Boss DR-110 MIDI Interface Manual

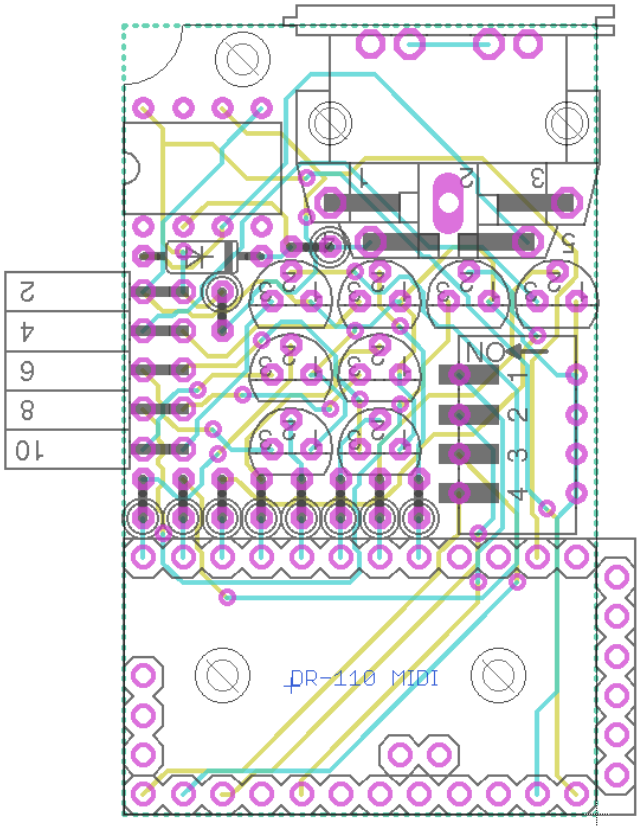
Assembly

The converter comes in two parts - the unit itself and the connector to be installed in the DR-110. The main unit comes either assembled or as a kit. With both, the connector needs to be installed in the DR-110.

Tools required

- Screwdriver
- Soldering iron
- Drill
- File or preferably rotary tool
- Multimeter (recommended)

Constructing the Unit



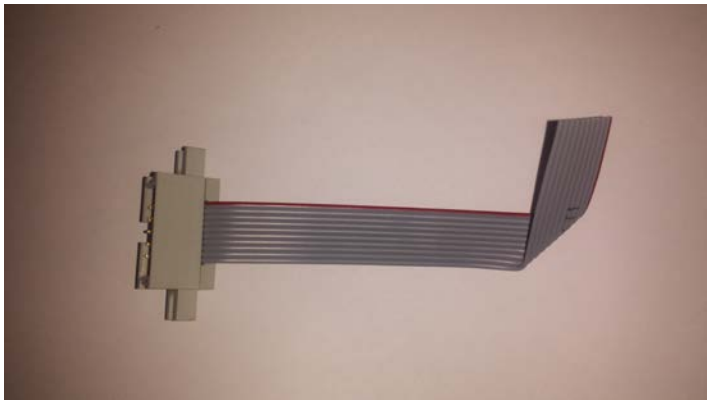
Solder the components to the PCB as per the diagram to the left. The order of soldering is not particularly important, but a good order would be: large chip socket, 8 trigger resistors, 8 transistors, the diode, the 2 other resistors, then the remaining chip, switch, MIDI port and 10-way connector.

The 8 resistors beside the chip and the one beside the 10-way connector should all be 10kΩ (Brown Black Orange). The resistor beside the MIDI port should 220Ω (Red Red Brown).

The legs of the transistors must be bent to fit in the holes. The easiest way is to line up two legs into the correct holes and then turn the transistor until the third lines up. The transistors may sit at different heights depending on how far they are pushed in.

The resistors can be inserted in either direction, but the other components must be inserted in the direction shown. Ensure the black band of the diode faces towards the MIDI port and the 8 pin chip has its dot aligned towards the semicircle in the picture.

The controller chip can now be inserted for testing.



To ensure the PCB has been soldered correctly, the next step is to make and then install the connector for the DR-110 and check the two units work together. This step is very delicate and involves separating and stripping the end of the wires of the ribbon cable so they line up with the pins mentioned in the next section.

Refer to the next section for fitting it in the unit.

The final step is to affix the PCB to the enclosure. The controller chip will need to be removed for this.

The PCB should be aligned with the enclosure lid so the edge of the PCB is just within the lip of the lid, as shown to the left. Guide marks should be drawn onto the lid through the bolt holes. These holes should then be drilled and the PCB bolted in place. The three short bolts included are for this. Care must be taken not to tighten them too much as that could potentially damage the board.

Once this is done, the controller chip can be inserted into the socket.

