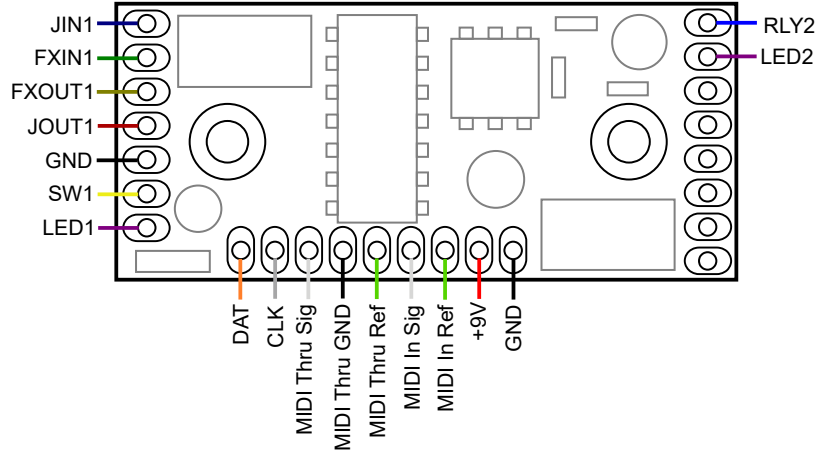# Goblin-3PDT in POG2
Installation, Configuration and Usage

The Goblin-3PDT – Single Relay is able to control bypass and presets of the EHX POG2 and therefore make them accessible via MIDI.

Installation

These are the connections of the Goblin-3PDT that are needed for the POG2 installation.

Step 1: Bypass Preperations

First remove the old 3PDT bypass switch. I leave the ribbon cable at the PCB and desolder only the little switch PCB, like the picture below (left). To get it off as clean as in the picture, put a lot of solder on all connections and move the soldering iron back and forth quickly to get heat on all connections at the same time. While moving the soldering iron back and forth, pull gently and the switch PCB will come off.

Use a cutter to separate the wires of the ribbon cables like the picture below (right). The first two wires can stay as they are, because they connect directly to the Goblin-3PDT, the GND wire is not needed and the other ones are needed but in other order on the Goblin-3PDT.
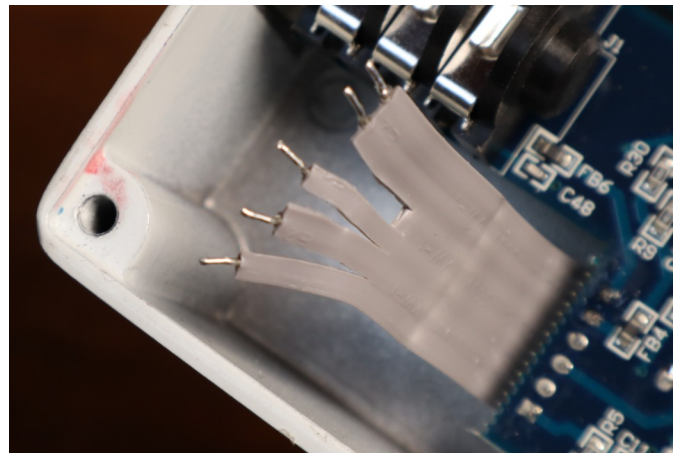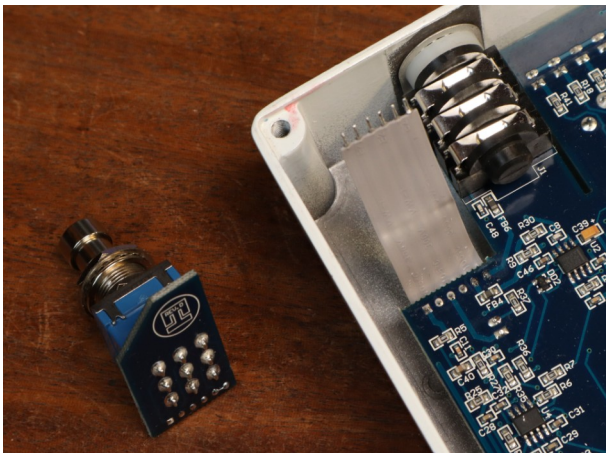

