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1 FUNCTION OVERVIEW

1-1 INTRODUCTION

The Plotter Buffer PL-121 is designed to speed up the releasing file speed from a host computer to a plotter. It also provides the same ablity for a printer with a RS-232C serial port.

The PL-121 is designed with one input port and one output port. Both ports are RS-232C serial ports. It is capable of rapidly inputting and storing up to 4Mega Byte(MB) of data from a host RS-232C port and subsequently transmitting data to a plotter or a serial printer.

The PL-121 provides four types of handshake modes; Hardware(Direct), XON/XOFF, ENQ/ACK and no handshake mode. It is designed mainly to match the protocol of the Hewlett-Packard(HP) series drafting plotters and meets almost all the device control commands of HP plotters. The speed of the PL-121 buffer is more than three times faster than the speed without the use of a buffer.

The PL-121 provides many features, such as Auto Pause, Replot, Cancel and Slow-Down functions. When the available memory size of the PL-121 is less than 8K bytes, then the PL-121 will enter the Slow-Down mode, which means that the receiving speed from the host will slow down to 10 bytes per second in order to prevent off-line between the PL-121 and it's host.

In addition, The PL-121 can also fit many other plotters whether the HP-GL mode be set or not. It has been tested to work well with many applications such as AutoCad, P-CAD and Micro-Cadam to name a few.

Note: HP™ is a trademark of Hewlett-Packard Corporation.

1-2 FUNCTION SPECIFICATION TABLE

FUNCTIONS	SPECIFICATION
DRAM MEMORY	64KB-4MB
I/O CHANNELS	One serial Input/One serial Output
FRONT PANNEL INDICATORS	RAM status, Plotter error
	Buffer ready, Pause, Replot/Run
POWER COMSUMPTION	Max. 11 W
OPERATION TEMPERATURE	5°C - 40°C (41°F - 104°F)
STOCK TEMPERATURE	-20°C - 60°C (-4°F - 140°F)
CPU	Z-80A
POWER	DC9V, 1.2A
HUMIDITY	0-80%
FUNCTION KEY	Reset, Pause, Run, Cancel
REPLOT, SLOW-DOWN	Supported
TIME OUT SELECTION	10 seconds or 30 seconds
AUTO FORM FEED	Supported (For Printer Only)
PROTOCOL	Hardware, XON/XOFF, ENQ/ACK, No
BAUD RATE	150-19200 bps
DATA BITS	7 or 8
STOP BITS	1 or 2
PARITY CHECK	Disabled, Even, Odd
DIMENSIONS	184x127x61 mm

