample properties window below). Control Codes and Escape Sequences can be added at the beginning or ending of a print job by selecting the "Printer Commands" tab (see below) and entering the codes into the appropriate box.

Samples of the MS Windows "Generic / Text Only" print driver properties. This driver, which comes standard in Windows, can be used with all versions of the Telpar PL1xxRMx Printers.

Notice that the "Printer Commands" Tab allows you to enter Control Codes and Escape Sequences at the beginning and end of a print job. <1B><2D><01> shown here turns on the printer's Underline Mode at the beginning of a print job.

PAPER SLOT

BASE

└ COVER

LEFT

OPEN

CLOSE

RIGHT

REMOVE THIS END FIRST.

SPINDLE

REPLACE THIS END FIRST.
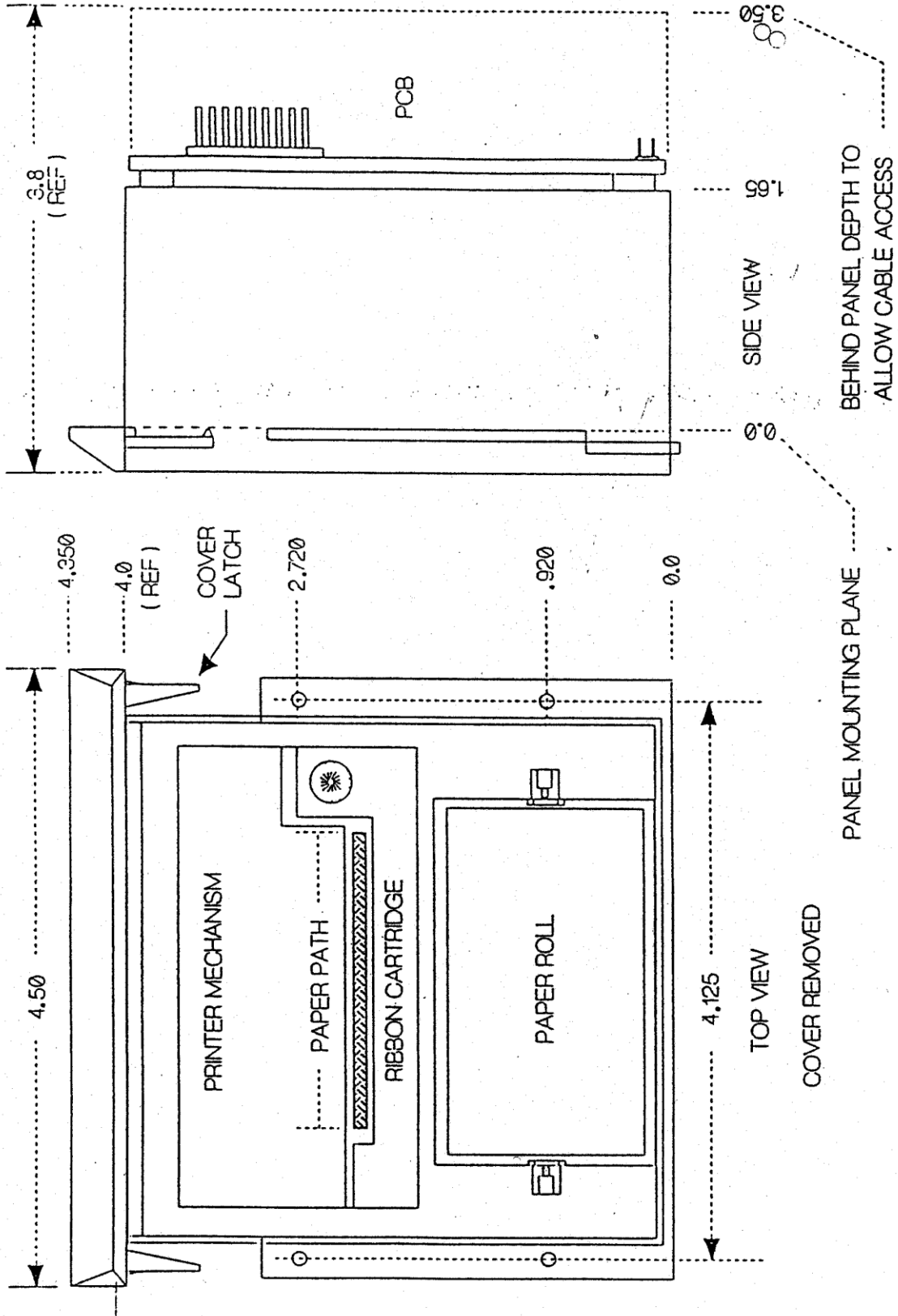
PAPER ROLL

TO CHANGE THE PAPER ROLL

1. Slide the cover in the direction marked OPEN (it will only move a half inch).
2. Lift the cover off of the base.
3. Lift (rotational motion) the LEFT end of the paper spindle first then remove the spindle.
4. Insert the end of the new roll of paper into the paper slot of the printer mechanism
   with the paper coming off the roll at the bottom as shown.
5. Use the paper feed switch to advance paper (at least three inches extend above the printer).