Step 2: Drilling

Now is a good time to drill the holes for the MIDI socket, since there aren't many wires and stuff that gets in the way. I use masking tape and mark 11mm from the bottom and around 40mm from the side of the power supply socket. For the Isolated Mini TRS Socket use a 8,5mm drill.
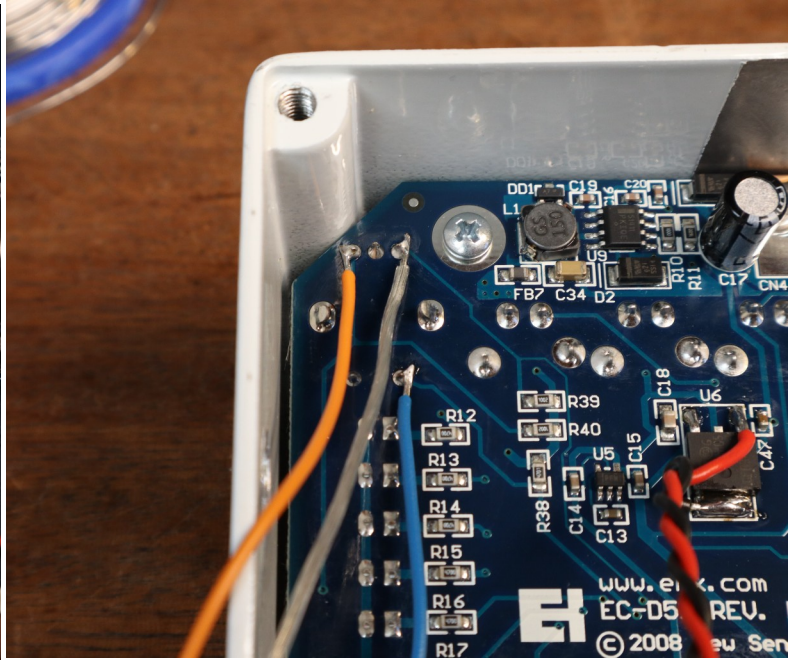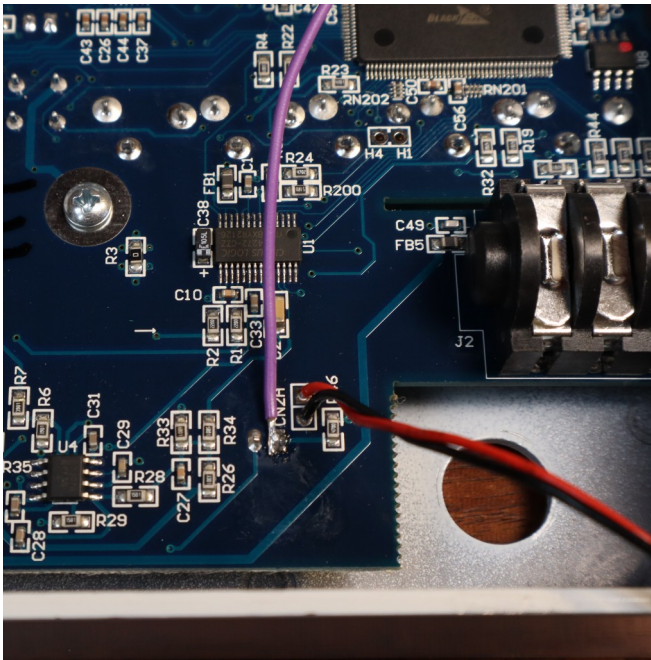
Step 3: Power Supply

