

# RT60

Stereo Multi-Effects Processor



**QU-BIT**  
ELECTRONIX

## Description

---

RT60 is a stereo multi-effects processor in the Eurorack synthesizer format. It features 7 high quality DSP effects running from the venerable Spin Semiconductor FV-1 chip. Each parameter can be voltage controlled or changed manually.

The RT60 works equally well as a traditional multi-effects unit or an esoteric sound processor.

RT60: The amount of time it takes for a sound to decay by 60 dB discovered by Wallace Sabine.

[http://en.wikipedia.org/wiki/Wallace\\_Clement\\_Sabine](http://en.wikipedia.org/wiki/Wallace_Clement_Sabine)

The FV-1 chip was designed by Keith Barr and manufactured by Spin Semiconductors.

[Keith Barr Bio](#)

Made by Qu-Bit in Portland, OR

# Table of Contents

Installation/Specifications	4
RT60	5
General Functions Overview	6
Verb 1	7
Verb 2	8
Chorus	9
Flange	10
Tremolo	11
Delay/Pitch	12
Pitch	13
Effect Selection Modes	14
Credits	15

## Installation

---

To install, locate 8 HP of space in your Eurorack case and confirm the positive 12 volts and negative 12 volts sides of the power distribution lines. Plug the connector into the power distribution board of your case, keeping in mind that the red band corresponds to negative 12 volts. In most systems the negative 12 volt supply line is at the bottom. The power cable should be connected to the RT60 with the red band facing the bottom of the module.

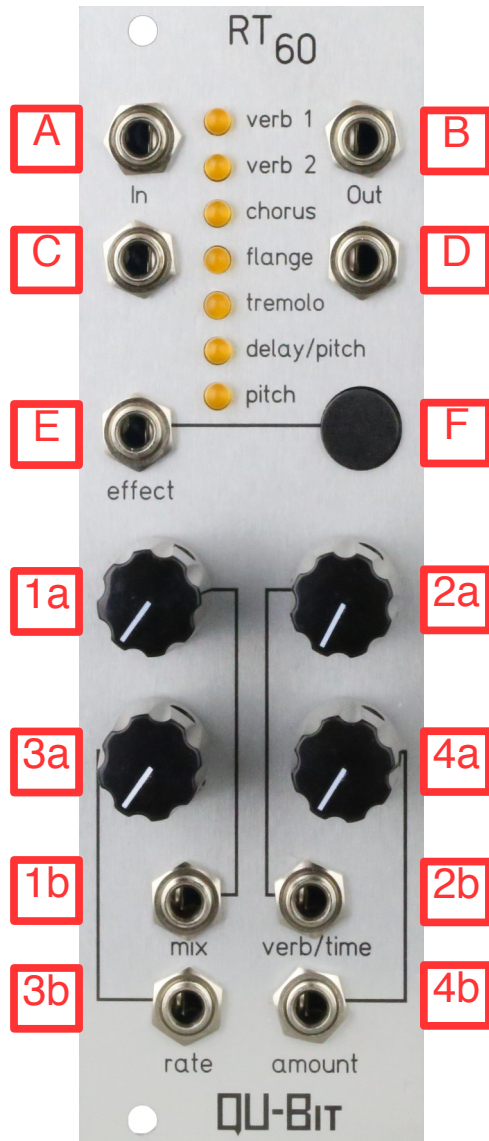
## Specifications

---

**Format:** 8 HP Eurorack module

**Depth:** 47mm (Skiff Friendly)

**Max Current:** +12V = 70mA  
                  -12V = 9mA



## General Functions Overview

---

**A. Channel 1 Input** – Audio input for channel 1.

**B. Channel 1 Output** – Audio output for channel 1.

**C. Channel 2 Input** – Audio input for channel 2.

**D. Channel 2 Output** – Audio output for channel 2.

**E. Effect Selection Gate Input** – Gate input for proceeding to next effect according to the effect order as set in edit mode. See page 5 for detailed instructions on changing the effect order. Threshold voltage is 2.5V.