Figure 1-1 PL-121's Specification

1-3 FRONT PANEL AND REAR PANEL

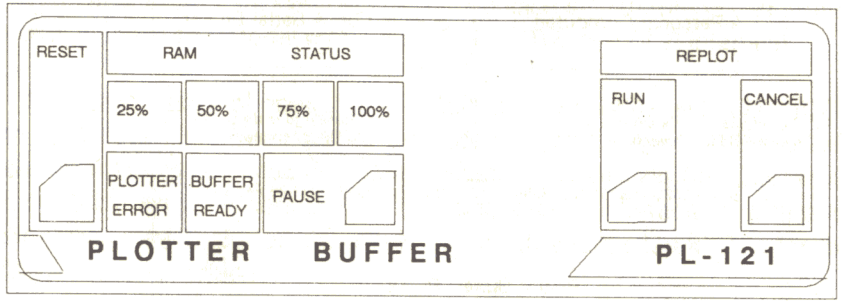

Figure 1-2 Front panel

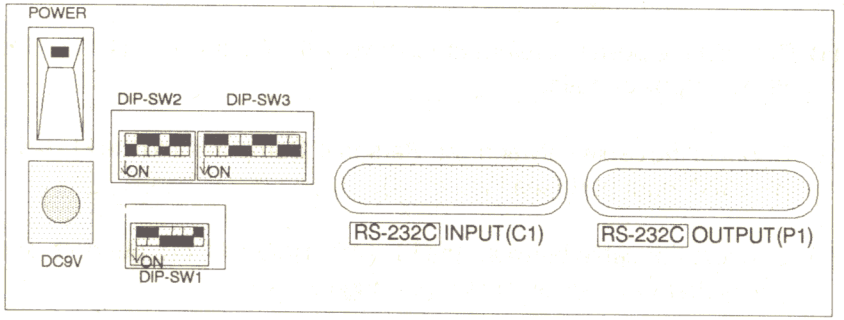

Figure 1-3 Rear panel

2 INSTALLATION AND POWER ON PROCEDURE

2-1 INSTALLATION PROCEDURE

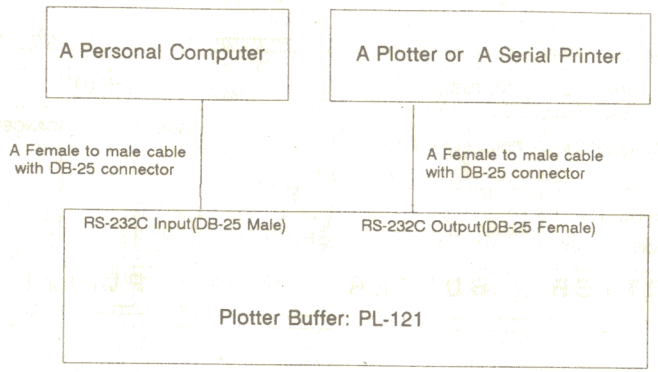

Figure 1-4 Installation Diagram

During installation these following four steps should be included:

(1) Connect the power core/adapter between the AC power outlet and the PL-121's power outlet.

(2) Connect the cable between the Personal Computer and the PL-121's RS-232C input port (see Figure 1-4).

(3) Connect the cable between the PL-121's RS-232C out put port and the plotter or a serial printer (see Figure 1-4).

(4) Set the DIP switches on the rear panel to the desired configurations (see Section 2-2 System Configuration).

In order to properly connect the terminal to the PL-121 the user must first determine the proper type of terminal interface. There are two types of RS-232C interfaces, namely the Data Terminal Equipment(DTE) interface and the Data Communication Equipment(DCE) interface. Usually the RS-232C interface on a plotter or laser printer is of the DCE type. These two types of interfaces require different kinds of connecting cables, therefore you must first determine whether the interface on your unit is a DTE or a DCE interface.

For convenience of operation the PL-121 is provided with a DTE/DCE switch on the RS-232C interface (please see the chart in the section of this manual on memory expansion). Slide switch-1 controls the RS-232C input interface. Slide switch-2 controls the RS-232C output interface. The factory default settings are DCE for the RS-232C input interface, and DTE for the RS-232C output interface.