6. Place the spindle in the new paper roll with the two round shafts on the left end.
7. Insert the RIGHT end of the spindle in it's holder first.
8. Snap the LEFT end of the spindle into position.
9. Feed the loose end of paper through the paper slot and locate the cover flush with the base
   at the position one half inch from the top (see step 1).
10. Slide the cover in the direction marked CLOSE and snap it into position.

TO CHANGE THE RIBBON CARTRIDGE

1. Remove the cover as described in steps 1 and 2 above.
2. Use the paper feed switch to advance paper (at least three inches extend above the printer).
3. Press down on the left end of the ribbon (ribbon is marked PUSH).
4. Lift both ends to remove the old ribbon.
5. Turn the knob on the right end of the ribbon as needed to keep the ribbon tight while
   placing the new ribbon over the extended paper and snapping it down firmly into place.
6. Replace the cover as described in steps 9 and 10 above.

Telpar, Inc.			Aug. 24, 1994		MODEL	none	
DWG#	none		FILE	RMPAPRIB.GCD	PART #	none	
DESCRIPTION		RM or TG or TXG Series			REV	0	NOT TO SCALE
Instructions for changing paper roll and ribbon for printers using M180 series printer mechanisms.					ENGR		
					PROD		

3.50

PCB

3.8
(REF)

1.65

SIDE VIEW

0.0

BEHIND PANEL DEPTH TO
ALLOW CABLE ACCESS

4.350

4.0
(REF)

