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behringer ABACUS Analog Music Computer

Specifications

- Product Name: ABACUS Analog Music Computer for Eurorack
- Version: 2.0
- Manufacturer: Music Tribe

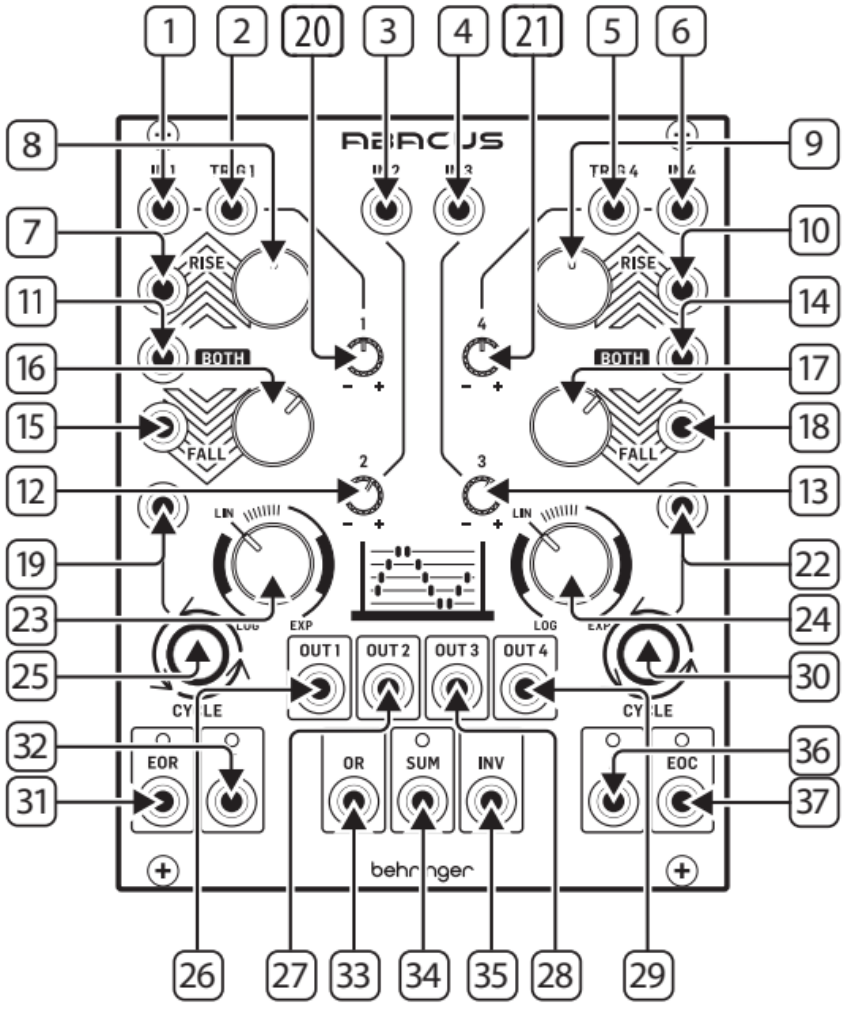
Safety Instruction

1. Please read and follow all instructions.
2. Keep the apparatus away from water, except for outdoor products.
3. Clean only with a dry cloth.
4. Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
5. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
6. Use only attachments/accessories specified by the manufacturer.

7. Use only specified carts, stands, tripods, brackets, or tables. Use caution to prevent tip-over when moving the cart/apparatus combination.
8. Avoid installing in confined spaces like bookcases.
9. Do not place near naked flame sources, such as lighted candles.
10. Operating temperature range 5° to 45°C (41° to 113°F).

