

MORE ROAR! DIY Version Doc - JR 25/5/25

MORE ROAR! is an entropic synthesiser and degenerative artwork.

The more you play it, the more its sounds degrade, become re-ordered. Every restart, a different rate of degradation. 'Raw' sound weathered into noise and silence.

MORE ROAR! is a collaboration between Dirty Electronics and Agnes Cameron with printed circuit board artwork by Tellamont.

It builds on Dirty Electronics' work of creating sound inside electronics and code, and low-level electronic music projects. The DIY version explores freeform and prototypic methods of construction and is built from a range of materials: wood, nails, wire, and electronic components.

It is a DIY wavetable synth and noise circuit using the STM32 family of microcontrollers. The resulting sounds can also be interacted with by touching the nails of the device.

See MORE ROAR! Guide for further details.

The programs are selected with a 'Silly Switch' (wire to positive voltage/pull-up).

There are 2 analogue inputs. These typically control frequency and modulation but take on different functions per program. The Touch controls can be omitted or used with an alternative analogue input. The analogue input should match the VDD (3v), although the input is 5v tolerant.

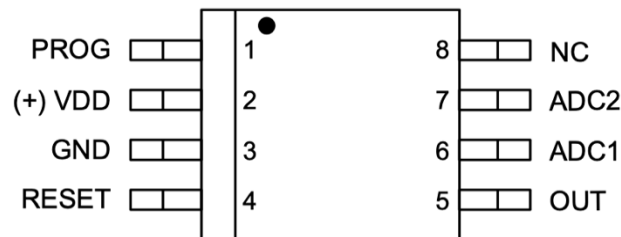
RESET (pin 4) is internally wired to VDD (3v).

Designed for battery power 3 volts (2 x AAA).

A SOP8 to DIP8 adaptor is used for wire and nail construction (see Dirty Electronics Bed of Nails and derivatives).

A dialogue between John Richards (Dirty Electronics) and Agnes Cameron is included in the code as a header file: (ROAR_DIY_25_5_25/Core/Inc/dialogues.h). This file may be read in any text editor.

PIN I/O



NOTES

Code download

https://www.dirtyelectronics.org/docs/ROAR_doc.zip

Programming the chip/build version

STM32G031J6M6

CPU ARM Cortex-M0+

SOP8 package

IDE

STM32CubeIDE v. 1.15.1

STM32CubeProgrammer v. 2.16.0

Programmer

ST-LINK/V2 programmer built-in to the NUCLEO-G031J6 board (STM32G0316-DISCO - Discovery kit). See other available development boards and/or ST-LINK/V2 programmer or clones.

Arduino ready

The chip can be programmed using the Arduino IDE and a programmer/development board (*note current code will need to be adapted to compile with Arduino IDE).

See core support

https://github.com/stm32duino/Arduino_Core_STM32

<https://community.st.com/t5/stm32-mcus/how-to-program-and-debug-the-stm32-using-the-arduino-ide/ta-p/608514>

Website dedicated to Arduino for STM32

<https://www.stm32duino.com/>

Hardware

Where to buy components/tools

<https://www.farnell.com/>

<https://www.rapidonline.com/> (UK)

DIY DAC/RC Filter

<https://www.changuak.ch/electronics/PWM-to-DC-Lowpass-Calculator.php>

<https://www.digikey.co.uk/en/resources/conversion-calculators/conversion-calculator-low-pass-and-high-pass-filter>

See ROAR schematic for DIY circuit construction.

More stuff

Playlist/listening

Some noisy patterns, data stuff, code, and microcomputer music

Spotify

<https://open.spotify.com/playlist/5DisfEOOL0KDHMCfegew1y>

Soundcloud

<https://soundcloud.com/dirty-electronics/sets/radical-nails>

References

DDS - direct digital synthesis resources/PWM DAC

<https://www.analog.com/media/en/training-seminars/tutorials/MT-085.pdf>

Arduino based DDS (good place to start for programming microprocessors)

<https://hackaday.com/2016/02/12/embed-with-elliott-audio-playback-with-direct-digital-synthesis/>

See Dirty Electronics examples:

https://www.dirtyelectronics.org/docs/DDS_Arduino.zip

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Bowers, J., Richards, J. et al (2023). Raw Data, Rough Mix: Towards an Integrated Practice of Making, Performance and Pedagogy. *New Interfaces for Musical Expression (NIME) Conference Proceedings*.

Bowers, J., Richards, J. et al (2016). One Knob To Rule Them All: Reductionist Interfaces For Expansionist Research. *New Interfaces for Musical Expression (NIME) Conference Proceedings*.

Dirty Electronics (2024). *Bed of Nails*.

https://www.dirtyelectronics.org/docs/Bed_of_Nails.zip

Richards, J. (2018) Speculative Sound Circuits. *EVA Copenhagen 2018 - Politics of the Machines - Art and After*, EVAC18.33.

Richards, J & Wainwright, W. (2019). *Microcomputer Music*. Originally published as two-colour A2 risograph poster in January 2019 on 120gsm Fluweel paper together with the Radical Chip. Edition of 125.

https://www.dirtyelectronics.org/docs/microcomputer_music.pdf