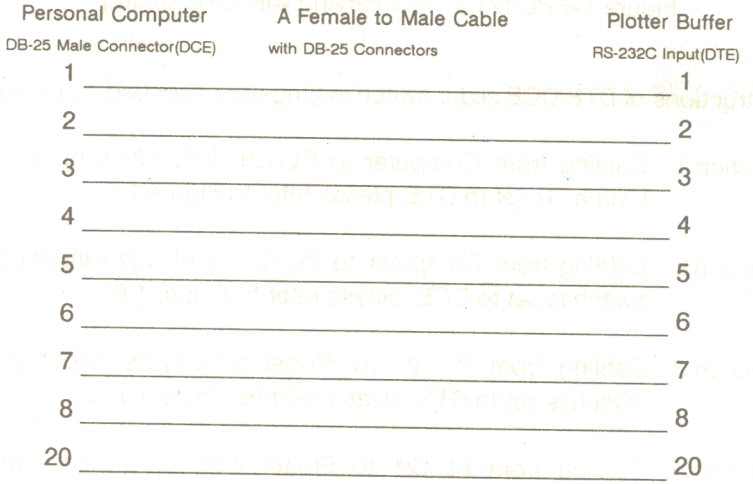

Figure 1-5 PL-121's input cabling with DCE setting

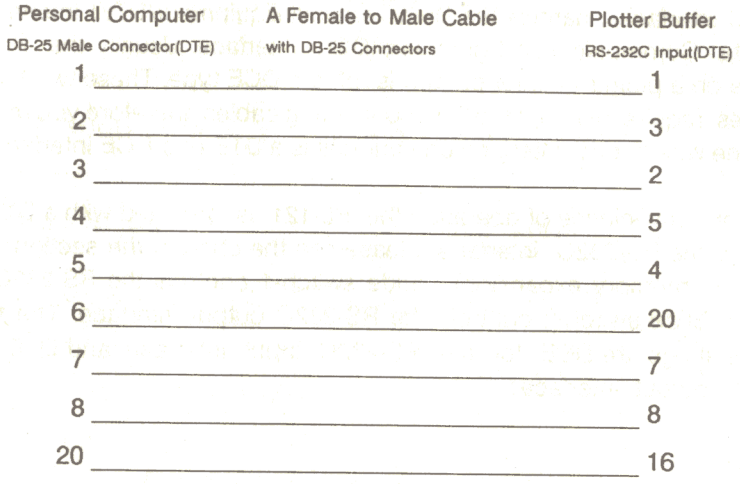

Figure 1-6 PL-121's input cabling with DTE setting

The instructions of DTE/DCE slider switch setting are described as follows:

Instruction 1: Cabling from Computer to PL-121, if PL-121's input port switch is set to DTE, please refer to Figure 1-5.

Instruction 2: Cabling from Computer to PL-121, if PL-121's input port switch is set to DCE, please refer to Figure 1-6.

Instruction 3: Cabling from PL-121 to Plotter if PL-121's output port switch is set to DTE, please refer to Figure 1-7.

Instruction 4: Cabling from PL-121 to Plotter if PL-121's output port switch is set to DCE, please refer to Figure 1-8.

