

ShoeMan

Based on:

Schumann PLL One

Effect type:

Analog Fuzz harmonizer

Build difficult:

Advanced

Number of parts:

High, total 81 components

Technology:

Operational Amplifiers and CMOS

Power consumption:

9V

Enclosure type:

1590bb

Get your board at:

[Shoeman](#)

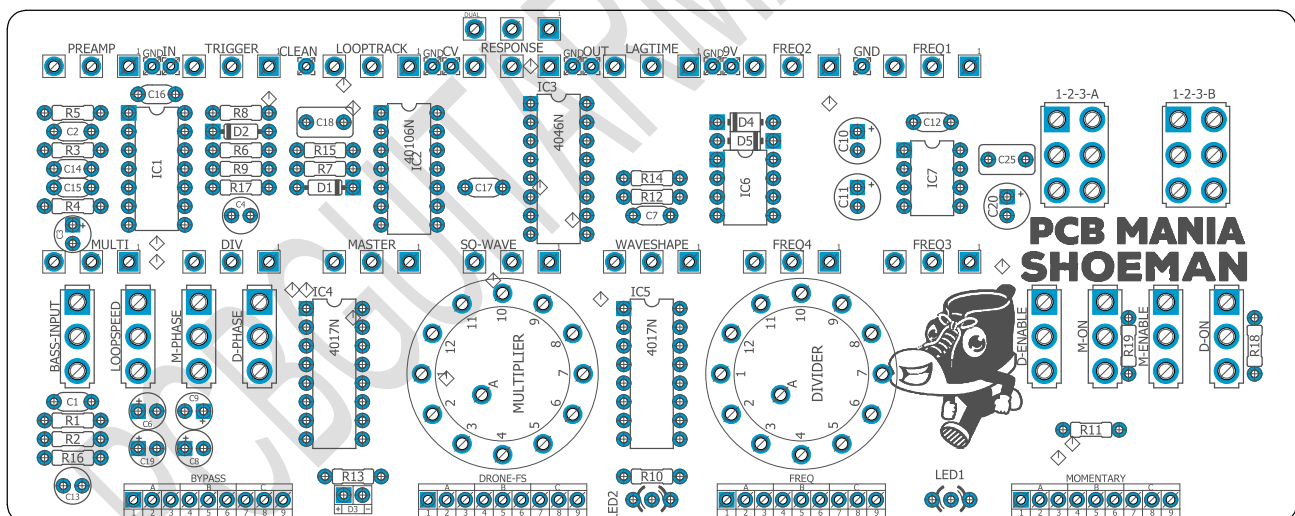
Get your kit at:

[Das Musikding \(Europe\)](#)

Project overview:

Shoeman is one of the coolest, rarest, and most sought effects pedals ever made. This absolute unit of pure genius is full of more options than any pedal probably should have.

An analog harmonizer that turns your input signal into a square wave and then launches it through a multiplier and divider that adds intervals to your note, sending your signal into the far reaches of space and beyond.



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Introduction

This crazy analog fuzz harmonizer turns your guitar or any other instrument into a badass chord machine that allows control over each voice independently with specific knobs. Plus, the Looptrack control lets you decide just how accurately it follows your playing. And the best part? The controls are super interactive with each other, making for some seriously cool sound experimentation.

I've been playing around with mine ever since it was created, and let me tell you, this thing has limitless potential. I mean, with 14 potentiometers and 16 switches, you can create an infinite amount of sounds and chord combinations. And the best part is, the more you play with it, the more you discover just how versatile it is. It's like a never-ending journey of sound exploration; the possibilities are truly endless.

