

**FCB1010 Phantom Power Adapter
Installation Directions**

Dec 14, 2007

Introduction

The Behringer FCB1010 is a very popular MIDI foot controller with 10 banks of 10 presets, 2 expression pedals and 2 programmable relay controlled switch jacks. It is truly a great pedal board. Unfortunately, the FCB1010 has its power supplied by a line cord that needs to be plugged into a 110/240V AC wall jack.

In many live stage situations this can become problematic because the unnecessary AC power cord can become a tripping hazard, in addition to increasing the chances of inducing 60 cycle hum into your audio signals.

Fortunately there is a way to power the FCB1010 without using the external AC power cord or AC for that matter. The FCB1010 communicates with other MIDI equipment by sending control signals over three of the wires inside a standard **five wire** MIDI cable. To eliminate the external power cord, it is possible to use the two remaining wires inside the MIDI cable to supply the needed power to the FCB1010.

Installing the DMV Phantom Power Adaptor will let you power the FCB1010 from either the AC line cord or phantom power without having an obtrusive switch that you will need to toggle back and forth sticking out the back of your unit. In order to install the DMV Phantom Power Adaptor, you will only need to reroute a couple of wires and stick the adapter's pre-glued feet onto an open space inside of your FCB1010. You will not need to drill any holes in your unit to accommodate a switch. Once the adaptor is installed, you can forget about it. There will be no cosmetic modifications to the outside of your unit, and if you want to sell your FCB1010 you can remove the adaptor and install it in a new FCB1010 if you decide to buy one again later.

Most importantly, the adaptor will automatically sense whether you are supplying either line voltage or phantom power and then seamlessly directs it to your FCB1010. If you forget and mistakenly apply phantom power to your unit while it is plugged into the wall, the adaptor will disconnect the AC power and use phantom power. The reverse is also true. The Phantom Supply Adaptor defaults to phantom power whenever two voltages are present.

WARNING! - Please Read this Information Carefully:

Effect Pedal Modifications Disclaimer

This modification will void the warrantee. By performing any of our modifications, you agree to comply with this disclaimer statement and fully realize any risks that may be involved with performing any of our modifications.

Our do it yourself (DIY) modifications should only be used by individuals that are 18 years of age or older unless accompanied by a supervising parent or guardian.

Soldering Guns can cause serious injury if not used properly. Always take the proper precautions when soldering. Always unplug power from the pedal when performing these modifications. We cannot be held responsible if you hurt yourself, hurt someone else or destroy property.

Please also know that we cannot be held responsible if you ruin your equipment. These modifications are believed to be safe and error free when performed as indicated in their respective guide. If you follow the instructions exactly as indicated you will minimize your chance of problems. If you feel uncomfortable performing this modification, find someone that is familiar with electronics modification or repair to perform the modification for you.

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Our designs are not allowed to be used for anything other than their intended, commercial or non-commercial, purpose without my written permission.

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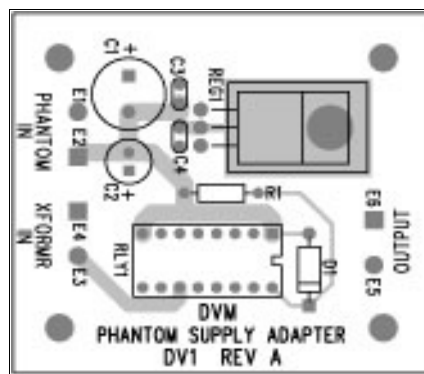
Now the Mod:

Overview:

These instructions will have you disconnect two yellow wires from the FCB1010 and then solder them onto the DMV Phantom Supply Adapter. Next, you will solder the two pre-attached yellow wires from the Phantom Supply Adapter back to the same location on the FCB1010 that you removed the previously mentioned yellow wires from. Then you will mount the phantom adapter's circuit board and then attach a red and a black wire from the Phantom Supply Adapter to the backside of the MIDI out/thru connector. The circuit is designed to use a 9VDC 500ma power brick or equivalent.

