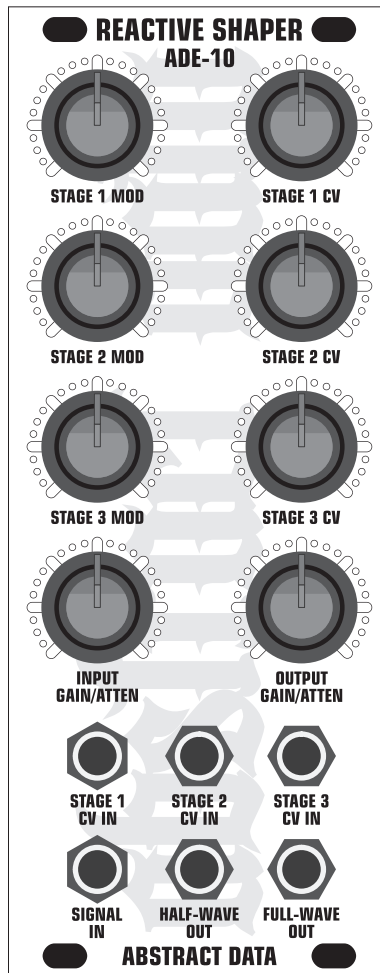


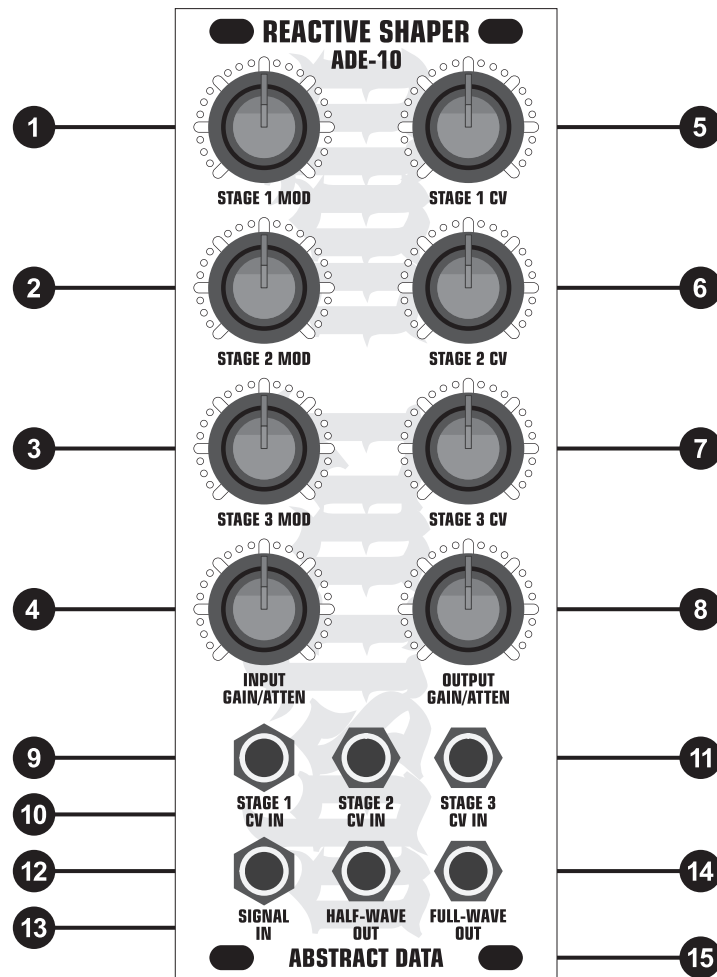
# abstract data

INSTRUMENTS  EFFECTS

## 3-Stage Shaping, Folding & Feedback Module with Dedicated CV Control and Dual Outputs

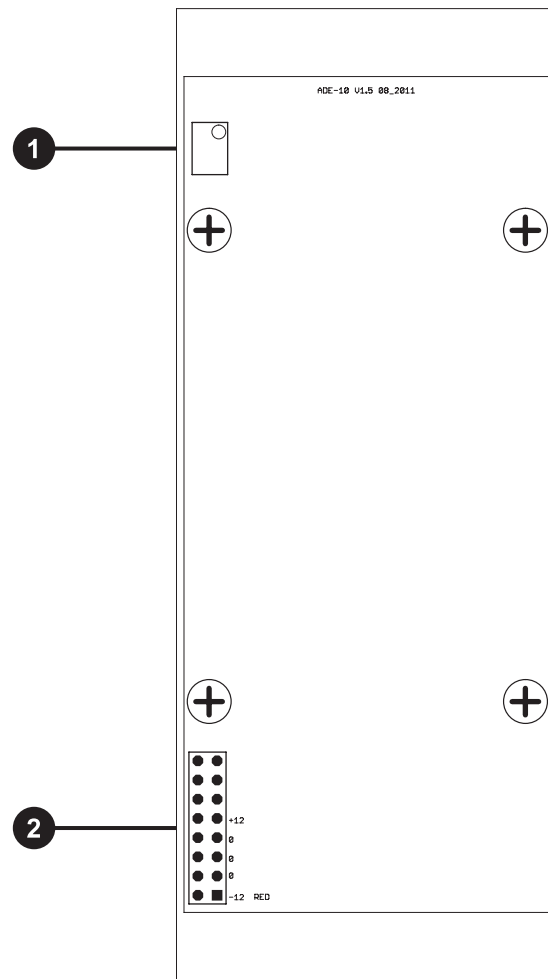


# 1: Front



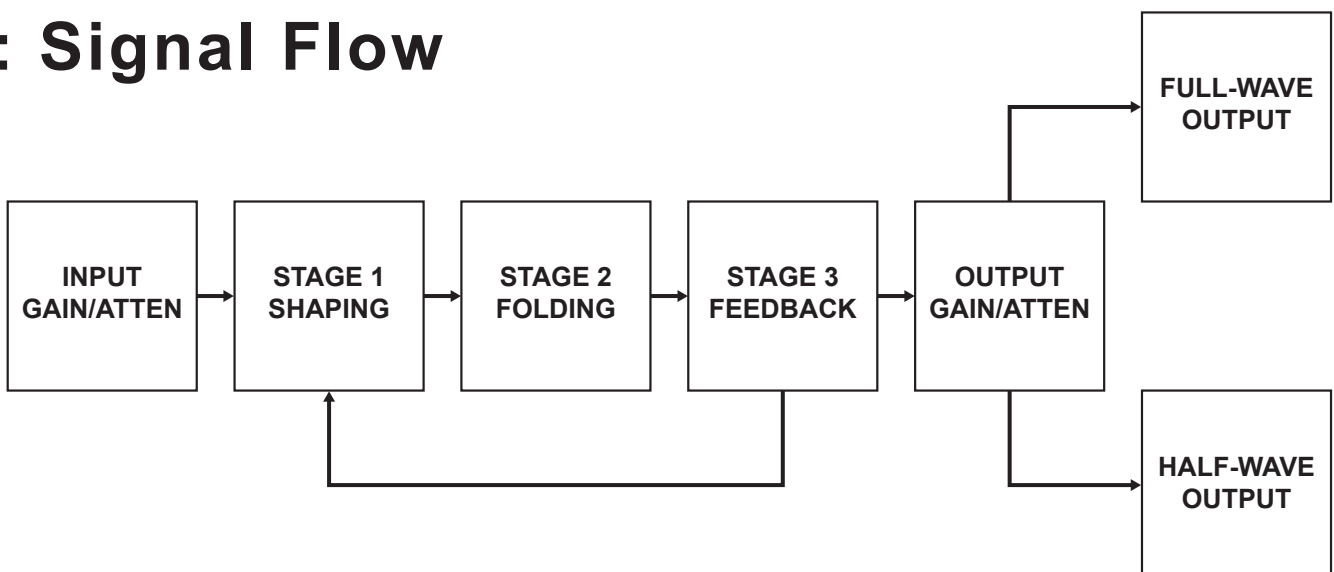
- 1 **STAGE 1 MOD:** Vertical waveshaping for subtle phasing and PWM-style effects
- 2 **STAGE 2 MOD:** Inward wavefolding for additional harmonics and harder PWM-style effects
- 3 **STAGE 3 MOD:** Feedback and saturation amount fed back into stage 1
- 4 **INPUT GAIN/ATTEN:** Pre-effect gain/attenuation up to +/- 50% at SIGNAL IN
- 5 **STAGE 1 CV:** Sets the level of the external CV input for stage 1 from 0% to 100%
- 6 **STAGE 2 CV:** Sets the level of the external CV input for stage 2 from 0% to 100%
- 7 **STAGE 3 CV:** Sets the level of the external CV input for stage 3 from 0% to 100%
- 8 **OUTPUT GAIN/ATTEN:** Post-effect gain/attenuation up to +/- 50% at the full- and half-wave outputs
- 9 **STAGE 1 CV IN:** DC-coupled input for external CV. Accepts up to +/-10V AC and DC signals
- 10 **STAGE 2 CV IN:** DC-coupled input for external CV. Accepts up to +/-10V AC and DC signals
- 11 **STAGE 3 CV IN:** DC-coupled input for external CV. Accepts up to +/-10V AC and DC signals
- 12 **SIGNAL IN:** Main DC-coupled input. Accepts up to +/-10V AC and DC signals
- 13 **HALF-WAVE OUT:** DC-coupled, half-wave rectified output, allows positive AC and DC signals
- 14 **FULL-WAVE OUT:** DC-coupled, full-wave output, allows +/- AC and DC signals
- 15 **MOUNTING HOLES:** Accepts M2.5 or M3 screws in Doepfer or Analogue Systems spacing width

