

APPENDIX A CONTROL PANEL LED OPERATING AND ERROR CONDITIONS

A.1 INTRODUCTION

The control panel LED indicators display various operating and error conditions. A summary of the displays are listed in Table A-1. The conditions are explained in the following paragraphs.

NOTE

This appendix uses three different graphic symbols to illustrate the status of an LED. The symbol means that the LED is off, and the symbol means that the LED is on. If an LED is flashing on and off, the * symbol is used.

TABLE A-1. LED INDICATOR CODE SUMMARY

LED INDICATOR				CONDITION AND REFERENCE PARAGRAPH
RESET	LOAD	LOCAL	ENTER	
Normal Operation				
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Remote mode, A.2
*	*	<input type="checkbox"/>	<input type="checkbox"/>	Out of media, A.3.1
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Local mode, A.2
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Menu mode, A.2
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Window mode, A.2
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	*	Digitizer mode, A.2
*	<input type="checkbox"/>	*	<input type="checkbox"/>	Pen pause, A.2

= LED off

= LED on

* = LED flashing

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TABLE A-1. LED INDICATOR CODE SUMMARY (Continued)

LED INDICATOR				CONDITION AND REFERENCE PARAGRAPH
RESET	LOAD	LOCAL	ENTER	
Error Conditions				
□	*	□	*	Window error, A.3.2
*	□	□	*	Pen changer status change, A.3.3
*	□	*	*	Pen changer error, A.3.3.1
□	□	□	*	EEPROM error, A.4.1
□	□	*	□	ROM error, A.4.2
□	□	*	*	RAM error, A.4.3
□	*	□	□	Communication error, A.5
*	*	*	□	Voltage error, A.6.1
*	*	*	*	Current error, A.6.2
□	*	*	□	Extended buffer error, A.7
□	*	*	*	RS-232-C loopback test error, A.8
*	*	□	*	Program error, A.9
*	□	□	□	Plot Command Condition, A.10

□ = LED off

■ = LED on

* = LED flashing

A.2 NORMAL OPERATION LED DISPLAYS

The following LED displays occur during normal operation.

Remote Mode



This code indicates that the plotter is ready to operate in remote mode (see Paragraph 2.2).

Local Mode



The control panel keys can be used to manually operate the plotter when this code is displayed (see Paragraph 2.3).

Menu Mode



This code indicates that the plotter is presently in menu mode (see Paragraph 2.4).

Window Mode



This code indicates that the plotter is in window mode (see Paragraph 2.8).

Digitizer Mode



If this code is displayed, the plotter has received a DM/PL Digitize command or a HPGL Digitize Point command and is ready to transmit x,y-coordinate data (see Paragraphs 1.10 and 4.4.10).

Pen Pause

* □ * □

This code indicates that the plotter is being operated as a single-pen unit (or the multi-pen changer accessory is configured for single-pen operation) and is waiting for a manual pen change. To continue plotting, manually change pens and then press the LOCAL key. The pen pause feature can be disabled in the menu by selecting the *IGNORE* option in the menu *PEN PAUSE* parameter (see Paragraph 2.4).

A.3 NONFATAL OPERATING CONDITIONS

The flashing LED codes listed below occur if a nonfatal operating condition is detected by the plotter. (A nonfatal flashing LED code may, however, be caused by a fatal steady state LED code as described in the following paragraphs.) A nonfatal operating condition requires operator attention to continue normal plotting activities. If a nonfatal condition occurs, correct the problem and then press the LOCAL key to continue plotting.

A.3.1 Nonfatal Chart Media Operating Conditions

The following codes are displayed if the plotter detects a nonfatal chart media operating condition.

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In most instances, this code simply indicates that media is not presently installed in the plotter. If media is not installed, load the plotter with a chart and then press the LOCAL key. The plotter will automatically execute a load and will then continue.

If the new chart size is changed by more than 0.25 inch (6.35 mm) when plotting media is installed, the plotter will execute a reset rather than a load. This is because the present windowing is no longer valid for the new size.

This error code has an LED steady state feature. The exact cause of the error condition can be checked by pressing the ENTER key. After the ENTER key is pressed, the plotter will exit the present flashing error code and will display a steady (non-flashing) error description code. The particular LED that remains on identifies the condition error that the plotter has detected. To return to the original flashing error code, press the ENTER key again. To resume plotting after changing charts, press the LOCAL key. The steady state LED codes are explained below.

Media Not Detected



The above code indicates that the plotter does not detect plotting media. If media is installed, the plotter may have a hardware problem in its chart sensors and service is required (see Paragraph 5.3).

