

Echo Nightmare

Based on:
DBA Echo Dream II
Effect type:
Lo-Fi Delay + Fuzz
Build difficult:
Advanced

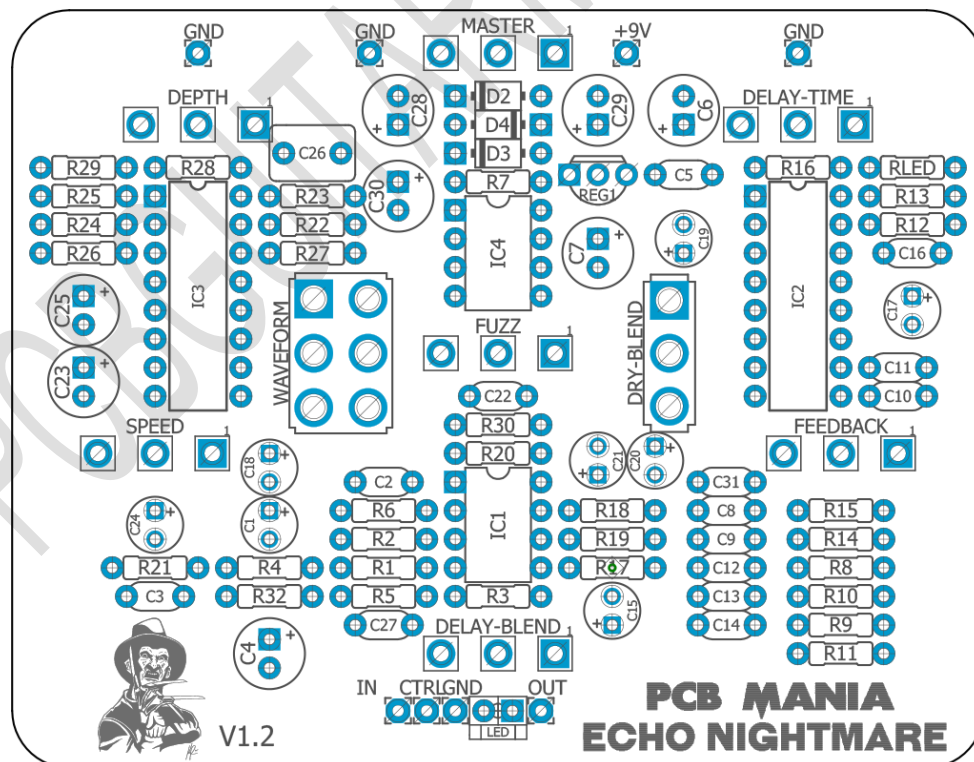
Amount of parts:
High, total 80 components
Technology:
Pt2399 Delay controlled by
XR2206P's LFO
Power consumption:
9V(9mA)

Enclosure type:
1590bb
Get your board at:
[Echo Nightmare](#)
Get your kit at:
[Das Musikding \(Europe\)](#)

Project overview:

The Echo Nightmare is a dream come true for everyone who likes to experiment with lo-fi delays, ambient noises and crazy fuzzes, all in one box. With seven knobs and two switches, we can assure that this is definitely the tweakaholics dream!

This circuit allows you to build such a versatile pedal capable of experimenting with different shape of waveforms, slapback or self-oscillating feedback, you can even use the modulation and fuzz sounds with the delay or on their own, just by flicking the dry switch, making this circuit way more versatile than any other delay pedal.



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Introduction

The circuit of the Echo nightmare is as crazy as the tones it generates, like always, we could not expect less from the people from DBA.

The most interesting part of this circuit is without a doubt the XR2206P IC in charge of changing the shape of the wave, controlling depth and speed of the modulation. Definitely a unique approach for a modulated delay.

Over the original design we included an internal charge pump that provides the XR2206P with 18v for the right functioning.

Controls

Master: Sets the overall volume.

Fuzz: Sets the amount of gain, from clean to fuzzed-out bliss.

Delay Blend: Blend the volume of the delayed signal.

D Time: Controls the delay time (numbers shown in milliseconds) between 20 ms and 1.2 seconds. Long delay times can create flutter, noise, and distortion.