Solder the wires for the power supply to the regulator, like in the picture. Black is GND, red is +9V.
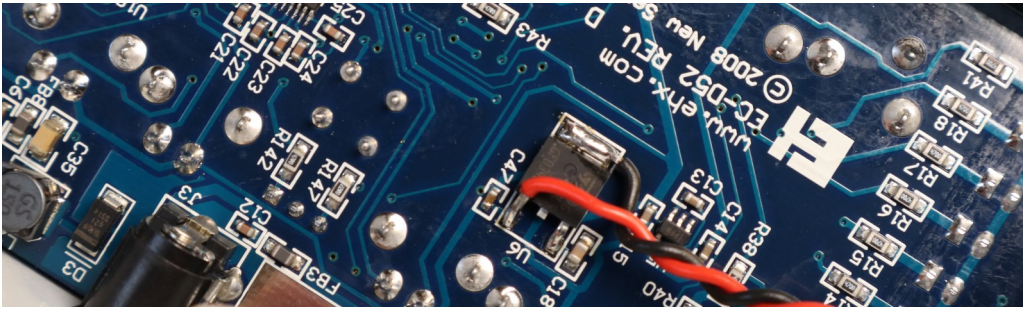
Step 4: Encoder Preparations

For the encoder, 4 wires are needed. The LED (purple wire), the push button (blue wire) and 2 for the encoder itself (orange and silver).
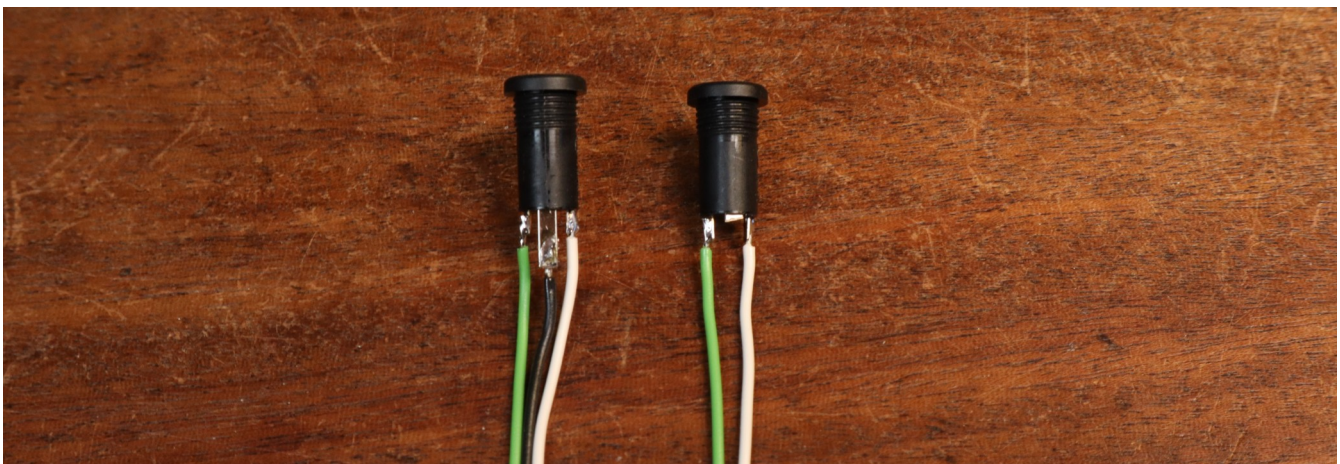

Step 5: Switch Preparation

Just solder two wires to the SPST switch and you're done for that step.