Illegal X-axis Chart Length



The above code indicates that the plotter does detect plotting media, but did not detect a rear chart edge within the limits of the plotter's maximum X limit. The chart presently loaded therefore has an illegal x-axis length. A hardware problem with the plotter's chart sensors can also cause the above error code. If the chart presently loaded is legal size, then service is required.

Paper Drive Hardware Failure



This error occurs if there is a hardware problem in the paper drive mechanism or electronics. Service is required (see Paragraph 5.3).



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Optical Paper Sensor Failure



This error occurs if the optical paper sensor fails. Service is required (see Paragraph 5.3).

A.3.2 Window Error Code

The following code is displayed if an error is detected while operating the plotter in window mode.

Illegal Clip Limits



This illegal clip limit condition occurs if the clip limits are set to less than two dimensions. This is caused by specifying one point as both the lower left and the upper right corner points of a window. To recover, either press LOCAL and specify the clip limits again or power down/up the plotter. (The window limits default to maximum at power up.)

A.3.3 Multi-Pen Changer Accessory LED Condition Codes

The following LED codes may be displayed during operation if a problem occurs with the multi-pen changer accessory.

Change in Status of the Multi-Pen Changer

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When the plotter is reset, it checks whether the multi-pen changer accessory is connected or not and if its pen stable assembly is in the upper or lower position. This condition occurs if the status of the pen changer has changed since the last reset.

To correct the condition, either configure the pen changer unit as it was at the last reset and then press LOCAL, or configure the pen changer to the way you want it and then press RESET OR LOAD.

A.3.3.1 Multi-Pen Changer Pen Error Codes

This error condition can occur only if the multi-pen changer accessory is installed and the plotter is being operated in multi-pen mode.

The LED error code listed below indicates that the multi-pen changer unit has some type of malfunction.

* □ * *

This error code has a LED steady state display. If the ENTER key is pressed one time, the plotter will display the type of error that has occurred. The four possible error types and recovery instructions are explained below. (This error code does have a second LED steady state level which displays whether the stable was moving in or out at the time of the error. If the ENTER key is pressed a second time, the code 0001 indicates that the stable was moving in, and the code 0010 indicates it was moving out. This information is useful only to service personnel.)

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Overcurrent Detected During Stable Move-in



This code indicates that the plotter detected overcurrent as the pen stable assembly was moving in toward the pen holder.

If there is a foreign object that is preventing the pen stable assembly from traveling the required length to the pen holder, then remove the object. A pen that is accidentally placed in the plotter's pen holder will also cause this error condition. After correcting the situation, refer to the recovery instructions, which follow the error type codes, to continue plotting.

If it appears that the pen stable assembly is not aligned with the pen holder, the plotter should be powered down and the problem fixed. Align the stable assembly again as described in the pen changer operation manual. Be sure that the pen changer unit is correctly installed as described in its operation manual.

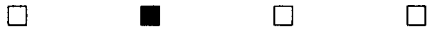
Optical Sensor Error During Move-in



This error code indicates that the optical sensor inside of the pen changer unit has failed to report a pen stable move-in to the plotter.

Check the continuity of all of the wires in the cable that connects the pen changer unit and the plotter and be sure the pen changer's arm assembly is in the down position. (The optical sensors can be tested as explained in Appendix B.) After correcting the situation, refer to the recovery instructions, which follow the error type codes, to continue plotting. If the error condition continues to occur on pen changes after checking the cable and making sure the arm assembly is in the down position, then service is required (see Paragraph 5.3).

Overcurrent Detected During Stable Move-out



This code indicates that the plotter detected overcurrent as the pen stable assembly was moving away from the pen holder.

If there is a foreign object that is preventing the pen stable assembly from returning to its home/rest position, then remove the object. After correcting the situation, refer to the recovery instructions, which follow the error type codes, to continue plotting.

Optical Sensor Error During Move-out



This error code indicates that the optical sensor inside of the pen changer unit has failed to report a pen stable move-out to the plotter.

Check the continuity of all of the wires in the cable that connects the pen changer unit and the plotter and be sure the pen changer's arm assembly is in the down position. (The optical sensors can be tested as explained in Appendix B.) After correcting the situation, refer to the recovery instructions, which follow the error type codes, to continue plotting. If this error condition continues to occur on pen changes after checking the cable and making sure the arm assembly is in the down position, then service is required (see Paragraph 5.3).

Multi-Pen Changer Pen Error Recovery Instructions

If you found that the plotter or the pen changer unit requires service to recover from a pen error, power down the plotter and refer to Paragraph 5.3. If you have identified the cause of the error condition and fixed the problem, then follow the instructions below.

After any type of pen error, the plotter will not retry an aborted pen operation. You must manually perform the pen operation yourself. After using the LEDs to identify the type of error that has occurred, note the present location of the plotter pen and then refer to Table A-2 to determine what action is required.