Controls

Potentiometers

- Div
- Freq1
- Freq2
- Freq3
- Freq4
- Lagtime
- Looptrack
- Master
- Multi
- Preamp
- Response
- SQ-Wave
- Trigger
- Waveshape

Switches

- D-On
- M-ON
- M-ENABLE
- D-ENABLE
- M-PHASE
- D-PHASE
- BASS-INPUT
- Loopspeed
- 1-2-3 A
- 1-2-3 B
- Freq
- DRONE-FS
- Momentary
- BYPASS
- Multiplier
- Divider

Bill of materials

| Resistors | |
|-----------|-------|
| Part | Value |
| R1 | 150k |
| R2 | 10k |
| R3 | 1k |
| R4 | 200k |
| R5 | 1m |
| R6 | 10k |
| R7 | 10k |
| R8 | 10k |
| R9 | 100k |
| R10 | 4k7 |
| R11 | 4k7 |
| R12 | 1m |
| R13 | 4k7 |
| R14 | 10k |
| R15 | 10k |
| R16 | 1m |
| R17 | 150k |
| R18 | 1m |
| R19 | 1m |

| Capacitors | |
|------------|-------|
| Part | Value |
| C1 | 10p |
| C2 | 47p |
| C7 | 10n |
| C12 | 100n |
| C14 | 100p |
| C15 | 220n |
| C16 | 100n |
| C17 | 20n |
| C18 | 470n |
| C25 | 470n |

| Electrolytic Capacitors | |
|-------------------------|------------|
| Part | Value |
| C3 | 10u |
| C6* | 470n - 10u |
| C8 | 2u2 |
| C9 | 2u2 |
| C10 | 100u |
| C11 | 10u |
| C19 | 33u |
| C20 | 47u |

| Non-polarized Capacitors | |
|--------------------------|-------|
| Part | Value |
| C4 | 10u** |
| C13 | 10u** |

| Potentiometers | |
|----------------|-------------|
| Part | Value |
| DIV | 100K A |
| FREQ1 | 1M B |
| FREQ2 | 1M B |
| FREQ3 | 1M B |
| FREQ4 | 1M B |
| LAGTIME | 10K B |
| LOOPTRACK | 500K A |
| MASTER | 100K A |
| MULTI | 100K A |
| PREAMP | 10K A |
| RESPONSE | 1M B Stereo |
| SQ-WAVE | 100K A |
| TRIGGER | 10K B |
| WAVESHAPE | 250K B |

| Switches | |
|----------|------------|
| Part | Value |
| D-ON | SPDT On-On |
| M-ON | SPDT On-On |

| | |
|-------------------|-----------------------------------|
| M-ENABLE | SPDT On-On |
| D-ENABLE | SPDT On-On |
| M-PHASE | SPDT On-On |
| D-PHASE | SPDT On-On |
| BASS-INPUT | SPDT On-On |
| Loopspeed | SPDT On-Off-On |
| 1-2-3 A | DPDT On-On-On Type 1 |
| 1-2-3 B | DPDT On-On-On Type 1 |
| FREQ | 3PDT On-On |
| DRONE-FS | 3PDT On-On |
| Momentary | 3PDT Momentary non latching On-On |
| BYPASS | 3PDT On-Off |
| Multiplier | 1P12t set to 8 positions |
| Divider | 1P12t set to 8 positions |
| - | 3PDT Stomp foot |
| - | 3PDT Stomp foot |
| - | 3PDT Stomp foot |
| - | 3PDT Stomp foot |

| IC | |
|------------|--------|
| Part | Value |
| IC1 | TL074 |
| IC2 | 40106N |
| IC3 | 4046N |

| | |
|------------|------------|
| IC4 | 4017N |
| IC5 | 4017N |
| IC6 | TL072 |
| IC7 | TC1044SCPA |

| Diodes | |
|---------------|-------------------------|
| Part | Value |
| D1 | 1N4001 |
| D2 | 1N4001 |
| D3 | 3mm LED |
| D4 | 1n5817 |
| D5 | 1n4742 |
| LED1 | Dual LED Common Cathode |
| LED2 | Dual LED Common Cathode |

| Jacks | |
|--------------|------------|
| Part | Value |
| - | DC Jack |
| - | Audio Jack |
| - | Audio Jack |