## 2: Rear



- 1 CALIBRATION POINT:** Removes DC offset at both outputs. Factory calibrated to 0V DC (*Please see 'CALIBRATION' on page 7 of this guide*)
- 2 POWER CONNECTOR:** Doepfer-style 16-pin IDC Socket. The ADE-10 uses the Doepfer standard for power connection and cable orientation. The RED stripe on the supplied power cable connects to the NEGATIVE (-12V) rail on the ADE-10 with the RED stripe facing DOWN. This is marked on the back of the ADE-10 PCB as "-12 RED". (*Please see 'PRECAUTIONS' on page 7 of this guide*)

## 3: Signal Flow



## INTRODUCTION:

The ADE-10 is a 3-stage analog waveshaping, wavefolding and feedback effect in a 10HP module in the Eurorack format.

The 3 stages are arranged in series so any 1 stage can be operated independently or combined with either of the other 2 stages.

All 3 stages can be modulated manually or via dedicated external CV inputs, which can also be attenuated and biased directly from the front panel.

All inputs and outputs are DC-coupled and input and output signal levels can be gained or attenuated at both the pre- and post-effect stage.

All inputs are capable of accepting signals within a range of approximately +/-10V AC or DC and, under normal operating conditions, should work with any signal level generated within the Eurorack format.

Simultaneous outputs provide a FULL-WAVE output for +/- AC and DC signals and a HALF-WAVE rectified output for positive AC and positive DC signals.

## INTEGRATION:

The ADE-10 is designed to work best with simple, symmetrical, angular and non-rectangular waveforms (i.e. sine, triangle and sawtooth) and most waveforms derived from combinations of these initial waveform shapes.

The ADE-10 can also work with envelope generator and CV signals created from square, pulse, gate and trigger signals fed via a lag generator to 'round' the edges of the input signal.

The ADE-10 is frequency and waveform independent - it operates across the complete 'musical' frequency range from audio to LFO and CV.

The shaping stages produce effects from subtle phasing to more aggressive PWM-style sounds. The feedback circuit can add soft, bell-like resonance to simpler waveforms or harsher saturation to more complex waveforms.

The output of each stage will vary slightly based on the type of waveform that is used as the initial input. This is due to the way the ADE-10 adds and reacts to the harmonic content of the input waveform and then, in turn, the output waveform of the preceding stage - thus, the term 'reactive' - each stage is a reaction to the stage that precedes it.