FeedBack: Controls the feedback of the delays, from slapback to wild runaway oscillation.

Speed: Controls how fast the modulator runs.

Depth: Sets how far the modulator will swing the delay time. At high intervals, the pitch of the repeats will shift several semitones!

Waverform Toggle: Up for a smoother modulator waveform, down for a sharp, square-shaped wave.

Dry Toggle: Up for clean blend, down to kill the dry signal and hear only the repeats.

Bill of materials

Resistors	
Part	Value
R1	1K
R2	470K
R3	470K
R4	10K
R5	10K
R6	10K
R7	100R
R8	10K
R9	10K
R10	15K
R11	1K
R12	10K
R13	10K
R14	3K3
R15	10K
R16	10K
R17	10K
R18	390R
R19	8K2
R20	10K
R21	3K6
R22	13K
R23	13K
R24	82K
R25	6K8
R26	6K8
R27	220R
R28	680R
R29	2K7
R30	10K
R32	1M
RLED	4K7

Diodes	
Part	Value
D2	1N5817
D3	1N5817
D4	1N5817

Capacitors	
Part	Value
C2	470p
C3	10n
C5	100n
C8	100n
C9	100n
C10	82n
C11	47n
C12	33n
C13	2n2
C14	10n
C16	2n2
C22	220p
C26	680n
C27	100n
C31	10n

Electrolytics Capacitors	
Part	Value
C1	1u
C4	100u
C6	100u
C7	100u
C15	1u
C17	1u
C18	1u
C19	1u
C20	1u
C21	1u
C23	10u
C24	1u
C25	10u
C28	220u
C29	100u
C30	10u

Potentiometers	
Part	Value
DELAY-BLEND	B100K
DELAY-TIME	A100K
DEPTH	C100K
FEEDBACK	C100K
FUZZ	A1M
MASTER	A100K
SPEED	A1M

Switches	
Part	Value
Waveform	DPDT ON-ON
Dry-Blend	SPDT ON-ON

IC	
Part	Value
IC1	MC33172P**
IC2	XR2206P*
IC3	TC1044SCPA
IC4	PT2399

Shopping list

Resistors		
Qty	Value	Parts
1	100R	R7
12	10K	R4, R5, R6, R8, R9, R12, R13, R15, R16, R17, R20, R30
2	13K	R22, R23
1	15K	R10
2	1K	R1, R11
1	1M	R32
1	220R	R27
1	2K7	R29
1	390R	R18
1	3K3	R14
1	3K6	R21
2	470K	R2, R3
1	4K7	RLED
1	680R	R28
2	6K8	R25, R26
1	82K	R24
1	8K2	R19

Capacitors		
Qty	Value	Parts
4	100n	C5, C8, C9, C27
3	10n	C3, C14, C31
1	220p	C22
2	2n2	C13, C16
1	33n	C12
1	470p	C2
1	47n	C11
1	680n	C26
1	82n	C10

Switches		
Qty	Value	Part
1	DPDT ON-ON	Waveform
1	SPDT ON-ON	Dry-Blend

Electrolytics Capacitors		
Qty	Value	Parts
4	100u	C4, C6, C7, C29
3	10u	C23, C25, C30
8	1u	C1, C15, C17, C18, C19, C20, C21, C24
1	220u	C28

Potentiometers		
Qty	Value	Parts
2	A100K	DELAY-TIME, MASTER
2	A1M	FUZZ, SPEED
1	B100K	DELAY-BLEND
2	C100K	DEPTH, FEEDBACK

IC		
Qty	Value	Parts
1	MC33172P**	IC2
1	TC1044SCPA	IC1
1	XR2206P*	IC4
1	PT2399	IC3

Diodes		
Qty	Value	Parts
3	1N5817	D2, D3, D4

Components Recommendations

As many people like to experiment some pedals with higher voltage, always ensure the max tolerance of your **electrolytic capacitors** is over 25v.

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.

