VTG

user manual v.1.0

bardsynthesizers.com

Introduction

Thank you for ordering BARD product!

The Vacuum Tube Gate is an dual channel, non-resonant Lowpass gate built around 6N3P(6Н3П) double triode. It provides soft saturation and characteristic photoresistor responses to create intricate changes in sound amplitudes. Occupying only 6HP, it is intended as a compact, easy-to-use tool for animating your sounds.

Diverse applications, from simple attenuation to processing entire sub-mix channels, creating side-chaining effects are possible.

Installation

Module requires 6HP of Eurorack cabinet space. The Ribbon power cable needs to be plugged into keyed connector on the rear of the module, with red stripe position corresponding to the marking on the rear panel. Please pay attention to the polarity of the connection on your bus board, as the incorrect orientation may damage the module and/or your power supply!

Module requires 550mA @ +5V during the startup - this is caused by filament resistance being low when cold. After couple of seconds the current draw settles on 300mA. You may need to wait 15-20 seconds after the power-on for the module to reach the point of operation.

Please have in mind the fact that the module generates heat and needs open air space around the tube for a proper heat dissipation.

Module Specification
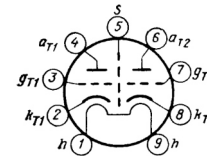
Current draw

+12V	18mA
-12V	18mA
+5V (startup)	550mA
+5V (running)	300mA

Dimensions

Width	6HP (30.7 mm)
Depth	38.7 mm
Height (Tube)	32 mm
Weight	114 g

Vacuum Tube

Type	6N3P (6Н3П)
Service life	>3000 hrs.

Built & designed in E.U

Component fuctions

1 6N3P(6H3П) double triode

2 Amplitude / Brightness CV Level indicator

3 Ampltude / LPG Brightness control CV attenuation

4 Mode switch
LPG - Module controls the brightness of the sound
AMP - Module controls amplitude of the sound
XM - Module comtrols amplitude of the sound, input is
being mixed with output of the other channel.

5 Audio input

6 Amplitude / Brightness CV
This input receives 5V DC when nothing is connected to it.

7 Audio output

8 Tube bias (symmetry trim)
Adjusts operating point of the triode, change of this setting
alters harmonics on the output.

9 Output level trim
Sets the output level of a given channel.

10 Amplitude / Brightness CV Zero Offset trim
Sets the closing point of the gain cells, adjust to have no audible
output when AMT knob is turned fully counter-clockwise.

11 Filament Supply present
Lights up when +5V rail on your PSU is properly delivered to the
module.

12 16-pin IDC power connector

Mind the power connector polarity on your bus board!
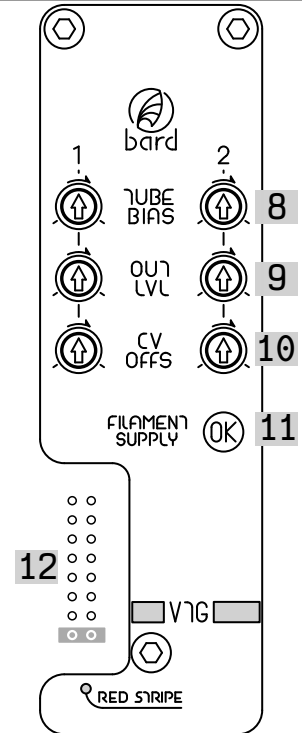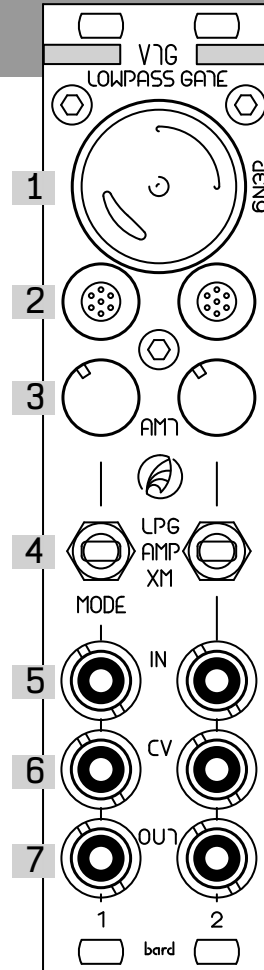
Function Overview

Single VTG channel consists of two gain cells (also known as Vactrols), both controlled simultaneously via AMT control and CV input.