COVER
LATCH

2.720

.920

0.0

PANEL MOUNTING PLANE

PRINTER MECHANISM

PAPER PATH

RIBBON CARTRIDGE

PAPER ROLL

4.50

4.125

TOP VIEW
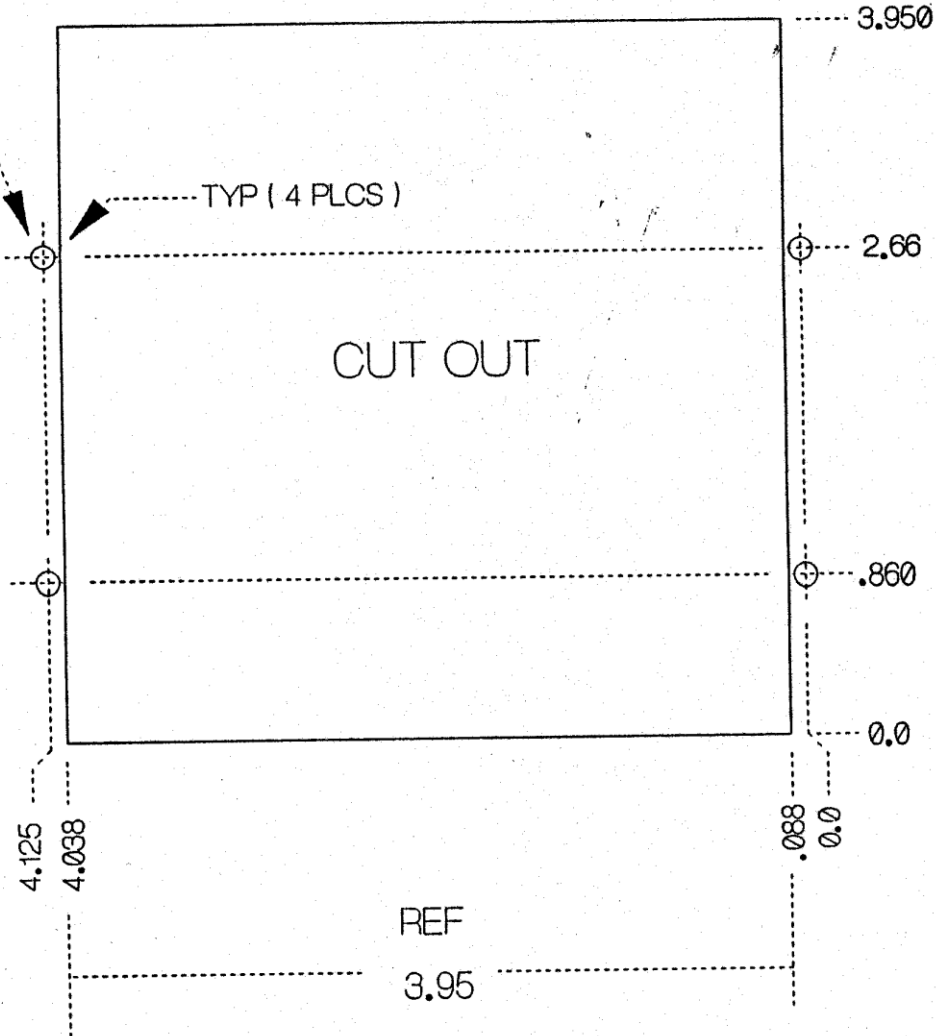
COVER REMOVED

PANEL MOUNT PRINTER DIMENSIONS

A1
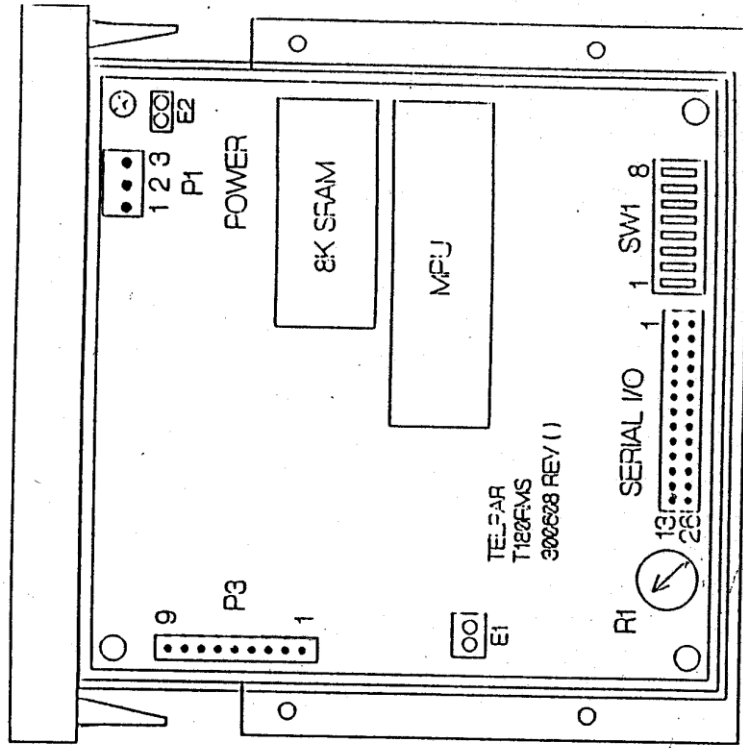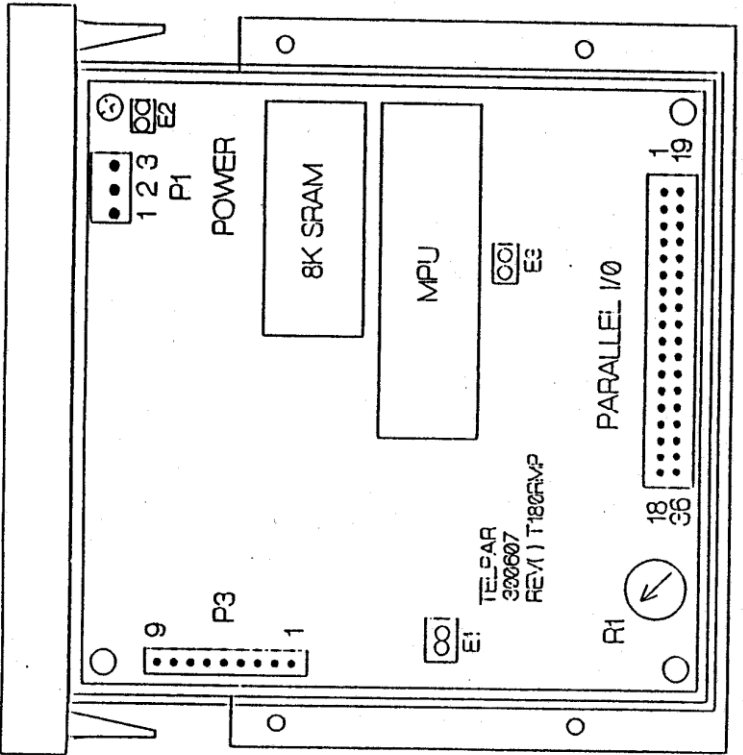
USER MUST ADD .50 DIA HOLE TO MOUNT
THE SUPPLIED PAPER FEED SWITCH

.076 DIA HOLE FOR 2-56 SELFTAPPING SCREWS -- SUPPLIED

.089 DIA CLEARANCE HOLE FOR 2-56 MACHINE SCREWS -- OPTIONAL

3.950

TYP (4 PLCS)

2.66

CUT OUT

.860

0.0

4.125
4.038

.088
0.0

REF

3.95

PANEL MOUNT PRINTER CUT-OUT

A2

SERIAL VERSION

POWER

P1　1 2 3　E2

8K SRAM

MPU

TELPAR
T182FMS
300508 REV ( )