Step 6: MIDI Socket Preparation

Solder three wires to the MIDI Thru socket and two to the MIDI Input socket. The Sleeve connection is not needed for the input.
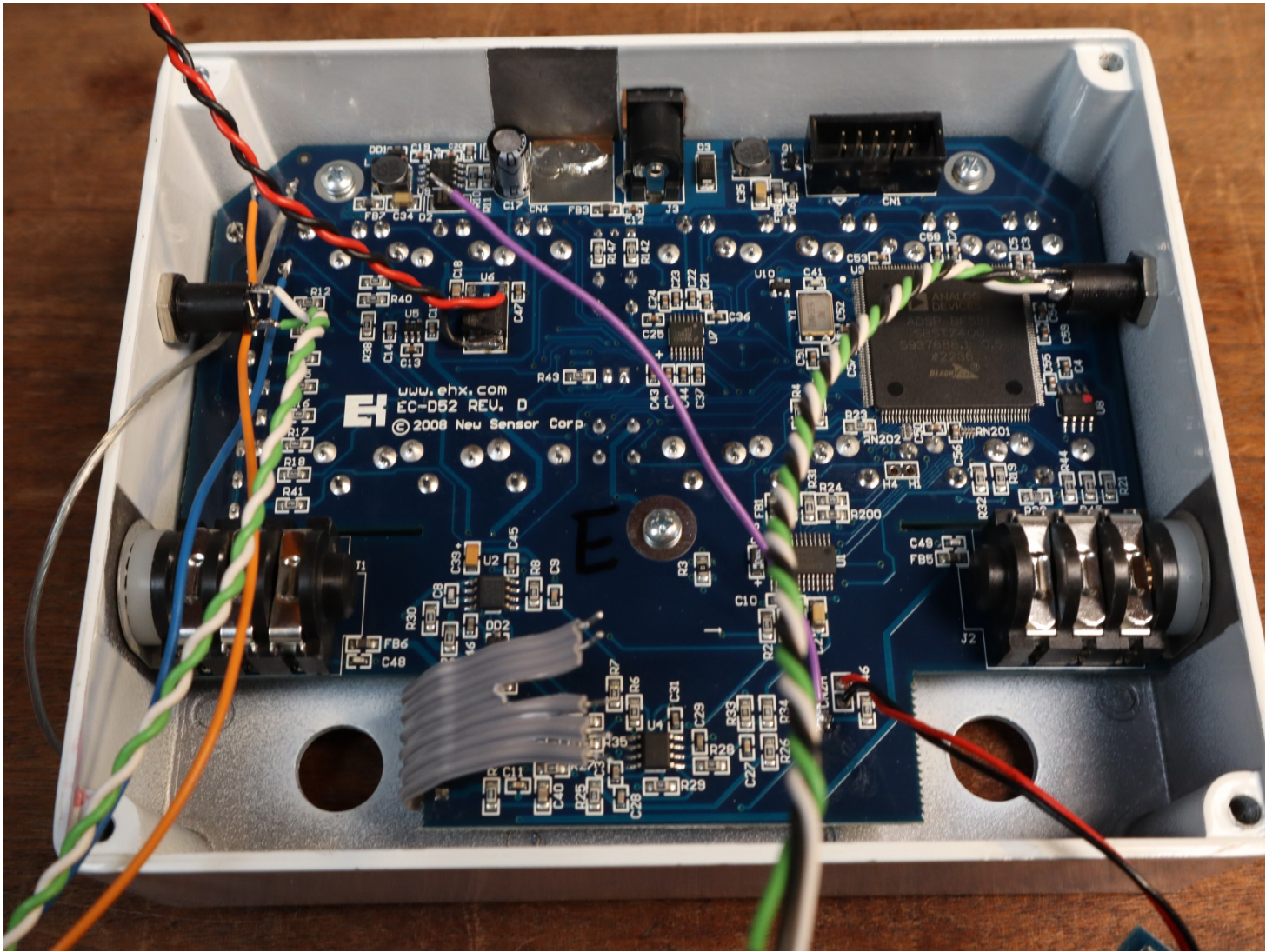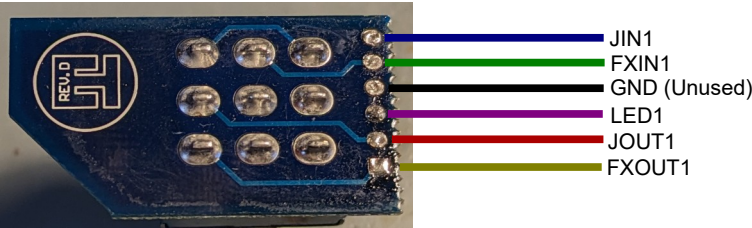White = Tip, Green = Ring, Black = Sleeve
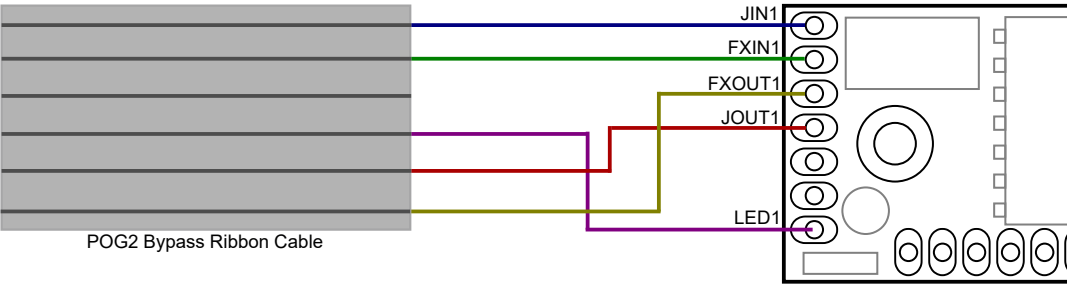
Step 7: Wiring

