Sea Device

Based on:
EQD Sea Machine

Amount of parts:
High, total 74 components

Enclosure type:
1590BB

Effect type:
Ultimate Chorus

Technology:
PT2399 based

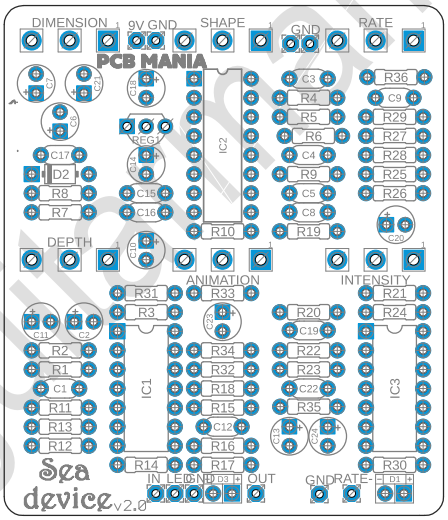
Get your board at:
Sea Device

Build difficult:
Advanced

Power consumption:
50mA (9v)

Get your kit at:
Das Musikding (Europe)

Project overview:
Inspired by EQD Sea Machine, the Sea Device is a chorus pedal that gives you an unprecedented measure of control over its parameters.



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Introduction

The people from Akron, Ohio, have cooked up this circuit to achieve the ultimate versatile chorus. From subtle, shimmery chorus sounds to wobbly, seasick, warbly pitch-bent detuning that rocks the boat.

This digital-analog hybrid circuit gives you standout chorusing effects topped off with dramatic shimmer, based around a PT2399 short digital delay line, with controls for Animation, Dimension, and Depth. From there, knobs for Shape, Rate, and Intensity let you craft and fine-tune your chorus effect to perfection.

Its Sea Device palette of controls, both standard and proprietary that makes it unique - and eminently useful for everything from understated warble and classic Leslie effects to roller-coaster pitch bends, condensed arpeggiations, outrageous alien soundscapes, and more!

EarthQuaker Devices designed the original circuit of the Sea Machine to play nicely with the other pedals in your signal chain without distorting, attenuating volume or inducing mud. At Sweetwater, we tend to prefer it placed after distortion pedals and before signal boosters.

When engaged, the Sea device's transparent buffer leaves your dry, all-analog signal crystal clear and untouched!

Controls

The Sea Device controls might look a bit complicated at the first contact but is much more intuitive than what it looks.

- The delay line (PT2399 LFO) controls Dimension, Animate, and Depth.
- RATE: Sets the speed of the LFO. The miniature LED will show the tempo even in bypass mode.
- SHAPE: From a soft triangle through a hard square wave.
- DIMENSION: Adds a slight slap-back at low levels, a reverb-like ambiance at mid-levels, and an echo-resonance at max.
- DEPTH: How much the LFO modulates the delay time.
- ANIMATE: How far the pitch-shifted signal swings, lower levels equals a tighter and more focused shift à la traditional chorus. As you increase the control, a more wild and animated pitch shift begins to emerge.
- INTENSITY: How much modulated signal is blended in with the dry signal.

Bill of materials

Resistors	
R1	1m
R2	1m
R3	10k
R4	33k
R5	10k
R6	33k
R7	1k
R8	8K2
R9	33k
R10	1k
R11	10k
R12	10k
R13	10k
R14	10k
R15	10k
R16	100k
R17	470r
R18	2k2
R19	22k
R20	47k
R21	100k
R22	100k
R23	100k
R24	10k
R25	10k
R26	10k
R27	10k
R28	10k
R29	33k
R30	1k
R31	10k
R32	10k
R33	100k
R34	100k
R35	4k7
R36	33k

Capacitors	
C1	100n
C2	1uf electro
C3	470pf
C4	470pf
C5	100n
C6	1uf electro
C7	10uf Electro
C8	100n
C9	3n3
C10	1uf electro
C11	1uf electro
C12	100p
C13	1uf electro
C14	10uf
C15	100n
C16	100n
C17	100n
C18	10uf Electro
C19	47n
C20***	470n
C21	100uf
C22	100n
C23	10uf Electro
C24	10uf Electro

Potentiometers	
ANIMATION	2K B
DEPTH	25k B
DIMENSION	5k B
INTENSITY	50K B
RATE	**1M C****
SHAPE	100k A

Semiconductors	
IC1	TL074
IC2	**PT2399***
IC3	LM324
REG1	L78L05

Diodes	
D1	3mm Blue Led
D2	1n5817
D3	3mm Blue Led

Shopping list

Resistor		
QTY	**Value**	**Position**
1	22k	R19
1	470r	R17
1	47k	R20
1	4k7	R35
1	8K2	R8
3	1k	R7, R10, R30
2	1m	R1, R2
1	2k2	R18
5	33k	R4, R6, R9, R29, R36
6	100k	R16, R21, R22, R23, R33, R34
14	10k	R3, R5, R11, R12, R13, R14, R15, R24, R25, R26, R27, R28, R31, R32