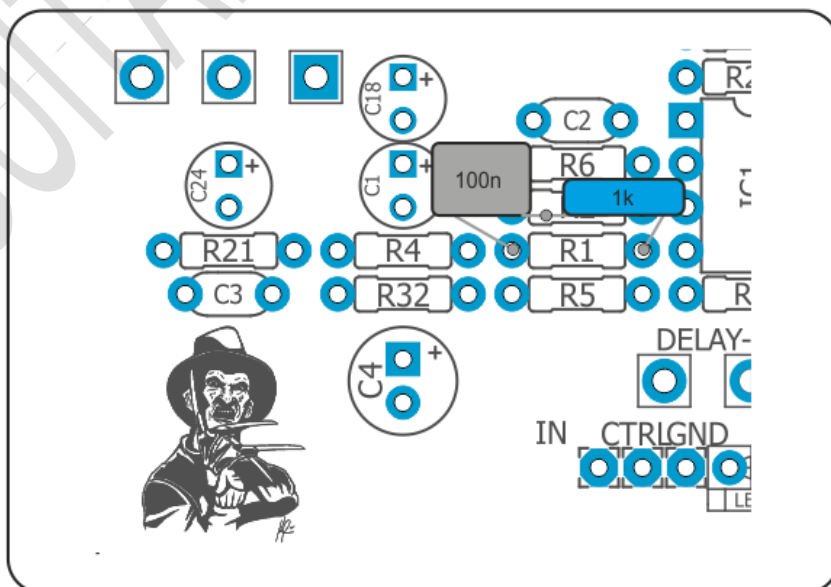
The BOM and Shopping list are exclusively regarding this project. It doesn't include all the hardware like the 3PDT bypass switch, audio/dc jacks, enclosure, etc.

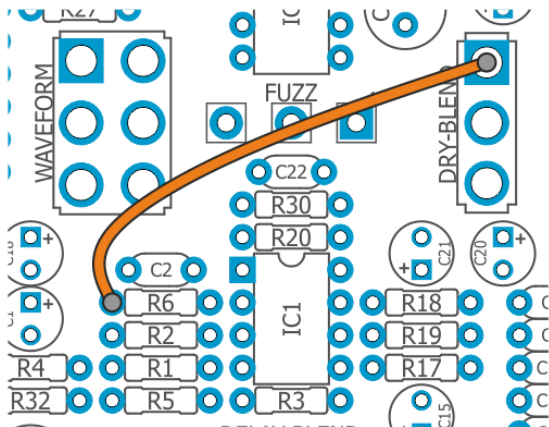
XR2206P* This is definitely a hard to source IC, with many counterfits around that will give you a total headache at the time of building this pedal. Make sure you are using a legit IC from a trusted source.

MC33172P** This is another unobtainable IC, however could be easily replaced by any other Opamp. In our first build we found that NE5532P works the best. However other classic opamps such as TL072 might do the job.

For the first version of the Give away check the diagram Bellow on how to add a couple of fixes to have it working perfectly!

Leave R1 unpopulated and replace it by a 100n Capacitor in series with a 1K resistor as is shown in the graphic. Their legs must be on the same orientation as on the graphic!





The second thing is to wire a cable from R6 to the Dry-blend Switch.

Follow the graphic on the left and solder the wire together with R6 and with the square PAD of the switch.

In order to have it working properly you **MUST** do it exactly as it's on the graphic.

The last thing you have to do to update the beta version from the give away to the current 1v2 version is to reverse the legs of the speed potentiometer. If you are using pcb mounted pots, cut the legs of it and wire it on the opposite way, pin 1 with pad 3, pin 3 with pad 1, and pin 2 with pad 2. If you omit this step your speed knob will work backwards.

