



# Service Bulletin

Title: **DSP-4 DC Converter Update**  
Bulletin #: DSP0004 Issue Date: October 25, 2002  
Models Affected: DSP-4 Bulletin Revision: A  
Production Range: 04/2002-10/2002 (serial# 0402xxxxx-1002xxxxx)

## Description

Early production DSP-4's were manufactured with the incorrect DC/DC converter causing the surrounding components to weaken. Also in these units, the HD15 connector was not sufficiently grounded to the chassis. To correct this a spacer needs to be inserted between the connector and the PCB to raise the HD15 connector to the chassis. With the help of the EMI shield that's placed on top of the HD15, a solid grounding connection is made between the HD15 and the chassis.

## Symptoms

The DSP-4 does not turn on; the blue power LED does not light. This symptom may occur when the DSP-4 is used with an external power supply. Alternatively, the DSP-4 produces heavily distorted sound through the audio outputs. This symptom may occur when the DSP-4 is used with a QSC DataPort amplifier that supplies power to the module. The DSP-4 may exhibit grounding problems when the module is running.

## Instructions

### Tools and materials required:

- Soldering iron with fine tip (recommended range 25 to 60 W)
- Desoldering station
- Rosin-core solder (diameter .015 eutectic type recommended) and flux
- #2 Philips screwdriver
- Small boxes or compartments (to keep assorted screws during disassembly)
- Tweezers
- PC running Signal Manager
- Oscilloscope

Location Number	QSC Part Number	Description
U6	IC-0000225-30	LT1617ES5 (LTKF)
D5 & D7	QD-000190-30	40V 3A Schottky SMT
C32, C33 & C35	CA-610008-30	10uF 20V tantalum
J5	PL-000194-00	Spacer, HD15 Connector
NA	NA	WP-000411-01 Board ID Label

Table 1. Required parts.

### Procedure: Updating the DC converter and surrounding components

**CAUTION: Take appropriate anti-static precautions to guard against electrostatic discharge (ESD).**

1. Disconnect DSP-4 from AC and wait at least 10 minutes for internal voltages to bleed down.
2. Remove all fourteen fasteners on the front panel of the DSP-4. Turn the DSP on its side and remove the other two fasteners, then flip the DSP over (Data Port receptacle side) and remove the remaining fasteners. Note that there are four different sizes of screws.
3. Gently pull the chassis apart and remove the PCB boards.
4. Separate the two PCB boards and locate the board with QSC part# WP-000411-00.

5. With your soldering iron and tweezers, carefully remove U6, D5, D7, C32, C33 and C35. If you find the parts difficult to remove, try adding new solder to the pads for better heat flow. Use the tweezers to delicately lift the part while touching the pad with the soldering iron. Refer to Figure 1 and Figure 2 for the location of the parts to be removed.
6. Use a desoldering tool or desoldering braid to remove excess solder from the solder pads.
7. Install the new components using the soldering iron and tweezers. Refer to Table 1 for correct part numbers.
8. With your soldering iron, carefully remove C17, C21, C25 and C43. Refer to figure 1 and figure 2 for the locations of these capacitors. There will be no parts soldered in the place of these capacitors.
9. Use a desoldering tool or desoldering braid to remove any remaining residual solder from the solder pads.
10. With your desoldering tool, remove J5. Refer to Figure 1 for the location of this HD15 connector.
11. Install the spacer between J5 and the PCB. Refer to Table 1 for the correct part number.