Capacitors		
Qty	**Value**	**Position**
1	47n	C19
1	3n3	C9
1	470n	**C20*****
2	470pf	C3, C4
7	100n	C1, C5, C8, C15, C16, C17, C22
1	100p	C12

Electrolytics		
Qty	**Value**	**Position**
1	100uf	C21
5	1uf	C2, C6, C10, C11, C13
5	10uf	C14, C18, C23, C24, C7

Semi Conductors		
Qty	**Value**	**Position**
1	LM324	IC3
1	**PT2399***	IC2
1	L78L05	REG1
1	TL074	IC1

Diodes		
Qty	**Value**	**Position**
2	3mm Blue Led	D1, D3
1	1N5817	D2

Potentiometers		
Qty	**Value**	**Position**
1	50K B	INTENSITY
1	5k B	DIMENSION
1	25k B	DEPTH
1	2K B	ANIMATION
1	**1M C****	RATE
1	100k A	SHAPE

Components Recommendations

This project must use **PT2399*** from a trusted source such as Das Musikding, Small bear, and many other pedal-related suppliers. DO NOT trust non-verified vendors, as are many counterfeits out there, and they won't work properly on your build.

This board has been tested using Film box capacitors for most of the values over 1nf and ceramics discs for the ones under 1nf. However, high-quality components such as Wima's Capacitors and Panasonic's electrolytics can deliver a better performance.

All the resistors used for testing this project are 1/4W Metal Film.

Rate C 1M**
All the pots are Alpha 16mm. Rate** C 1M is an anti-logarithmic potentiometer; if you have any issue sourcing it, you could try a B 1M lineal potentiometer for a similar functionality.

C20***
Is a no polarized capacitor. However, the silkscreen of some of the versions of the board can indicate that it is polarized.

The BOM and Shopping list are exclusive regarding this project. It doesn't include all the hardware like the 3PDT bypass switch, audio/dc jacks, enclosure, etc.