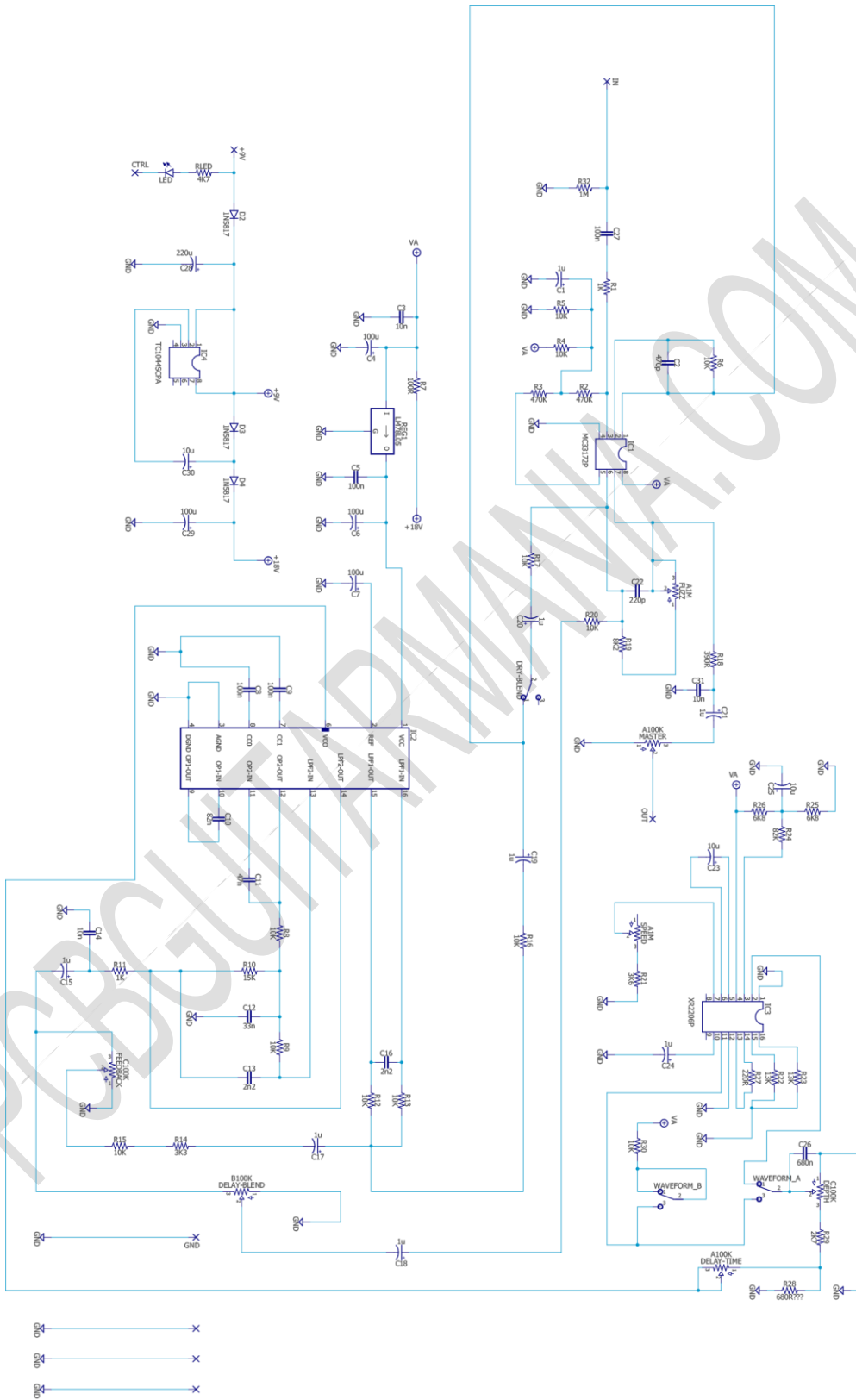
Build Notes

If this is one of your first projects I recommend you to take a look on 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



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.

This board has been designed to match our EZ 3PDT PCB check it [here](#) to access to 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 in an A4 page.

Licensing and Usage

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

We try to reply to every question we receive on our email or in our social media, but we try to encourage all our customers to join our [PCB Guitar Mania – Builders Group](#) on Facebook, in order to post all your doubts, issues, suggestions or request, as well to share your builds and have some feedback from us and other fellow builders!

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

These boards may be used for commercial endeavors in any quantity unless specifically noted. No attribution is necessary, though accreditation or a link back is always greatly 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 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 silk screen, 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 own designs, with your brand and logo we could certainly reach an agreement.

Follow us on [Instagram](#) and [Facebook](#) to stay in tune with the latest projects!