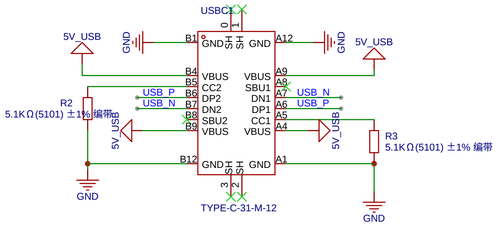
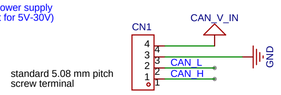
Connectors

USB C In



CAN Bus / PWR In

External power supply
(laying out for 5V-30V)

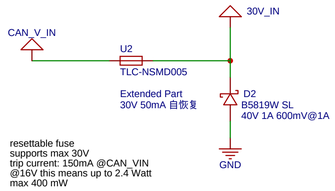


standard 5.08 mm pitch
screw terminal

DB128V-5.08-4P-GN-S
Extended Part

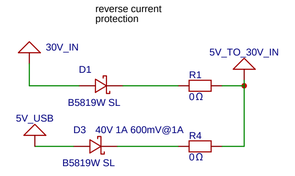
Power Supply

CAN PWR:
short and reverse polarity protection



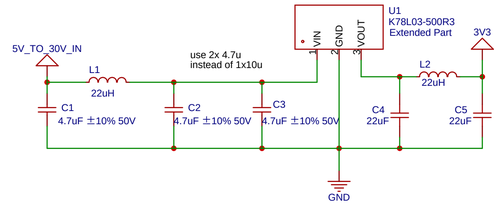
resettable fuse
supports max 30V
trip current: 150mA @CAN_VIN
@16V this means up to 2.4 Watt
max 400 mW

Power or-ing:
USB XOR external power



0 Ohm resistors,
to shut one power off completely
and as testpoints

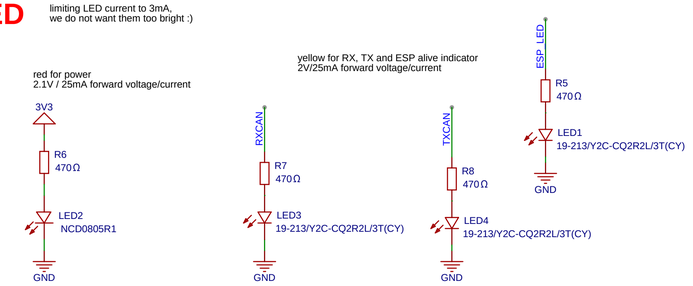
4.5V-30V to 3V3



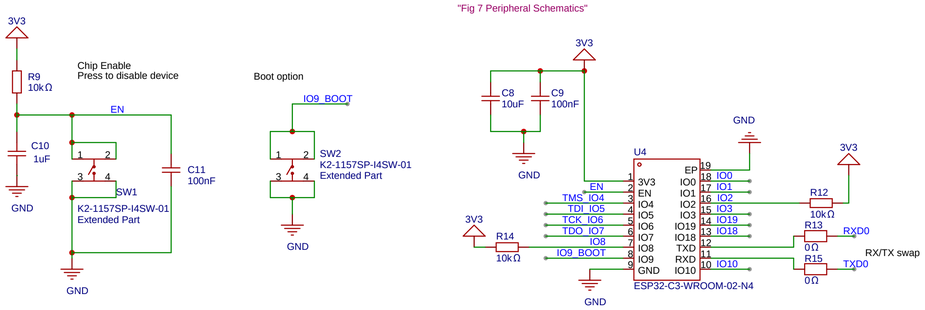
WARNING: UNFINISHED, UNPRODUCED, UNTESTED !

