# E580 Resampling Mini-Delay DIY Kit
www.synthtech.com/euro/e580



## What is the E580?

The Synthesis Technology E580 is a mono-in, mono-out audio digital delay that uses a unique 'resampling' algorithm to mimic analog BBD and tape delays. Analog delays have the property that when the delay time is changed, the pitch of the output changes. The E580 recreates this effect. There are 3 modes: clean, BBD and Tape. The BBD mode adds a low-pass filter that is based on delay time as well as noise. The Tape mode adds non-linear distortion (tape saturation effect) and "wow & flutter" (motor speed variations). The E580 has 2 outputs: a main Delay and a Tap. The Tap is a percentage (0-100%) of the main Delay. All 4 panel controls are also under CV (-5V to +5V range).

## Connecting to the power supply

The E580 can use either a MOTM 4-pin, MTA-156 style connector (+-15V) or a 16-pin Euro style (+-12V) connector. See the photos below. The Euro ribbon cable has a red stripe to indicate -12V.  The supplied Euro power cable is keyed so that when inserted in the E580, the red stripe is 'down' (towards the jacks) and by the white lettering on the pc board.
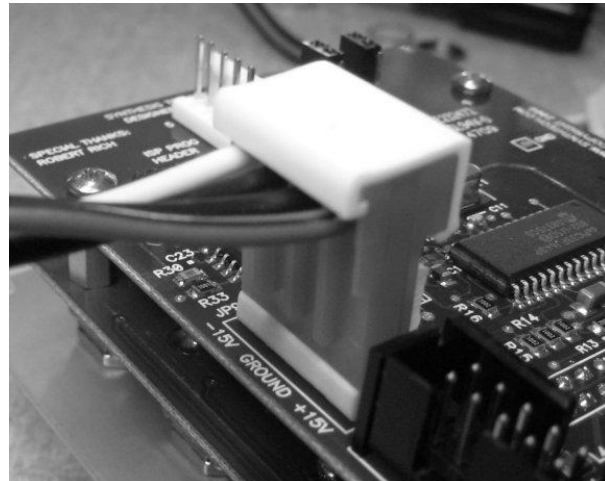
## What's in the Kit (Power Cable Included, not Shown)
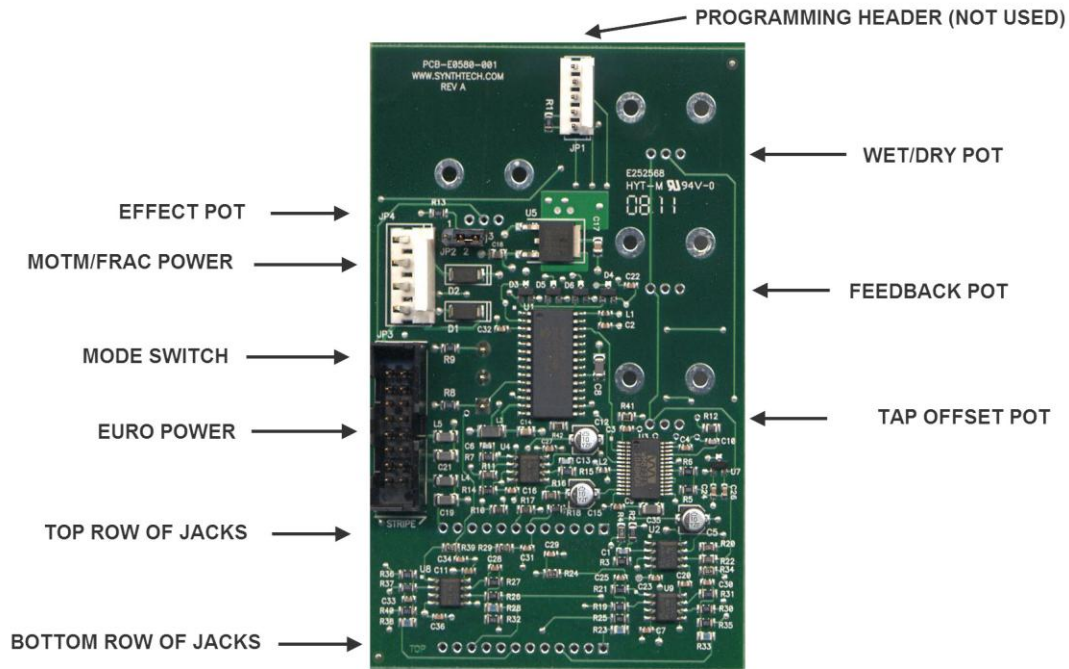


E580 RESAMPLING MINI-DELAY PC BOARD - REAR VIEW

# What you will need to supply

4ea 50K or 100K linear pots (either one will work fine) and 7 jacks. These can be banana, 3.5mm or 1/4".  The MODE switch is pre-soldered, but you can remove/replace it if you are careful. The holes on the pc board are in a pattern for vertical pots from BI, part number P260T-D1BS3CB100K (see www.mouser.com). However, most people will solder 3 wires into the 3 pot holes and ignore the 2 large mounting holes.