These wires, red and black, go to the backside of the Midi out / thru jack.

Attach the 2 yellow wires from the your FCB here.



These yellow wires attach To where the FCB's yellow Wires came from.

Directions:

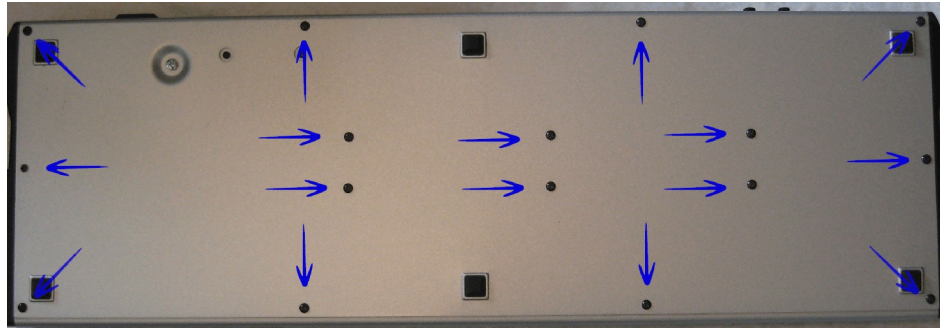
1. Read this entire document before you start this modification.

If, after reading these directions you feel uncomfortable performing this modification, find someone that is familiar with electronics repair to perform the modification for you.

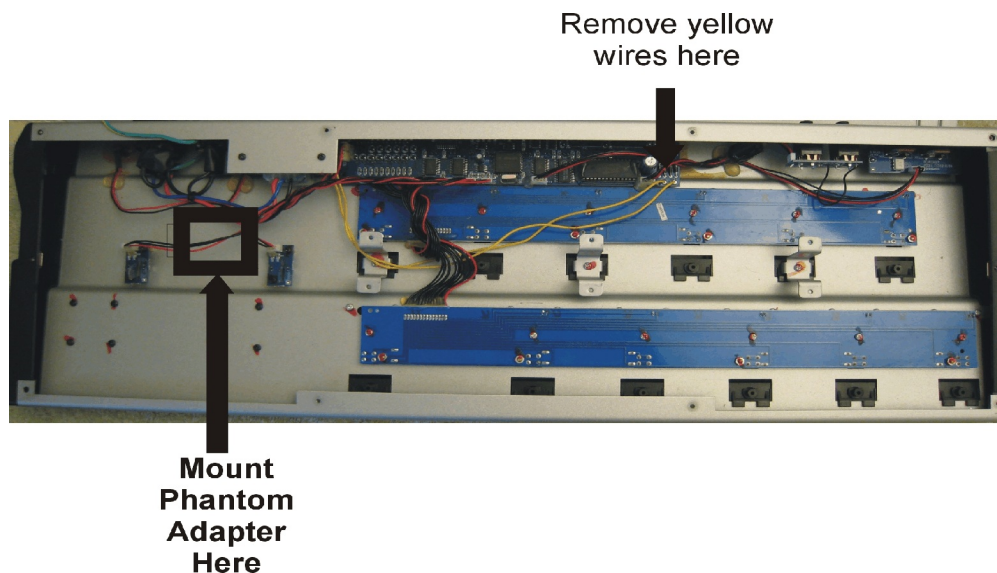
2. If the FCB1010 is plugged into the wall outlet unplug it and then disconnect the wall cord from the unit. If the FCB1010 is not plugged into the wall outlet still disconnect the wall cord from the unit.

3. Remove the back cover.

There is a cable attaching the back cover to the unit. There is no need to disconnect the cable but, be careful so that you do not break it. Gently flip the back cover out of the way.