P3　9　1

E1

SERIAL I/O　1

SW1　8　1

13
28

R1

PARALLEL VERSION

POWER

P1　1 2 3　E2

8K SRAM

MPU

E3

TELPAR
300607
REV ( ) T182RMP

P3　9　1

E1
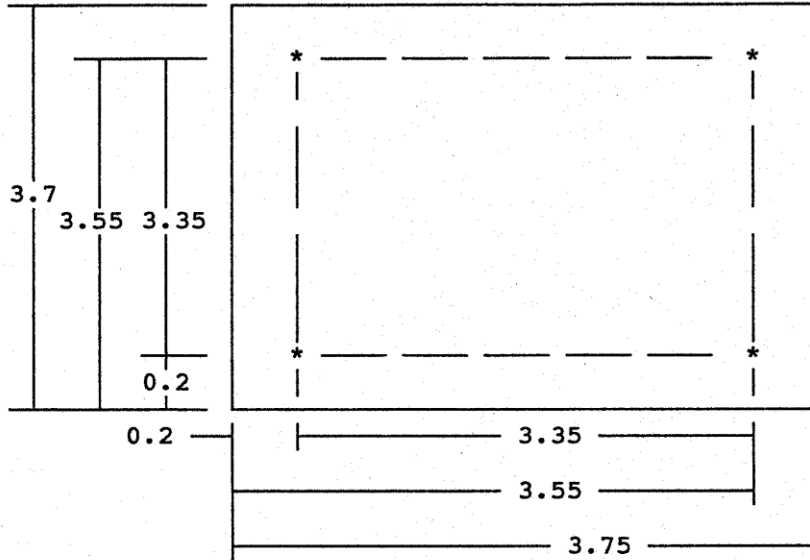
PARALLEL I/O
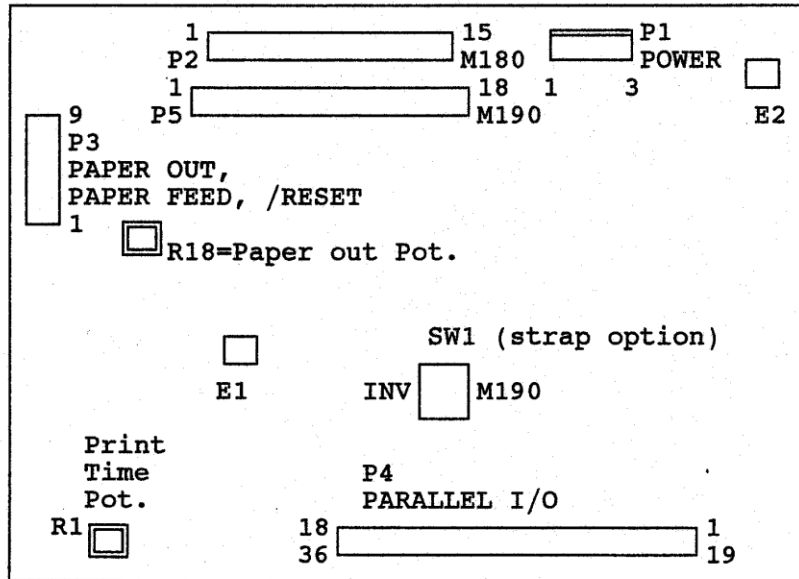
1
19

18
36

R1

REAR VIEW

PRINTED CIRCUIT BOARD DETAIL

A3

T189RM PCB DIMENSIONS - NOT TO SCALE

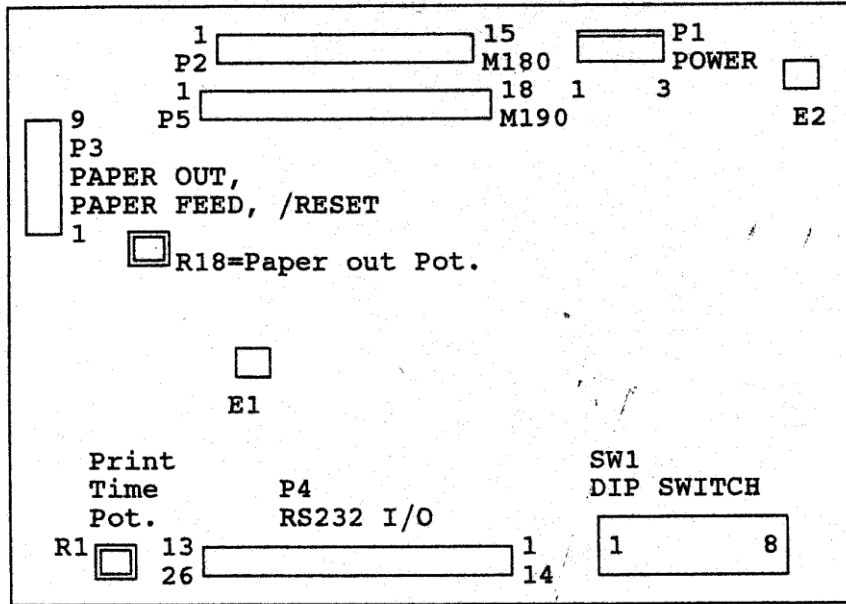* = 0.140" diameter mounting holes 4 places.