ABACUS Controls

Controls



1. CHANNEL 1 CV INPUT – Accepts variable voltages in the range +/- 10 V for processing by Channel 1. If no voltage is present the Abacus will use a self-generated voltage of approximately +10 V.
2. CHANNEL 1 TRIGGER INPUT – Accepts any positive-going gate or trigger above +

2.5 V. Causes the Rise/Fall function to be activated.

3. CHANNEL 2 CV INPUT – Accepts voltages in the range +/- 10 V for attenuverting by control 20.
4. CHANNEL 3 CV INPUT – Accepts voltages in the range +/- 10 V for attenuverting by control 21.
5. CHANNEL 4 TRIGGER INPUT – Accepts any positive-going gate or trigger above + 2.5 V. Causes the Rise/Fall function to be activated.
6. CHANNEL 4 CV INPUT – Accepts variable voltages in the range +/- 10 V for processing by Channel 4. If no voltage is present the Abacus will use a self-generated voltage of approximately +10 V.
7. CHANNEL 1 RISE CV INPUT – Allows CV control of the Rise function, in conjunction with control 8. Accepts voltages in the range +/- 8 V. Positive voltages increase the Rise time until the maximum is achieved; negative voltages decrease it until it reaches minimum.
8. CHANNEL 1 RISE TIME – Use this control to set the Rise time. See table below for maximum times according to different settings. Can be modulated further by feeding a CV to socket 7.
9. CHANNEL 4 RISE TIME – Use this control to set the Rise time. See table below for maximum times according to different settings. Can be modulated further by feeding a CV to socket 10.
10. CHANNEL 4 RISE CV INPUT – Allows CV control of the Rise function, in conjunction with control 9. Accepts voltages in the range +/- 8 V. Positive voltages increase the Rise time until the maximum is achieved; negative voltages decrease it until it reaches minimum.
11. CHANNEL 1 BOTH CV INPUT – Accepts a voltage in the range +/- 8 V.
    A positive voltage will exponentially decrease the total Rise/Fall time, until the minimum is reached; a negative voltage exponentially increases it until it reaches maximum.
12. CHANNEL 2 ATTENUVERTER – Use this control to attenuate (CW) or invert (CCW) voltages fed to Channel 2 input on socket 3 or the internally generated voltage in the range -10 V to + 10 V.
13. CHANNEL 3 ATTENUVERTER – Use this control to attenuate (CW) or invert (CCW) voltages fed to Channel 3 input on socket 4 or the internally generated voltage in the range -5 V to + 6 V.

14. CHANNEL 4 BOTH CV INPUT – Accepts a voltage in the range +/- 8 V.
    A positive voltage will exponentially decrease the total Rise/Fall time, until the minimum is reached; a negative voltage exponentially increases it until it reaches maximum.
15. CHANNEL 1 FALL CV INPUT – Allows CV control of the Fall function, in conjunction with control 16. Accepts voltages in the range +/- 8 V. Positive voltages increase the Fall time until the maximum is achieved; negative voltages decrease it until it reaches minimum.
16. CHANNEL 1 FALL TIME – Use this control to set the Fall time. See table below for maximum times according to different settings. Can be modulated further by feeding a CV to socket 15.
17. CHANNEL 4 FALL TIME – Use this control to set the Fall time. See table below for maximum times according to different settings. Can be modulated further by feeding a CV to socket 18.
18. CHANNEL 4 FALL CV INPUT – Allows CV control of the Fall function, in conjunction with control 16. Accepts voltages in the range +/- 8 V. Positive voltages increase the Fall time until the maximum is achieved; negative voltages decrease it until it reaches minimum.
19. CHANNEL 1 CYCLE TRIGGER – Allows an external positive going gate or trigger of +2.5 V or more to trigger Channel 1's Cycle function.
20. CHANNEL 1 ATTENUVERTER – Use this control to attenuate (CW) or invert (CCW) the output of Channel 1 after Rise/Fall processing. Does not pass internal voltage unless processing is taking place.
21. CHANNEL 4 ATTENUVERTER – Use this control to attenuate (CW) or invert (CCW) the output of Channel 1 after Rise/Fall processing. Does not pass internal voltage unless processing is taking place.
22. CHANNEL 4 CYCLE TRIGGER – Allows an external positive going gate or trigger of +2.5 V or more to trigger Channel 4's Cycle function.
23. CHANNEL 1 RESPONSE – Use this control to vary the response of Channel 1 from logarithmic through linear to exponential. See table below.
24. CHANNEL 4 RESPONSE – Use this control to vary the response of Channel 4 from logarithmic through linear to exponential. See table below.
25. CHANNEL 1 CYCLE – Use this button to initiate cycling of Channel 1; Rise and Fall will cycle until button is pressed again to stop the cycle. Button is illuminated when