4. Using the picture below, locate the area where you are going to mount the Phantom Supply Adapter's circuit card. DO NOT attach the phantom supply adapter at this time; it will be attached in step 7.



5. Unsolder or cut, see steps 6A thru C, the two yellow wires (see arrow above) from the FCB1010's circuit board and then route the wires through the group of wires by the FCB1010's transformer to prevent the wires from interfering with the operation of the expression pedals' optical strips before you solder the wires to the Phantom Supply Adapter. (Read and understand steps 6A thru C, so that you know what you need to do. You can not route the FCB's yellow wires thru the group of wires by the FCB1010's transformer after you solder them to the Phantom Supply Adapter.)

6A. Solder the wires to the E3 and E4 "xformr in" pads on the preassembled phantom adapter board. Because the yellow wires will be carrying AC, the order (polarity) in which you solder the yellow wires to the Phantom Supply Adapter does not matter.

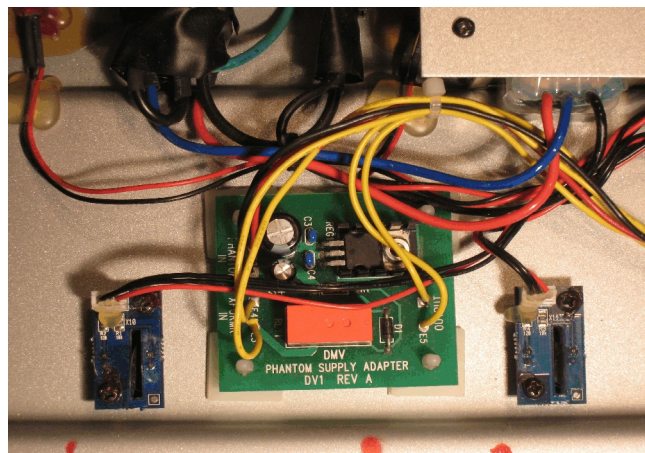
6B. If you do not want to unsolder the wires or are concerned about soldering directly on the FCB1010's printed circuit boards, another choice is to cut the wires about 4 or 5 inches away from where they are connected to the FCB1010's circuit board and then strip off a little of the insulation and then solder the now unconnected ends (attached to the FCB's transformer) of the FCB1010's yellow wires to the E3 and E4 "xformer in" locations on the Phantom supply adaptor.

6C. If you opted to buy the pig tail option, the Phantom Adapter will come with two 4" pig tails with butt splice connectors preattached soldered to the "xformer in" pads and two loose butt connectors for use in step 9C. With this option, like above, you will need to cut the yellow wires about 4 or 5 inches away from where they are connected to the FCB1010's circuit board and then strip off about a 1/4" of insulation from each of the now 4 wires and then insert one of the wires that are attached to the FCB1010's transformer, the longer wires, into one of the butt connectors that came preattached to the Phantom Adapter's E3 and E4 "xformer in" solder pads.

Make sure that the stripped portion of the wire is totally inside of the butt connector so that the wire will not short out against anything. If the stripped off portion is too long trim a little off until it is short enough to be totally inside the butt connector. After the wire is inserted into the butt connector, crimp the butt connector down onto the wire with a pair of terminal crimping pliers. After the wire is crimped give it a slight tug to verify that the wire is locked into the butt connector. Next, repeat this procedure between the other wire that is attached to the FCB1010's transformer and the other pig tail that is attached to the Phantom Supply Adapter's "xformer in" pad.

7. Attach the supplied feet into the holes in the 4 corners of the phantom supply adapter making sure that the little tab at the bottom of the posts pops thru the mounting holes in the Phantom Supply Adapter's circuit board there by locking the feet in place. Remove the backing paper on the bottom of the feet and stick the phantom supply adapter to the inside of the FCB1010 at the location shown in the figure above.

Make sure that the bottom of the feet are positioned the way you want them, as you may only have one chance at sticking them down. Notice how the wires are woven thru and tie wrapped to the wires coming out the transformer.