## OPERATION:

Setting up the ADE-10 for optimal use is easy and for first-time users, these simple steps should get you started:

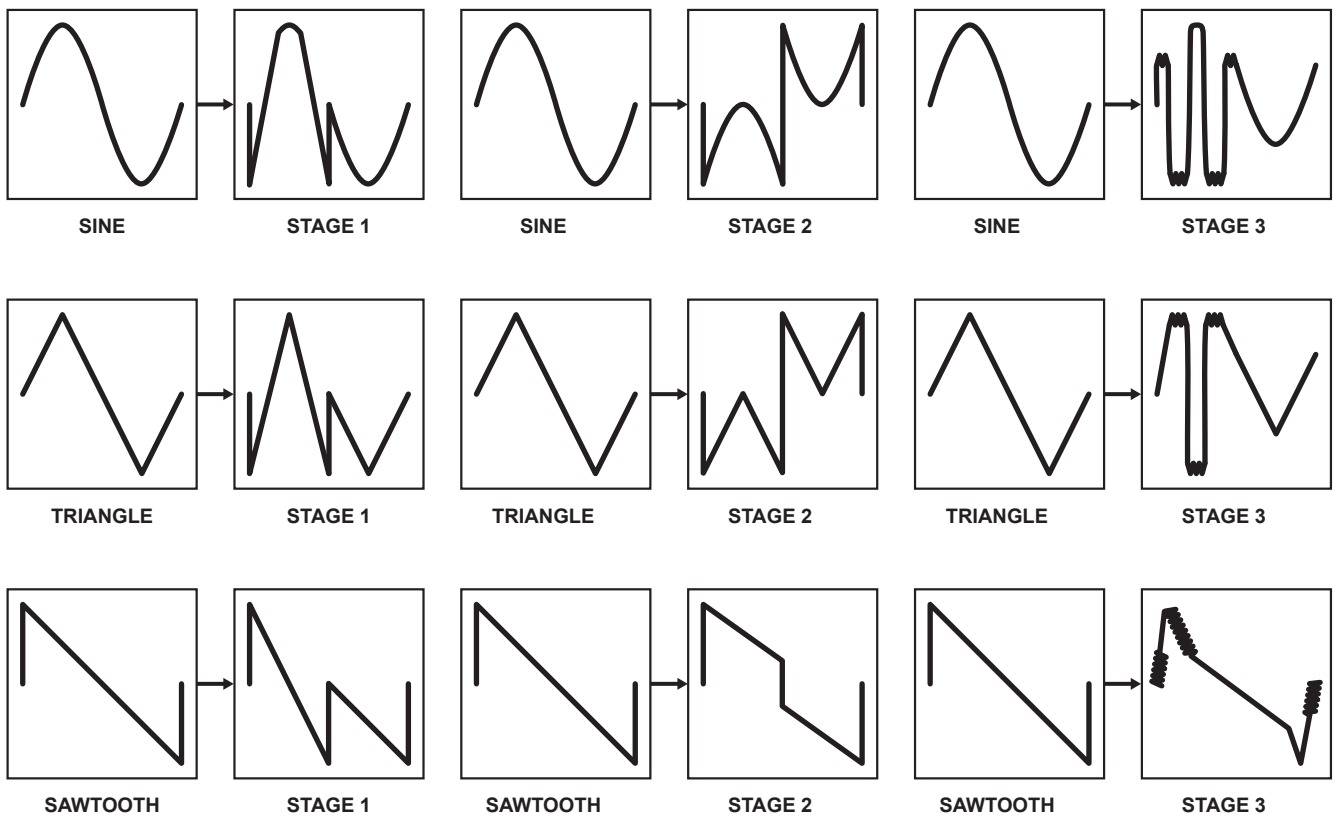
- 1) Secure the ADE-10 into a rack using the correct mounting screws, connect the rack's internal power supply and turn the power on (*Please see 'PRECAUTIONS' on page 7 of this guide*);
- 2) Lower all knobs on the ADE-10 to fully counter-clockwise (0%);
- 3) Connect the output of a VCO to the SIGNAL IN of the ADE-10. If possible, use a sine wave output as this will demonstrate the full harmonic potential of the ADE-10;
- 4) Connect the FULL-WAVE output of the ADE-10 to the Input stage of another module or some type of AC-coupled output stage (*Please see 'CALIBRATION' on page 7 of this guide*);
- 5) Raise the INPUT GAIN/ATTEN knob until shaping is triggered (depending on the volume of your initial input this should be at approx. 50%, you might hear a change to a more square-like sound at this threshold. If not - that is fine, your input is below the triggering threshold and you're good to go) - then lower the INPUT GAIN/ATTEN knob to just below this threshold;
- 6) Raise the OUTPUT GAIN/ATTEN to approximately half-way (50%) or to a level that suits the requirements of the module the ADE-10 is plugged in to;
- 7) Start making noises.

