



HP 12991A
Power Fail Recovery System
installation manual



HEWLETT-PACKARD COMPANY
11000 WOLFE ROAD, CUPERTINO, CALIFORNIA, 95014

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WARNING

1. INTRODUCTION

This manual provides installation instructions for the HP 12991A Power Fail Recovery System, which is an accessory for the HP 2112A/2113A Computers and option 001 for the HP 12990A Memory Extender. For additional information, refer to the following manuals:

- a. *HP 21MX E-Series Computer Operating and Reference Manual*, part no. 02109-90001.
- b. *HP 21MX E-Series Computer Installation and Service Manual*, part no. 02109-90002.
- c. *HP 21MX Computer Series Reference Manual*, part no. 02108-90002.
- d. *HP 21MX Computer Series Installation and Service Manual*, part no. 02108-90006.
- e. *HP 12990A Memory Extender Installation and Service Manual*, part no. 12990-90003.

2. DESCRIPTION

The power fail recovery system, which provides up to 2 hours of memory sustaining power with an automatic restart capability, consists of the following:

- a. One battery inverter printed-circuit assembly (PCA), part no. 02112-60003.
- b. Two battery packs, part no. 1420-0206.
- c. Two battery boxes, part no. 02108-00007.
- d. Two battery box covers, part no. 02108-00006.
- e. Two foam pads, part no. 9220-2070.
- f. Miscellaneous attaching hardware.

3. INSTALLATION IN COMPUTER

Install the power fail recovery system in the computer as follows:

CAUTION

All contents of memory will be lost when ac power is turned off. Therefore, before proceeding with the installation, ensure that any contents of memory to be saved are stored in another medium for later retrieval.

Hazardous voltages are present inside the computer mainframe!! Before installing the power fail recovery system, set the ~ LINE and BATTERY switches to OFF and DISCONNECT THE POWER CORD!! Failure to observe this precaution can result in serious injury.

- a. On rear panel, set ~ LINE and BATTERY switches to OFF and disconnect power cord.
- b. Slide top cover back and insert battery inverter PCA in the PCA slot on the lower power supply PCA. Observe component side orientation of the PCA as shown in figure 1. Replace top cover.
- c. Remove I/O PCA cage cover by loosening the four captive screws. (See figure 2.)
- d. Remove the four screws and lockwashers securing battery box cover to battery box. Separate battery box cover from battery box and remove battery pack. Repeat procedure for other battery assembly.
- e. Position battery box onto I/O PCA cage cover and secure in place with the four flathead screws, lockwashers, and nuts. Repeat for other battery box.
- f. Reinstall battery pack against foam pad in battery box. Ensure that rubber grommet on battery cable is inserted in slot provided in right-hand side of battery box. Repeat for other battery pack.
- g. Position battery box cover over battery box and secure in place with the four screws and lockwashers. Repeat for other battery box cover.
- h. Install I/O PCA cage cover and secure in place by tightening the four captive screws.
- i. Connect battery cable assemblies to BAT. INPUT connectors.

Automatic restart switch A1S2 which is mounted on the CPU PCA, will alternatively enable or disable the automatic restart capability of the computer. The action that the computer will take upon the restoration of primary power following a power failure of less than 2 hours is determined by the following alternative switch settings:

- a. ARS. The automatic restart feature is enabled when switch A1S2 is in the ARS position. After a built-in delay of about half a second following the return to normal power levels, an interrupt from select code 04 is generated and the computer enters the run mode. An auto-restart program may be entered by the proper JMP or JSB in trap cell 00004 or alternatively, a HLT may be programmed.

