Quantum Design

MPMS Service Note 1014-806

Replacing the Hardware Configuration Option EPROM on the 1822

When you install an MPMS option, you will use these procedures to replace the hardware configuration option EPROM (HW Config EPROM) on the 1822. The replacement procedures will take 30 minutes or less to complete. You can expedite the process by reviewing the instructions before you begin them.

MPMS Models Covered: These instructions cover MPMS units that use the MPMS MultiVu application software or the MPMSR2 software (the DOS-based operating system).

System Requirements: MPMS units that use MPMSR2 software must have version 2.25 or later of the software and version 3.10 or later of the 1822 controller. MPMS units that use the MultiVu software must have version 3.10 or later of the 1822 controller. If your system does not meet these specifications, contact your Quantum Design representative for further instructions.

Important Guidelines: Follow the guidelines below to help ensure a successful installation.

○ Limit your movements during the upgrade and ground yourself by touching the metal case of the 1822 Controller *before* you touch the internal components. These precautions will help you prevent damage to the EPROMs from static discharge.

○ Install any EPROM so that the notched edge faces toward the inside of the board and the contacts, unless you are instructed otherwise. In other words, the notched edge of the EPROM should be oriented to the left when the contacts are at the left side of the CPU board.

○ Verify that all the EPROM pins have been completely inserted into the holes—sometimes pins are bent so that they do not properly mate with the openings.

○ Note the orientation and connection of any controller cable *before* you disconnect it. Components of the controller can be damaged if a cable connection or its orientation is incorrect.

Tools

The following items will facilitate the installation process:

○ Phillips screwdriver (#2)

○ Allen wrench or gripping tool, such as a dental pick

I. Identify EPROM Version Number

Before you start the procedure, identify the version number of the EPROM that is currently being used with the 1822.

MPMSR2 SYSTEMS

1. Press **F6** to open the **Utilities** menu

2. Select **Software Version**. This displays the current software version and the version numbers of the 1802 and 1822 EPROMS.

   Important: The software version must be 2.25 or later, and the 1822 version must be 3.10 or later. If it is not, contact your Quantum Design representative for further instructions.

MULTIVU SYSTEMS

1. Open the dropdown **Help** menu in the MultiVu window and select **About MPMS MultiVu** (see Figure 1).

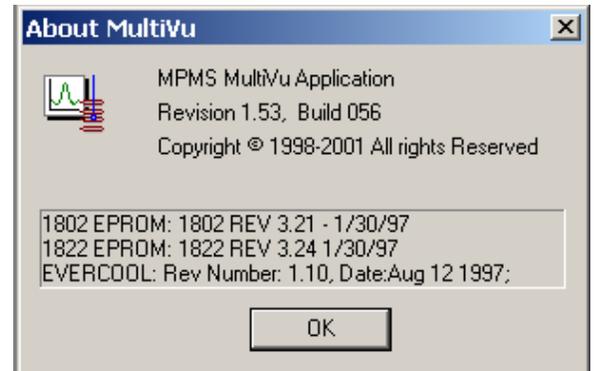Figure 1. Dropdown Help menu in MPMS MultiVu

Figure 2. Dialog box listing the version of the 1822 and 1802 EPROMS

2. The **About MultiVu** dialog box will open, showing the version (REV) of the 1822 and 1802 EPROMS. For example, the 1822 EPROM in Figure 2 is REV 3.24.

   Important: Any software version is acceptable, provided that the 1822 version is 3.10 or later. If it is not, contact your Quantum Design representative for further instructions.

II. Access and Remove the Existing 1822 EPROM

1. Verify that you have the replacement "HW Config EPROM" (part number U2764) that was shipped with your new MPMS option.

2. Verify that the magnetic field is at zero (0) Oe.

3. Exit the software.

4. Turn off the power button at the front of the Model 1822 controller unit. (***Do not*** turn off the power to any other component of the system or unplug the system. If you have any questions about this (or any) subject, please contact Customer Service at Quantum Design.)