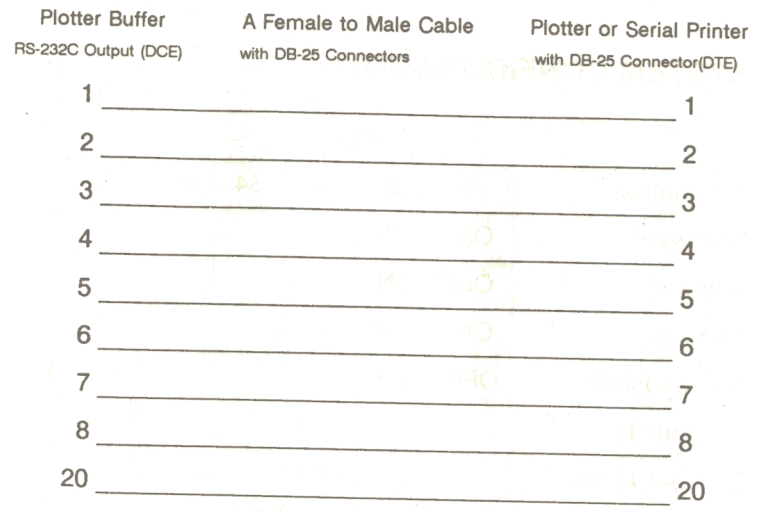

Figure 1-7 PL-121's output cabling with DTE setting

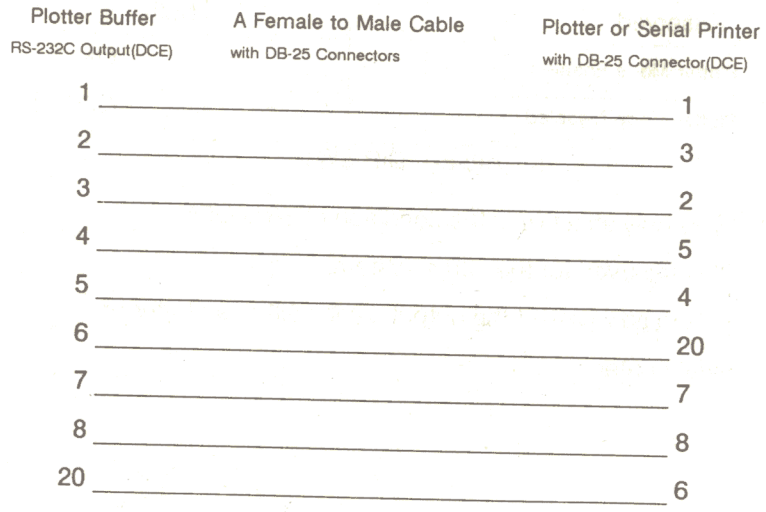

Figure 1-8 PL-121's output cabling with DCE setting

2-2 SYSTEM CONFIGURATION

DIP-SW1						
Description	S1	S2	S3	S4	S5	S6
Hardware	ON	ON				
Xon/Xoff	OFF	ON				
Enq/Ack	ON	OFF				
No handshake	OFF	OFF				
Timeout 30 sec.			ON			
Timeout 10 sec.			OFF			
Auto FormFeed Enabled				ON		
Auto FormFeed Disabled				OFF		
Reserved					both	
Plotter Mode Enabled						ON
Plotter Mode Disabled						OFF

Table-1 DIP-SW1

Note: S4 is only effective in the condition of S6 is OFF.
S5 is reserved for the future system.
S6 is used to select the output device either a plotter or a serial printer.

DIP-SW2	INPUT			OUTPUT		
BAUD RATE	S1	S2	S3	S4	S5	S6
19200 bps	ON	ON	ON	ON	ON	ON
9600 bps	OFF	ON	ON	OFF	ON	ON
4800 bps	ON	OFF	ON	ON	OFF	ON
2400 bps	OFF	OFF	ON	OFF	OFF	ON
1200 bps	ON	ON	OFF	ON	ON	OFF
600 bps	OFF	ON	OFF	OFF	ON	OFF
300 bps	ON	OFF	OFF	ON	OFF	OFF
150 bps	OFF	OFF	OFF	OFF	OFF	OFF

Table-2 DIP-SW2

Note: bps means bits per second

DIP-SW3	INPUT				OUTPUT			
MODE	S1	S2	S3	S4	S5	S6	S7	S8
7 DATA BITS				ON				ON
8 DATA BITS				OFF				OFF
PARITY ENABLED			ON				ON	
PARITY DISABLED			OFF				OFF	
CHECK EVEN		ON				ON		
CHECK ODD		OFF				OFF		
1 STOP BIT	ON				ON			
2 STOP BITS	OFF				OFF			

Table-3 DIP-SW3

2-3 DIP SWITCH DEFAULT SETTING

The chart below shows the factory DIP Switch default setting.

(a) DIP SW1

S1	S2	S3	S4	S5	S6
ON	ON	OFF	OFF	OFF	ON

Hardware Handshake
Timeout 10 seconds
No Auto Form Feed
Plotter Mode Enabled

(b) DIP SW2

S1	S2	S3	S4	S5	S6
OFF	ON	ON	OFF	ON	ON

Input Baud Rate: 9600
Output Baud Rate: 9600

(c) DIP SW3

S1	S2	S3	S4	S5	S6	S7	S8
ON	ON	OFF	OFF	ON	ON	OFF	OFF

8 Data Bits
No Parity
Check Even
1 Stop Bit

2-4 MEMORY EXPANSION

The memory capacity of the Plotter Buffer can be adjusted from 64KB to 4MB. Each unit has four RAM slots, each of which can hold a RAM card with a size of 64KB, 256KB and 1MB. To expand the RAM capacity on your Plotter Buffer, follow the steps below:

1) Contact our company and purchase a RAM card with a size of 64KB, 256KB and 1MB.