cycling. Button flashes when Cycle is externally triggered via socket 19. Internal Cycle takes priority over external trigger.

26. CHANNEL 1 OUTPUT – Outputs the processed voltage from Channel 1.
27. CHANNEL 2 OUTPUT – Outputs the processed voltage from Channel 2.
28. CHANNEL 3 OUTPUT – Outputs the processed voltage from Channel 3.
29. CHANNEL 4 OUTPUT – Outputs the processed voltage from Channel 4.
30. CHANNEL 4 CYCLE – Use this button to initiate cycling of Channel 4; Rise and Fall will cycle until button is pressed again to stop the cycle. Button is illuminated when cycling. Button flashes when Cycle is externally triggered via socket 22. Internal cycle takes priority over external trigger.
31. CHANNEL 1 END OF RISE OUTPUT – Outputs a + 9 V voltage at the top of the Rise function, indicated by the associated LED, which continues active until the end of the Fall cycle.
32. CHANNEL 1 UNITY OUTPUT – Outputs a 0 – +10 V voltage following the Rise/Fall functions when Channel 1 is cycling; otherwise follows the channel input unaffected by the attenuverter. LED shows green for a positive voltage, red for a negative one.
33. OR OUTPUT – Outputs the result of an analog OR function based on the setting of the attenuverters for Channels 1 – 4 (controls 12, 13, 20, 21). Channels 1 and 4 need an external voltage to be included.
34. SUM OUTPUT – Outputs a summed voltage in the range +/- 10 V based on the settings of the attenuverters for Channels 1 – 4 (controls 12, 13, 20, 21). LED shows green for a positive voltage, red for a negative one. Channels 1 and 4 need an external voltage to be included.
35. INVERTED SUM OUTPUT – Outputs the inversion of the Sum output 34.
36. CHANNEL 4 UNITY OUTPUT – Outputs a 0 – +10 V voltage following the Rise/Fall functions when Channel 4 is cycling; otherwise follows the channel input unaffected by the attenuverter. LED shows green for a positive voltage, red for a negative one.
37. CHANNEL 4 END OF CYCLE OUTPUT – Outputs a + 9 V voltage at the end of the Rise/Fall cycle, indicated by the associated LED.