## Here is how to connect to the pc board

### Step 1

Decide if you want to keep the toggle switch soldered to the front panel (highly recommended) or not.

If you decide that you want to remove it (you can reuse it if you are careful), then use solder wick to remove as much solder as possible, then apply a vacuum 'solder sucker' to remove all the solder. The switches are called ON_OFF_ON types (SPDT) because they have 3 positions. The center position is OFF, meaning the common side is not connected to either switched side.

The switch has 2 mounting nuts. For maximum mounting strength, the 'bottom nut' should be threaded up touching the rear of the front panel before the 'top nut' is tightened.

Also note that when the toggle switch it flipped 'up' (say to select the CLEAN mode) this means the center pin (COMMON) is connected to the **bottom** switch lug.

If you remove the switches/use your own, use 24ga tinned stranded wire.

## Step 2

For these instructions, please note that the way this pc board is setup, that the "component side" with all the soldered parts faces ***away*** from the front panel. The switch is facing ***towards*** the front panel.

When you solder to the pc board, the wires from the front panel are inserted from the "switch side" and solder is applied to the "component" or rear side.

Wire up the pots. The wire should be inserted from the front (switch) side, not from the back. All 4 pots are wired exactly the same. There are 3 horizontal holes that correspond to the 3 pot lugs when the pot is viewed from the **front** and **NOT FROM THE BACK SIDE**. If you wire the pots up backwards, you will not damage anything but you will quickly figure it out.

So, using 22ga or 24ga stranded wire, wire the left pot lug (when facing the FRONT of the shaft) to the left hole, the center lug to the center hole and the right lug to the right hole.

## Step 3

Wire up the 7 jacks. Refer to the photo below:
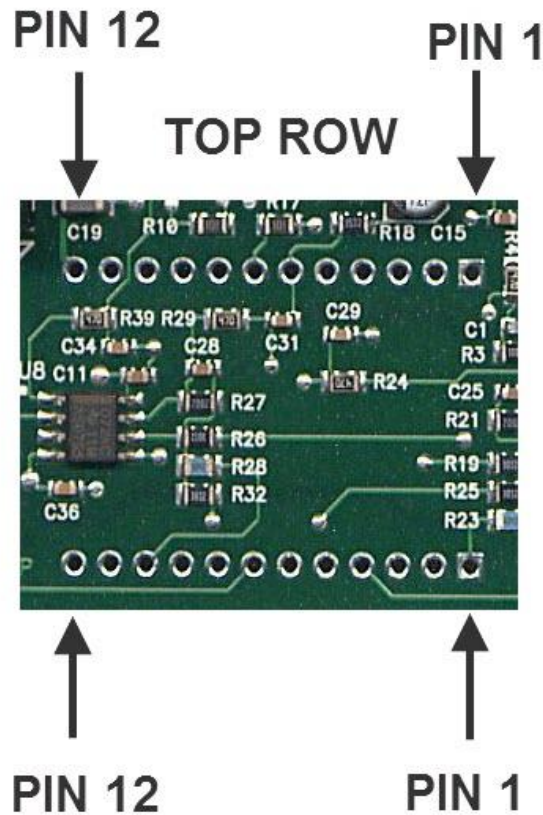


Notice that PIN 1 of the jack connectors has a square pad. As before, insert the wire from the 'front' side and solder on the back side. The connections to the jacks are as follows:

**TOP ROW**

1 – AUDIO input signal
2 – do not connect
3 – Ground lug
4 – DELAY output
5 – do not connect
6 – Ground lug
7 – TAP OUT signal
8 – do not connect
9 – Ground lug
10 – do not connect
11 – do not connect
12 – do not connect

**BOTTOM ROW**

1 – DELAY input signal
2 - do not connect
3 – Ground lug
4 – MIX input signal
5 - do not connect
6 – Ground Lug
7 – FEEDBACK input signal
8 – do not connect
9 – Ground lug
10 – OFFSET input signal
11 – do not connect
12 – Ground lug

## General Info

CV Inputs: -5V to +5V, DC to 8KHz.
Audio Input: -5V to +5V maximum, 18KHz bandwidth (clean mode).

***Important Note***: in order to have maximum Feedback settings without clipping, the maximum audio input level is 5V pk-pk (~+4dBm or 'line level'). Audio input levels greater than 5V pk-pk will reduce the overall Feedback range until clipping occurs. An external attenuator on the audio signal may be needed (for example, if you want to use a VCO signal, you need to attenuate it first).

Power: +12V@105ma, -12V @20ma. For MOTM use: +15V @100ma, -15V@ 20ma.
Max Delay time: 780ms (0.78 seconds)
Min Delay time (1 tap position): 26us
Tap positions: 7680
SNR: 74dB (clean mode)

Jumper options:
1-2 position: feedback is taken from the TAP output.
2-3 position: feedback is taken from the DELAY output (what you are probably used to hearing).
Be sure to try the 1-2 position. It will sound differently than traditional delays.


If you have any questions or issues please email me at: synth1@airmail.net