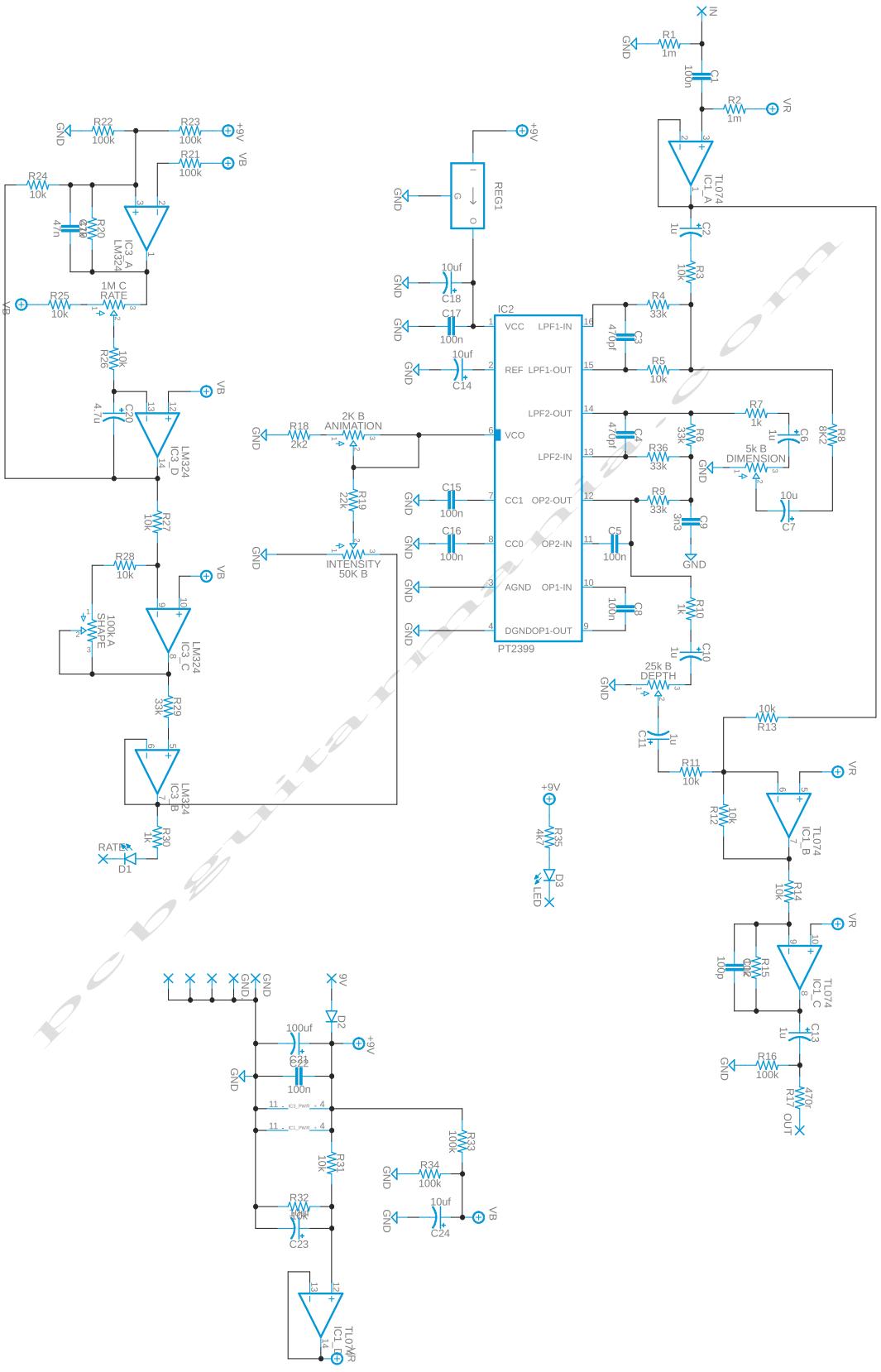
Build Notes

If this is one of your first projects, I recommend you to take a look at our Pedal Building Guide.

For a successful and tidy build, it's recommended the following order:

1. Resistors & diodes
2. Capacitors, starting with the smaller ones and the ceramic ones.
3. Electrolytic capacitors (always check the polarity)
4. Transistors
5. Wires
6. Potentiometers and switches
7. Off-board wiring

Schematic



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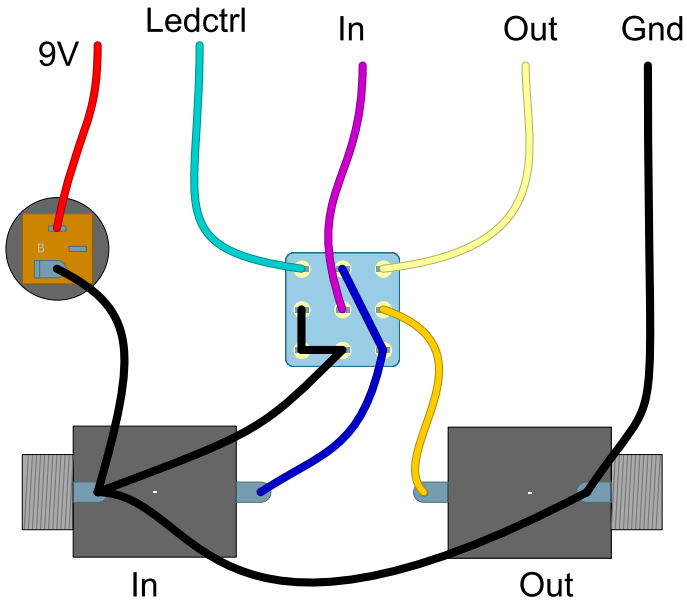
Wiring Diagram

All our projects include a **free 3PDT** Board to make the wiring easier and tidier. Also all of our PCBs feature the status LED on board.

The pad named “Ctrl” or “LED” is the one that controls the status of the led, wire it to the “LED”pad on the 3PDT board, or in control slug of your 3PDT.

You can take a look on the following diagram to understand the general connections. For further information check our Pedal Wiring guide.



Drill Template

This Project has been planned to fit into a 1590bb enclosure type.
Check the Attached “Drilling templates” to drill the box properly. The files are on Scale 1:1, ready to print on an A4 page.

Licensing and Usage

We really appreciate your trust and support in buying this PCB, as well as your will to dive into the DIY electronics world. For us, that's why you can make this project work properly and enjoy not only the building process but also experiment and play with it on your rig.

We try to reply to every question we receive on our email or our social media. Still, we try to encourage all our customers to join our PCB Guitar Mania – Builders Group on Facebook to post all your doubts, issues, suggestions, or requests, share your builds, and have some feedback from other fellow builders and us!

We tested all our projects following this same guide on their standard configurations. Although, not all of the variations and mods have necessarily been checked. These are suggestions based on the schematic analysis and the experiences and opinions of others. Feel free to share with us your views and recommendations regarding the mods your personal experimentation.

These boards may be used for commercial endeavors in any quantity unless expressly noted. No attribution is necessary, though accreditation or a link back is always much appreciated.

If you are a builder planning to make your own run of pedals, we also offer the service of custom-made boards with your brand and logo, design according to your specifications.

The only usage restrictions are that, first, you cannot resell the PCB as part of a kit without prior arrangement with us, and second, you cannot scratch off the silkscreen or other way of trying to hide our logos and the source of the PCBs. Like it's written above, if you want to have your designs with your brand and logo, we could undoubtedly reach an agreement.

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