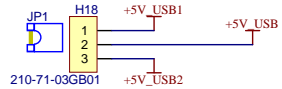
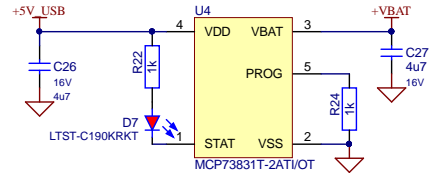


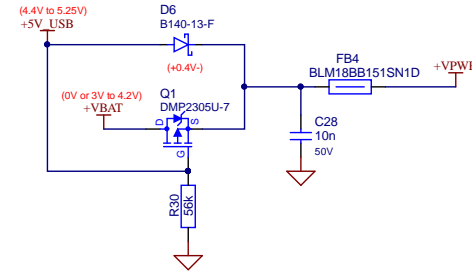
USB input power selector (jumper)



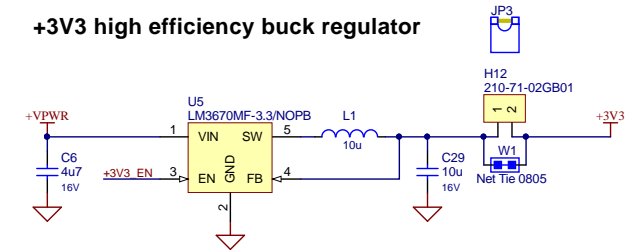
Li-Po Battery Charger



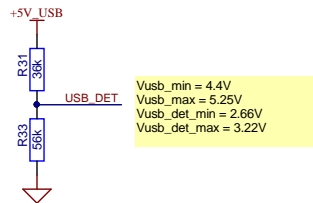
Automatic power path selection



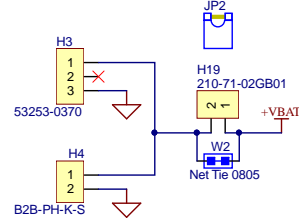
+3V3 high efficiency buck regulator



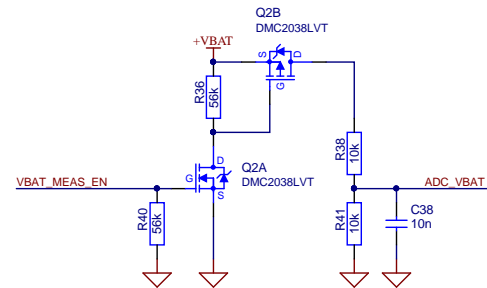
USB power detect



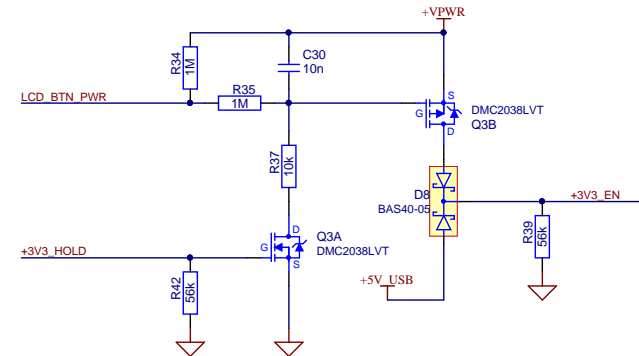
Li-Po Battery Connector (Molex or JST)



Battery Voltage Measurement



Power on button and microcontroller hold (always on when USB connected)



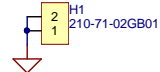
Fiducials

- H5 Fiducial 1mm
- H8 Fiducial 1mm
- H13 Fiducial 1mm
- H14 Fiducial 1mm

Mounting Holes

- H6 Mounting hole, M3
- H9 Mounting hole, M3
- H10 Mounting hole, M3
- H11 Mounting hole, M3