Shopping list

| Resistors | | |
|-----------|-------|--------------------------|
| Qty | Value | Parts |
| 1 | 100k | R9 |
| 6 | 10k | R2, R6, R7, R8, R14, R15 |
| 2 | 150k | R1, R17 |
| 1 | 1k | R3 |
| 5 | 1m | R5, R18, R12, R16, R19 |
| 1 | 200k | R4 |
| 3 | 4k7 | R10, R11, R13 |

| Capacitors | | |
|------------|-------|----------|
| Qty | Value | Parts |
| 2 | 100n | C12, C16 |
| 1 | 100p | C14 |
| 1 | 10n | C7 |
| 1 | 10p | C1 |
| 1 | 20n | C17 |
| 1 | 220n | C15 |
| 2 | 470n | C18, C25 |
| 1 | 47p | C2 |

| Electrolytic Capacitors | | |
|-------------------------|------------|------------------|
| Qty | Value | Parts |
| 1 | 100u | C10 |
| 4 | 10u | C3, C4, C13, C11 |
| 2 | 2u2 | C8, C9 |
| 1 | 33u | C19 |
| 1 | 470n - 10u | C6* |
| 1 | 47u | C20 |

| Non-polarized Capacitors | | |
|--------------------------|-------------------|---------|
| Qty | Value | Parts |
| 2 | 10u non-polarized | C4, C13 |

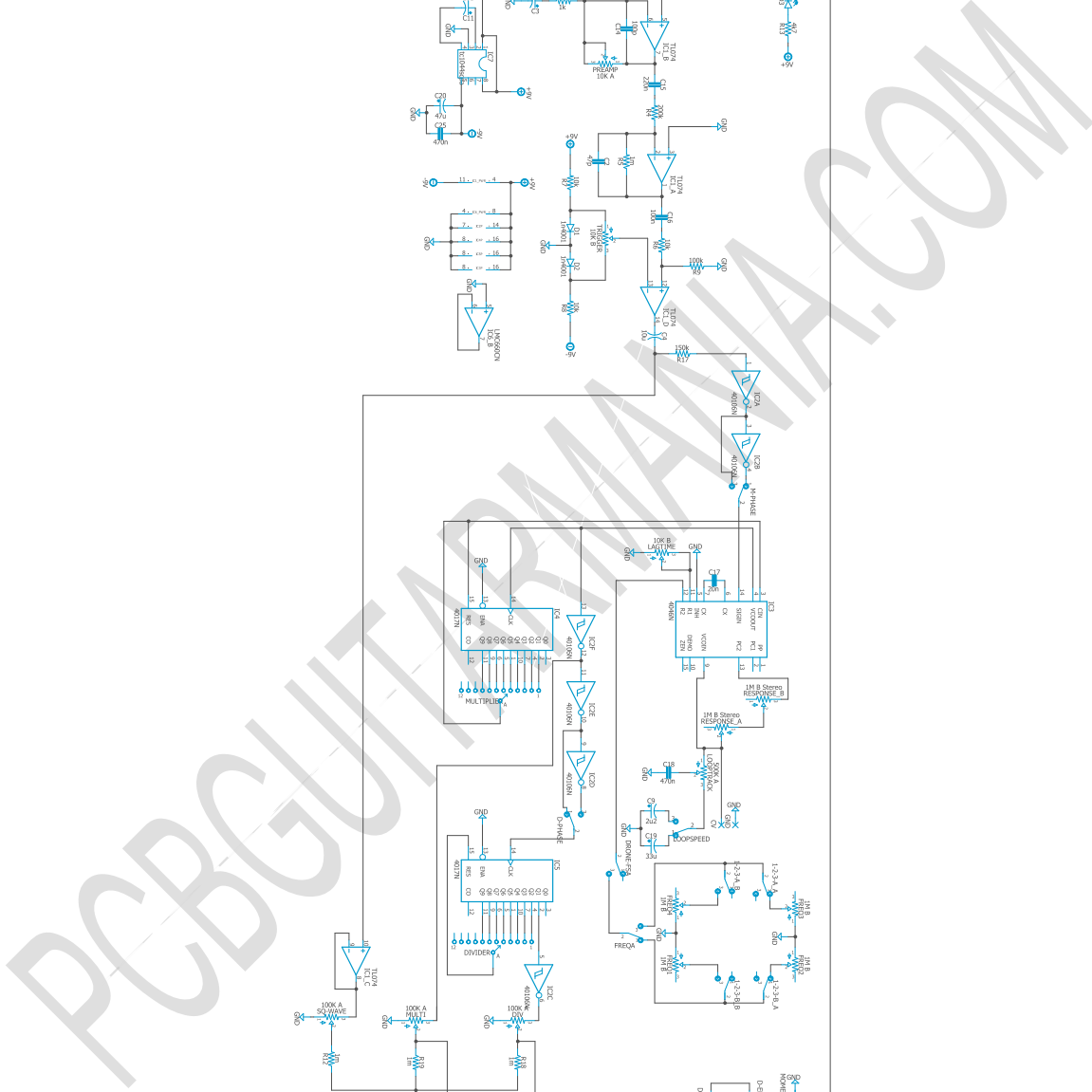
| Potentiometers | | |
|----------------|-------------|-----------------------------|
| Qty | Value | Parts |
| 4 | 100K A | DIV, MASTER, MULTI, SQ-WAVE |
| 1 | 10K A | PREAMP |
| 2 | 10K B | LAGTIME, TRIGGER |
| 4 | 1M B | FREQ1, FREQ2, FREQ3, FREQ4 |
| 1 | 250K B | WAVESHAPE |
| 1 | 1M B Stereo | RESPONSE |
| 1 | 500K A | LOOPTRACK |