**F. Effect Selection** – Button for proceeding to next effect according to the effect order as set in edit mode. See page 12 for detailed instructions on changing the effect order.

## Verb 1

---

### **1a. Global Wet/Dry Mix** – Global Wet/Dry Mix control for Reverb.

If the Mix knob is far left, then audio will be completely dry. If the Mix knob is far right, then audio will be completely wet.

### **1b. Global Wet/Dry Mix CV In** – Unipolar Positive control voltage input for Global Dry/Wet Mix. Control voltage is added to the current pot position. Range is 0V – 5V.

### **2a. Reverb Time** – Control for Reverb Time.

If the Reverb Time knob is far left, then it will be as short as possible. If the Reverb Time knob is far right, then it will be as long as possible.

### **2b. Reverb Time CV In** – Unipolar Positive control voltage input for Reverb Time. Control voltage is added to the current pot position. Range is 0V – 5V.

### **3a. High Pass Filter Cutoff Frequency** – Cutoff Frequency control for High Pass Filter.

If the Cutoff Frequency knob is far right, then it will be at its lowest possible frequency.

### **3b. High Pass Filter Cutoff Frequency CV In** – Unipolar Positive control voltage input for High Pass Filter Cutoff Frequency. Control voltage is added to the current pot position. Range is 0V – 5V.

### **4a. Low Pass Filter Cutoff Frequency** – Cutoff Frequency control for Low Pass Filter.

If the Cutoff Frequency knob is far right, then it will be at its highest possible frequency.

### **4b. Low Pass Filter Cutoff Frequency CV In** – Unipolar Positive control voltage input for Low Pass Filter Cutoff Frequency. Control voltage is added to the current pot position. Range is 0V – 5V.

## Verb 2

---

**1a. Global Wet/Dry Mix** – Global Wet/Dry Mix control for Reverb.

If the Mix knob is far left, then audio will be completely dry. If the Mix knob is far right, then audio will be completely wet.

**1b. Global Wet/Dry Mix CV In** – Unipolar Positive control voltage input for Global Dry/Wet Mix. Control voltage is added to the current pot position. Range is 0V – 5V.

**2a. Reverb Time** – Control for Reverb Time.

If the Reverb Time knob is far left, then it will be as short as possible. If the Reverb Time knob is far right, then it will be as long as possible.

**2b. Reverb Time CV In** – Unipolar Positive control voltage input for Reverb Time. Control voltage is added to the current pot position. Range is 0V – 5V.

**3a. High Pass Filter Cutoff Frequency** – Cutoff Frequency control for High Pass Filter.

If the Cutoff Frequency knob is far left, then it will be at its lowest possible frequency.

**3b. High Pass Filter Cutoff Frequency CV In** – Unipolar Positive control voltage input for High Pass Filter Cutoff Frequency. Control voltage is added to the current pot position. Range is 0V – 5V.

**4a. Low Pass Filter Cutoff Frequency** – Cutoff Frequency control for Low Pass Filter.

If the Cutoff Frequency knob is far right, then it will be at its highest possible frequency.

**4b. Low Pass Filter Cutoff Frequency CV In** – Unipolar Positive control voltage input for Low Pass Filter Cutoff Frequency. Control voltage is added to the current pot position. Range is 0V – 5V.



## Chorus

---

**1a. Global Wet/Dry Mix** – Global Wet/Dry Mix control for Chorus + Reverb.

If the Mix knob is far left, then audio will be completely dry. If the Mix knob is far right, then audio will be completely wet.

**1b. Global Wet/Dry Mix CV In** – Unipolar Positive control voltage input for Global Dry/Wet Mix. Control voltage is added to the current pot position. Range is 0V – 5V.

**2a. Reverb Amount** – Control for Reverb Amount.

If the Reverb Amount knob is far left, then the signal will be completely dry of Reverb. If the Reverb Amount knob is far right, then the signal will be completely wet with Reverb.