T189RMP PCB LOCATION OF PARTS - NOT TO SCALE
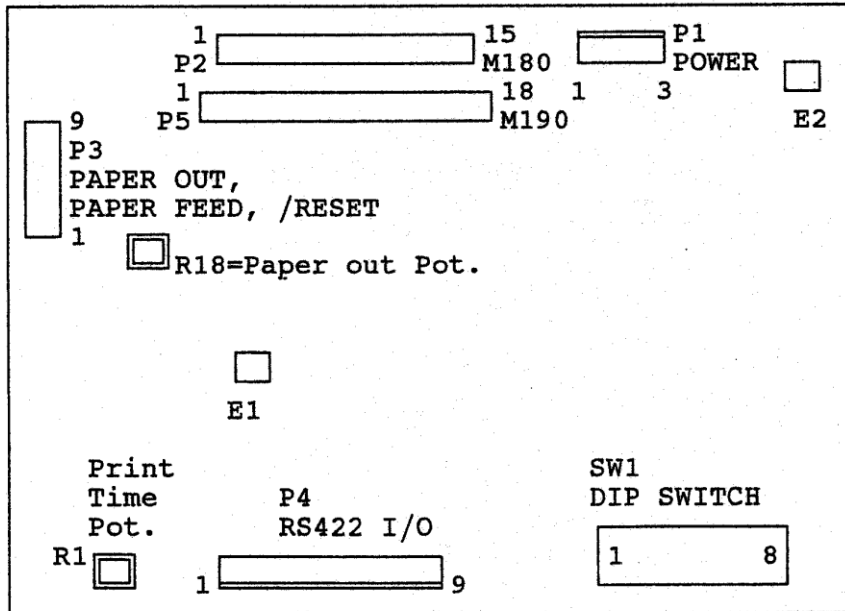

A3-1

TELPAR   PANEL MOUNT PRINTERS (180 & 190 series) Sept. 22, 1996

T189RMS PCB LOCATION OF PARTS - NOT TO SCALE

T189RMS2 PCB LOCATION OF PARTS - NOT TO SCALE

This board has NOT been produced at the present date. The T180RMS2 board is available for printers using the M180 series of mechanisms.

A3-2

1.55"

3.775"

POWER JACK

DIP SWITCH ACCESS

3.375"

4-40 SCREWS
(4 PLCS)

PAPER FEED SWITCH
(WIRING ACCESS)

25 PIN D-SUB
(SERIAL)

36 PIN CENTRONICS

RJ11 MODULAR JACK
(SERIAL)

REAR COVER CONNECTOR LOCATIONS

A4

3.45" WITH 25 PIN D-SUB

3.60" WITH 36 PIN CENTRONICS

3.20" WITH RJ11 MODULAR JACK

USER SUPPLIED CABLE

PRINTER COVER

PRINTER CASE

PANEL MOUNTING PLANE

PANEL MOUNT PRINTER DIMENSIONS WITH REAR COVER

A

A5

TELPAR
Your Printer Solutions Company

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Lewisville, Texas 75057

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CHARACTER SET

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20		!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	þ	q	r	s	t	u	v	x	y	z	{	|	}	~	▓
80	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
90	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	¢	£	¥	₧	ƒ
A0	á	í	ó	ú	ñ	Ñ	ª	º	¿	⌐	¬	½	¼	¡	«	»
B0	░	▒	▓	│	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
C0	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	=	╬	╧
D0	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	█	▄	▌	▐	▀
E0	α	β	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ	∞	φ	∈	∩
F0	≡	±	≥	≤	⌠	⌡	÷	≈	°	•	·	√	η	²	∙

B1