+5V constant voltage is applied by default to the CV Input. That enables use of AMT (Attenuation) control as a fixed gain. Plugging control signal into CV Input overrides the constant +5V. In that situation AMT control works as an attenuator for the incoming signal.

Audio inputs are DC-coupled, if there is DC component on the input, it can create "thumping" effect when fast CVs are present.

Signal is AC-Coupled after the Tube amp, then it's buffered and passed to the output jack. Tube Bias trimmer changes operating point of the triode channel resulting in differences in tone. Out Lvl trimmer changes output voltage level. It can be adjusted to user's preference.
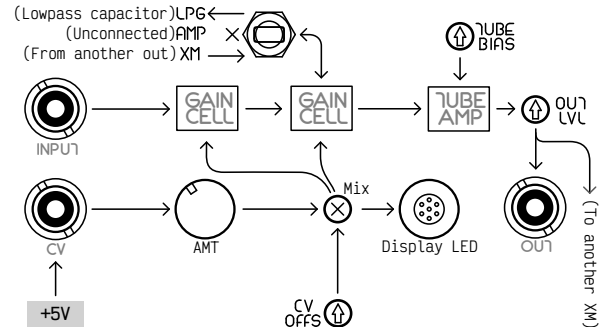
Toggle switch sets the mode of operation, with the Amplifier mode setting being the default, center position. LPG mode changes the frequency response of the second cell, creating mellower tones. XM mode injects output of another channel into the net between first and second gain cell, with the injection amount inversely proportional to the control voltage set on a channel where the XM mode is active. This enables side-chaining effect as well as intricate cross-modulations of two audio sources.

The module will self-oscillate when both of the XM modes are active and potentiometers are set fully-clockwise.
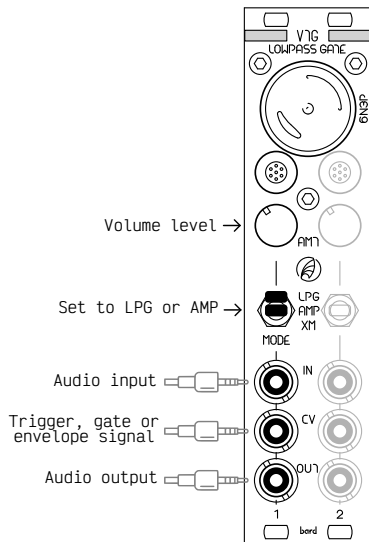
Dynamic range available in AMP mode @440Hz: 82dB

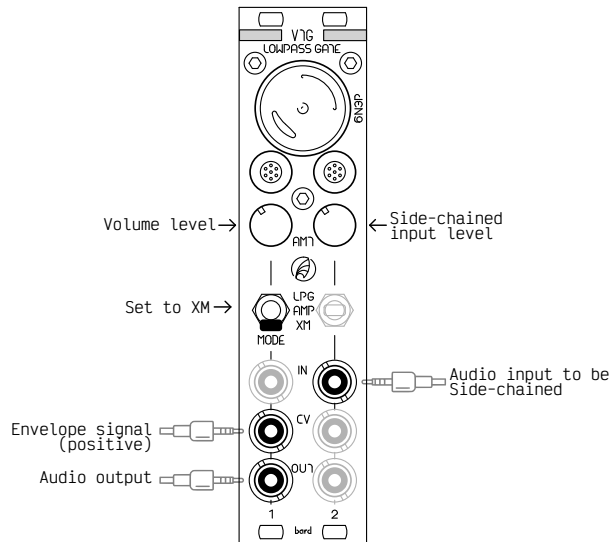Dynamic range available in LPG mode @ 440Hz: 112dB

Block Diagram (Single Channel)