After all the preparations are done, it's time for the wiring. Your POG2 should look like this now.

Below is the pinout of the bypass switch and therefore the pinout of the ribbon cable.

- JIN1
- FXIN1
- GND (Unused)
- LED1
- JOUT1
- FXOUT1

Connect the ribbon cable like this

POG2 Bypass Ribbon Cable

JIN1
FXIN1
FXOUT1
JOUT1
LED1

Connect the wires from step 3, 4 and 5 like this:

Connection		What it does
Goblin-3PDT	**POG2**	
+9V	Red wire from Step 3: Power Supply	Positive Power Supply
GND (Adjacent to +9V)	Black wire from Step 3: Power Supply	Negative Power Supply
DAT	Orange wire from Step 4: Encoder Preparations	Encoder
CLK	Silver wire from Step 4: Encoder Preparations	Encoder
RLY2	Blue wire from Step 4: Encoder Preparations	Encoder Push Button
LED2	Purple wire from Step 4: Encoder Preparations	LED
SW1	Yellow wire from Step 5: Switch Preparation	Bypass Switch
GND (Adjacent to SW1)	Black wire from Step 5: Switch Preparation	Bypass Switch

This is the MIDI Pinout in reference to the connections of the Goblin-3PDT

| Goblin-3PDT	Wire Color from Step 6: MIDI Socket Preparation	Signal Name	MIDI Connection	
			DIN 5 Pin	**MIDI TRS Type A**
ISIG	White	MIDI In (Signal/Current Sink)	Pin 5	Tip
IREF	Green	MIDI In (Reference/Current Source)	Pin 4	Ring
OSIG	White	MIDI Thru (Signal/Current Sink)	Pin 5	Tip
GND	Black	MIDI Thru (Shield/GND)	Pin 2	Sleeve
OREF	Green	MIDI Thru (Reference/Current Source)	Pin 4	Ring