Maximum Function Times – Channel 1 & Channel 4

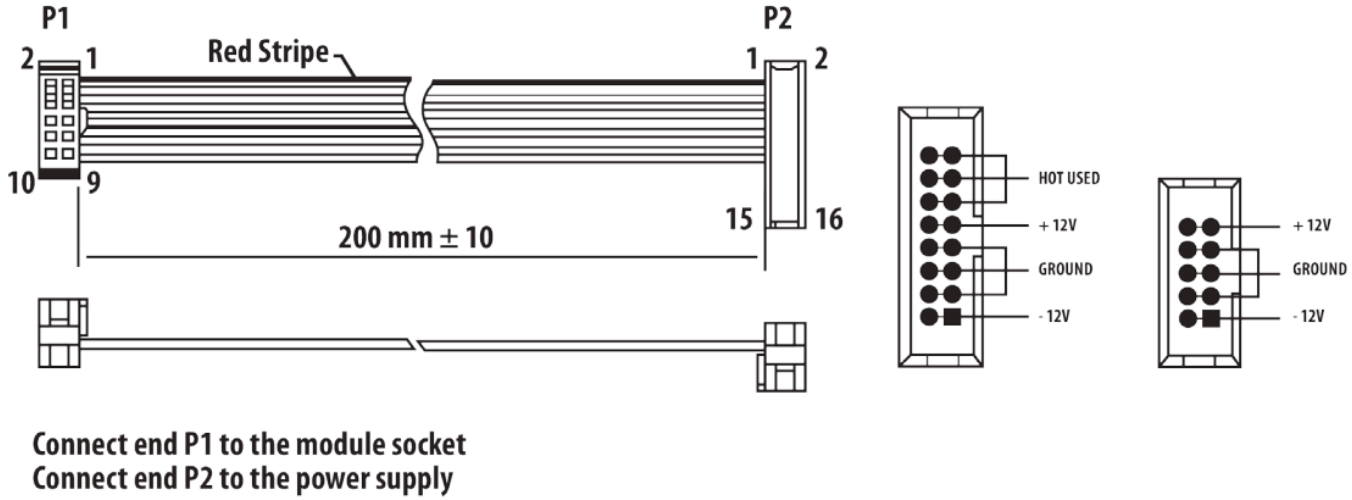
Control(s) and Attenuverter set to maximum (fully CW)

	Rise Time	Rise Peak	Fall Time	Fall Min	Cycle Time
Log	9 m 0 s	9.48 v	25 m 15 s	0.03 v	42 m 45 s
Lin	55 s	9.48 v	50 s	0.03 v	1 m 45 s
Exp	7 s	4.5 v	5 s	0.03 v	10 s

Hints and Tips

- Channels 1 and 4 can be used to modulate each other's Rise, Fall or Both functions.
- Channel 4's EOC trigger can be used to trigger an external Sample & Hold generator which could then be used as a modulation source.
- Channel 1's EOR output can be used as a modifier to any CV input on channels 1 and 4; or as an external voltage input to any channel.
- Channels 2 and 3 can be used to provide an offset voltage for the CV inputs of Channel 1 and 4.
- Experiment with the inverted sum voltage as a control source.

Power Connection



Connect end P1 to the module socket
Connect end P2 to the power supply

The module comes with the required power cable for connecting to a standard Eurorack power supply system. Follow these steps to connect power to the module. It is easier to make these connections before the module has been mounted into a rack case.

1. Turn the power supply or rack case power off and disconnect the power cable.

2. Insert the 16-pin connector on the power cable into the socket on the power supply or rack case. The connector has a tab that will align with the gap in the socket, so it cannot be inserted incorrectly. If the power supply does not have a keyed socket, be sure to orient pin 1 (-12 V) with the red stripe on the cable.
3. Insert the 10-pin connector into the socket on the back of the module. The connector has a tab that will align with the socket for correct orientation.
4. After both ends of the power cable have been securely attached, you may mount the module in a case and turn on the power supply.

Installation

The necessary screws are included with the module for mounting in a Eurorack case. Connect the power cable before mounting.
Depending on the rack case, there may be a series of fixed holes spaced 2 HP apart along the length of the case, or a track that allows individual threaded plates to slide along the length of the case. The free-moving threaded plates allow precise positioning of the module, but each plate should be positioned in the approximate relation to the mounting holes in your module before attaching the screws.

Hold the module against the Eurorack rails so that each of the mounting holes are aligned with a threaded rail or threaded plate. Attach the screws part way to start, which will allow small adjustments to the positioning while you get them all aligned. After the final position has been established, tighten the screws down.

