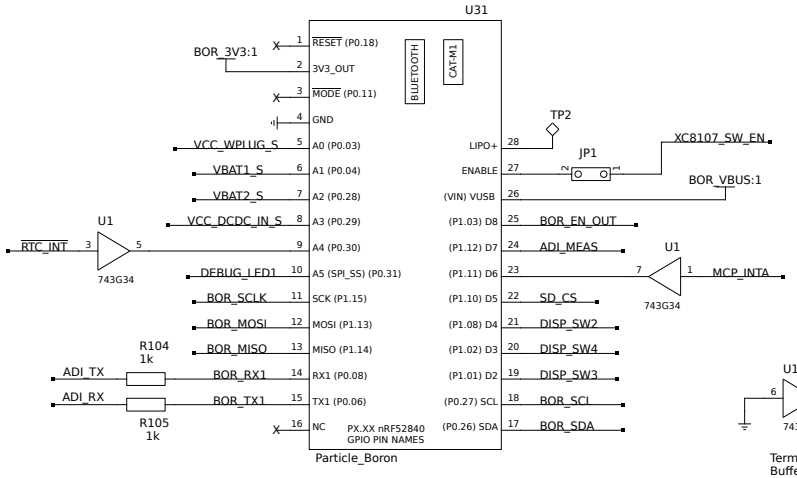
STYSTEM CONTROLLER / COMMS

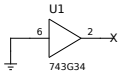


Particle Boron
==========
Variants: 2G/3G (Global) and LTE (US specific)
nRF52840 (3V3)
Provides prototype with
an option for
CAT-M1 + Bluetooth
POWER: Boron 2G/3G in 2G mode needs 5V 2A!
recommend attach LiPo to serve peak demand

Particle Xenon (BLE + Mesh) was used
on Jan 2020 prototype (lower power)

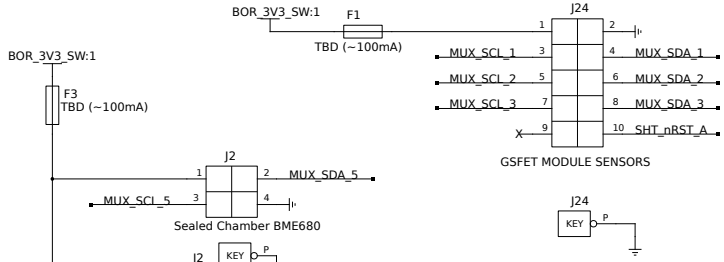
Important:
Must ensure no inputs are absorbing significant
power when Boron has been powered off.
This could happen if an input is driven High
by an external chip and thus
power would be dissapated in the input
protection diodes and could also damage the input.
This is the reason for the buffer with Ioff isolation
implemented which is used for RTC_INT and
MCP_INT

The analog _S inputs are ok because they are
conected to power rail by ~500k resistor so
very little current flows through the protection diode
when the Boron is powered off.

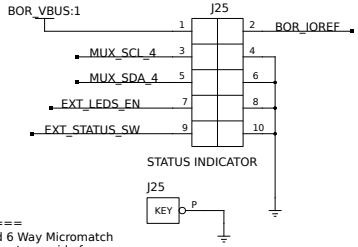


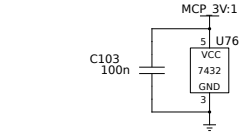
Termination of unused
Buffer slot

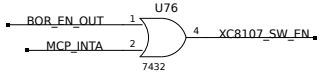
SN74LVC3G34DCT
==========
3x Buffers
Vcc 1V65 to 5V5
Icc 10uA Max
Fully specified for partial power
down applications. Ioff circuitry
disables the outputs.



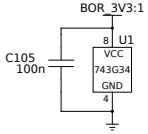
Dry Chamber BME680
==========
Relevant for inline measurement of
de-humidied air in the gas flow.
This may provide an indication
of 1-MCP level.

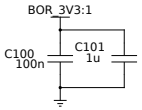






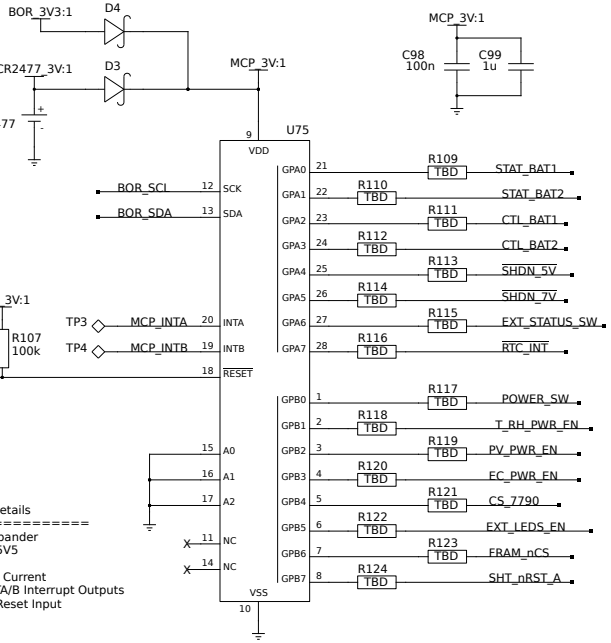
SN74AUP1G32
==========
VCC: 0V8 to 3V6
ICC: 500 nA Typ



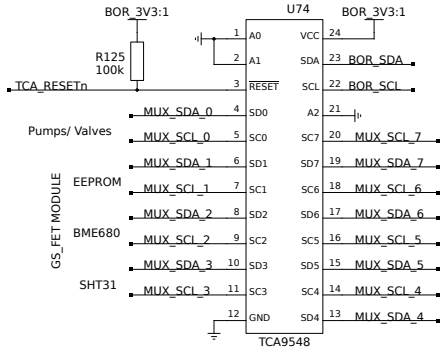


Ext BME680
==========
It may be desirable to sample
the external air without pumping the air
through the system. This could be useful
to manage when sampling can commence
after a fog treatment.

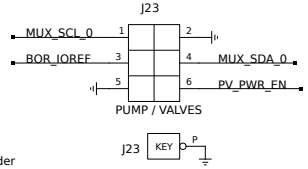
Spare
==========
Uncomitted 6 Way Micromatch
Cable header to provide for
adding extra functionality at a
future date.



MCP23017 Details
==========
16 Bit I/O Expander
Vop: 2V7 to 5V5
ADDR: 0x20
1uA Standby Current
INTA/B: PORTA/B Interrupt Outputs
RESET: Ext. Reset Input



I2C MUX (1 to 8)
Mitigate against bus lock-up
in case of one faulty / wet sensor



Spare Header

BME680 (External)

BME680 (De-humidified)

Status Indicator

TCA9548
==========
Address: 0x70
Vsupply: 1V65 to 5V5
I_standby : 100nA
5V tolerant inputs
Can be configured to
act as voltage level translator
TCA will reset on each time
the Boron is powered up