8. Route the two yellow wires that came pre-attached to the phantom supply adapter back to the location where you un-soldered, or cut, the yellow wires that were attached to the FCB1010's printed board. Once again, make sure to route the wires so that they will not interfere with the operation of the expression pedal's optical strips.

You may need to adjust the lengths of the wires if they are too long. We intentionally ship the wires on the long side, because the way you route them may be slightly different from the way someone else routes them. A pair of nail clippers works fine to adjust the wires to the length that you want. Make sure to leave slack in the wires.

9A. Strip off a little insulation and then Solder the yellow wires that came pre-attached to the phantom adapter to the FCB1010 making sure that the portion of the wire that sticks thru the FCB1010 circuit board is not so long that it comes in contact with the metal case below. If the wires come in contact with the case they may cause a short circuit which can cause damage to your FCB1010, the phantom supply adapter or both. We soldered from the wires back in from the top. A solder sucker or desoldering braid is recommended to clean the old solder out the holes before you solder the new wires back in.

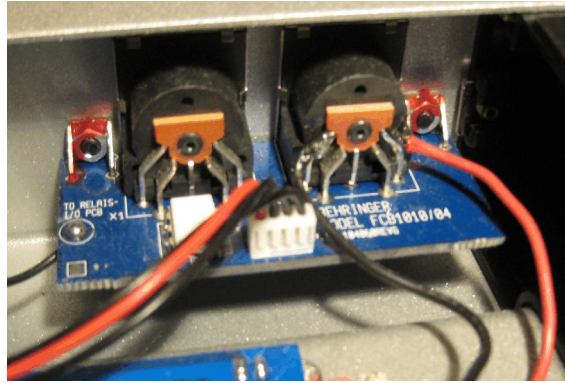
9B. If you decided to cut the FCB1010's yellow wires a few inches away from where they were attached to the FCB1010's circuit board instead of un-soldering them, solder the yellow wires that came pre-attached to the Phantom supply adapter to the FCB1010's yellow wires. Wrap the solder joint in electrical tape or, preferred, use heat shrink tubing. If you use heat shrink, do not forget to slide the tubing on one of the wires before you solder any 2 wires together. Once again, the order (polarity) of the yellow wires does not matter just solder one of the Phantom Supply Adapter's yellow wires to one of the FCB1010's yellow wires and the other Phantom Supply Adapter's yellow wire to the other FCB1010's yellow wire. Use a heat source, carefully, to shrink the heat shrink tubing to size.

9C. If you opted for the pig tail option, repeat the steps in 6C except between the yellow wires that are pre-attached to the E5 and E6 "output " connections on the Phantom Supply Adapter and the 4"- 5" yellow wires that are attached to the FCB1010's circuit board. As stated in step 8, we ship the wires that are attached to the Phantom Supply Adapter on the long side so that you can adjust their length. After adjusting the wires length, don't forget to leave slack in the wires, strip off a 1/4" of insulation off of the Phantom Supply's yellow "output" wires and then attach the supplied butt connectors between the Phantom Supplies yellow wires and the yellow wires that are connected to the FCB1010's circuit board.

10. Route the red and black wires from the phantom supply adapter, steering clear of the expression pedals optical strips, to the back side of the MIDI Out/ Thru jack.

11. While facing the BACK side of the MIDI out/ Thru jack, solder the RED wire to the RIGHT most pin of the MIDI connector. Solder the BLACK wire to the LEFT most pin of the MIDI connector. This is very important. We found removing the black plastic end cover on that side of the FCB1010 helpful, because it allows for better access to the back side of the MIDI connector. Don't forget to pre-tin the wires before you solder them on.

Another option is to pull the circuit board and solder the Phantom supplies power supply wires to the bottom of the circuit board where the MIDI jacks pins protrude thru the circuit board. We have not tested this idea but have been told that it works.