**2b. Reverb Amount CV In** – Unipolar Positive control voltage input for Reverb Amount. Control voltage is added to the current pot position. Range is 0V – 5V.

**3a. Chorus Rate** – Control for Chorus Rate.

If the Chorus Rate knob is far left, then it will be as slow as possible. If the Chorus Rate knob is far right, then it will be as fast as possible.

**3b. Chorus Rate CV In** – Unipolar Positive control voltage input for Chorus Rate. Control voltage is added to the current pot position. Range is 0V – 5V.

**4a. Chorus Amount (Depth)** – Control for Chorus Amount.

If the Chorus Amount knob is far left, then the chorusing will be as narrow as possible. If the Chorus Amount knob is far right, then the chorusing will be as wide as possible.

**4b. Chorus Amount (Depth) CV In** – Unipolar Positive control voltage input for Chorus Amount. Control voltage is added to the current pot position. Range is 0V – 5V.

## Flange

---

**1a. Global Wet/Dry Mix** – Global Wet/Dry Mix control for Flange + Reverb. If the Mix knob is far left, then audio will be completely dry. If the Mix knob is far right, then audio will be completely wet.

**1b. Global Wet/Dry Mix CV In** – Unipolar Positive control voltage input for Global Dry/Wet Mix. Control voltage is added to the current pot position. Range is 0V – 5V.

**2a. Reverb Amount** – Control for Reverb Amount. If the Reverb Amount knob is far left, then the signal will be completely dry of Reverb. If the Reverb Amount knob is far right, then the signal will be completely wet with Reverb.

**2b. Reverb Amount CV In** – Unipolar Positive control voltage input for Reverb Amount. Control voltage is added to the current pot position. Range is 0V – 5V.

**3a. Flange Rate** – Control for Flange Rate. If the Flange Rate knob is far left, then it will be as slow as possible. If the Flange Rate knob is far right, then it will be as fast as possible.

**3b. Flange Rate CV In** – Unipolar Positive control voltage input for Flange Rate. Control voltage is added to the current pot position. Range is 0V – 5V.

**4a. Flange Amount (Depth)** – Control for Flange Amount. If the Flange Amount knob is far left, then the flanging will be as narrow as possible. If the Flange Amount knob is far right, then the flanging will be as wide as possible.

**4b. Flange Amount (Depth) CV In** – Unipolar Positive control voltage input for Flange Amount. Control voltage is added to the current pot position. Range is 0V – 5V.

## Tremolo

---

**1a. Global Wet/Dry Mix** – Global Wet/Dry Mix control for Tremolo + Reverb.

If the Mix knob is far left, then audio will be completely dry. If the Mix knob is far right, then audio will be completely wet.

**1b. Global Wet/Dry Mix CV In** – Unipolar Positive control voltage input for Global Dry/Wet Mix. Control voltage is added to the current pot position. Range is 0V – 5V.

**2a. Reverb Amount** – Control for Reverb Amount.

If the Reverb Amount knob is far left, then the signal will be completely dry of Reverb. If the Reverb Amount knob is far right, then the signal will be completely wet with Reverb.

**2b. Reverb Amount CV In** – Unipolar Positive control voltage input for Reverb Amount. Control voltage is added to the current pot position. Range is 0V – 5V.

**3a. Tremolo Rate** – Control for Tremolo Rate.

If the Tremolo Rate knob is far left, then it will be as slow as possible. If the Tremolo Rate knob is far right, then it will be as fast as possible.

**3b. Tremolo Rate CV In** – Unipolar Positive control voltage input for Tremolo Rate. Control voltage is added to the current pot position. Range is 0V – 5V.

**4a. Tremolo Amount (Depth)** – Control for Tremolo Amount.

If the Tremolo Amount knob is far left, then the tremolo will be as narrow as possible. If the Tremolo Amount knob is far right, then the tremolo will be as wide as possible.

