

**SeymourDuncan**

**POLARON**

**ANALOG PHASE SHIFTER**

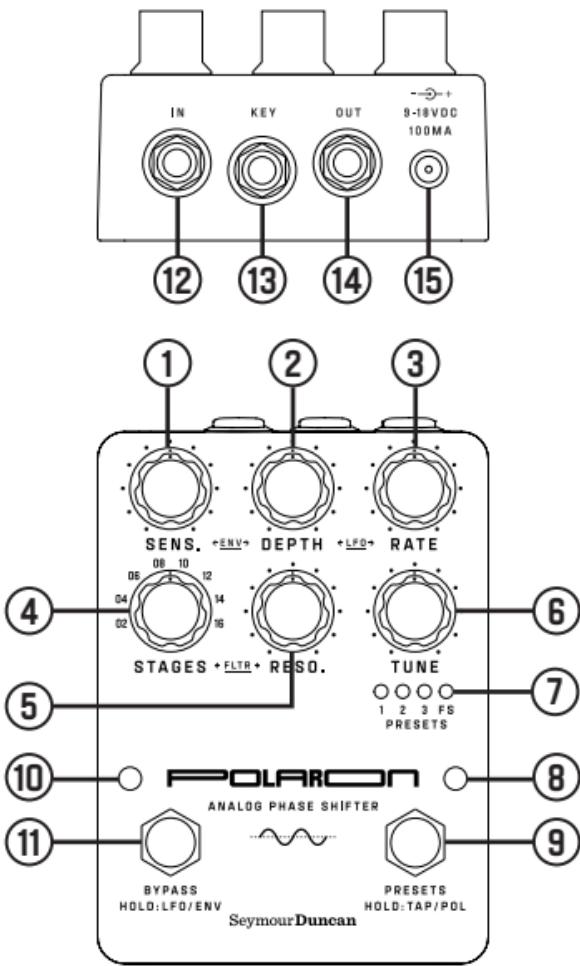


Thank you for purchasing the Polaron Analog Phase Shifter! Make sure to visit [SeymourDuncan.com](http://SeymourDuncan.com) for the most up to date info and sound samples.

Polaron covers your classic phaser needs and expands into a galaxy of modulation tones, from rotary speaker emulation, funky auto-wah phrasing, talk box squawks, and even flangey whale sounds – and pre-sets allow you to easily save and recall your favorites on the fly.

Switching between modes, accessing presets, and setting the tap tempo are all easily achieved via footswitch, ensuring you don't have to reach down during a song to adjust your settings.

Like all of our pedals, Polaron is designed and built in the USA and features True Bypass switching to keep your tone pure when the pedal isn't in use.



1. Sensitivity
2. Depth
3. Rate
4. Stages
5. Resonance
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## **Sensitivity**

Controls the sensitivity of the Envelope Detector

## **Depth**

Controls the range of the modulation. Higher settings will produce wider sweeps of the All-pass filters

## **Rate**

Controls the speed of the modulation

## **Stages**

Selects the number of All-pass filters used to perform phase shifting, from 2 to 16

## **Resonance**

Adjusts the amount of positive feedback used around the filter network

## **Tune**

Sets the center frequency of the filter. Extreme settings combined with high Depth setting will produce asymmetrical sweeps

## **Preset Indicators**

- 1, 2 or 3 solidly lit – indicates PRESET mode (default) and which preset is active
- 1, 2 or 3 blinking – indicates EDIT mode is active. The current digital control settings will be saved to that location when both Left and Right footswitches are held

for 1 second (see SAVE Mode)

- No presets lit – indicates MANUAL mode is active and the pedal will operate where all the knobs are set
- FS solidly lit – (LFO mode) indicates TAP TEMPO mode is active and the rate can be set using the right momentary footswitch

## Right LED Indicator

- Yellow: indicates LFO mode (see LFO Mode). Flashing interval indicates the rate of the LFO
- Red: indicates ENV mode (see ENV Mode). Dimly lit (default) indicates positive polarity of sweep (sweeping up from starting point). Brightly lit indicates negative polarity of sweep (sweeping down from starting point)