GND Test Points



BOM

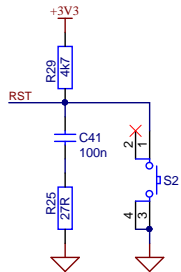
PCB1
P0014-A

| | | |
|--|-------------------------------------|----------------------------|
| PCB NAME Hero Board | | PCB NUMBER P0012 |
| SCH PAGE TITLE Power Supply | | PCB REV C |
| SHEET 1 OF 3 | DATE 2018-10-30 | VARIANT [No Variations] |
| DRAWN BY Pieter Conradie | PROJECT ENGINEER Pieter Conradie | TEMPLATE REV 02 |
| COPYRIGHT © 2018 PICONOMIX (https://piconomix.com) ALL RIGHTS RESERVED | | |

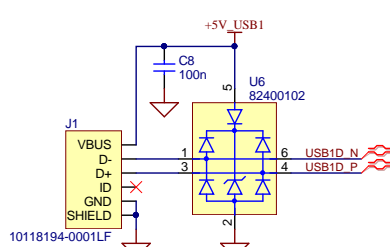
ARM Cortex M0+ Microcontroller



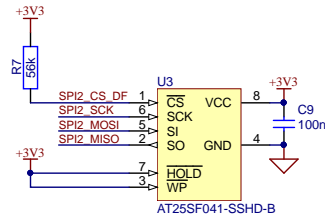
Reset Button



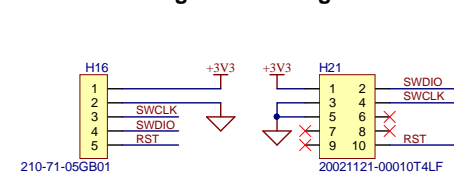
USB Device Port