# 5: Shaping

The diagram below shows an approximation of the effect that each stage of the ADE-10 has on each of the three primary waveform types when the control for each stage is used in isolation and turned to full.

*n.b.* The effect each stage has on the input waveform is 'cyclical' - i.e. as the knob for a particular stage is raised, the effect on the waveform 'evolves' through the input signal from dry to wet.

*n.b.* Input signals other than audio can be shaped and effected and this diagram should be considered as a starting point for further experimentation. (*Please see 'INTEGRATION' on page 4 of this guide.*)

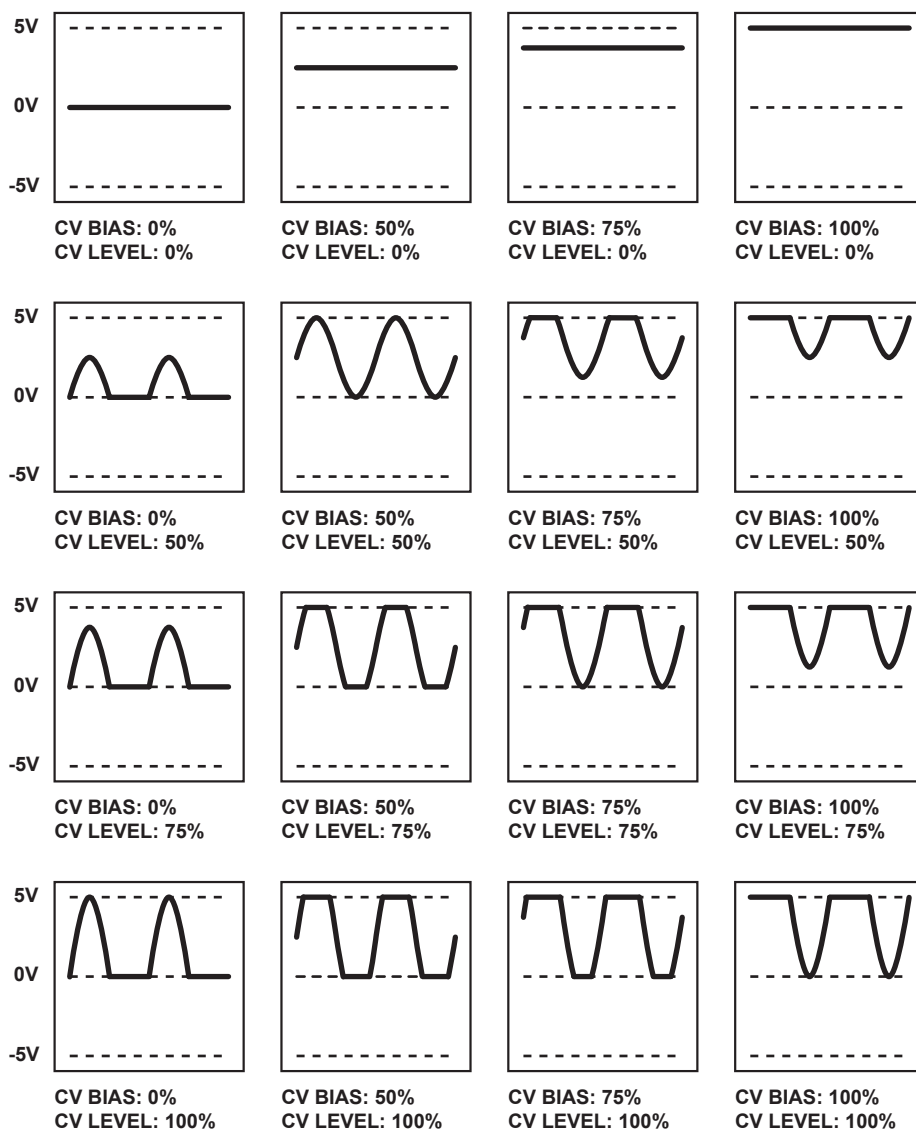


# 6: CV

The external CV inputs of the ADE-10 should accept any CV, LFO or audio signal within a range of approximately +/-10V, however, CV content outside the range of 0-5V DC will be clipped and blocked internally.

The diagram below shows how a single +/-5V (10V peak to peak) AC sine wave used as an external CV input can be attenuated and/or biased via the front panel controls to modulate within the internal 0-5V DC CV range with no need for PCB 'jumpers' or external signal conditioning.

*n.b.* For this diagram, 'bias' refers to the manual modulation control (e.g. STAGE 1 MOD) for each stage and 'level' refers to the external CV input control (e.g. STAGE 1 CV) for each stage.



<b>HARDWARE:</b>	<b>Controls (Left):</b>	STAGE 1 MOD (Manual) STAGE 2 MOD (Manual) STAGE 3 MOD (Manual) INPUT GAIN/ATTEN
	<b>Controls (Right):</b>	STAGE 1 CV (External) STAGE 2 CV (External) STAGE 3 CV (External) OUTPUT GAIN/ATTEN
	<b>Inputs (Signal):</b>	1x DC, approx. +/-10V max. (3.5mm mono socket)
	<b>Inputs (CV):</b>	3x DC, approx. +/-10V max. (3.5mm mono socket)
	<b>Outputs (Signal):</b>	1x DC FULL-WAVE (3.5mm mono socket) 1x DC HALF-WAVE (3.5mm mono socket)