Patching ideas

BASIC LPG

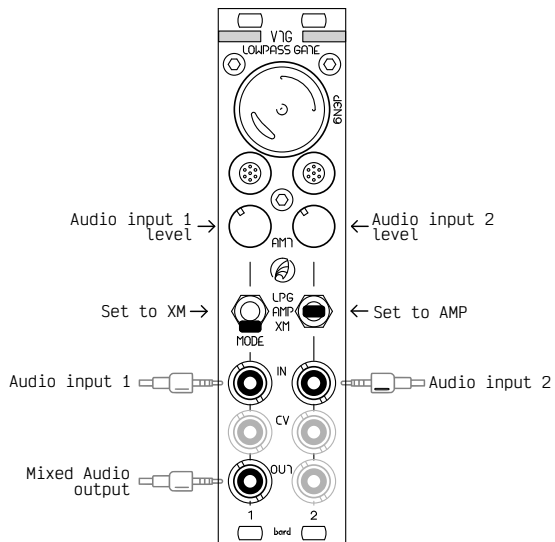Volume level →

Set to LPG or AMP →
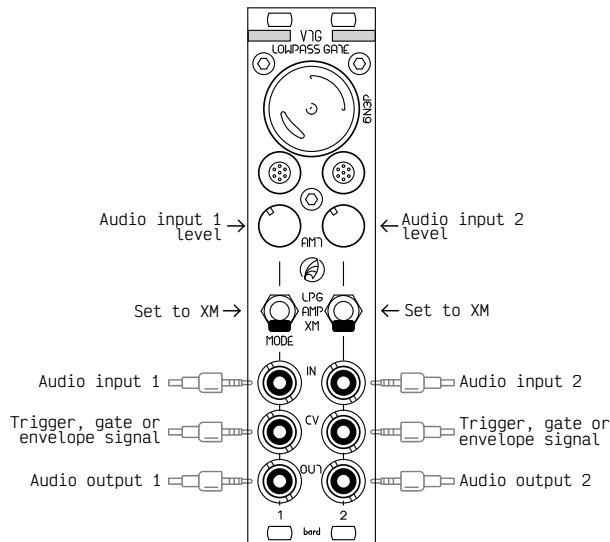
Audio input

Trigger, gate or
envelope signal

Audio output

SIDECHAIN MODE

Volume level →

← Side-chained
  input level

Set to XM →

Audio input to be
Side-chained

Envelope signal
(positive)

Audio output

MIXER MODE

Audio input 1 level →

← Audio input 2 level

Set to XM →

← Set to AMP

Audio input 1 ⊏▭

▭⊐ Audio input 2

Mixed Audio output ⊏▭

FEEDBACK DISTORTION MODE

Audio input 1 level →

← Audio input 2 level

Set to XM →

← Set to XM

Audio input 1 ⊏▭

▭⊐ Audio input 2

Trigger, gate or envelope signal ⊏▭

▭⊐ Trigger, gate or envelope signal

Audio output 1 ⊏▭

▭⊐ Audio output 2

Disclaimer: This Warranty applies to products purchased directly from BARD Synthesizers. For products purchased from distributors, the warranty terms and conditions may be different. Please check the warranty terms and conditions with the distributor from whom the products were purchased.

This BARD Product has Limited Warranty that covers any defects in material or workmanship under normal use during the Warranty Period.

During the Warranty Period, BARD will repair or replace, at no charge, products or parts of a product that proves defective because of improper material or workmanship, under normal use and maintenance.

The Warranty Period for Eurorack series products purchased directly from BARD Synthesizers is 3 years from the date of original purchase.

A replacement of product or part assumes the remaining warranty of the original product or 180 days from the date of replacement or repair, whichever is longer.

If you do have an unit that has problems, please contact me, we'll fix it. In case of products outside the warranty period, I reserve the right to charge for labour, parts and transit expenses where applicable.

BARD is an one-man operation focusing on incorporating old technology into a modern musical world. I utilize vacuum tubes in creation of synthesizer circuits, embracing simplicity of their design and extracting yet unexplored sonic qualities.

BARD is an acronym that expands to Brain Aided Radical Designs.

All devices are hand-built and carefully tested, and so they should be played with heart.

Feedback, suggestions, questions:

bardsynthesizers@gmail.com or
jakub@bardsynthesizers.com

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