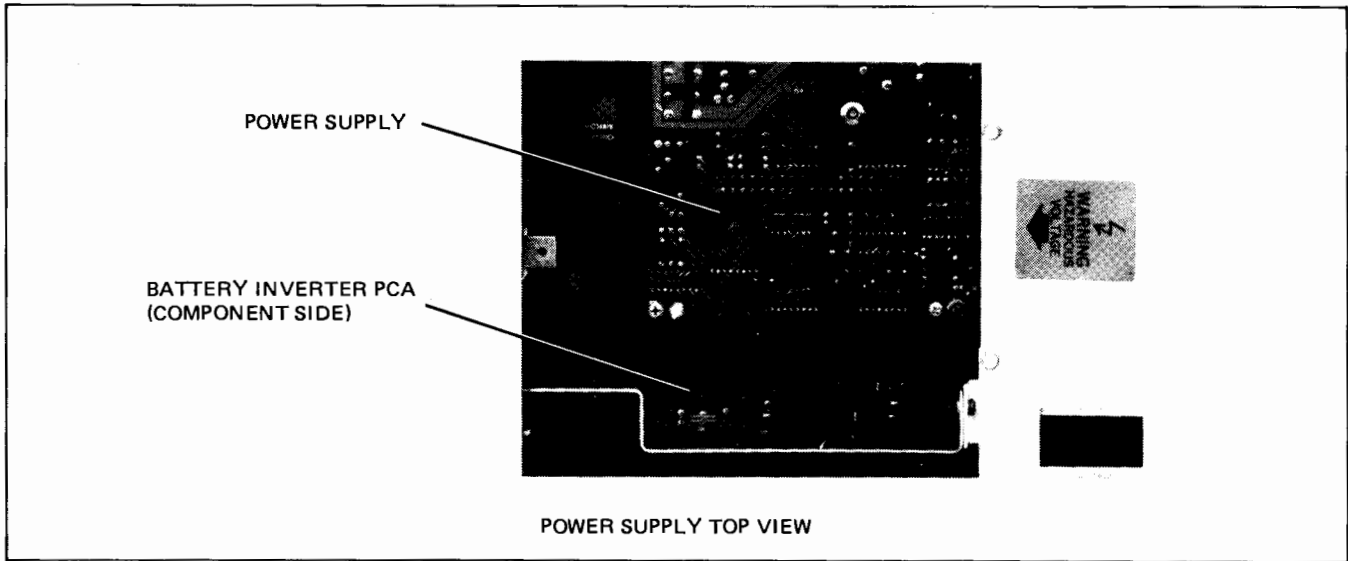


Figure 1. PCA Installation

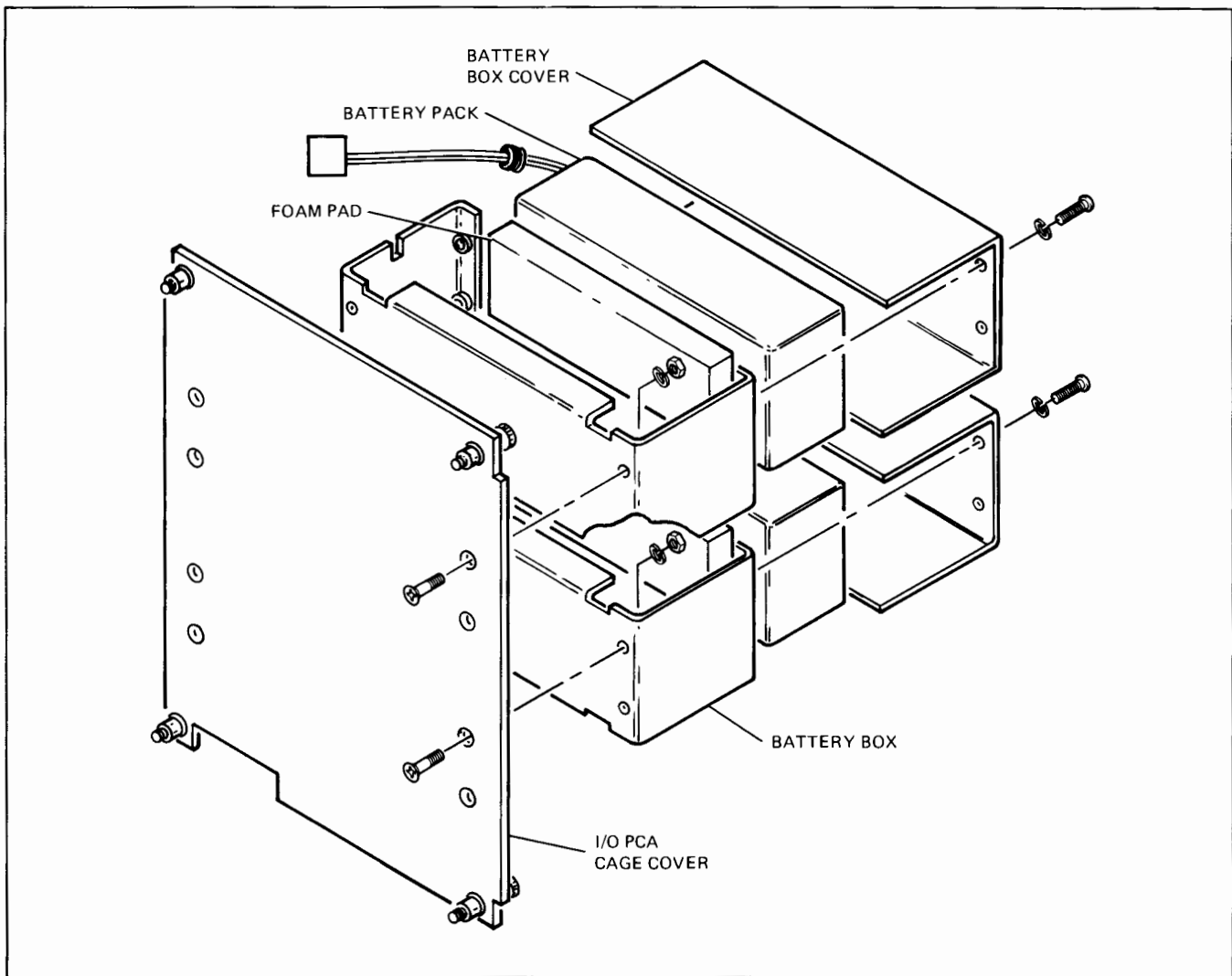


Figure 2. Battery Installation in Computer



WARNING

- (1) The ARS mode may be overridden by pressing the PRESET button while enabling power to the computer. This will prevent the interrupt to select code 04 and leave the computer in the halt mode.
 - (2) In the event that memory was lost while the computer was not powered, the ARS feature is overridden as described above.
- b. **ARS.** The automatic restart feature is disabled when switch A1S2 is in the **ARS** position. The computer is halted immediately regardless of whether the computer was running or halted when the power failure occurred.

Consult with the system programmer to determine the required switch setting and proceed as follows:

WARNING

Hazardous voltages are present inside the computer mainframe!! Before setting automatic restart switch A1S2, set the ~ LINE and BATTERY switches to OFF and DISCONNECT THE POWER CORD!! Failure to observe this precaution can result in serious injury.

- a. For HP 2113A computer, remove I/O PCA cage cover; for 2112A computer, remove computer bottom cover.
- b. Refer to appropriate Installation and Service Manual and set switch A1S2 as determined by system programmer.
- c. Reinstall I/O PCA cage cover (2113A) or computer bottom cover (2112A). Perform checkout to verify proper operation as described in paragraph 5.

4. INSTALLATION IN EXTENDER

Install the power fail recovery system in an HP 12990A Memory Extender as follows:

CAUTION

All contents of memory will be lost when ac power is turned off. Therefore, before proceeding with the installation, ensure that any contents of memory to be saved are stored in another medium for later retrieval.