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TABLE A-2. PEN RECOVERY INSTRUCTIONS

CONDITION	OVERCURRENT OR OPTICAL FAILURE ERROR DURING MOVE-IN	OVERCURRENT OR OPTICAL FAILURE ERROR DURING MOVE-OUT
No pen in pen holder— No pen in stall	Place a pen in the pen holder and then press LOCAL	Place a pen in the empty pen stall for future use, and then press LOCAL
No pen in pen holder— Pen in stall	Remove the pen from the pen stall and place it in the pan holder, and then press LOCAL	Press LOCAL
Pen in pen holder— No pen in stall	Press LOCAL	Remove the pen from the pen holder and place it in the pen stall, and then press LOCAL
Pen in pen holder— Pen in stall	Remove the pen from the pen stall, and then press LOCAL	Remove the pen from the pen holder, and then press LOCAL

A.4 FATAL LED ERROR CODES

The following LED codes are displayed if the plotter detects a fatal error or an error condition in which the plotter cannot be properly operated. Service is required to correct the conditions listed below (see Paragraph 5.3).

A.4.1 EEPROM Errors

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The EEPROM is the plotter's Electrically Erasable Programmable Read Only Memory chip. This chip contains the menu-selectable parameters and certain factory-set plotter control parameters.

The above code indicates that an EEPROM error has occurred. The plotter will not operate in this condition. If this error condition occurs after the next power up, then set the power switch to OFF and refer to Paragraph 5.3.

A.4.2 Fatal ROM Error

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This code indicates that a ROM (Read Only Memory) error has occurred and the ROM data is corrupted. The plotter will not operate in this condition. If this error condition occurs after the next power up, then set the power switch to OFF and refer to Paragraph 5.3.

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A.4.3 Fatal RAM Error

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This code indicates that a RAM (Random Access Memory) error has occurred and there is at least one dead cell in the system RAM. The plotter will not operate in this condition. If this error condition occurs after the next power up, then set the power switch to OFF and refer to Paragraph 5.3.

A.5 COMMUNICATION ERROR CODES

The following codes are displayed if communication errors occur between the plotter and the computer. These errors are not fatal; however, the plotter cannot properly respond to computer control if communication errors occur.

Communication error checking by the plotter is useful when you are first setting up a plotter/computer interface. Communication errors most often occur when the plotter and a computer are first connected to each other. These errors are rare after a good communication link is established between the two devices.

Communication error checking is enabled by selecting the *REPORTED* option for the DM/PL menu *COMM ERRORS* parameter. After establishing a good communication link between the computer and the plotter, it is recommended to disable the communication error checking in the DM/PL menu by selecting the *IGNORE* option for the DM/PL menu *COMM ERRORS* parameter. A computer program that uses auto-baud will trigger errors in the plotter as it attempts to match baud rates.

If communication error checking is enabled in the DM/PL menu and the following LED error code is displayed, then some type of communication error has occurred.

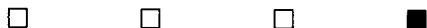
 *

This error code has an LED steady state feature. The exact cause of the error condition can be checked by pressing the ENTER key. After the ENTER key is pressed, the plotter will exit the present flashing error code and will display a steady state LED code. The particular LED that remains on identifies the error that the plotter has detected. To return to the original flashing error code, press the ENTER key again. The steady state LED codes are explained in the following paragraphs.

Note that if multiple errors are detected, more than one LED will remain on.

It is also possible that no communication errors are reported by the plotter but the plotter still fails to respond to the host computer. This type of problem usually results from improper wiring in the computer/plotter data cable. If you suspect this is the problem, refer to your computer and software documentation and be sure that the handshake lines used by your computer and software are properly connected. This type of problem can usually be fixed by "looping back" certain lines on the computer connector end of the cable so that the computer is essentially handshaking with itself on those lines not required by the plotter but used on the computer.

Buffer Overflow



This error occurs if a handshaking problem exists between the host computer and the plotter. The code indicates that the main data buffer in the plotter is near overflow and unprocessed buffer data will be destroyed. This is a result of the computer not acknowledging the plotter's signal to stop sending data.

If this error occurs, check the handshaking lines in the software/computer/plotter interface cable and make sure they are connected to the correct connector pins. Be sure to check the software documentation to see if it requires a specific cable configuration.

Some software use only hardware handshaking. If this applies to your software, be sure the plotter *handshake RTS/DTR* menu parameter has the *TOGGLE* option selected.

