

Entry Point



Introduction:

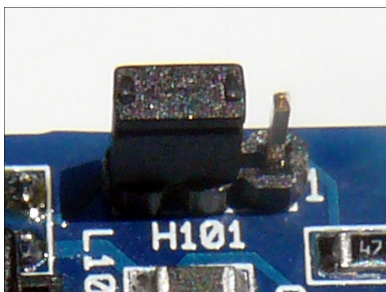
The Eurorack platform is rich in sound shaping tools that can be used to create new and innovative effects for stringed instruments. The Entry Point allows you to take advantage of this sonic landscape by acting as a bridge between your electric or bass guitar and Eurorack modular synthesizer. Instead of buying a single effect pedal to achieve a desired sound, now you can patch multiple modules to build your own unique effects with the individual characteristics you desire. The Entry Point performs three primary functions when connecting your instrument to a Eurorack system. First, it acts as a low noise preamplifier to bring your instrument up to Eurorack signal levels. Second, it generates an envelope voltage that follows your playing dynamics for use as a control voltage. Third, it extracts the fundamental frequency of the note played and outputs it as a square wave signal for processing in the modular.

Preamplifier:

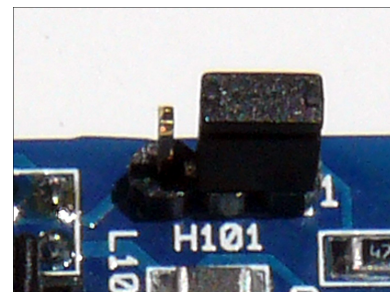
The Entry Point's preamplifier is designed to amplify musical instruments up to Eurorack signal levels. When connecting traditional passive instruments or other low signal level devices, the *ACTIVE/PASSIVE* switch should be set to the passive position. When connecting active instruments or other devices that output line level signals the switch should be set to the active position. The switch position affects both the envelope follower and the square wave generator and should be set prior to making any other adjustments. The *GAIN* control knob sets the amplitude of the signal coming out of the the *SIG* jack. The amplitude of the *SIG* output is displayed on the LED signal strength meter.

Envelope Follower:

The envelope follower generates a control voltage that correlates with the dynamics of your playing. An envelope is output when the amplitude of the input signal is greater than the threshold set by the *THRESH* knob. Exceeding the set threshold is displayed by illumination of the blue threshold LED. The *RATIO* control sets the amount gain that is applied to the control signal that has exceeded threshold. A wide range of envelope shapes can be achieved by the manipulation of these controls. For an envelope shape that follows the overall dynamics of the input signal, the *THRESH* control should be set to the minimum threshold (full clockwise) and the *RATIO* control should be adjusted to set the maximum envelope size. To create an envelope that responds to the most dynamic parts of the input signal, raise the *THRESH* control so the threshold LED illuminates only on the loudest parts of the input signal. Then adjust the *RATIO* control for the desired envelope amplitude. The envelope follower control voltage is available as both a positive control *ENV +* and negative control *ENV -*. The range on the *ENV +* output is 0 to 5V and the range on the *ENV -* is 5V to 0 or 0 to -5V as set by H101.



ENV - : 5V down to 0V (default configuration)



ENV - : 0V down to -5V (user option)

Square Wave Generator:

The square wave generator extracts the fundamental frequency of the single note being played and outputs it as a $\pm 5V$ square wave on the *SQR* jack. The *TRACK* control knob allows for adjustments to be made to the bias of the extraction circuit. When this control is in the counterclockwise position the circuit is very sensitive and an output can be triggered with an extremely light touch. As the control is rotated clockwise, the sensitivity is reduced resulting in more precise tracking; however the sustain of a note will be shortened. The quality of the tracking is largely dependent on a number of factors such as the instrument configuration, setup, and playing technique. Playing with a soft touch and using only the neck pickup will generally offer good results. Poor tracking will result in an output that jumps between the fundamental and the second harmonic (octave up). At times this might be just the thing you're looking for, so have at it.

1. Instrument Input

1/4" phone jack input for connection to both passive and active instruments.

2. Active/Passive Selector Switch

Selects the amount of gain required to bring your instrument's output up to a line level signal. For passive instruments with standard high impedance pickups the switch should be set to *PASSIVE* for best results. When using instruments with on-board active electronics or when feeding the Entry Point from the output of an external preamplifier, the switch should be set in active mode. Some instruments with active pickups (like EMG) produce relatively low output signals and may work best in passive mode. Since every instrument is different experimentation is encouraged.

3. Output Level Control

Sets the output level for the 3.5mm *SIG* jack. The required output level is dependent on the next module in the processing chain. Experiment with driving filters and other modules with different amounts of gain to broaden your sound palette. Once you find the sweet-spot for a particular module, note the LED metering level for repeatability.

4. Output Level Metering

The LED output metering provides a visual feedback for the proper level settings. The meter is particularly valuable when playing live as it allows you to quickly setup your system based on predetermined levels.

5. Fundamental Tracking

The *TRACK* control is used to set the bias for the fundamental extractor. In the counterclockwise position the extractor is at its most sensitive setting. In this position the extractor may be unreliable when tracking low frequency notes and open strings. This will be evident by the note jumping between the fundamental and an octave above the fundamental. As the control is rotated clockwise, tracking will improve but the sustain will be shortened.

