



Shakmat Ballista Blast Expander

- 4HP Eurorack module
- Built & designed in E.U.

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1. Introduction

The Ballista Blast Expander adds a flexible modulation source to enhance your Ballista Blast. The main module is fully CV controllable and gives CV access to almost any parameter but what if you can have a dedicated modulation source assignable with configurable depth to the key parameters of the Ballista Blast ? What if those modulation settings can be stored and recalled with your favourite presets ? This is what this expander has to offer.

Did we say you can have two expanders per Ballista Blast ? Two expanders, two times more modulation, twice the fun.

2. Specifications

Size
4 HP

CV inputs
-5v to +5v

Depth
21 mm

3. Basics

The Ballista Blast Expander offers three main controls:

The **SHAPE/ATTACK** potentiometer sets the shape of the LFO, or the envelope attack time. The **+** and **-** LEDs next to the potentiometer shows the activity of the expander. In envelope mode, only the green LED is used. In LFO mode both LEDs are used.

The **TIME/DECAY** potentiometer sets the LFO rate or the envelope decay/release time.

The **DEPTH** potentiometer sets the modulation depth of the destination parameter. By default, it works as an attenuator but can be set to work as an attenuverter using the global options menu of the Ballista Blast.

4. Installation

Plug the ribbon cable to the expander, with the red stripe matching the white line on the PCB. The expander has to be connected to the corresponding expander port on the Ballista Blast (expander 1 on port 1).

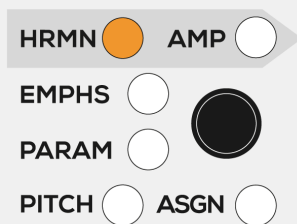
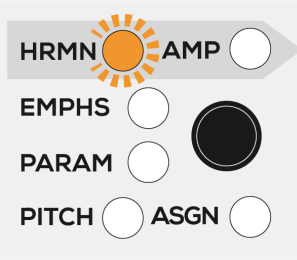
Enable the expander in the expander 1 or expander 2 page of the global options menu of the Ballista Blast.

5. Destinations

To assign the expander to one or multiple destinations, press the destination button (next to the destination LEDs). Pressing the button will cycle through the six available destinations. The expander offers the same four destinations as the Ballista Blast integrated envelope (harmonics, emphasis, parameter and pitch) plus the amplitude (which acts on the level) and an assignable destination. This last destination allows modulating the integrated envelope of the Ballista Blast or the parameters of another expander.

This special assignable destination is set in the expanders pages of the mod menu from the Ballista Blast. These pages appear only when an expander is activated in the global options of the Ballista Blast. See chapter 6.3 for more information about the special assignments.

The destination's LED inform you if a destination is selected, if it's assigned or not, and if the position of the DEPTH potentiometer currently matches the selected destination or not:

 <p>HRMN <input checked="" type="checkbox"/> AMP <input type="checkbox"/></p> <p>EMPHS <input type="checkbox"/> <input checked="" type="checkbox"/></p> <p>PARAM <input type="checkbox"/> <input checked="" type="checkbox"/></p> <p>PITCH <input type="checkbox"/> ASGN <input type="checkbox"/></p>	<p>Selected</p> <p>When a destination is selected, the corresponding destination LED is on.</p>
 <p>HRMN <input checked="" type="checkbox"/> AMP <input type="checkbox"/></p> <p>EMPHS <input type="checkbox"/> <input checked="" type="checkbox"/></p> <p>PARAM <input type="checkbox"/> <input checked="" type="checkbox"/></p> <p>PITCH <input type="checkbox"/> ASGN <input type="checkbox"/></p>	<p>Selected but the DEPTH potentiometer position does not match the current depth value</p> <p>When cycling through the destinations, if the DEPTH potentiometer position is different from the stored depth value, the destination LED will blink until the value is caught by the potentiometer.</p>

HRMN AMP

EMPHS

PARAM

PITCH ASGN

Not selected and inactive

When a destination is not selected and inactive (the depth value is zero), the LED is off. In the example, emphasis is selected and harmonics is inactive and not selected.

HRMN AMP

EMPHS

PARAM

PITCH ASGN

Not selected but active

When a destination is not selected but is active, the LED is dimmed. In the example, emphasis is selected and harmonics isn't, but is active.



Holding the destination button for two seconds clears the depth for all the destinations. Note that the **DEPTH** potentiometer works as an attenuator by default but can be set to work as an attenuverter using the global options menu.

6. Settings

There are three pages related to an expander in the Ballista Blast Mod menu. First is the mode, second is the shape and third is the assignment.

6.1. Expander modes

The Ballista Blast expander can be configured to one of seven modes. The three first modes are envelopes and the four last are LFOs:

6.1.1 Expander envelope modes

6.1.1.1. AR

EXP1 MODE
.....
ENV AR
Triggered attack and release.

6.1.1.2. AD

EXP1 MODE
.....
ENV AD
Gated attack and decay

6.1.1.3. ASR

EXP1 MODE
.....
ENV ASR
Gated attack, sustain and release.

6.1.2 Expander LFO modes

6.1.2.1. Free



A free running LFO.

6.1.2.2. Synced



Sync to a rising edge received at the **GATE** input of the Ballista.

6.1.2.3. Clocked



Clocked to the **TRIG/CLK** input of the Expander.

6.1.2.4. Both



Both synced and clocked

6.2. Expander Shapes

The Ballista Blast expander can be configured to one of six shapes. The two first shapes are for the envelope and the four last are for the LFO:

6.2.1 Expander shapes as an envelope

6.2.1.1. Linear



Decay/release response is set to linear.

6.2.1.2. Exponential



Decay/release response is set to exponential.

6.2.2 Expander shapes as an LFO

6.2.2.1. Skewed Ramp



The LFO shape continuously balances the rise and fall time.

6.2.2.2. Symmetrical wave



The shape morphs from tilted triangle to triangle, sine and square.

6.2.2.3. Random



A sample and hold random, acting on a constant time slew limiter

6.2.2.4. Sequences




The shape morphs 8 steps sequences.


6.3. Expander special assignments

Beside the harmonics, emphasis, parameter and pitch values of the Ballista Blast, the expander can also modulate the integrated envelope of the Ballista Blast or a second expander. Six different special assignments are available, three labeled MN (as main) and three labeled E1/E2 (as expander one or two). The following descriptions are from the standpoint of a single expander being used but scales accordingly in the case where two expanders are used.


6.3.1. Main envelope depth

 The depth of the Ballista Blast integrated envelope.


6.3.2. Main envelope attack

 The attack of the Ballista Blast integrated envelope.


6.3.3. Main envelope decay

 The decay of the Ballista Blast integrated envelope.


6.3.4. Other expander depth

 The depth of another expander

6.3.5. Other expander shape/attack

 The shape/attack of another expander.

6.3.6 Other expander time/decay

 The time/decay of another expander.

7. Random and Velocity

When an expander is connected to the Ballista Blast (and enabled), the Random and Velocity menu pages are augmented with the parameters of the expander(s). This allows to set both random and velocity to any parameter of the expander(s).

8. Memory

All the parameters of an expander are saved on the Ballista Blast memory when you save a preset. Presets packs both without any expander, or with one or two expander(s) are available on shakmat.com.