Then the lid can be aligned with the case and guide marks for the 10-way connector slot can be made. There are many ways to remove the plastic of the slot, but the fastest seems to be to use wire cutters to cut away as much plastic as possible and then file it down to neaten it up. Once that is removed, the lid should fit into the case.

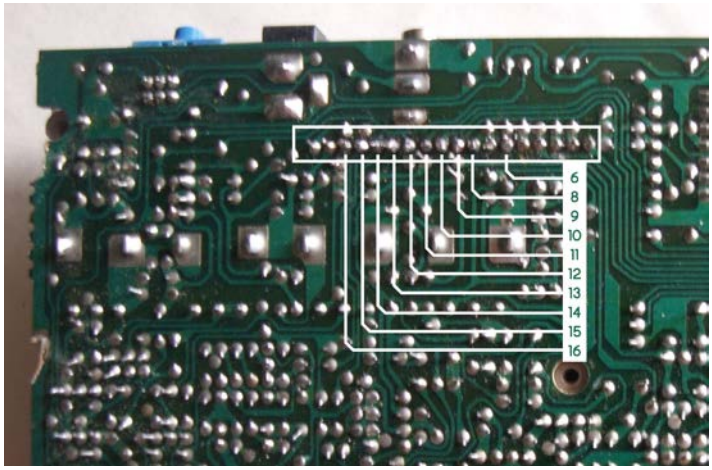
Next, a hole can be made in the case for the MIDI port. There is no simple way to locate the hole other than measuring or estimating its position. A stepped drill bit is the best way to make the hole.

Finally, the lid and PCB can be screwed in place onto the case.

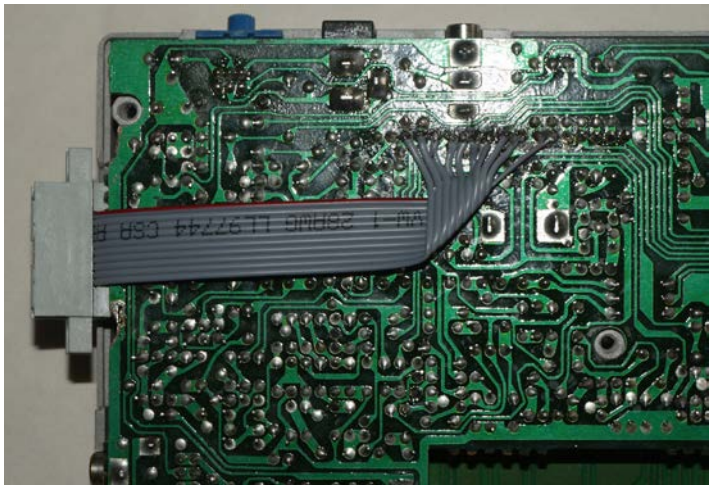
Installing the Connector

[!] Any user patterns saved in memory will be erased so write them down if you want to keep them.

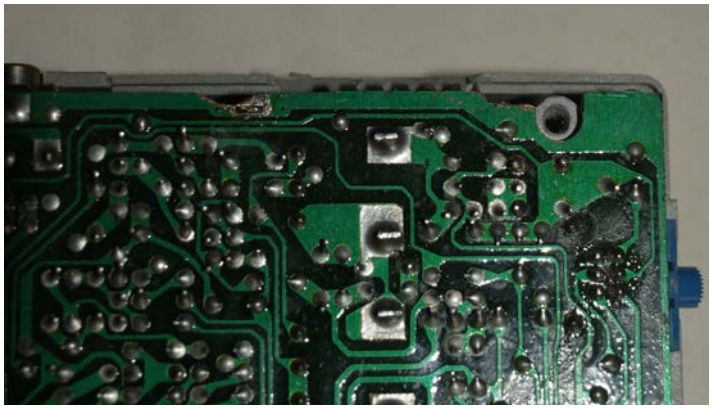
Remove the 3 screws on the base of the DR-110. The back should now come off. Set this aside for later.



The PCB will now be exposed. Solder the ribbon cable so the red wire is connected to the point labelled 6 on the image and the cable runs towards the front of the DR-110. The wire beside can be soldered to either point 7 or 8 and the other wires are to be soldered sequentially from point 9 to 16. Once soldered, it is important to check the continuity between each adjacent pair of connections to ensure they are not being bridged.