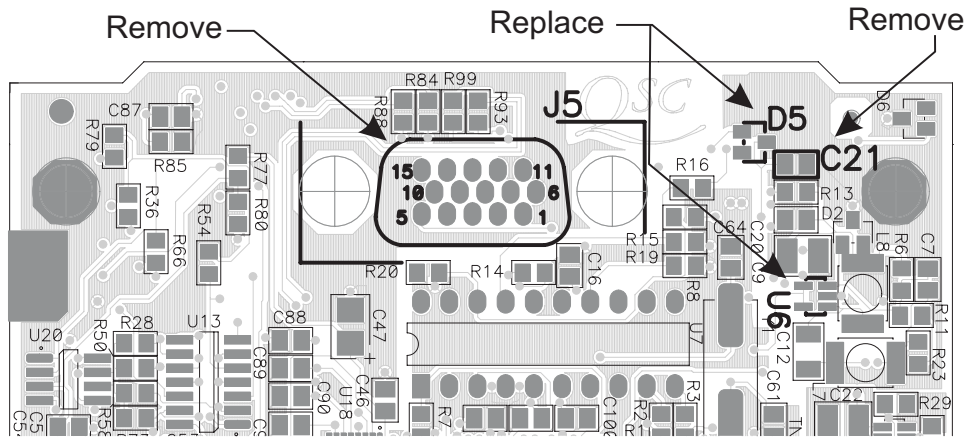


Figure 1. Top Layer.

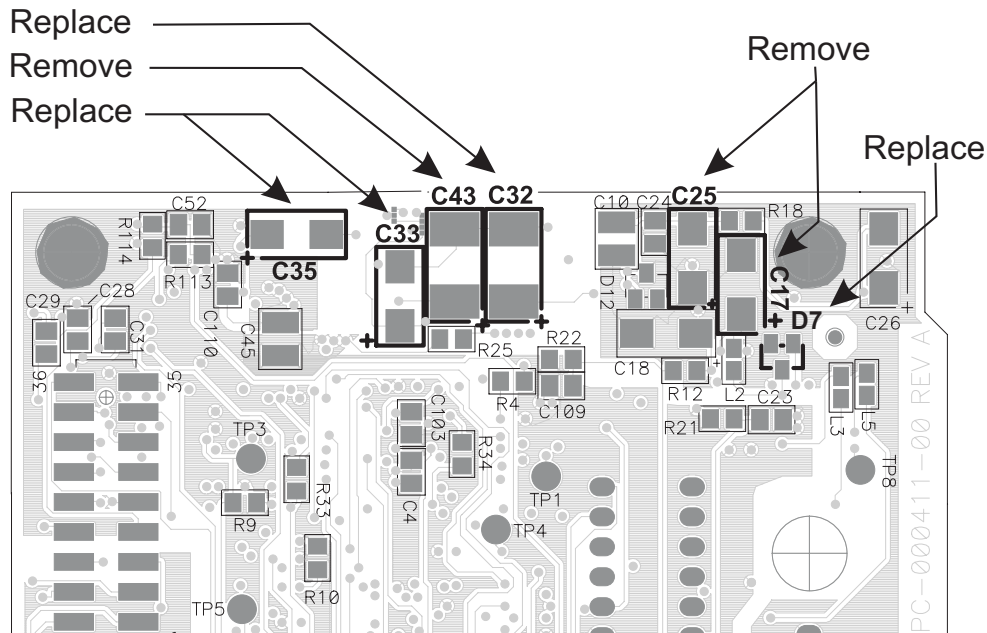


Figure 2. Bottom Layer.

12. Reinstall J5.
13. Remove the WP-0000411-00 label from the board and replace it with the WP-0000411-01 label.
14. Reassemble the two boards by connecting the two headers (J10 and J1).
15. Insert the PCB assembly into the chassis (making sure the power LED and the signal LED are lined up correctly in the appropriate slots).
16. Place the cover on the chassis. Insert and tighten all eighteen fasteners.

### **Procedure: Testing**

1. Using an external power supply (DPX-1), apply power to the DSP-4. If the power LED does not light, call QSC Technical Services for assistance.
2. Connect the DSP-4 to an available COM port on your PC and start Signal Manager. Create a straight through configuration with no processing but use the function generator with the sine wave setting as the input on each channel. Check that the sensitivity settings are set for 4 volt in and 4 volt out.
3. Connect the oscilloscope to the audio outputs of the DSP-4 and check that the signal is not clipping or distorted.

## **Contact information**

If you need any further information regarding this service procedure, please contact QSC Technical Services at the addresses or numbers below.

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