## Right Footswitch

- Tap to scroll through presets (default)
- Hold for 0.5 seconds to engage Tap Tempo option (LFO mode). After holding for 1 second, FS LED will turn on – you may now use tap tempo (if in LFO mode – yellow LED) or switch the envelope polarity (if in ENV mode – red LED). Tap the footswitch 2-3 times to set the rate of the LFO
- In edit mode, tap to cancel the changes to the preset

## Left LED Indicator

Off indicates bypass is active, ON indicates effect is engaged.

## **Left Footswitch**

- Tap to Engage/Bypass the effect
- Hold for 0.5 seconds to switch between LFO and ENV modulation
- In save mode, tap to select a save location, hold to confirm the save

## **Input Jack**

Plug a musical instrument in here or the signal from the preceding pedal on your board

## **Key Jack**

Use this input to inject a clean guitar signal for better control over the envelope follower. See ENV KEY Input section later in this manual for a full explanation

## **Output Jack**

Run a cable from here to your amplifier or the next pedal on your board

## **Power Jack**

Apply 9 -18V, 100mA minimum, Use a plug with 2.1mm internal diameter, center negative.

## Initial Setup

The Polaron can produce extreme frequencies at higher STAGES and RESONANCE settings. Start with these controls set moderately or bring up your amplifier volume gradually to ensure a pleasant experience.

We suggest starting by setting all controls at noon, except for the STAGES control – which should be set to 04, one click from fully counter-clockwise.

## Footswitch Controls

### LEFT FOOTSWITCH

The primary function of the Left footswitch is to engage or bypass the circuitry. The secondary function is activated by pressing and holding for 0.5 second. This will switch between LFO (default) and ENV mode. LFO mode is indicated by the right LED lit yellow, and ENV mode is indicated by the LED lit red. This is one of the most pivotal controls in terms of how the Polaron will perform, so we felt it was important to have the ability to switch it on the fly. Press and hold for 0.5 second again to switch back to the previous mode. This can be done whether the pedal is engaged or bypassed.

### RIGHT FOOTSWITCH

The primary function of the Right footswitch is to scroll through the three onboard Presets. Pressing it will scroll

up by one preset (1-3), and last location (FS) which puts the pedal in manual mode to the knob settings with no preset loaded.

The secondary function is activated by pressing and holding for 1 second. The FS LED will turn on to indicate that the footswitch is now in Tap Tempo mode. This mode allows you to use the footswitch as a tap-tempo for the LFO rate (when the pedal is in LFO mode, yellow LED) or invert the polarity of the Envelope (when in ENV mode, red LED). The pedal will revert back to Preset mode after 5 seconds or you can press and hold the RIGHT FOOTSWITCH for 1 second to revert to Preset mode. (When the Polaron is powered on it will default to Preset mode). The FS LED will turn off to let you know you have returned to Preset mode and the currently loaded preset light will be lit.

## Saving Presets

If you've found a sound you like, and you want to save it as a preset; press and hold both footswitches for 1 second to enter 'save' mode. The currently loaded preset LED will blink rapidly. Use the right footswitch to select a preset location to save to (indicated by a blinking light). To confirm the save, press and hold both footswitches for 1 second. If you want to cancel the save press the left footswitch, and you will be returned to the last settings

used. The pedal will also exit save mode after 5 seconds and revert to the last preset again.

## Analog Filter Section

The controls in this section are ANALOG and cannot be saved as part of your preset – wherever they are set to is the sound you will hear. In order to control these functions digitally, some portion of the audio signal would need to be converted to digital. For this reason, we have chosen to leave them as they are.

The STAGES control will select the number of All-Pass Filter Stages used for phase shifting – between 2 and 16. The phasing effect will become more intense as the number of stages is increased. Set at 2, the effect will be very subtle, while 16 will be quite dramatic, and each step in between has its own unique character. 4 stages is probably a good starting point, as this is the number often used in classic guitar phase shifters and will allow you to easily dial in a good sound – this is position 04 (one click away from fully counter-clockwise) on the rotary switch.