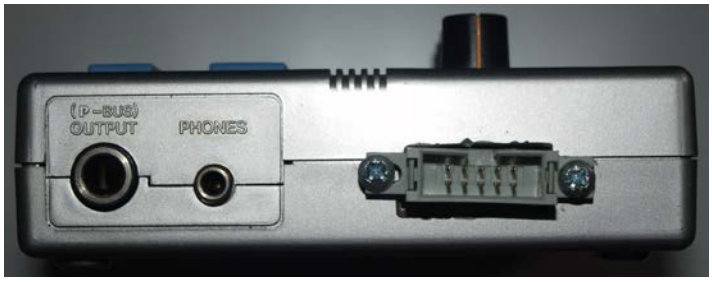


Once soldered, it should look similar to this. At this stage, it is a good idea to connect the mod to the unit to confirm it is working and triggering the sounds properly. If it is not, the soldering must be checked again and possibly redone.



Part of the PCB will need to be filed down slightly to allow clearance for the bolts.

Remove a section of case and drill holes in order to fit the connector in the unit. The exact position may vary based on how the cable has been soldered so it is best to do this at this stage.



Use the nuts and bolt to secure the connector. Connect the DR-110 to the mod box.

Playing Notes

Play notes as you would normally on your MIDI-equipped keyboard or digital sequence generator, with the default keymapping below. By default, the unit will be set to channel 1.

Bass Drum	36
Rimshot	37
Snare Drum	38
Clap	39
Weak Clap	40
Snare Noise*	41
Closed Hi-Hat	42
Pedal Hi-Hat	44

Hi-Hat Noise*	45
Open Hi-Hat	46
Accent Hold*	47
Accent Trigger	48
Cymbal	49
Cymbal Noise*	51
Clap Noise*	52

Most sounds have no need to respond to Note Off events as they only trigger a short pulse, the duration of which is set by the velocity of the note, creating a form of velocity sensitivity. However, some sounds are sustained until a Note Off message is received. These sounds are marked above with an asterisk and do not have velocity sensitivity.

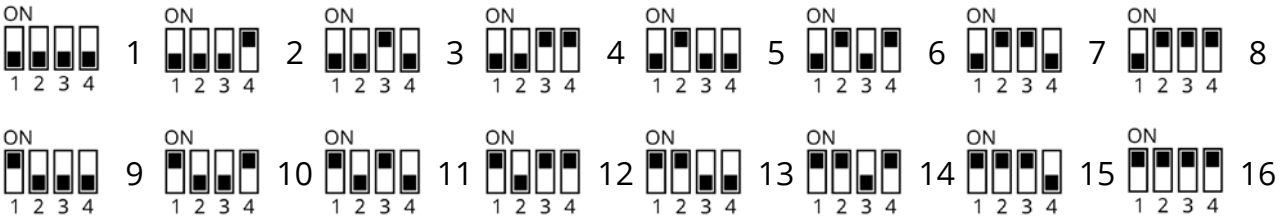
Those sounds that do have velocity sensitivity are set so a velocity of 100 triggers each sound the same way as the internal sequencer does.

Changing MIDI Channel

The MIDI channel can be set by either the internal switches, or MIDI CC.

Setting the channel by switch

The channel can be set using the switch positions below.



The position of the switches and the corresponding MIDI Channel

The unit will read these switches on startup if the channel has not been set previously by CC. It will also be read if a CC9 with value 0 is received.

Setting the channel by CC

When a value of 1 - 16 is received on MIDI CC 9, the channel will be set to that value. Values 17+ have no effect. A value of 0 sets the MIDI channel the position of the switches. The MIDI channel and omni status are saved when the device is switched off.

Once the channel has been changed to another via CC, it will no longer respond to a CC on the original channel. The sending equipment must have its send channel set the new channel of the unit.

Omni mode can also be enabled or disabled, allowing the device to respond to messages sent on any channel. To enable this, CC125 must be sent with a value of 0. To disable this, send CC124 with a value of 0.

Changing the keymapping

To change which keys trigger which notes, send the CC in the implementation chart below followed by the note number that should trigger it. For example, to change the open hi-hat so it is triggered by the key to left of the default Bass Drum key, send CC46 with a value of 35. These values are retained while the device is switched off.

MIDI Implementation

The unit does not transmit MIDI.

Channel	1-16	
Mode	Omni / Mono	
Note number	0-127	
Velocity	0-127	
CC	9	Set channel
	36	Set Bass Drum note number
	37	Set Rimshot note number
	38	Set Snare Drum note number
	39	Set Clap note number
	40	Set Weak Clap note number
	41	Set Snare Noise note number
	42	Set Closed Hi-Hat note number
	44	Set Pedal Hi-Hat note number
	45	Set Hi-Hat Noise note number
	46	Set Open Hi-Hat note number
	47	Set Accent Hold note number
	48	Set Accent Trigger note number
	49	Set Cymbal note number
	51	Set Cymbal Noise note number
	52	Set Clap Noise note number
Aux	All notes off	