PicoStrip

Pico 2 on a stripboard. Stripboard size is 36 strips x 35 holes.

This is very much an experiment to see how practical it is to build a good PicoMite setup on stripboard and fitting into an easily available commercial enclosure. It's probably not very cost-effective. If I buy a pack of five custom FR4 PCBs 100mm x 100mm from JLCPCB it usually costs about £4.00 including taxes and postage from China. At the time of writing (May 2025) cheap 35 strip x 50 holes SRBP stripbioards from ebay are £6.99 for 5. FR2 100mmx 100mm strip boards are £6.99 each.

Yes, it's possible. No, I don't think I'd recommend it purely on cost grounds. If you love working with stripboard though (Hello Stan!), it might be worth having a go.

Specifications:

Uses PICO 2 DVI video output I2S audio with 3.5mm line output jack socket micro SD card RTC with built-in battery PS2 keyboard socket (can optionally be wired to include PS2 mouse connections if you use a splitter cable) USB-C power input (and console connection if a serial console is used). Pico USB is powered, so an external USB hub can be used. IR detector Fits the Hammond RM2015S case

I have made no attempt to make the Pico USB port available from outside the enclosure. I don't really think it's necessary once the system is up and running, and it's easy enough to take the top off the enclosure if you need to. Rotating the board through 90 degrees would have made most of the connectors impossible to use. I was deliberately avoiding pad board.

Please feel free to mangle this design in any suitable stripboard manner. :)

Configuration:

OPTION HDMI PINS 2,5,7,0 OPTION KEYBOARD DISABLE OPTION KEYBOARD PINS GP20, GP21 OPTION SYSTEM I2C GP2, GP3 OPTION RTC AUTO ENABLE OPTION AUDIO I2S GP0, GP5 OPTION SDCARD GP6, GP10, GP7, GP11

GPIO list:

GP0 - BCK - PCM5102 GP1 - LCK GP5 - DIN GP2 - SDA - RTC GP3 - SCL GP6 - CS - SD CARD GP7 - MOSI GP10 - CLK GP11 - MISO GP8 - CONSOLE TX GP9 - CONSOLE RX GP12 - TX2+ - HSTX0 GP13 - TX2- - HSTX1 GP14 - TXC+ - HSTX2 GP15 - TXC- - HSTX3 GP16 - TX0- - HSTX4 GP17 - TX0+ - HSTX5 GP18 - TX1- - HSTX6 GP19 - TX1+ - HSTX7

GP20 - PS2 DAT - Keyboard GP21 - PS2 CLK

GP22 - IR detector

GP28 - Red section of LED D1

GP4 - isolated - not available at all GP26 - spare GP27 - spare

Notes:

Pull out socket pins 3, 6 and 35 of the Pico socket as these have no connection.

Components are generally what I usually use.

You need the Adafruit DVI breakout module.

The PS2 centre earth pin should be cut off and the pins bent out a bit to fit 2.54mm pitch. Note that there are mid-hole track cuts under this socket.

The PS2 socket is connected to all four channels of the level shifter. The unused channels could be linked

to GP26 and GP27 for a PS2 mouse. Mouse DAT is on LV3, and CLK on LV4.

The SD card socket is the "inverted" sort with built-in capacitors.

I've included the 3.5mm square-type jack because the socket on the PCM5102 doesn't project past the

edje of the PCB. The seperate jack allows just a bit of projection.

I couldn't find a suitable PCB-mounted side-actuated button for Reset, so use the outer pins of the 3-pin header for whatever you have.

There are no pullup resistors on the I2C pins. The specified RTC has built-in resistors which should be adequate with only a single device on extremely short connections. If you want to extend the I2C bus you may have to add resistors.

5V input is on VBUS so don't power via both sockets at the same time. This allows use of a separate USB hub connected to the Pico if you wish.

The PCB link between the USB-C converter and VBUS could be replaced by a power switch in this case as there

are no 5V signals applied to any GPIO pins.

Unless you can get FR4 or similar stripboard it's going to be a bit delicate. I'd suggest that U1 & U4

are mounted using only male pin headers (no sockets) and stuck to the board using one or two foam pads

prior to soldering. This should keep some of the strain off the connections to the copper strips. U5 could also be stuck down with a pad, but it probably doesn't need it as there is no external cable on it.

Red links are +5 or +3V3 Brown links are GND Green links are on top of board Yellow links are either under the board or between the pins of the Pico socket, in which case use something like wire wrap or Kynar wire.

The design includes drawings for the front and rear panels. If printed out at full size they can be glued onto card or similar. They can also be made as PCBs (but be aware that they are a little more expensive

than you may expect as they are not available on special offer at JLCPCB). They can also be used as full

size templates for cutting the panels supplied with the enclosure.Dimensions are based on using just male

pins to mount U1, U4 and U5. U5 has the socket nect to the stripboard so if you think it needs additional support

double sided tape would be suitable.