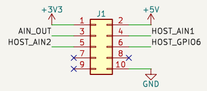
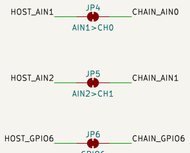
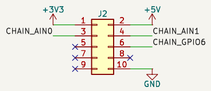
01 / GADGETEER A SOCKET (HOST, J1), CHAIN SHIFT JUMPERS JP4..JP6 AND CHAIN SOCKET (J2)



GADGETEER A IN

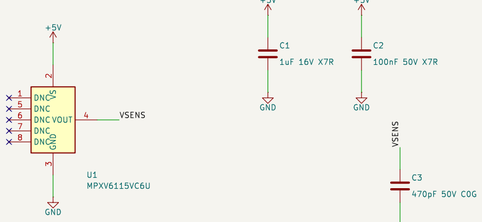




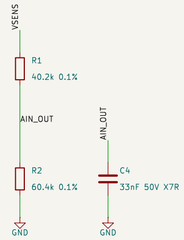


GADGETEER A CHAIN

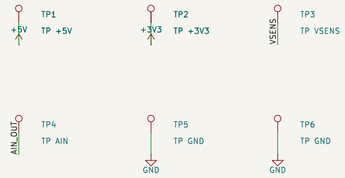
02 / MPXV6115VC6U VACUUM SENSOR AND VS BYPASS (C1 1 uF, C2 100 nF), VOUT CAP C3 470 pF



03 / OUTPUT DIVIDER R1/R2 + C4 (k = 0.6004)



04 / BOTTOM TEST PADS (TP3, TP4: OBSERVE ONLY)



QUALIFICATION AND INTERFACE NOTES

Pin map D1 (CLAUDE.md type A row): J1 1 +3V3, 2 +5V, 3 AIN_OUT (GI), 4 AIN (G), 5 AIN, 6 GPIO, 7–9 [UN] not connected, 10 GND.

Chain shift: J2.3 <– J1.4 (JP4), J2.4 <– J1.5 (JP5), J2.5 open, J2.6 <– J1.6 (JP6); pins 1, 2, 10 direct; 7–9 not connected. J1 pin 3 is consumed locally, never forwarded.

JP4, JP5, JP6 ship BRIDGED (cut the copper strip to isolate). A downstream board therefore sees host AIN1 on its pin 3, AIN2 via the second board.

Divider: AIN = VSENS x R2/(R1+R2), k = 60.4/(40.2+60.4) = 0.6004; worst case Vs 5.25 V saturated output gives 3.155 V (< 3.3 V); P = 0 at Vs 5.0 V gives 2.76 V: –115 kPa gives 0.12 V.

Transfer function: Vout = Vs x (0.007652 x P + 0.92). P in kPa (negative for vacuum). P = (V_ain / (k x Vs) – 0.92) / 0.007652 after a zero reading at open port.

Fault window (firmware policy): AIN below 0.05 V = unpowered/missing/shorted sensor (R2 pulls the node to GND); 0.05–2.95 V valid; 2.95–3.16 V over-range or positive pressure.

U1 pins 1, 5, 6, 7, 8 are DNC: never connected to any net or to GND (datasheet). No-connect flags placed. Vacuum goes to the top port P1; keep the area under the body clear (back vent P2).

Assumption A-port: output falls with vacuum (4.6 V at 0 kPa, 0.2 V at –115 kPa); the Rev 4.0 prose is ambiguous – bench check. Divider is safe in either polarity.

Open checklist items S051 (current limit on J2 forwarded rails) and S052 (ESD protection on lines leaving the board) are OPEN. no parts in v03. Host header pinout (wiki pin 8 = 5 V / pin 9 = 3.3 V) needs a continuity check before first power.

DRY FILTERED AIR ONLY. Vacuum use only, Pmax 400 kPa. NO HOT-PLUG. Assembled variant: PRESS-A v11 std. CERN-OHL-S-2.0 | KiCad only | black mask, white silkscreen | v03 study, not built or tested.

PRESSURE LIMITS: 400kPa is the inherited absolute rating, not an allowed operating pressure. Use only the qualified vacuum range/media/fitting.

ELECTRICAL LIMITS: host allocation, chain ampacity, hot insertion, MCU injection, output protection and actual sensor identity remain unqualified.

v11 study: physical qualification pending
Generated from design-contract.json by tools/create_schematic.py
MPXV6115VC6U vacuum sensor, 0..–115 kPa, analogue on Gadgeteer type A socket
Smoothieware / CERN-OHL-S-2.0

Sheet: /
File: pressure-sensor.kicad_sch

Title: Smoothie pressure (vacuum) sensor board

Size: A2	Date: 2026-10-01	**Rev: v19**
KiCad E.D.A. 9.0.8		Id: 1/1