

LiPo Battery

Lipo 1S BAT1
300mAh
F1 3A
R18 10k
V_{BAT}

Power Monitor

max 3A, full scale 450mV
15mOhm \rightarrow 2.67A max [150mW-500mW]
R16 15m
INA220 U10
V_S 6
V_{IN+} 9
V_{IN-} 4
SDA 4
SCL 5
V_{BUS} 8
AG 2
A1 1
I2C Address: 0x68+rw
V_{ACT}

Battery Charging

V_{CHG}
Q1 N-channel MOSFET
D1 Schottky Diode
bq4092 U9
IN 1
ISET 2
VSS 3
PRETERM SET 4
PG 5
out 10
TS 9
CH2 8
SET 7
V_{ACT}

ON/OFF Power Switch

V_{ACT}
LTC2955 ITS8-2 U11
V_{IN} 6
EN 7
ON 1
INT 8
PB 5
KILL 4
TMR 3
GND 2
SH1443EDH U12
V_{ACT}

Low Power Supply

LTC3240 U7
GND 1
VIN 2
VOUT 3
3.3V, 150mA (max)
SHDN 4
V_{ACT}

Decoupling

chip ferrite
chip inductor
C1 100nF
C2 100nF

High Power Supply

L6 100nF
L7 100nF
L8 100nF
SW LT1930 U8
V_{IN} 5
SHDN 4
FB 3
GND 2
V_{ACT}

Molex PicoBlade

Debug Conn

VCC

GND

NRST

TDI

TDO

TMS

STRAP1

STRAP2

STRAP3

CONN2

Molex SlimStack (1.5mm height)

[0.5A / pin]

V_{EXP} 2W

EXP 11 12 13 14 15

CONN3

CoreX Expansion
(PCB to PCB clip)

- VCC
- GND
- VBAT
- UART
- SPI
- I2C
- ADC/DAC

EXP 11 12 13 14 15

CONN4

micro USB

V_{USB}

D+

D-

ID

GND

Shield

R8

C25

4.7pF

250V

CONN1

GND - Shield

http://www.mouser.com/catalog/molex/molex_pico_blade_conn_250v001.pdf

Molex PicoBlade

UART

VCC

GND

TX

RX

CONN4

STRAP1

STRAP2

STRAP3

STRAP4

STRAP5

STRAP6

STRAP7

STRAP8

STRAP9

STRAP10

STRAP11

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[illegible]

The schematic diagram illustrates the internal wiring of the sensor module, connecting three primary sensors to the system power and data lines:

- MS5611 (U3):** A digital pressure sensor. Its VDD (pin 1) is connected to VCC_A (3.3V) through a 1kΩ resistor (R31). Its GND (pin 3) is connected to ground. Its SCL (pin 8) and SDA (pin 7) are connected to the I2C bus. Its CS (pin 5) is connected to ground. Its VCC_B (pin 4) is connected to VCC_B (5V) through a 1kΩ resistor (R2).
- MPU6050 (U2):** A digital motion sensor. Its VDD (pin 1) is connected to VCC_A (3.3V) through a 1kΩ resistor (R3). Its GND (pin 18) is connected to ground. Its SCL (pin 23) and SDA (pin 24) are connected to the I2C bus. Its ADO (pin 9) is connected to ground. Its CPOUT (pin 20) and REGOUT (pin 19) are connected to ground. Its VLOGIC (pin 8) is connected to VCC_A (3.3V) through a 1kΩ resistor (R4). Its CLKIN (pin 1) and CLKOUT (pin 22) are connected to ground. Its FSYNC (pin 11) is connected to ground. Its INT (pin 12) is connected to ground. Its AUX_CL (pin 7) and AUX_DA (pin 6) are connected to ground.
- HMC5883L (U1):** A digital compass. Its VDD (pin 2) is connected to VCC_A (3.3V) through a 1kΩ resistor (R5). Its VDDIO (pin 13) is connected to VCC_A (3.3V) through a 1kΩ resistor (R6). Its SDA (pin 16) and SCL (pin 15) are connected to the I2C bus. Its SETP (pin 8) and SETC (pin 12) are connected to ground. Its DRDY (pin 35) is connected to ground. Its RST (pin 10) is connected to ground. Its CS (pin 1) is connected to ground. Its VCC_B (pin 4) is connected to VCC_B (5V) through a 1kΩ resistor (R7).

The diagram also shows the connection of the sensor module to the main system via a ribbon cable. The ribbon cable is connected to the sensor module's pins and to the main system's pins. The main system's pins are labeled: VCC_A (3.3V), VCC_B (5V), GND, SCL, SDA, CS, CS2, CS3, CS4, CS5, CS6, CS7, CS8, CS9, CS10, CS11, CS12, CS13, CS14, CS15, CS16, CS17, CS18, CS19, CS20, CS21, CS22, CS23, CS24, CS25, CS26, CS27, CS28, CS29, CS30, CS31, CS32, CS33, CS34, CS35, CS36, CS37, CS38, CS39, CS40, CS41, CS42, CS43, CS44, CS45, CS46, CS47, CS48, CS49, CS50, CS51, CS52, CS53, CS54, CS55, CS56, CS57, CS58, CS59, CS60, CS61, CS62, CS63, CS64, CS65, CS66, CS67, CS68, CS69, CS70, CS71, CS72, CS73, CS74, CS75, CS76, CS77, CS78, CS79, CS80, CS81, CS82, CS83, CS84, CS85, CS86, CS87, CS88, CS89, CS90, CS91, CS92, CS93, CS94, CS95, CS96, CS97, CS98, CS99, CS100.

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