	<b>Power Requirements:</b>	+/-12V via 16-pin, Doepfer-style IDC connector
	<b>Current Draw:</b>	80mA average
	<b>Dimensions:</b>	10HP (W); panel to IDC connector 35mm (D)
	<b>Supplied Accessories:</b>	1x 16-pin, Doepfer-style cable, 4x M3 screws

**CALIBRATION:** AC-coupled inputs and outputs (i.e. most inputs and outputs that are used for AC and 'audio' signals) use a capacitor to remove constant DC content, leaving only the AC content of the waveform.

The inputs and outputs of the ADE-10 are DC-coupled, which allows it to use both audio and CV signals (AC and DC) such as LFOs, gates, triggers, etc. as input and external CV input signals - but please note that any DC content present at the input will also be present at the output.

Additionally, a non-calibrated ADE-10 can also add a small amount of DC content to the output waveform.

Each ADE-10 is calibrated before shipping and once set, the output should remain at close to 0V DC with all front panel controls set to 0% and no inputs connected.

For advice on calibrating the ADE-10 please contact Abstract Data.

**PRECAUTIONS:** The ADE-10 uses the Doepfer standard for power connection and cable orientation. The RED stripe on the supplied power cable connects to the NEGATIVE (-12V) rail on the ADE-10 with the RED stripe facing DOWN. This is marked on the back of the ADE-10 PCB as "-12 RED".  
*(Please see 'POWER CONNECTOR' on page 3 of this guide)*

The ADE-10 has diode and polyfuse protection built in but an incorrectly connected cable may still cause damage to the module or the power supply.

The rear panel of the ADE-10 has exposed parts and connections. Please ensure when handling the ADE-10 that the unit is held by the sides of the front panel or the sides of the PCB.

**CREDITS:** Dr. Zoe Healey  
Rory Dow  
Matrix