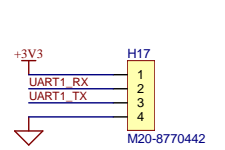
DataFlash

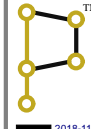


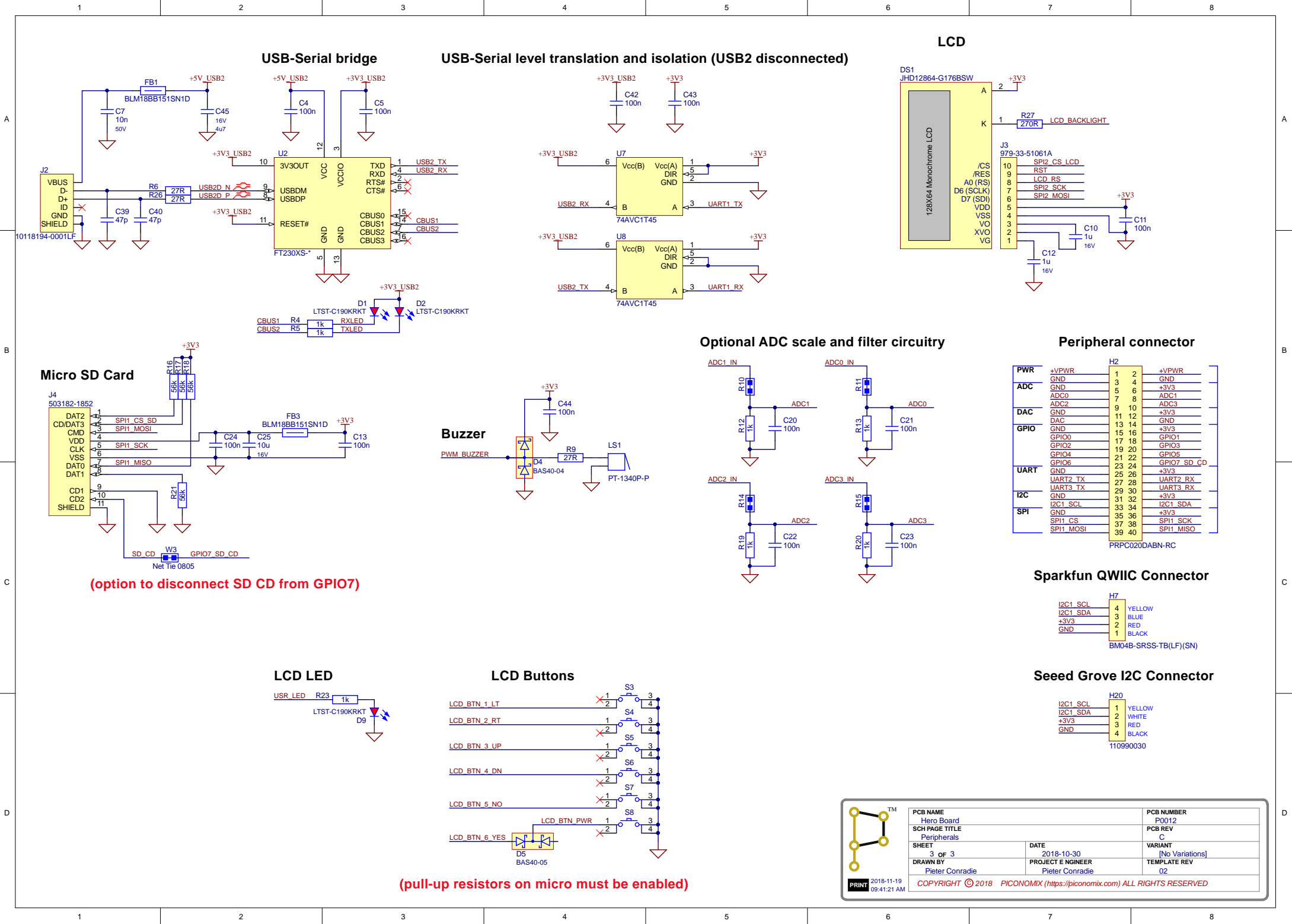
Program & Debug



UART Header



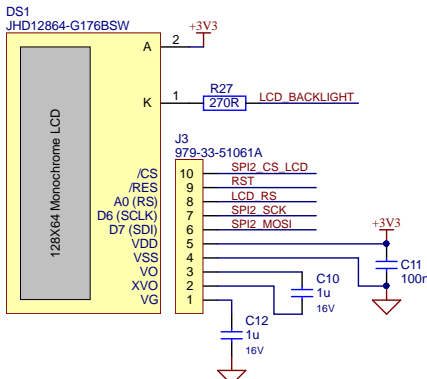
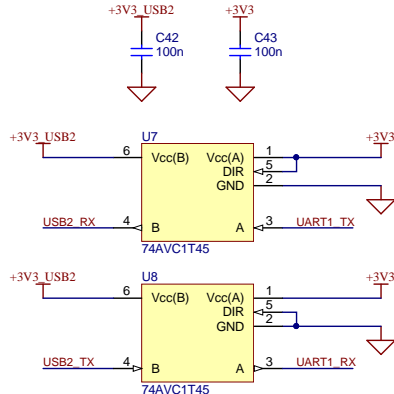
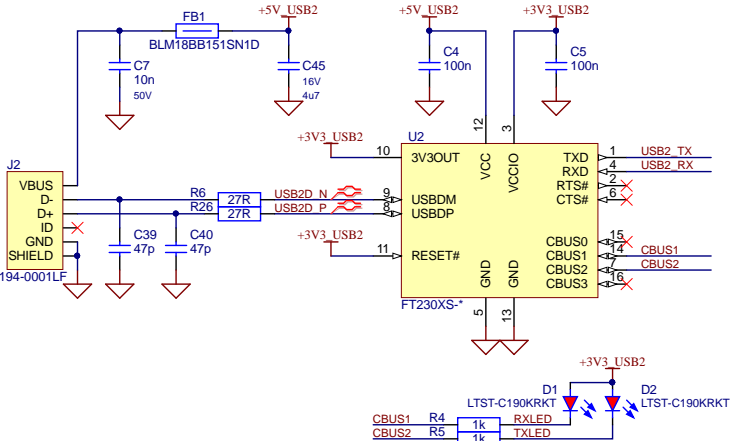
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|  | | PCB NAME Hero Board SCH PAGE TITLE Microcontroller | PCB NUMBER P0012 PCB REV C |
| SHEET 2 OF 3 DRAWN BY Pieter Conradie | DATE 2018-10-30 PROJECT E NGINEER Pieter Conradie | VARIANT [No Variations] TEMPLATE REV 02 | |
| PRINT 2018-11-19 09:41:21 AM COPYRIGHT © 2018 PICONOMIX (https://piconomix.com) ALL RIGHTS RESERVED | | | |