2) Make sure your Plotter Buffer is turned off.

3) Remove the rubber foot pegs. (see Diagram 1)

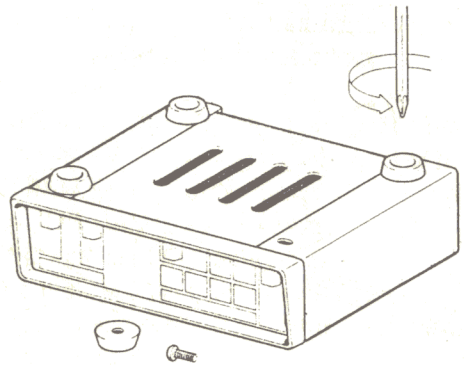

Diagram 1 Remove the rubber foot pegs

4) Open the cover and pull out the frame. (see Diagram 2)

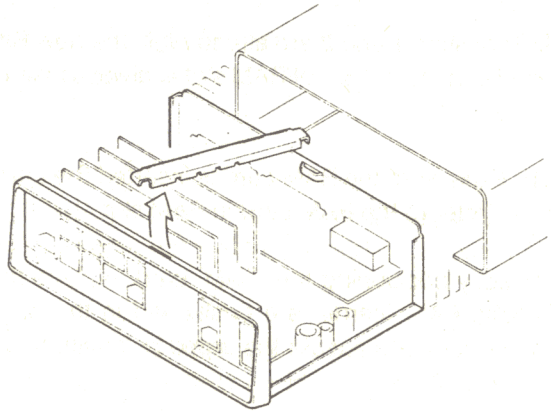

Diagram 2 Open the cover and pull out the frame

5) Place the RAM Card in the CORRECT slot. (see Diagram 3)

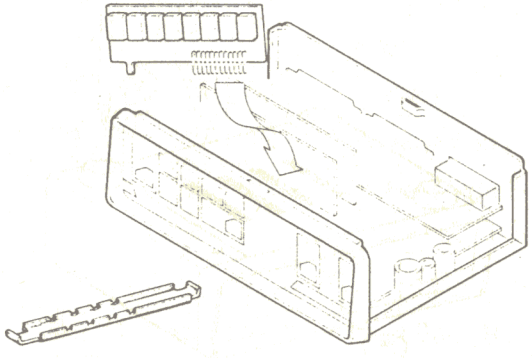

Diagram 3 Place the RAM Card in the correct slot

If RAM slots 1 and 2 are already full, the new RAM card should be inserted in RAM slot 3, not RAM slot 4. always insert the RAM cards in this order.

NOTE: Make sure the RAM card is inserted the correct direction (refer to the RAM card in RAM slot 1).

6) After correctly positioning the RAM card, replace the frame. Make sure that the RAM cards are positioned in the gaps in the frame. Refer to diagram 2 to ensure the frame is positioned properly, then replace the cover.

7) Replace the rubber foot pegs.

3 OPERATING PROCEDURE

3-1 POWER ON MODE

1) After properly connecting the units, turn on the power. At this time RAM Status LED will indicate the RAM size as follows:

First, all LEDs will light and later turn off sequentially. The 25%, 50%, 75% and 100% LEDs indicate the capacity of the first, second, third and fourth RAM SLOTs respectively. A continual light 25% LED indicates that a 1MB RAM card is inserted in the first RAM slot. A flashing 25% LED indicates that either a 64KB or a 256KB RAM card is inserted in the first RAM slot. If a 64KB RAM card is inserted, the 25% LED will flash twelve times. If a 256KB RAM card is inserted, the 25% LED will flash six times.

The following example further illustrates:

LED	25%	50%	75%	100%
Status	ON	ON	ON	OFF
Memory Size	1MB	1MB	1MB	0KB

Total: 3M Bytes

2) After the unit is turned on the buffer ready display will be lit. When you hear a beep it means that the Data Buffer has entered the READY MODE.