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If DM/PL Mode Two communication protocol (software handshake) is being used, be sure the computer is sending 256 bytes of data (or less) between requests for room in the buffer. Also, if you wrote the plot code program, be sure you did not select illegal characters for the prompt enable or prompt request characters. DM/PL Mode One and Mode Two and the prompt enable and prompt request commands are discussed in the *DM/PL Command Language Manual* (part number MI-1044), which is available as an option from your Houston Instrument product dealer, or direct from Houston Instrument by calling toll-free: 1-800-444-3425.

Since this error code indicates that data corruption has most likely occurred, it is best to reset the plotter (or power down/up) before continuing.

General interface configurations are provided in Paragraph 1.9. Interface configurations for specific computer models are listed in Appendix E. Before building or ordering a cable, be sure to check your software documentation for possible cabling specifications.

Framing Error

This error code indicates that a transmitted character was not framed by a stop bit. This is usually caused by the computer and the plotter having different baud rates selected. Match the baud rates by either reprogramming the baud rate in the computer or by changing the baud rate in the plotter menu mode.

Parity Error

This error indicates that the transmitted parity and the received parity are mismatched. Check to be sure that the computer and the plotter are using the same type parity.

Overrun Error



An overrun error indicates that a byte of data was not read by the plotter before another byte of data was transmitted by the computer. This type of error condition is usually caused by a hardware failure and service may be required (see Paragraph 5.3).

A.6 VOLTAGE/CURRENT ERROR CODES

The following error codes protect the plotter from damage which may result from low voltage or high current.

A.6.1 Line Voltage Too High or Low



Your plotter is designed to operate within the voltage ranges listed in Table 1-1. If the line voltage falls below or exceeds a voltage range, the above error code is displayed.

To recover, power down the plotter and have a certified electrician inspect the ac power source from which your plotter operates.

A.6.2 High Current Detected



This error code is displayed if the plotter detects high current in its electronic circuitry. To prevent damage to its electronic components, the plotter will shut down and control panel operation is inhibited. It is possible, however, to use the control panel LEDs to determine the circuitry in which the high current occurred.

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A typical cause of a high current error code is a bind in either the pen or chart drive mechanisms. To recover from the error code, power down the plotter and correct the condition which caused the binding problem. Install a new chart and power up the plotter.

If this error occurs without apparent reason, the plotter may have an electrical or mechanical problem and requires service (see Paragraph 5.3).

This error code has an LED steady state display. If the ENTER key is pressed one time, the plotter will display the circuitry in which the high current occurred.

X-Axis Average Position Error Too High

Y-Axis Average Position Error Too High

High Current Detected in Multi-Pen Changer

X-Axis Instantaneous Position Error Too High

Y-Axis Instantaneous Position Error Too High

A.7 EXTENDED BUFFER REPORT CONDITION

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This error code can occur only if the plotter has the extended buffer board accessory installed and if an error occurs during the automatic extended buffer board RAM test during power up.

If this error condition occurs after the next power up, set the power switch to OFF and refer to Paragraph 5.3.

A.8 RS-232-C LOOPBACK TEST CONDITION

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This code indicates that the plotter has been placed in the RS-232-C loopback test routine. This feature is explained in Appendix B.

A.9 PLOT CODE PROGRAM ERROR

* * *

This error code occurs if the plot code in a program contains a bug that confuses the plotter's processor. Review the plot code for errors.

A.10 PLOT COMMAND CONDITION CODES

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This code indicates that the plotter has recognized an illegal code sequence or set of command parameters, or has received a command which places the plotter in a state for operator attention.

This code has an LED steady state display. If the ENTER key is pressed one time, the plotter will display the type of error or condition that has occurred.

Illegal Command Code

This code indicates that the plotter has received a DM/PL Closed Figure (CF) command with parameters that exceed a 2500 byte limit. The limit is due to the plotter's internal memory, and use of the extended buffer board will not increase the number of allowed vectors, arcs, and embedded commands in the CF command.

If this error occurs, you can divide the CF command figure into smaller figures that contain fewer parameters. To compute the maximum number of vectors or arcs allowed in a CF command, add the required bytes for each data type and compare the sum to the maximum limit of 2500 bytes. Each vector is eight bytes, an embedded CP parameter is two bytes, and an embedded CM parameter is 22 bytes.

To recover from this error code, you can press the LOCAL key which causes the plotter to either ignore the command or process as much of it as possible, or you can abort the plot by pressing either the RESET key or the LOAD key.

End of Plot Command Received

The above code indicates that the plotter has received a DM/PL end of plot (e) command. To resume plotting after changing plotting media, first press the ENTER key to return to the original flashing code, and then press the LOCAL key. The plotter will then track the media and immediately begin plotting the next buffer file.

Reserved

and

These codes are reserved. If for some reason one should appear, press the LOCAL key to continue plotting.