| Switches | | |
|----------|-----------------------------------|--|
| Qty | Value | Parts |
| 7 | SPDT On-On | D-ON, M-ON, M-ENABLE, D-ENABLE, M-PHASE, D-PHASE, BASS-INPUT |
| 1 | SPDT On-Off-On | Loopspeed |
| 2 | DPDT ON-ON-ON Type 1 | 1-2-3 A, 1-2-3 B |
| 2 | 3PDT On-On | FREQ, DRONE-FS |
| 1 | 3PDT Momentary non latching On-On | Momentary |
| 1 | 3PDT On-Off | BYPASS |
| 2 | 1P12t set to 8 positions | Multiplier, Divider |
| 4 | - | 3PDT Stomp foot |

| IC | | |
|-----|------------|----------|
| Qty | Value | Parts |
| 1 | 40106N | IC2 |
| 2 | 4017N | IC4, IC5 |
| 1 | 4046N | IC3 |
| 1 | TL072 | IC6 |
| 1 | TL074 | IC1 |
| 1 | TC1044SCPA | IC7 |

| Diodes | | |
|--------|---------|--------|
| Qty | Value | Parts |
| 2 | 1N4001 | D1, D2 |
| 1 | 1n4742 | D5 |
| 1 | 1n5817 | D4 |
| 1 | 3mm LED | D3 |

| Jacks | | |
|-------|-------------|-------|
| Qty | Value | Parts |
| 1 | DC Jack | - |
| 2 | Audio Jacks | - |



Components Recommendations

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

This board has been tested using Film box capacitors for most of the values over 1nf and ceramics discs for those 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 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

C6*

It is a capacitor added in later PLL units. The "CON" switch engages this capacitor, allowing the unit to function better with lower frequency inputs. Reports from two different units have this value at 1uF, and 10uF. Conduct tests to find the value that suits your operation.

C4 & C13**

Both are non-polarized capacitors, which means that it does not matter the direction you place them on the PCB.

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 the control slug of your 3PDT.

This board has been designed to match our EZ 3PDT PCB; check it [here](#) to access our [Pedal Wiring Guide](#).

Drill Template

This Project has been planned to fit into a 1590dd 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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