**4b. Tremolo Amount (Depth) CV In** – Unipolar Positive control voltage input for Tremolo Amount. Control voltage is added to the current pot position. Range is 0V – 5V.

## Delay/Pitch

---

### **1a. Global Wet/Dry Mix** – Global Wet/Dry Mix control for Delay/Pitch.

If the Mix knob is far left, then audio will be completely dry. If the Mix knob is far right, then audio will be completely wet.

### **1b. Global Wet/Dry Mix CV In** – Unipolar Positive control voltage input for Global Dry/Wet Mix. Control voltage is added to the current pot position. Range is 0V – 5V.

### **2a. Pitch Shift (Bottom Input)** – Control for Pitch Shift.

If the Pitch Shift knob is far left, then the signal will be 4 semitones lower than the original pitch. If the Pitch Shift knob is far right, then the signal will be 4 semitones higher than the original pitch. If the Pitch Shift knob is in the middle, then the signal will be in unison with the original pitch.

### **2b. Pitch Shift CV In** – Unipolar Positive control voltage input for Pitch Shift. Control voltage is added to the current pot position. Range is 0V – 5V.

### **3a. Delay Time (Top Input)** – Control for Delay Time.

If the Delay Time knob is far left, then it will be as fast as possible. If the Delay Time Knob is far right, then it will be as slow as possible.

### **3b. Delay Time CV In** – Unipolar Positive control voltage input for Delay Time. Control voltage is added to the current pot position. Range is 0V – 5V.

### **4a. Feedback Amount (Top Input)** – Control for Feedback Amount.

If the Feedback Amount is far left, then it will be as low as possible. If the Feedback Amount is far right, then it will be as high as possible.

### **4b. Feedback Amount CV In** – Unipolar Positive control voltage input for Feedback Amount. Control voltage is added to the current pot position. Range is 0V – 5V.

## Pitch

---

**1a. Global Wet/Dry Mix** – Global Wet/Dry Mix control for Pitch.

If the Mix knob is far left, then audio will be completely dry. If the Mix knob is far right, then audio will be completely wet.

**1b. Global Wet/Dry Mix CV In** – Unipolar Positive control voltage input for Global Dry/Wet Mix. Control voltage is added to the current pot position. Range is 0V – 5V.

**2a. Pitch Shift (Top and Bottom Inputs)** – Control for Pitch Shift.

If the Pitch Shift knob is far left, then the signal will be 4 semitones lower than the original pitch. If the Pitch Shift knob is far right, then the signal will be 4 semitones higher than the original pitch. If the Pitch Shift knob is in the middle, then the signal will be in unison with the original pitch.

**2b. Pitch Shift CV In** – Unipolar Positive control voltage input for Pitch Shift. Control voltage is added to the current pot position. Range is 0V – 5V.

**3a. No Parameter.**

**3b. No CV In.**

**4a. No Parameter.**

**4b. No CV In.**

## Effect Selection Modes

---

To change the direction of the Effect Selection, press and hold the Effect button until all LEDs blink. Use the Effect button to toggle to the desired Effect Selection Mode. The highlighted LED will be flashing while choosing directions. Once you have reached the desired Effect Selection Mode, press and hold the Effect button again until all LEDs blink.

**Mode 1.** Top to Bottom.

**Mode 2.** Bottom to Top.

**Mode 3.** Toggles between Verb 1 and Verb 2.

**Mode 4.** Toggles between Chorus and Flange.

**Mode 5.** Toggles between Delay/Pitch and Pitch.

**Mode 6.** Random.

**Mode 7.** Toggles between the current and previous effect and is only controlled via the Gate Input. The button selects the current effect.

Effect Selection Mode will default to Mode 1.

Huge thanks to Dr. Richard Boulanger, Joseph Fraioli and Richard Devine for their support during the development of the RT60.

Manual written by [Collin Russell](#).

[www.qubitelectronix.com](http://www.qubitelectronix.com)