After the wiring your POG2 should look like this:
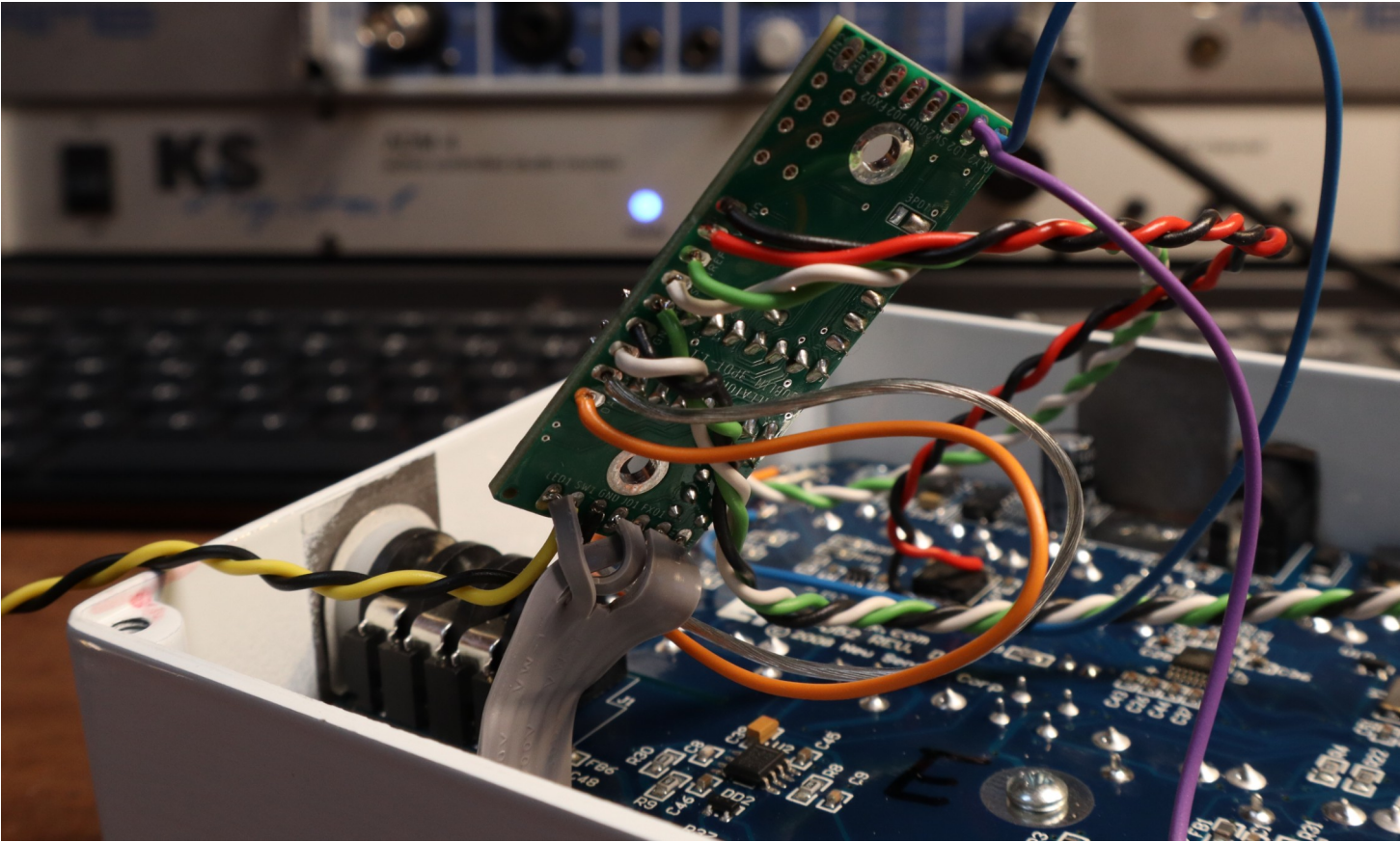
Step 8: Testing

Now is time to power up your POG2 and check if everything is in order. Check if the bypass switch switches and if a signal comes through in both states. Check if sending of MIDI PC command changes the preset.

IMPORTANT: There are two different models of POG2s out there. If you're sending PC messages and the preset is all the way around (PC1 goes to preset 8) exchange the CLK and DAT (orange and silver wires from Step 4: Encoder Preparations) and your good to go.