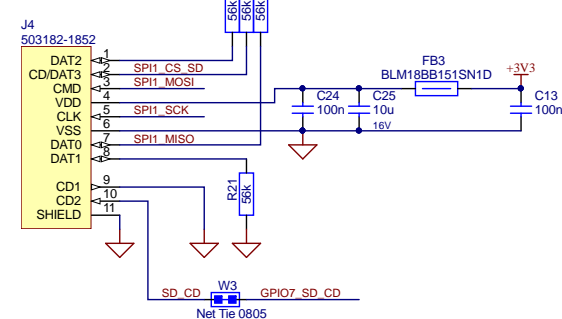
USB-Serial bridge

USB-Serial level translation and isolation (USB2 disconnected)

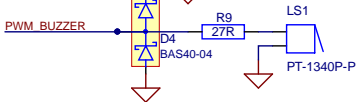
LCD



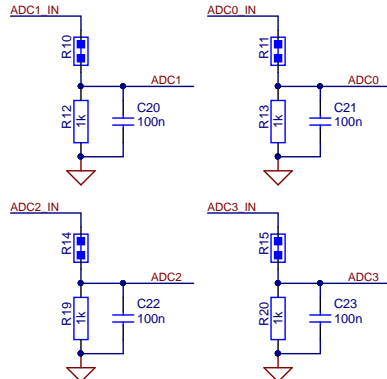
Micro SD Card



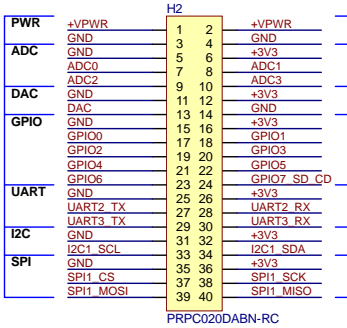
Buzzer



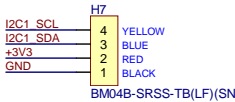
Optional ADC scale and filter circuitry



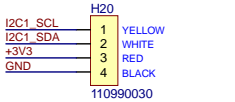
Peripheral connector



Sparkfun QWIC Connector

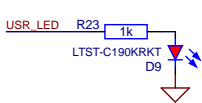


Seed Grove I2C Connector

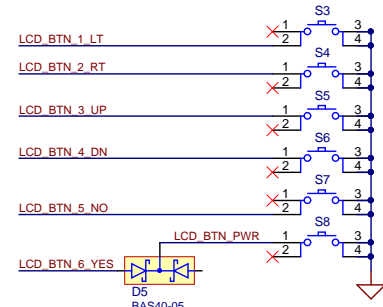


(option to disconnect SD CD from GPIO7)

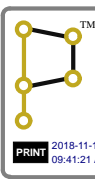
LCD LED



LCD Buttons



(pull-up resistors on micro must be enabled)



PCB NAME

SCH PAGE TITLE

SHEET

DRAWN BY

2018-11-19 09:41:21 AM

Hero Board

Peripherals

3 OF 3

Pieter Conradie

PCB NUMBER

PCB REV

VARIANT

TEMPLATE REV

P0012

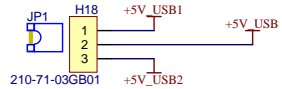
C

[No Variations]

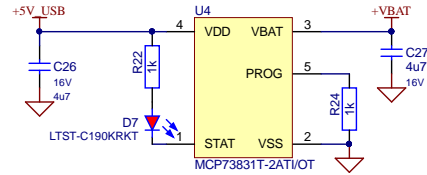
02

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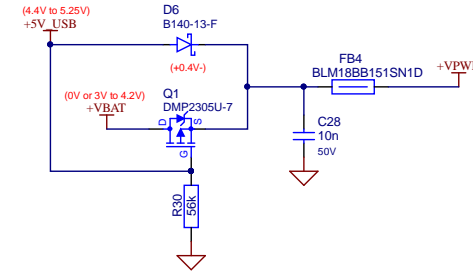
USB input power selector (jumper)