It is VERY IMPORTANT that the red wire have positive voltage supplied to it and the black wire have negative voltage supplied to it. The phantom adapter has a voltage regulator on it that needs to have positive voltage on the red wire. If you are also buying the optional insertion cable the red and black wires must be hooked up as stated above because the insertion cable is wired in respect to the positive voltage (red) being on the right and negative voltage (black) being on the left.

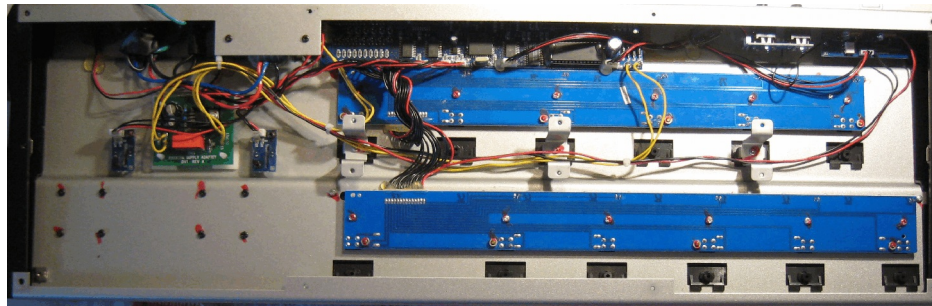
Note: We could not figure a way to attach these wires without soldering them on.

12. Secure the wires by tie wrapping them in select locations.

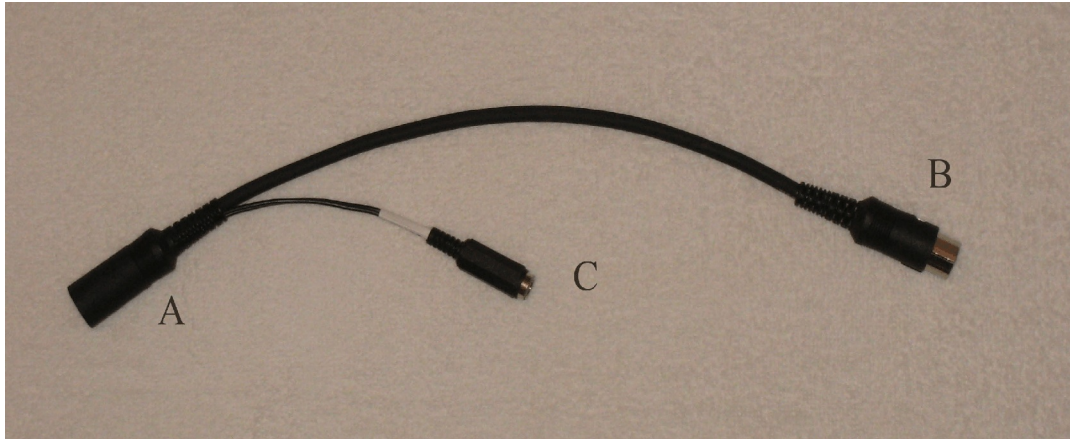
13. Reinstall the back cover on the unit.

14. Plug your unit in, using a 9VDC 500ma power brick (Pos Tip) or equivalent, test it, and enjoy.

The completed unit.



DMV Insertion Cable Directions



End “A” inserts into the MIDI cable that is attached to you FCB1010.

End “B” inserts into the MIDI device that you are going to control.

The power brick (9V@500mA Pos tip) inserts into connector “C.”

Notes:

1. The connector for the power brick is a 5.5/2.1mm jack but, a 5.5/2.5mm plug will also work.
2. The MIDI cable used to connect to the FCB1010 must be a 5 wire MIDI cable.
3. The cable is designed so that power from the power brick travels down the length of the MIDI cable to your FCB but not towards connector “B”, ie: your head unit. Data travels freely, in both directions, between connectors “A” and “B.”
4. The insertation cable is sold separately.