



For additional information, please visit the Bybee web site at www.BybeeLabs.com

Inside a Benchmark DAC 1, each Music Rail should be placed next to its associated regulator. Use a 4-40 x 3/4" L extension (threaded standoff) to elevate each Music Rail. Use 4-40 set screws to fasten the extensions to the existing standoffs that support the Benchmark PC board. These fasteners can be obtained from www.McMaster-Carr.com. Below are the part numbers:

93330A437 Aluminum Threaded Round Standoff, 1/4" OD, 3/4" Long, 4-40 Screw Size
92311A110 Stainless Steel Set Screw, 4-40 X 1/2" Long
91770A108 Stainless Steel Truss Head Phillips Machine Screw, 4-40 X 3/8" Long

There are four regulators in the Benchmark DAC 1. The + / - 18V regulators supply the analog output stage. The +5V & +3.3V regulators supply the DAC chip. There are convenient 2-pin jumpers for each regulator. The jumpers are marked as follows:

+18V = JP1 -18V = JP5 +5V = JP2 +3.3V = JP6

In each case, the pin nearest the sidewall connects to the Music Rail input (Vin). The output (Vout) of the Music Rail connects to the other jumper pin.

Note: the 2A Music Rail drops 0.5V so this insertion loss will have to be compensated in the low-voltage regs (+5V & +3.3V). To recover this voltage, lift the ground pin from each low-voltage regulator and insert a diode (the ground pin will have zero volts on it, and will be at ground potential, which you can confirm with an ohmmeter). The diode will boost the output of each regulator by 0.6V, making up the insertion loss of the Music Rail. For positive regulators, the diode should be inserted with the banded end toward ground (reverse it for negative regulators). You can use a 1N4001 diode, or any equivalent diode with a forward current rating of 100mA or greater.

Each Music Rail should have its two ground pins (the two outermost pins) jumpered. Next, run a wire from either one of these ground pins to the ground plane of the corresponding regulator (that part of the PC board that the regulator ground pin is, or was, soldered to). This completes the installation.

After installation and power up, you should read a 0.5V differential from input to output on each Music Rail. The RMS noise at each Music Rail output should read 25uV or less wideband. You should also ensure that each regulator is working properly after the mod (the output voltage of each regulator should remain stable when the AC line is decreased or increased).

For further installation and performance details please see the Music Rail [Technical Data](#). [App J0308](#) covers general considerations for installing Music Rails in DAC's .

If you need additional help, please e-mail techsupport@bybeelabs.com

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MUSIC RAILS are manufactured in the United States.

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8390 East Via de Ventura F-110

Scottsdale, Arizona 85258, USA

1-480-998-2880 / techsupport@bybeelabs.com
