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# Riscufefe #5 badge repo

Some howto’s below.

# The GLITCHIFIER9000 in a nutshell

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| Figure 1: What is voltage glitching? |

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| Figure 2: Normal operation |

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| Figure 3: While glitching |

Check out the schematics [in this repo](https://github.com/inconspicuous-username/Glitchifier9000/blob/main/hardware/pdf/Glitchifier9000-sch.pdf) for more information!

NOTE: The trigger input is currently set to the button for demo purposes, the use a different pin you have to modify [this line](https://github.com/inconspicuous-username/Glitchifier9000/blob/main/firmware/upython/badge/glitchifier9000.py#L32).

# Hardware DIY instructions

## Minimal badge functionality

To get minimal badge functionality:

1. Solder C3, C4

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1. To protect your PICO from having battery and USB power at the same time, solder Q1:

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1. To be able to switch off the batteries, solder SW1:

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1. Attach the screen to the front:

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1. Attach the AAA battery holder to the back:

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1. Insert 2xAAA batteries:

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You should now be able to see stuff on the screen, and you can interact over USB / serial.

## Button controls

To control the badge with the button:

1. Solder the 10 (3, 2, 3, 2) points of the button at SW1:

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You should now be able to use the botton.

## GLITCHIFIER9000

To add GLITCHIFIER9000 functionality:

1. Solder R2

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1. Solder unlabeled SOT8 MOSFET:

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Ready to glitch!

# Talk to the badge over USB

1. Plug in micro-usb cable.

Ready to talk!

## On Windows

1. Install a program to talk serial, like [putty](https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html)

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1. Find the COM port that pops up when you plug in the USB cable in device manager

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1. Set up that COM port with speed 115200

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1. Type some buttons, see what happens (also try CTRL+C and CTRL+D)

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Ready to talk!

## On Linux

1. You probably know yourself

# Set up badge firmware on a plain Raspberry Pi Pico

Set up PICO for badge

1. Set up micropython firmware
   * Boot RPI into bootloader mode (hold BOOTSEL button and plug in USB)
   * Copy micropython uf2 file to storage device (download yourself or located in firmware/upython/rp2-firmware/rp2-pico-latest.uf2)
2. Copy firmware folder to device, for example with [mpytool](https://github.com/pavelrevak/mpytool)
   * mpytool -p SERIALPORT put firmware/upython/badge/

To do stuff over serial, connect with SERIALPORT, baudrate 115200.

# Misc

To build this document in to various formats:

quarto render README.qmd --to pdf && \  
quarto render README.qmd --to html && \  
quarto render README.qmd --to docx && \  
quarto render README.qmd --to gfm