



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

Three Most Common MUSIC RAIL™ Questions

Q: *What are they? How do they work? Why do I need them?*

A: Download the [White Paper](#) from this web site to get the full story. Other helpful information is also available in the [Apps & Data](#) section.

Q: *I've read the **White Paper**. (Helpful reviews are also available on this web site.) How can I confirm the performance of these devices for myself?*

A: There are two ways: by ear or by instrument. It is possible to strap the device from input to output, effectively bypassing it. The strap can be opened via connector or switch. By this means, the Music Rail can be auditioned in and out of the circuit. To test the device, see Testing & Troubleshooting (below).

Q: *I'm sold. Where can I find installation information?*

A: All installation information, including the datasheet, app notes, and layout examples, is available in the **Apps & Data** section of this site. We recommend starting with the Data Sheet and the installation guidelines. Download the [Technical Data](#) followed by [App J0331: Installation & Mounting Notes](#).

Installation

Q: *I have downloaded the **Technical Data Sheet** and the **Installation Notes**, but there is too much information. I just want to get started right away. What do I do?*

A: Download the [Quick-Start Guide](#).

Q: *I have downloaded the **Quick-Start Guide** but I'm still confused about some installation details. What do I do?*

A: Keep reading.

Q: *My voltage rail is above 30V, so I need a high-voltage adaptor. How do I select R1 without doing math?*

A: Download app note [J0413: R1/R2 Selection Chart](#).

Q: *How do I rate C1, the noise drain capacitor?*

A: The C1 voltage rating should be the same or higher than the rail voltage.

More . . .

Q: *I have selected R1 & C1 for my high-voltage adaptor. Where can I buy these parts?*

A: Download [App J0412: Parts, Suppliers, & Accessories.](#)

Q: *My voltage rail is above 300V, so I need to use both R1 and R2, but I don't have room for two large power resistors in my chassis. What do I do?*

A: You can use vertical mount resistors or you can use a single high-power resistor. High-power resistors are available in 25W and compact 50W packages, but these require special mounting techniques. Download [App J0414: High Power Resistors](#) to learn more. You can also use TO-220 style resistors with heatsinks, such as those offered by Caddock and sold by our [distributors listed on this web site.](#)

Q: *My voltage rail is above 300V, so I need to use both R1 and R2, but I'm not sure how to connect them in series. What do I do?*

A: Download [App J0417: >300V Power Supply Schematic](#), which shows a typical configuration. You will need to adjust the R1/R2 values if your voltage rail is other than 300V. See [App J0413: R1/R2 Selection Chart.](#)

Q: *What mounting hardware do I need and where can I buy it?*

A: Download [App J0412: Parts, Suppliers, & Accessories.](#)

Applications

Q: *How do I connect the Music Rail to a negative voltage rail?*

A: Below 30V, the connections are the same as for a positive rail. Above 30V, you must reverse the two protection diodes. All other connections remain the same. To see a schematic for a negative installation, download [App J0410: Negative Power Supply Schematic.](#)

Q: *How do I connect the Music Rails for a bipolar (+/-) power supply?*

A: Download [App J0321: Bipolar Power Supply.](#)

Q: *How do I optimize Music Rails for a DAC?*

A: A special low-voltage technique is required for DAC's.
Download [App J0308: DAC Applications.](#)

Q: *How do I optimize Music Rails for tube amps?*

A: A special high-voltage technique is required for tube amps.
Download [App J0310: Tube Amp Applications.](#)

More . . .

Q: *I will be using 15A Music Rails. How do I know if I'm using enough heat sink?*

A: If you are modifying a power amplifier you can use the existing heat sink. If not, you will need to specify & supply one. In either case, you should run some numbers. Recommended web resources are shown on the main [Apps & Data](#) page of the Bybee Labs web site.

Testing & Troubleshooting

Q: *My Music Rail is in place. How do I know if it's working properly?*

A: First check the voltage drops, then compare the input vs. output noise with a sensitive AC meter or spectrum analyzer. You can also use a scope if the sensitivity is great enough to display noise at the sub-microvolt level. To find voltage drops, see Figs. 2 & 6 in the **Technical Data** information.

Q: *The noise level has not dropped at the Music Rail output. Where's the beef?*

A: Even the Music Rail produces *some* noise. Sometimes the noise in front of the Music Rail is just as low as the noise floor of the Music Rail. Wow! One of the interesting things about the Music Rail is that it produces "good noise", i.e., the character of the noise that it does produce is very smooth, like the sound of surf in the far distance. The character of a 3-terminal regulator, on the other hand, is more spikey & jumpy, which can put an edge on transients that makes them grating to the ear. So even if the PARD measures the same on an AC voltmeter, it can still sound quite different in its effects on music. A spectrum analyzer will show the difference quantitatively, but this does not always correlate psycho-acoustically.

Q: *The noise level has increased at the Music Rail output. What the frack?!*

A: Under certain capacitive conditions a Music Rail may produce a low-level, non-destructive oscillation. This oscillatory energy adds to the noise floor, which can be seen on a scope. This can occur when low-value capacitors are placed across the Music Rail output. Oscillation may also occur when the input capacitor is too far away from the Music Rail (see schematics for guidelines).

Q: *My installation cannot avoid using capacitors across the Music Rail output. Is there anything I can do?*

A: Download [App J0409: Bypass Capacitors](#).

Q: *I have tried all the remedies provided in the app notes and I still cannot get my Music Rail to operate as advertised. What do I do?*

A: E-mail TechSupport@BybeeLabs.com.

More . . .

Q: *Shazaam! My Music Rail is in place and it passes all tests. How can I convince myself was a wise choice?*

A: Besides listening with & without a bypass strap, you can run some tests. After checking the noise, run a signal (or music) into your component and increase the level until you can see it on the rail. Be sure not to exceed the limits of your component and to properly load your power amp. If you can't see any signal on the rail, try increasing the frequency. High frequencies will be stronger because there is less power supply rejection with frequency. When you see the signal clearly—stop. Now try the same test at the same levels with the Music Rail *un-bypassed*.

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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