Q118 Instrument Interface

Aug 2014

The Q118 module provides an interface for external input sources such as a guitar, microphone, etc. The incoming signal can be amplified up to 1000 times. An envelope output is created that will track the amplitude of the incoming signal. This envelope can be used to control filters, oscillators, and other modules. A gate signal is created based on a manual threshold control which can be used to trigger envelope generators or sequencers. An LED indicates gate signal output to aid threshold adjustment. A short trigger pulse is also provided. An output jack provides access to the amplified original signal for use by other modules.

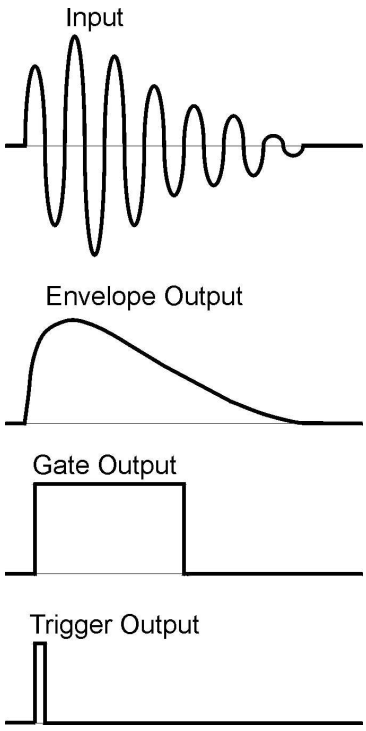
Specifications

Panel Size: Single width 2.125"w x 8.75"h.
Input Signal Level: 10mv to 10V PP
Amp Output Level: 20V PP maximum
Gate Output Level: 0-5V active high
Trigger Output Level: 0-5V active high, 20ms
Envelope Output Level: 0-5V maximum
Power: +15V@8ma, -15V@8ma, +5@8ma.

Controls and Connectors

Amplifier Multiplier Switch
Sets the initial amplification multiplier.
Amplifier Control
Adjusts the amplification depending on the multiplier switch.
Threshold Control
Sets the level at which a gate signal will be created.
Input Jack
Signal to be processed.
Amplifier Output Connector
Amplified signal.
Envelope Output Connector
Envelope that follows the input waveform amplitude.
Gate Output Connector
+5 volt gate signal set by threshold adjustment.
Gate LED
Indicates gate output status to aid in threshold adjustment.
Trigger Output Connector
Short trigger pulse at beginning of gate signal.

Waveforms



Amplification multiplier →

Amplification →

Threshold where a gate signal is produced ←

Signal Input from a guitar, microphone, or most other levels. →

Amplified signal output. →

Voltage that follows the amplitude envelope of the input signal. ←

Gate produced when threshold is reached. →

A short pulse at the beginning of gate. ←

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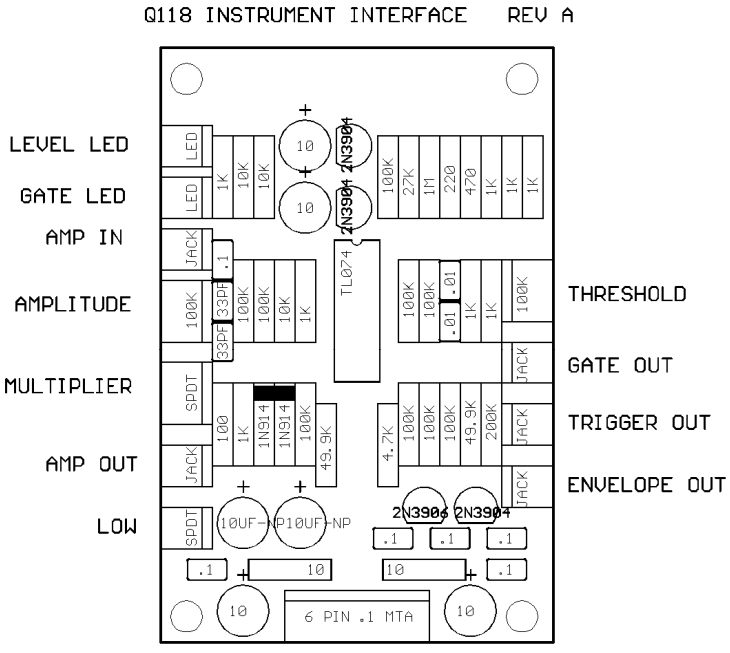
Testing

No calibration is required on this module

1. Apply a 1khz triangle waveform which is amplitude modulated with a 10hz sine wave.
2. Attach an oscilloscope to the amplifier output connector.
3. Select each multiplier position and adjust the amplifier control and check for proper operation.
4. Adjust the multiplier switch and amplitude control to cause the amplifier output to have an amplitude of approximately 10v PP.
5. Attach an oscilloscope to the envelope output connector and confirm that it follows the input waveform's amplitude envelope. Small bumps in the envelope waveform are normal.
6. Attach an oscilloscope to the gate output connector and confirm that a gate signal is produced when adjusting the threshold. The gate LED should also follow the gate signal.
7. Attach an oscilloscope to the trigger output connector and confirm that a short trigger pulse is produced when adjusting the threshold.

PC Board Layout



Power Connector

6 pin .1" MTA type connector made by AMP. Available from Mouser Electronics or Digi-Key. Modules have a male PCB mount connector and cable harnesses have a female.

Part Numbers:
Female cable mount: #6404416
Male PCB mount: #6404566

Pinout:
1 = +15v
2 = key (pin removed)
3 = +5v
4 = gnd
5 = -15v

Not all voltages are used on all modules.