The RESONANCE control adjusts the amount of positive feedback introduced into the filter. By increasing the resonance, the effect will become more pronounced and vocal, but can also thin your guitar tone. Setting this control at noon will provide some positive feedback, without going over the top – a good place to start.

## Digital Modulation Controls

These knobs are part of the digital control section. The signal path remains 100% analog, so while these parameters are set and saved digitally, your tone is never compromised. From top left:

**ENV SENSITIVITY** – controls the sensitivity of the ENV detector. Use this control to adjust for different input levels, or to change the performance of the envelope modulation. If you're using a guitar with low output pickups you may need to set this higher. The ENV SENSITIVITY control has no effect on the LFO.

**DEPTH** – controls the range of the modulation effect. The higher this control is set, the further the filter will sweep. Applies to both LFO and ENV modulation.

**LFO RATE** – controls the speed of the LFO. This control will only function when Polaron is in LFO mode.

**TUNE** – sets the center frequency of the filter. Extreme settings to either end of the control combined with a high DEPTH setting will result in an asymmetrical sweep, as the filter will 'bottom out' or 'top out' at one or the other end of its range for a portion of the sweep. Set at noon for the widest range of movement. Can also be used to manually sweep the phaser with the DEPTH control set fully counterclockwise. The range of this

control is automatically adjusted for ENV modulation to ensure the best performance of the effect.

## **LFO Mode**

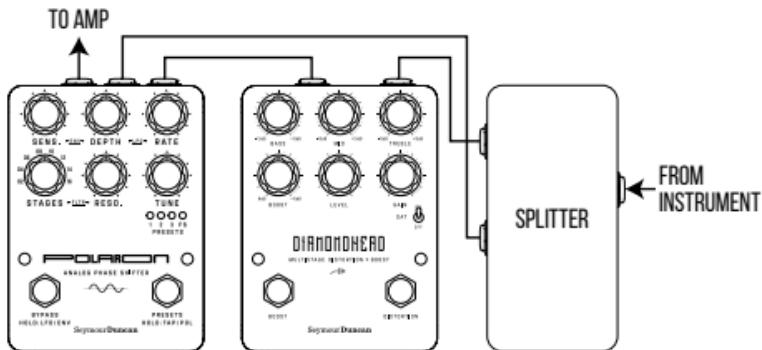
This is the classic guitar phaser effect – in LFO mode (right LED = yellow) the filter(s) will be swept cyclically with an LFO. The Rate knob (or tap-tempo) controls the speed of the effect, while Depth controls the range. Tune sets the center point of the sweep. Set the STAGES control to 4, and the other controls at noon for iconic ‘orange phaser’ tones.

## **ENV Mode**

Like an auto-wah or dynamic filter – ENV mode (right LED = red) sweeps the filter based on the level of the input signal. SENS controls how quickly the filter will react, and DEPTH controls the range of the sweep. TUNE sets the starting point. The polarity of the ENV defaults to positive (sweeping up from the starting point). The LED is dimly lit and will get brighter as a signal is applied. You can invert the polarity to negative (sweeping down from the starting point) using the secondary function of the right footswitch. In this setting the LED is bright and will dim when a signal is applied.

## ENV Mode – KEY Input

When using an Envelope Follower after a Compressor, Overdrive, or Distortion the dynamics of your signal are reduced and the Envelope effect can become much less noticeable as a result. For this reason, Polaron features a secondary input jack for the Envelope Follower only. When using the Polaron after a Distortion pedal for example, you could run a split signal from an earlier point in your signal chain into the Key Input. The Envelope will 'see' the original clean guitar signal and respond to the original dynamic content of your playing. An example is shown below:



