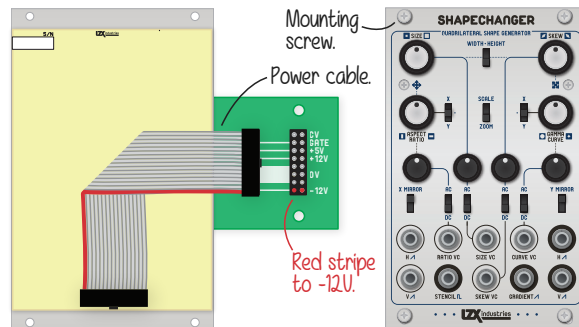# BEFORE YOU BEGIN

Take a moment to familiarize yourself with our website lzxindustries.net. You'll find documentation, instructional videos, links to community forums, and other user resources. Register your product's serial number with us to aid any future technical support requests. Some synthesists will find everything they need to learn about this module in this reference card, but don't forget there are videos and patch tips online. If you get stuck, have questions, or need help of any kind -- please write to us.

INSTALLATION

Power down the EuroRack case and unplug it from the wall. Connect the provided EuroRack power cable to your module and then to your EuroRack power bus board as shown. Mount the module in your case using the mounting screws provided by your case's manufacturer.

Mounting screw.

Power cable.

Red stripe to -12V.

SHAPECHANGER SPECIFICATIONS

FORMAT
3U EuroRack Synth Module

WIDTH	DEPTH
16HP	45mm

MAX POWER DRAW	
+12V	220mA
−12V	220mA
+5V	N/A

OUTPUT LEVELS
0-1V

VC CONTROL RANGE
0-1V

MAX INPUT VOLTAGE
+/-12V

INPUT TERMINATION
100K ohms

OUTPUT RESISTANCE
499 ohms

ONE YEAR WARRANTY
LZX industries

TIPS & TECHNIQUES

● Use mults to send the same modulation source to multiple VC inputs at once. Use mixer modules (like Passage or Bridge) to mix together many modulation sources.
● Try feedback of the horizontal and vertical outputs back to the VC inputs.
● Try patching multiple Shapechanger modules in parallel, and use a keyer module like Doorway to composite the two resulting shapes together.

YOUR NEXT MODULE?

Navigator and Shapechanger work together to form a holistic shape generation voice. This shape generation voice could exist several times in a larger system. Adjusting the ratio of Navigator to Shapechanger modules in a system can open up new techniques as well.
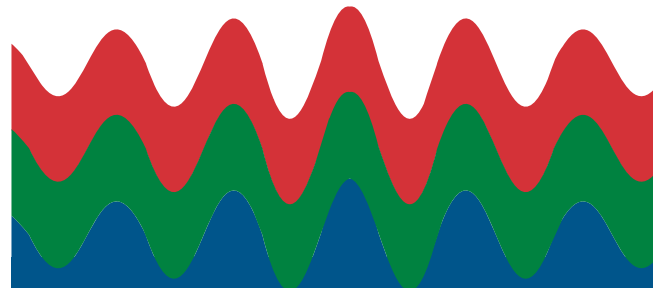
LZX-SH-URC
Written & Illustrated by Lars Larsen
First Printing, May 2017
©2017 LZX Industries LLC

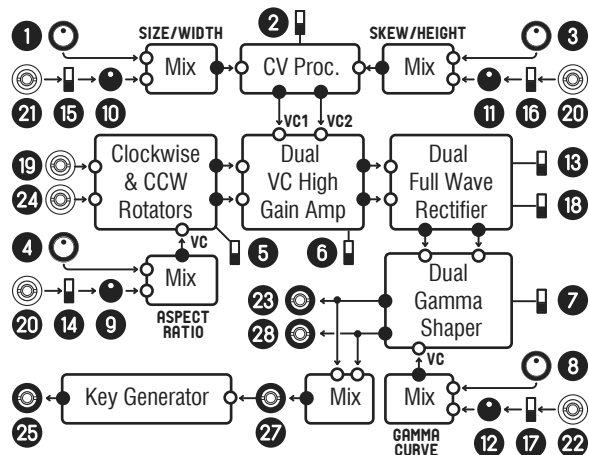# SHAPECHANGER
USER REFERENCE CARD

SHAPECHANGER

QUADRILATERAL SHAPE GENERATOR

CONTROLS & CONNECTIONS

SIZE / WIDTH

1 ⊙	Size / Width		
21 ◎	VC input	**0-1V FS**	
15 ▯	VC coupling	**AC DC**	
10 ●	VC level	**+/-** **19**	

SKEW / HEIGHT

3 ⊙	Skew / Height		
26 ◎	VC input	**0-1V FS**	
16 ▯	VC coupling	**AC DC**	
11 ●	VC level	**+/-** **19**	

ASPECT RATIO

4 ⊙	Aspect Ratio		
5 ▯	Axis select **X** **XY** **Y**		
20 ◎	VC input	**0-1V FS**	
14 ▯	VC coupling	**AC DC**	
9 ●	VC level	**+/-** **19**	

GAMMA CURVE

8 ⊙	Gamma Curve		
7 ▯	Axis select **X** **XY** **Y**		
22 ◎	VC input	**0-1V FS**	
17 ▯	VC coupling	**AC DC**	
12 ●	VC level	**+/-** **19**	

OTHER CONTROLS

2 ▯	Control mode	**SIZE/SKEW** **WIDTH/HEIGHT**
6 ▯	Gain mode	**SCALE** **ZOOM**
13 ▯	X mirror	**ON** **OFF**
18 ▯	Y mirror	**ON** **OFF**

INPUTS & OUTPUTS

19 ◎	Horiz. input	**0-1V FS**	
24 ◎	Vert. input	**0-1V FS**	
23 ◎	Horiz. output	**1V DC**	
28 ◎	Vert. output	**1V DC**	
25 ◎	Stencil output	**1V DC**	
27 ◎	Gradient output	**1V DC**	

FIRST STEPS

● Set all controls and switches to the default settings shown on the frontpanel illustration to the left.

● Patch horizontal and vertical ramp waveforms to the horizontal and vertical input jacks. If you are using Visual Cortex to generate ramp waveforms, set its two ramp mode switches to their center (middle) positions.

● Patch the Gradient output jack to your video output module.

● Explore all the controls and patch points.

SIGNAL PATH BLOCK DIAGRAM

SPATIAL POSITIONING WITH NAVIGATOR

Navigator and Shapechanger can be used together to form a shape generation voice, with Navigator controlling the resulting shape's position and rotation angle. To create this patch, patch the horizontal and vertical ramp waveforms first to Navigator, and then patch Navigator's horizontal and vertical outputs to Shapechanger's horizontal and vertical inputs.

VECTOR RESCANNING TECHNIQUES

If you are exploring techniques for vector rescanning with XY displays and oscilloscopes, set the gain mode switch to Scale. For more information on vector rescanning as a video synthesis technique, visit our website for additional documentation.

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