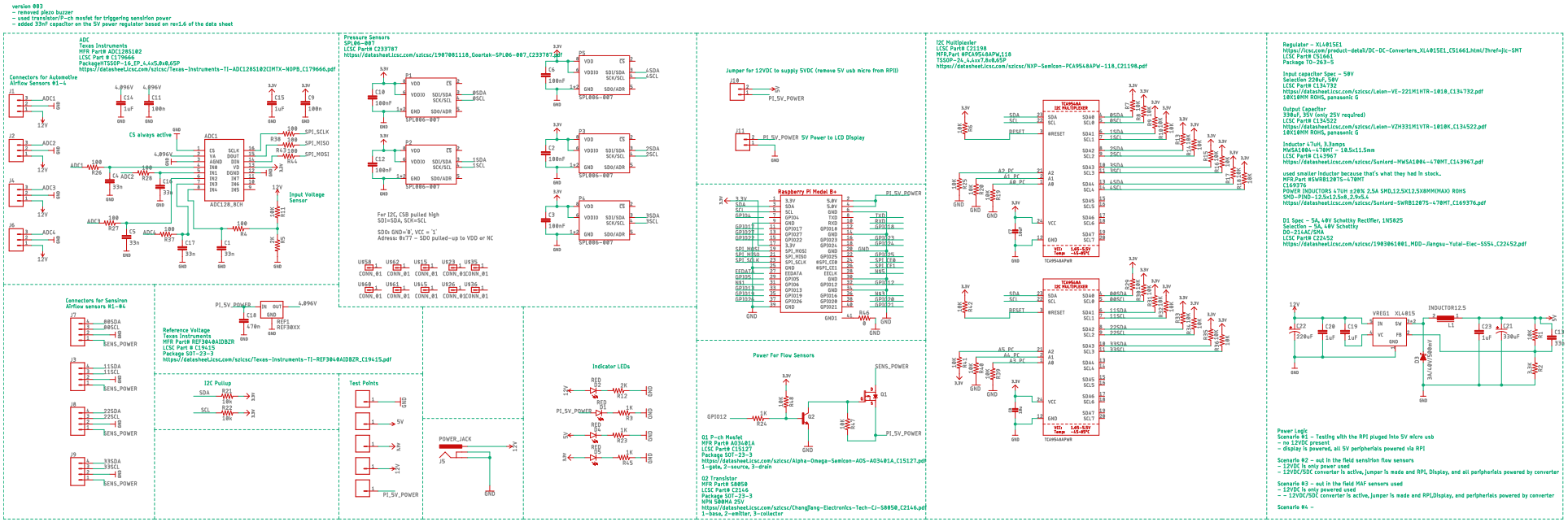
version 003
– removed piezo buzzer
– used transistor/P-ch mosfet for triggering sensirion power
– added 33nF capacitor on the 5V power regulator based on rev1.6 of the data sheet
ADC
Texas Instruments
MFR Part# ADC128S102
LCSC Part # C179666
Package#TSSOP-16_EP_4.4x5.0x0.65P
https://datasheet.lcsc.com/szlcsc/Texas-Instruments-TI-ADC128S102CIMTX-NOPB_C179666.pdf
Connectors for Automotive Airflow Sensors #1-4
CS always active
Input Voltage Sensor
Pressure Sensors
SPL06-007
LCSC Part# C233787
https://datasheet.lcsc.com/szlcsc/1907081118_Goertek-SPL06-007_C233787.pdf
For I2C, CSB pulled high
SDI=SDA, SCK=SCL
SDO: GND='0', VCC = '1'
Adress: 0x77 – SDO pulled-up to VDD or NC
Jumper for 12VDC to supply 5VDC (remove 5V usb micro from RPI)
5V Power to LCD Display
Raspberry Pi Model B+
I2C Multiplexer
LCSC Part# C21198
MFR.Part #PCA9548APW,118
TSSOP-24_4.4x7.8x0.65P
https://datasheet.lcsc.com/szlcsc/NXP-Semicon-PCA9548APW-118_C21198.pdf
Regulator – XL4015E1
https://lcsc.com/product-detail/DC-DC-Converters_XL4015E1_C51661.html?thref=jlc-SMT
LCSC Part# C51661
Package TO-263-5
Input capacitor Spec – 50V
Selection 220uF, 50V
LCSC Part# C134732
https://datasheet.lcsc.com/szlcsc/Lelon-VE-221M1HTR-1010_C134732.pdf
10X10MM ROHS, panasonic G
Output Capacitor
330uF, 35V (only 25V required)
LCSC Part# C134522
https://datasheet.lcsc.com/szlcsc/Lelon-VZH331M1VTR-1010K_C134522.pdf
10X10MM ROHS, panasonic G
Inductor 47uH, 3.3amps
MWSA1004-470MT – 10.5x11.5mm
LCSC Part# C143967
https://datasheet.lcsc.com/szlcsc/Sunlord-MWSA1004-470MT_C143967.pdf
used smaller inductor because that's what they had in stock..
MFR.Part #SWRB1207S-470MT
C169376
POWER INDUCTORS 47UH ±20% 2.5A SMD,12.5X12.5X8MM(MAX) ROHS
SMD-PIND-12.5x12.5x8_2.9x5.4
https://datasheet.lcsc.com/szlcsc/Sunlord-SWRB1207S-470MT_C169376.pdf
D1 Spec – 5A, 40V Schottky Rectifier, 1N5825
Selection – 5A, 40V Schottky
DO-214AC/SMA
LCSC Part# C22452
https://datasheet.lcsc.com/szlcsc/1903061001_MDD-Jiangsu-Yutai-Elec-SS54_C22452.pdf
Connectors for Sensiron Airflow sensors #1-#4
Reference Voltage
Texas Instruments
MFR Part# REF3040AIDBZR
LCSC Part # C19415
Package SOT-23-3
https://datasheet.lcsc.com/szlcsc/Texas-Instruments-TI-REF3040AIDBZR_C19415.pdf
I2C Pullup
Test Points
Indicator LEDs
Power For Flow Sensors
Q1 P-ch Mosfet
MFR Part# AO3401A
LCSC Part# C15127
Package SOT-23-3
https://datasheet.lcsc.com/szlcsc/Alpha-Omega-Semicon-AOS-AO3401A_C15127.pdf
1-gate,2-source, 3-drain
Q2 Transistor
MFR Part# S8050
LCSC Part# C2146
Package SOT-23-3
NPN 500MA 25V
https://datasheet.lcsc.com/szlcsc/ChangJiang-Electronics-Tech-CJ-S8050_C2146.pdf
1-base, 2-emitter, 3-collector
Power Logic
Scenario #1 – Testing with the RPI pluged into 5V micro usb
– no 12VDC present
– display is powered, all 5V peripherals powered via RPI
Scenario #2 – out in the field sensirion flow sensors
– 12VDC is only power used
– 12VDC/5DC converter is active, jumper is made and RPI, Display, and all peripherals powered by converter
Scenario #3 – out in the field MAF sensors used
– 12VDC is only powered used
– – 12VDC/5DC converter is active, jumper is made and RPI,Display, and peripherals powered by converter
Scenario #4 –