LED

limiting LED current to 3mA,
we do not want them too bright :)

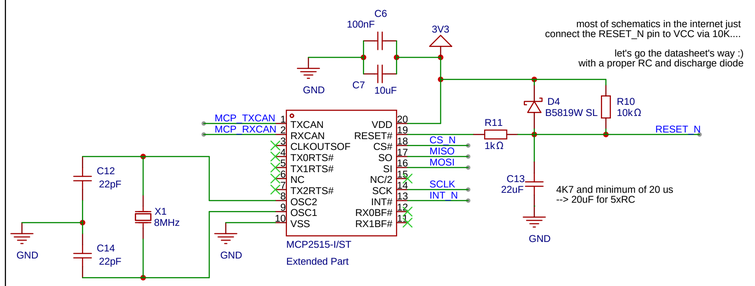


ESP32 as System on Module C3-Mini



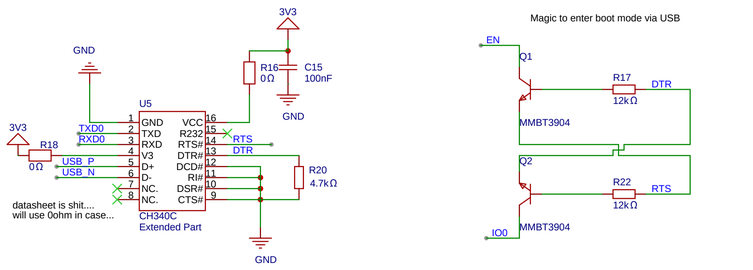
see https://www.espressif.com/sites/default/files/documentation/esp32-c3-wroom-02_datasheet_en.pdf
"Fig 7 Peripheral Schematics"

CAN Controller



USB to Serial

V3	POWER	Connect to VCC to input external power when 3.3V power supply, connect to 0.1uF decoupling capacitor when 5V power supply

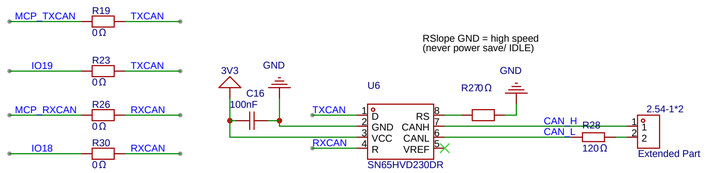


Magic to enter boot mode via USB

The DTR# pin of CH340 is used as a configuration input pin before the USB configuration is complete. An external 4.7KΩ pull-down resistor can be connected with this pin to generate default low level during USB enumeration, apply larger supply current to the USB bus via the configuration descriptor.

3V3 CAN transceiver

Assembly options to bypass the CAN controller
and use the CAN transceiver directly



optional 120 Ohm termination
via Jumper.

Only required, if the bus is not
terminated, yet on BOTH sides.

Leave open, if this device
is added to an existing system.

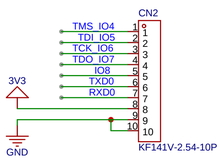
The CAN Bus of my Tecalor TTF 07 cool heatpump operates at 5V.

Fortunately, CAN supports a mixed 3V3 and 5V operation:
https://www.analog.com/en/technical-articles/can-bus-transceivers-operate-from-33v-or-5v-and-withstand-60v-faults.html
(Analog.com is a well-established manufacturer. They know what they are publishing!)

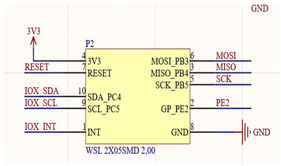
--> This means we can use a 3V3 transceiver and can be on the same 3V3 powerrail as the ESP. No need to go to 5V

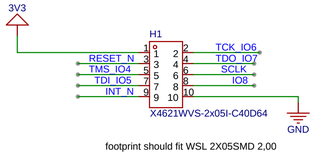
External GPIO

some GPIO to spring connector



2x5 pol 2mm Mysensors wired Connector
(want to re-use the board for other projects)





footprint should fit WSL 2X05SMD 2,00

Schematic		Update Date	2023-03-17
		Create Date	2023-03-07
Page	ESP_CAN	Part Number	
Drawed	Martin Kaiser	ESPHome_Heatpump_CAN	
Reviewed	-		
		VER	V0.1
		SIZE	A3
		PAGE	OF 1

EasyEDA