Specifications

Inputs	CV 1-4, Trig 1-4, Rise 1 & 4, Fall 1 & 4
	Both 1 & 4, Cycle 1 & 4: 3.5 mm jack
Outputs	CV 1-4, OR, SUM, INV, f1 & 4, 1 EOR, 4 EOC
	3.5 mm jack
	1 & 4 Rise, 1 & 4 Fall, 1 & 4 Response knobs

Controls	1 – 4 attenuverter knobs
	1 & 4 Cycle buttons
Impendences	Rise & Both CVs: 100 kΩ
	Fall CVs: 33 kΩ
	CV Inputs 1 & 4: 33 kΩ
	CV Inputs 2 & 3: 75 kΩ
	Trigger Inputs: 100 kΩ
	Cycle Trigger Inputs: 50 kΩ
	Outputs 1-4, INV, SUM, OR: 680 Ω
	EOR/EOC: 2.2 kΩ
	ƒ 1 & 4: 100 Ω
Sensitivities	Trigger 1 & 4: 4 V minimum
	Cycle 1 & 4: 1.8 V minimum
Power Consumption	60 mA +12 V / 50 mA -12 V
Dimensions	20 hp
	10 cm x 12.8 cm x 2.4 cm
	(3.94 ” x 5.04 ” x 0.94 “)
Weight	191 g (6.74 oz)
Packaged Weight	284 g (10.02 oz)

FEDERAL COMMUNICATIONS COMMISSION COMPLIANCE INFORMATION

Behringer
ABACUS

- Responsible Party Name: Music Tribe Commercial NV Inc.
- Address: 122 E. 42nd St.1,
- 8th Floor NY, NY 10168,
- United States
- Email Address: legal@musictribe.com

ABACUS

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Important information

Changes or modifications to the equipment not expressly approved by Music Tribe can void the user's authority to use the equipment.

Hereby, Music Tribe declares that this product is in compliance with General Product Safety Regulation (EU) 2023/988, Directive 2014/30/EU, Directive 2011/65/EU and Amendment 2015/863/EU, Directive 2012/19/EU, Regulation 519/2012 REACH SVHC and Directive 1907/2006/EC.

- Full text of EU DoC is available at https://community.musictribe.com/
- EU Representative: Music Tribe Brands DK A/S
- **Address**: Gammel Strand 44, DK-1202 København K, Denmark
- UK Representative: Music Tribe Brands UK Ltd.
- **Address**: 8th Floor, 20 Farringdon Street London EC4A 4AB, United Kingdom

Correct disposal of this product: This symbol indicates that this product must not be disposed of with household waste, according to the WEEE Directive (2012/19/EU) and your national law. This product should be taken to a collection center licensed for the recycling of waste electrical and electronic equipment (EEE). The mishandling of this type of waste could have a possible negative impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. At the same time, your cooperation in the correct disposal of this product will contribute to the efficient use of natural resources. For more information about where you can take your waste equipment for recycling, please contact your local city office, or your household waste collection service.

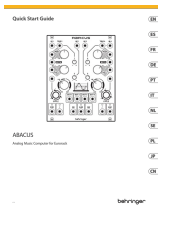
LIMITED WARRANTY

For the applicable warranty terms and conditions and additional information regarding Music Tribe's Limited Warranty, please see complete details online at community.musictribe.com/support.

Frequently Asked Questions

- **Q: What should I do if I encounter issues with the ABACUS module?**
  A: If you experience any problems with the module, refer to the troubleshooting section in the user manual. If issues persist, contact Music Tribe support for assistance.
- **Q: Can I use the ABACUS module with other Eurorack-compatible devices?**
  A: Yes, the ABACUS module is designed to be compatible with other Eurorack devices. Ensure proper power requirements and signal compatibility when integrating it into your setup.

Documents / Resources

	behringer ABACUS Analog Music Computer [pdf] User Guide V 2.0, ABACUS Analog Music Computer, ABACUS, Analog Music Computer, Music Computer

References

- Music Tribe
- Music Tribe
- User Manual

ABACUS, ABACUS Analog Music Computer, Analog Music Computer, Behringer, Music Computer, V 2.0

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