version 004 12/5/2020
- add new 5V regulator

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
PackageHTSSOP-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!)

PI_5V_POWER

PI_5V_POWER 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 - TPS56528DDAR
https://datasheet.lcsc.com/szlcsc/1805310826_Texas-Instruments-TPS56528DDAR_C138716.pdf
LCSC Part#
C138716

Package SOIC - 150mill grounding pad

Input Capacitor
330uF, 35V (only 25V required)
LCSC Part# C134522
https://datasheet.lcsc.com/szlcsc/Lelon-VZH331M1VTR-1010K_C134522.pdf
10X10MM ROHS, panasonic G

Inductor 3.3uH, 6.5amps
MHCI06030-3R3M-R8A - 6.6x7.3mm
LCSC Part# C280586
https://datasheet.lcsc.com/szlcsc/1912111437_Chilisin-Elec-MHCI06030-3R3M-R8A_C280586.pdf

output capacitor
CL21A226MAQNNNE
22uf, 0805, 25V, ceramic
https://datasheet.lcsc.com/szlcsc/Samsung-Electro-Mechanics-CL21A226MAQNNNE_C45783.pdf
C45783

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 peripherials 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 peripherials 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 peripherials powered by converter

Scenario #4 -