5. Lower the front panel of the 1822 after loosening the faceplate screws with a Phillips screwdriver.

Note: On some models, you must remove the four faceplate screws that attach the front panel. If it is more convenient, you can remove the front panel completely, ***but before you do this***, disconnect the power and heater-protect override switches shown in Figure 3.

6. Figure 3 shows a frontal view of the 1822 controller unit, including the different boards, cables, and connections. Referring to this figure, locate the ribbon cables marked GPIB and I/O Control Jack J4, which are in the far right of the controller unit next to the CPU board. Note that the layout of boards will vary according to the options that have been installed, but the CPU board is always at the far right. (For example, Figure 9 shows the layout for an AC system.)
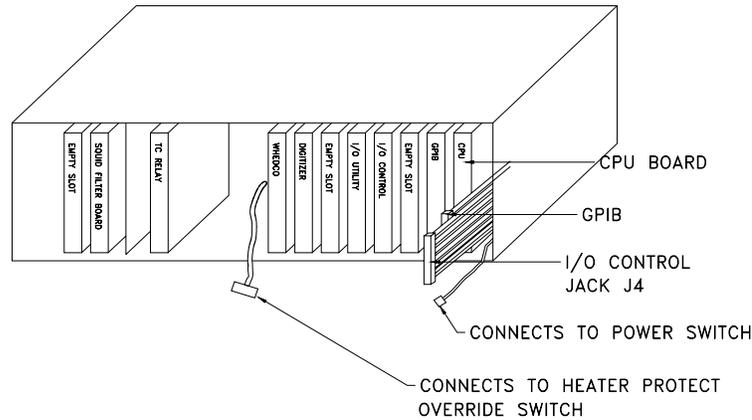

Figure 3. A frontal view of the 1822 controller on a standard MPMS unit, with callouts to CPU board (far right); power and heater-protect override switches; and GPIB and I/O Control cables.

7. Make a note of the position and orientation of the connectors to the GPIB and I/O Control Jack J4 cables.

C A U T I O N !

Note the orientation and position of each cable *before* you it remove it. Components of the 1822 will be damaged if any cables are connected to the wrong receptacle.

Important: Take care during the remaining steps—it is important that you do not bend any of the board components ***or*** let your skin contact them.

8. Disconnect the GPIB and I/O Control ribbon cables, which obstruct access to the CPU board. To avoid damaging the cables and connectors, grip the top and bottom edges of the connector and carefully pull from the top and bottom alternately (e.g., Figure 4). Remember to pull only on the connector (not on the cable).

9. Pull the CPU board out of the 1822 (Figure 5) by attaching a gripping tool to the hole in the board or by gripping the board at the top and bottom edges and moving it up and down a little as you pull on it.
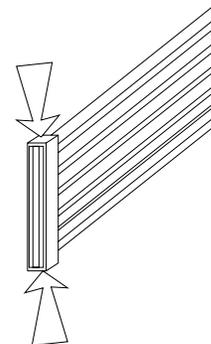

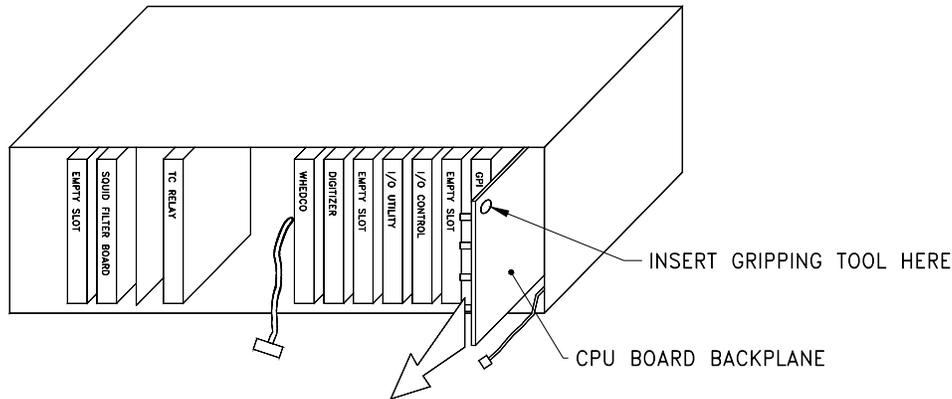Figure 4. Removing a ribbon cable by gripping the connector at the top and bottom