3) If the RAM card in the first RAM slot is missing or not functioning properly(for example, the DRAM on the RAM card is not reading or writing properly) all of the LEDs on the front panel will flash continuously, accompanied by a continuous beeping, until the power is shut off.

3-2 RAM TEST MODE

After the unit is turned on, the "PAUSE" display will flash for approximately three seconds. Pushing the "PAUSE" key during this time will cause the Plotter Buffer to enter the RAM Test Mode.

1) The purpose of RAM Test Mode is to test whether the RAM cards are able to read and write normally, while the RAM test is in progress the "PAUSE" LED will flash.

2) If the RAM cards all read and write normally, the 25%, 50%, 75% and 100% LEDs will display what RAM cards are inserted in their relative SLOTs, and the "PAUSE" LED will flash. Later, when you hear a beep, the Plotter Buffer will be in the Ready Mode.

3) If during the RAM test the plotter discovers that one of RAM cards is not functioning properly, the RAM test will be interrupted, and LEDs will light up as follows:

   50% LED lights and buzzer beeps: RAM card in second RAM slot is malfunctioning.

   75% LED lights and buzzer beeps: RAM card in third RAM slot is malfunctioning.

   100% LED lights and buzzer beeps: RAM card in fourth RAM slot is malfunctioning.

At this time you should turn off the power, consult the memory expension of this manual, and change the malfunctioning RAM card.

3-3 READY MODE

When the plotter buffer enters the Ready Mode, only the "Buffer Ready" LED will light up. If the printer is not ready at this time, after a short interval, the plotter error LED will begin to flash.

CAUTION: During the period of the data transfer the input/output configurations CANNOT be changed.

3-4 PAUSE FUNCTION

The PL-121 will auto pause after the input file had been sent from the host port to PL-121 and also the whole input file has been sent from the buffer to the output plotter or printer. The purpose of the auto pause is to allow user to have enough time to remove the finished drafting paper and to fill in new drafting paper.

Pressing the PAUSE key will cause the PAUSE LED to light up and will suspend data output until the PAUSE key is pressed again.

3-5 REPLOT FUNCTION

Once the PL-121 has entered Auto Pause Mode, the replot "RUN" LED will be turned on. If user wants to replot the last file, he can just press the RUN key instead of re-transmitting the file from the host again. In the Replot Mode, the "RUN" LED will be flashing until the file in the buffer is all sent out to the plotter or the printer. During this time the RUN key will have no effect. If user wants to stop replotting he can press the "CANCEL" key. The user can replot the last file as many times as he wants to.

There is a limitation in the Replot Mode. If the input file is larger than the memory space you have in PL-121 buffer, then it will not support the replot function. The maximum file space to be replotted is 4MB.

APPENDIX A

A-1 PREVENTING RADIO AND TV INTERFERENCE

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

If this equipment does cause interference problems to either television or radio reception the user is advised to attempt to try and solve the interference by using one or more of the following measures:

1. Check to see if the devise is actually causing the interference by turning it on and off.

2. Change the position of the receiving antenna.

3. Place the computer in a different area than that of the receiver.

4. Plug the computer and reciever into different outlets so that they are on different branch circuits.

5. Make sure that the mounting screws, ground wires and attachment connector screws are tightly secured.

6. Use good quality, shielded and grounded cables for data communications.

If necessary, the user should consult the dealer or an experienced radio(or television technician for more advise on solving the problem.

A-2 RESTRICTION ON USING

The AC adapter provided with this unit has an input of 117V and an output of DC 9V, 1.2A. We can also provide a 220V input, DC 9V, 1.2A output adapter. Be sure to use the correct adapter for your power supply.

This unit has under gone quality control inspections at the factory. It can be run continuously, 24 hours a day. But to insure the user's safety, and to prolong the life of the unit, we suggest that for every 16 hours of use the unit is turned off for one hour.