## **Tech Specs**

**Input Impedance:** 500KΩ

**Output Impedance:** 100Ω

**Gain:** 3.5dB nominal

**THD @ 2Vrms Output:** 0.01%

**Noise referred to input:**

- 2 Stages engaged - 113dBV
- 16 stages engaged - 112dBV

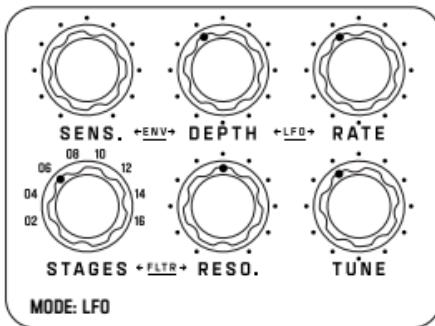
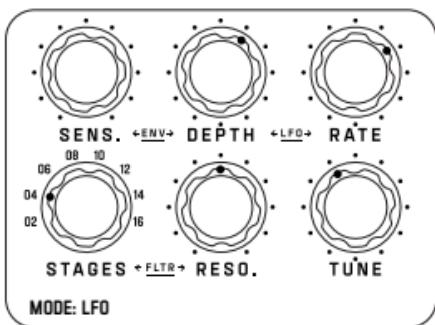
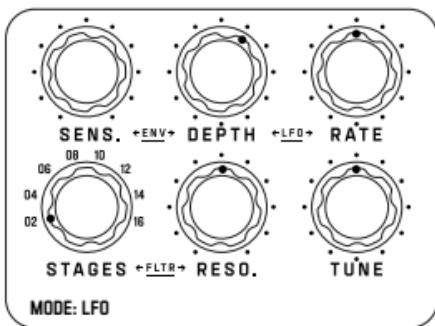
**Power:** 9V regulated DC adapter (center pin negative)

**Current Consumption:** 100mA

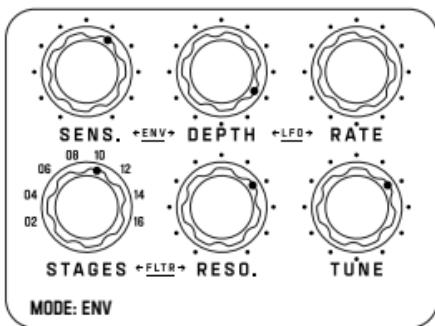
**Dimensions:** 3.57" x 4.80" x 1.60", exclusive of knobs and connectors

**Weight:** 0.9lbs

# Sample Settings



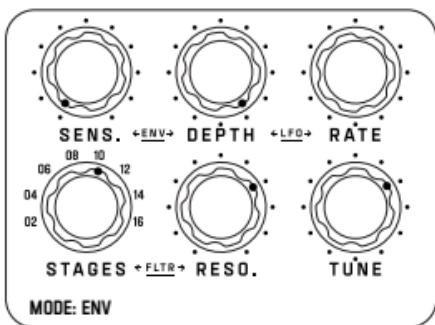
### Grateful Phase



Classic 10 stage phase tones with added envelope control

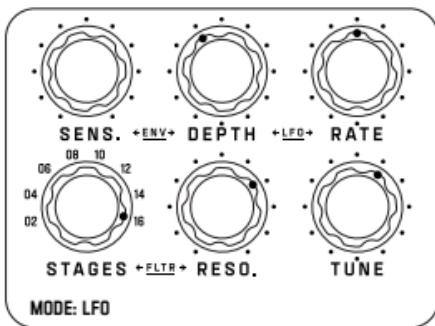
Vocal-like response and touch sensitivity will have you soloing like Jerry

### Pseudo-talkbox



12 stage phaser

Stiff, filtered talk box-y tones that bloom as notes decay



### Interstellar Communication

16 stage phase tones

Intense multi-stage modulation adds otherworldly character

## Disposal Guidelines

In the unlikely event that you ever need to dispose of this product, it must be disposed of properly by handing it over to a designated collection point for the recycling of waste electronic equipment. Please contact your local household waste disposal service or the shop where you purchased this product for those locations. Thanks for helping us conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.