6. Envelope Threshold

The envelope threshold control *THRESH* is used to set the minimum signal necessary before an envelope is created. Once the input signal crosses the set threshold level, an envelope will be present on the *ENV+* and *ENV-* jacks. The amplitude of the envelope will be the amount of signal over threshold multiplied by the ratio. The blue led illuminates when threshold has been exceeded.

7. Envelope Ratio

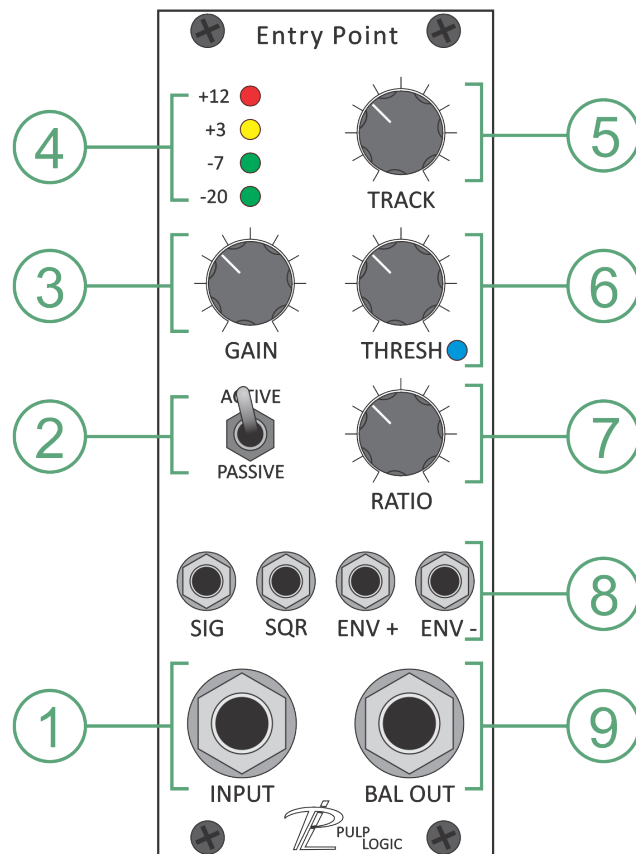
The ratio control sets the gain for the envelope follower. Large envelope ratios allow for the generation of envelopes that span the full control range on input signals that just barely exceed the threshold.

8. Output Group

3.5mm output jacks for interfacing with Eurorack modules. The *SIG* jack delivers a clean Eurorack level representation of your instrument's output. The *SQR* jack is the square wave output of the fundamental extractor. The *ENV+* and *ENV-* jacks output the rising and falling envelope control voltages. The rising envelope is 0V to 5V and the falling envelope is 5V to 0V or 0V to -5V.

9. Balanced Output

This output provides a line level balanced copy of the input signal. The jack is TRS balanced with the tip connected to the in phase signal and the ring to the -180° signal. It is safe to use a standard TS instrument cable if an un-balanced output is needed.



Specifications:

Form Factor -	Panel Size: Depth (Back of panel to Max):	10 HP Eurorack panel 35mm (1.38")
Power -	Connector: +5V: +12V: -12V: Max Operating Voltage:	Eurorack 16 pin keyed header Not Used 55mA Max Consumption 55mA Max Consumption ±15V
Electrical -	<i>Instrument Input:</i> Connector: Input Impedance:	1/4" TS Phone Jack (Unbalanced) 1 Meg Ω
	<i>Direct Output:</i> Connector: Output Impedance: THD + N (20Hz - 20kHz): SNR (A-weighted): Gain Passive Gain Active Max Output Before Clipping:	1/4" TRS Phone Jack (Balanced Line Level) 470 Ω < 0.002% 112dB +22dB Unbalanced +28dB Balanced +6 dB Unbalanced +12dB Balanced ±12V Rails - ±10Vpk (+19 dBm) ±15V Rails - ±13Vpk (+22 dBm)
	<i>Signal Output "SIG":</i> Connector: Output Impedance: THD + N (20Hz - 20kHz): SNR (A-weighted): Max Gain Passive Max Gain Active Max Output Before Clipping:	3.5 mm TS Jack (unbalanced) 470 Ω < 0.002% 110dB +35dB +18dB ±12V Rails - ±10Vpk (+19 dBm) ±15V Rails - ±13Vpk (+22 dBm)
	<i>Square Wave Output "SQR":</i> Connector: Output Impedance: Output Signal:	3.5 mm TS Jack (unbalanced) 470 Ω Output Impedance ±4.8Vpk (dc coupled)
	<i>Positive Envelope "ENV +":</i> Connector: Output Impedance: Envelope Detector: Output Signal:	3.5 mm TS Jack (unbalanced) 470 Ω Output Impedance True RMS (THAT 2252) 0V up-to 5.4V
	<i>Negative Envelope "ENV -":</i> Connector: Output Impedance: Output Signal:	3.5 mm TS Jack (unbalanced) 470 Ω Output Impedance 5.4V down-to 0V or 0V down-to -5.4V (jmp opt)