Hazardous voltages are present inside the extender mainframe!! Before installing the power fail recovery system, set the ~ LINE switch to OFF, the BATTERY switch to EXT, and DISCONNECT THE POWER CORD!! Failure to observe this precaution can result in serious injury.

- a. On rear panel, set ~ LINE switch to OFF and BATTERY switch to EXT (external), which is effectively the "off" position when external batteries are not connected.
- b. Remove top cover and insert battery inverter PCA into the PCA slot on the lower power supply PCA. Observe component side of the PCA as shown in figure 1.
- c. Remove the four screws and lockwashers securing battery box cover to battery box. Separate battery box cover from battery box and remove battery pack. Repeat procedure for other battery assembly.
- d. Remove bottom cover.
- e. As shown in figure 3, position battery box onto deck and secure in place with the four flathead screws, lockwashers, and nuts. Repeat for other battery box.
- f. Reinstall battery pack against foam pad in battery box. Ensure that rubber grommet on battery cable is inserted in slot provided in right-hand side of battery box. Repeat for other battery pack.
- g. Position battery box cover over battery box and secure in place with the four screws and lockwashers. Repeat for other battery box cover.
- h. Verify that 1A and 3A fast blow-fuses are installed in F2 and F3, respectively, on the extender rear panel.
- i. Connect battery cable assemblies to the two connectors located on inside of rear panel and reinstall top cover. Perform checkout as described in paragraph 5.

5. CHECKOUT

After installing the power fail recovery system, verify proper operation by performing the following:

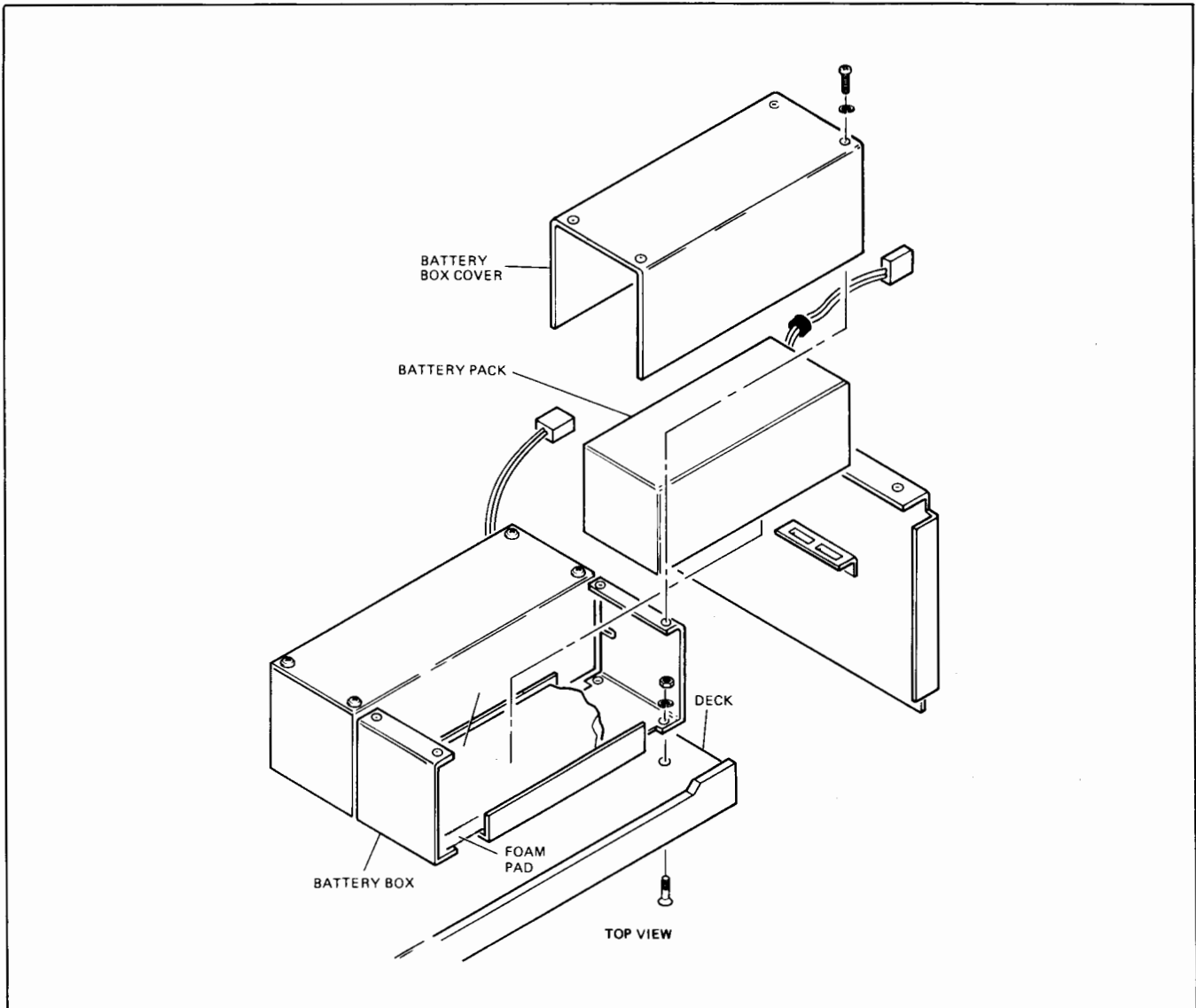
- a. Plug computer power cord into power mains receptacle and set ~ LINE and BATTERY switches to ON.

- b. Plug extender power cord into power mains receptacle, set ~ LINE switch to ON, and set BATTERY switch to INT (internal), which is effectively the "on" position when internal batteries are connected.
- c. On computer operator panel, rotate key-operated switch to R (reset) and then to OPERATE.

- d. Perform the diagnostic test as described in the *Power Fail/Auto Restart Diagnostic Reference Manual*, part no. 02100-90216.

Note: The batteries are completely discharged before shipment. Upon initial application of power, or upon restoration of power after a prolonged power failure, the POWER FAIL/BATTERY light will flash on and off for approximately 18 hours until the batteries are sufficiently charged to sustain memory. The battery levels are sampled every 7 minutes, so sufficient time must be allowed for the light to be turned off once corrective action is taken.

If the diagnostic test is completed without an error halt, the power fail recovery system is operating correctly. If the diagnostic test indicates an error halt, notify your nearest HP Sales and Service Office. A list of the HP Sales and Service Offices is given in the *HP 21MX E-Series Computer Operating and Reference Manual*, part no. 02109-90001, and the *HP 21MX Computer Series Reference Manual*, part no. 02108-90002.



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Figure 3. Installation of Batteries in Extender