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Figure 5. Removing the CPU board

10. Figure 6 shows the top of the CPU board and the EPROM sockets, which are labeled S1–S4 or U30–U27, depending on the revision. Locate socket S3 (or U28) and the EPROM that is labeled HW Config. (Contact Customer Service at Quantum Design if this EPROM is not in socket S3 or U28.)
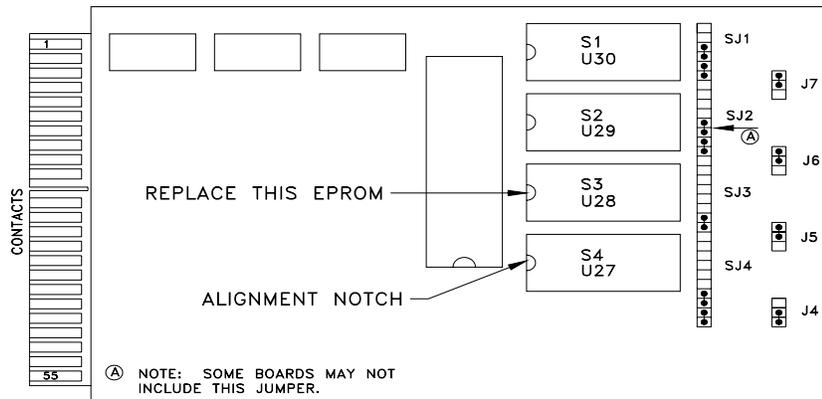

Figure 6. Top of 1822 CPU card showing the positions and orientation of the EPROMs

11. Remove the HW Config EPROM by placing a small, flat-ended tool under one of the short ends and gently prying it up, working alternately at each end of the chip.

12. Discard the EPROM that you have just removed.

III. Install and Verify the Option EPROM

1. Inspect the new HW Config EPROM and verify that the pins are aligned. Place the EPROM over the S3 socket and verify that the pins are spread correctly so that they will seat easily into the socket.

   If the pins are bent, you can straighten them by using the following technique: Place the chip on its side on a flat surface and gently press the top edge of the chip to move the pins into alignment (see Figure 7).
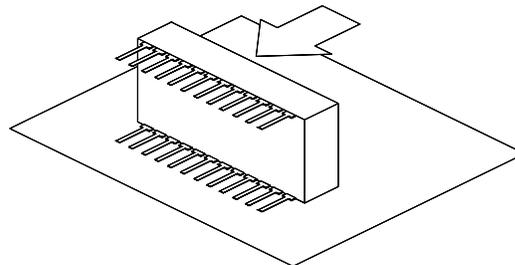

Figure 7. Aligning the pins on the HW Config EPROM

2. Carefully insert the new EPROM into the empty S3 (or U28) socket on the CPU board, with the alignment notch in the position shown in Figure 6, by placing the chip over the socket and aligning the pins with the socket holes. When the pins are in place, gently press down on the top surface of the chip. Press the chip into the socket until it is fully seated.

3. Verify that the alignment notch on the new chip is oriented correctly—the notch should point to the side of the CPU board that has the contacts (see Figure 6).