Step 9: Assembly

If you ordered the POG2 mod with the mounting bracket, slide in the mounting bracket and fasten it with the switches. Screw the Goblin on to the mounting bracket and you're done. Your POG2 should look like this now:
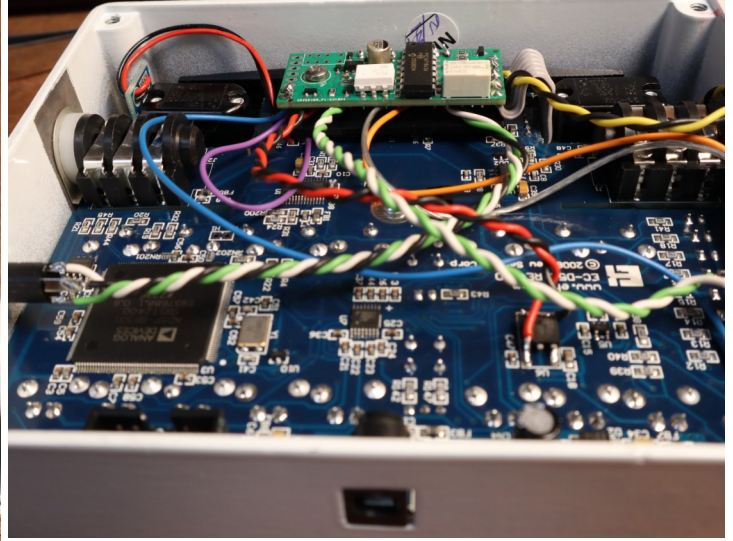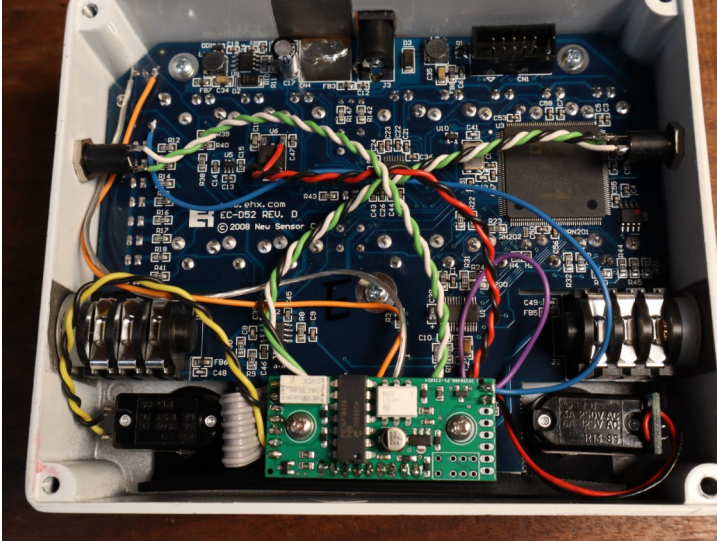
If you've ordered the Goblin-3PDT with mounting screws, refer to the Goblin-3PDT installation manual for mounting.

Step 10: Configuration

If you ordered a Goblin-3PDT in POG2 configuration (POG2 bundle for example), you can skip this step, because your Goblin-3PDT is already configured for the POG2.

If not, here are the configuration commands to set a Goblin-3PDT – Single Relay up for use with the EHX POG2. Note that these commands have to be sent in groups of four, without sending anything else in between.

With the POG2, port 1 is used as a relay. Port 3 is used as encoder and port 2 as its switch. Port 1 is configured as a relay by default, so no setting needs to be made.
For port 3, the role must be changed to Encoder:
CC 67 06, CC 09 18, CC 09 52, CC 09 03
For port 2, the role is Switch
CC 47 02, CC 09 18, CC 09 52, CC 09 02
Also, the measurements for the LED are 3.3V when the LED is off and 1.5V when it is on. Therefore, the polarity must be Low Active
CC 48 00, CC 09 18, CC 09 52, CC 09 02
and the threshold is to be changed to 2.4V.
CC 49 48, CC 09 18, CC 09 52, CC 09 05
Some POG2 models are slower than others. The switching speed must be reduced if presets are not reached correctly. To halve the speed, send:
CC 04 01, CC 09 18, CC 09 52, CC 09 10

Usage

Bypass

CC	#	Function
10	00	Turn off
	01	Turn on
	02	Toggle (From on to off and from off to on)

Presets

CC	#	Function
50	00	Preset decrement
	01	Preset increment

PC	Function
0	Leave preset mode
1...n	Select preset n

MIDI Channel

The *Goblin*'s MIDI channel is adjustable. To change the MIDI channel, proceed as follows

1. Disconnect the device from the power supply

2. Press the bypass button and restore the power supply while it is pressed. The device starts to flash its LED after the startup delay has elapsed.

3. Press the button according to the number of the desired channel (e.g. twice for channel 2). The *Goblin* acknowledges this by emitting short flashing impulses according to the number of the channel.

4. Once the desired channel is set, press the button and hold it down until the *Goblin* switches off completely.

5. Disconnect supply voltage. The next time the *Goblin* is started, it reacts to the selected MIDI channel.

To put the *Goblin* in omni mode (i.e. it responds to every channel) skip step 3.