III. Re-Assemble the 1822 Controller Unit

1. Holding the CPU board so that its top (the side with the chips on it) faces to your left, slide the board into the far right slot of the 1822 controller (Figures 8 and 9). Push on the board until it is firmly seated in the socket in the STD Bus board. Figure 8 illustrates the 1822 controller setup for a standard system, and Figure 9 illustrates it for an AC system.
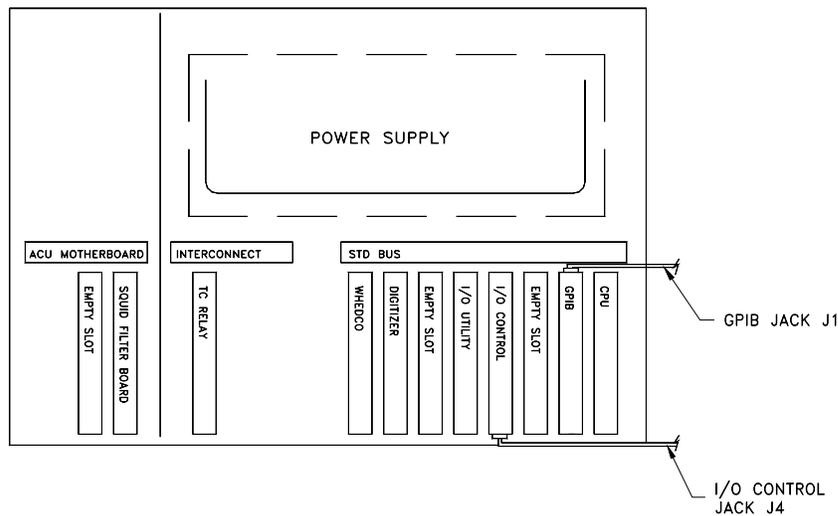

Figure 8. 1822 controller setup on a standard MPMS system, including proper connections for ribbon cables
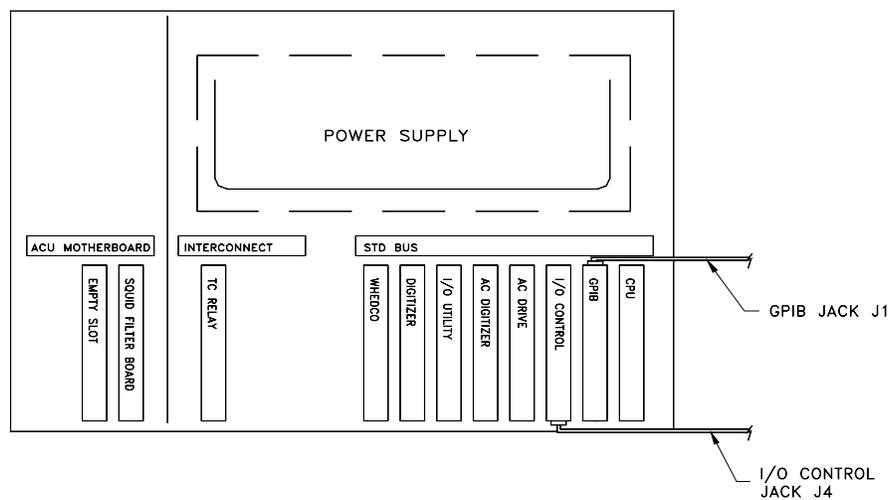

Figure 9. 1822 controller setup on an AC **s**ystem, including proper connections for ribbon cables

2. Attach the GPIB and I/O Control Jack J4 ribbon cables to their respective boards, referring to your notes so that the cables are connected to their original positions and have their original orientation. Connect Jack J4 to the bottom of the I/O control board and connect Jack J1 to the top of the GPIB board (see Figures 8 and 9).

3. Verify that you have connected the cables to their original positions with their original orientation.

4. If necessary, reconnect the power and heater-protect override switches.

5. Close (or re-attach) the front panel of the 1822 controller unit.

6. Turn on the power button at the front of the 1822 controller unit. Turn on the power to the 1802 as well if you are installing ETC using Service Note 1014-309.

7. Start the operating software by typing "MPMSR2" (DOS) or by initializing MultiVu (double-click on the MultiVu icon on the desktop).

8. The system is now ready to use with the new option. In MultiVu, you can verify the installation by selecting **Utilities >> Options**. If the name of the new option is in the left column of the **Option Manager** dialog box, the EPROM has been correctly installed.