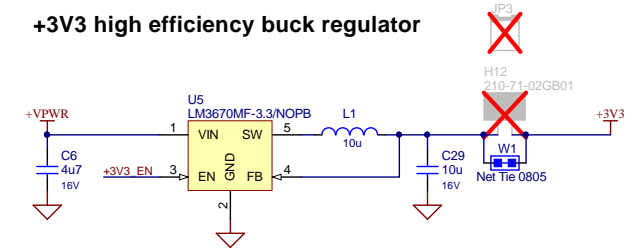
Li-Po Battery Charger



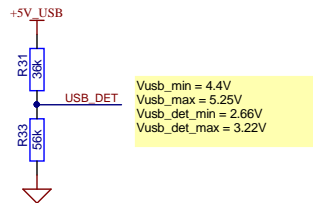
Automatic power path selection



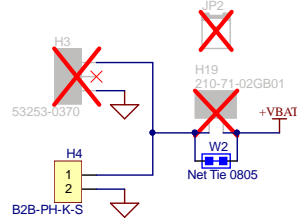
+3V3 high efficiency buck regulator



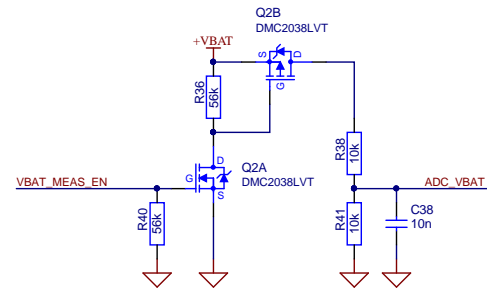
USB power detect



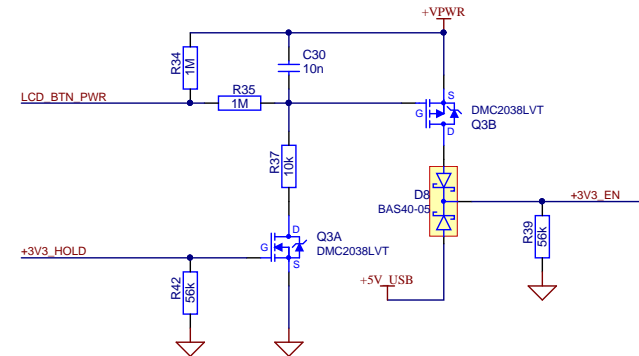
Li-Po Battery Connector (Molex or JST)



Battery Voltage Measurement



Power on button and microcontroller hold (always on when USB connected)



Fiducials

- H5 Fiducial 1mm
- H8 Fiducial 1mm
- H13 Fiducial 1mm
- H14 Fiducial 1mm

Mounting Holes

- H6 Mounting hole, M3
- H9 Mounting hole, M3
- H10 Mounting hole, M3
- H11 Mounting hole, M3

GND Test Points

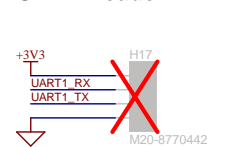
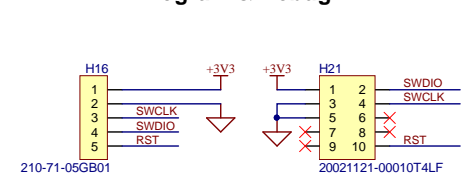
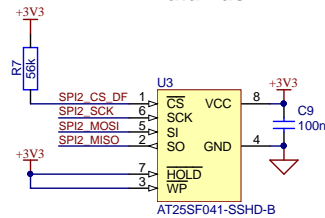
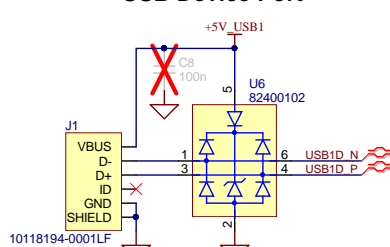
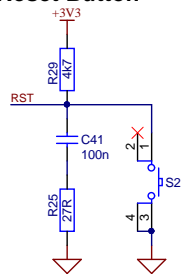


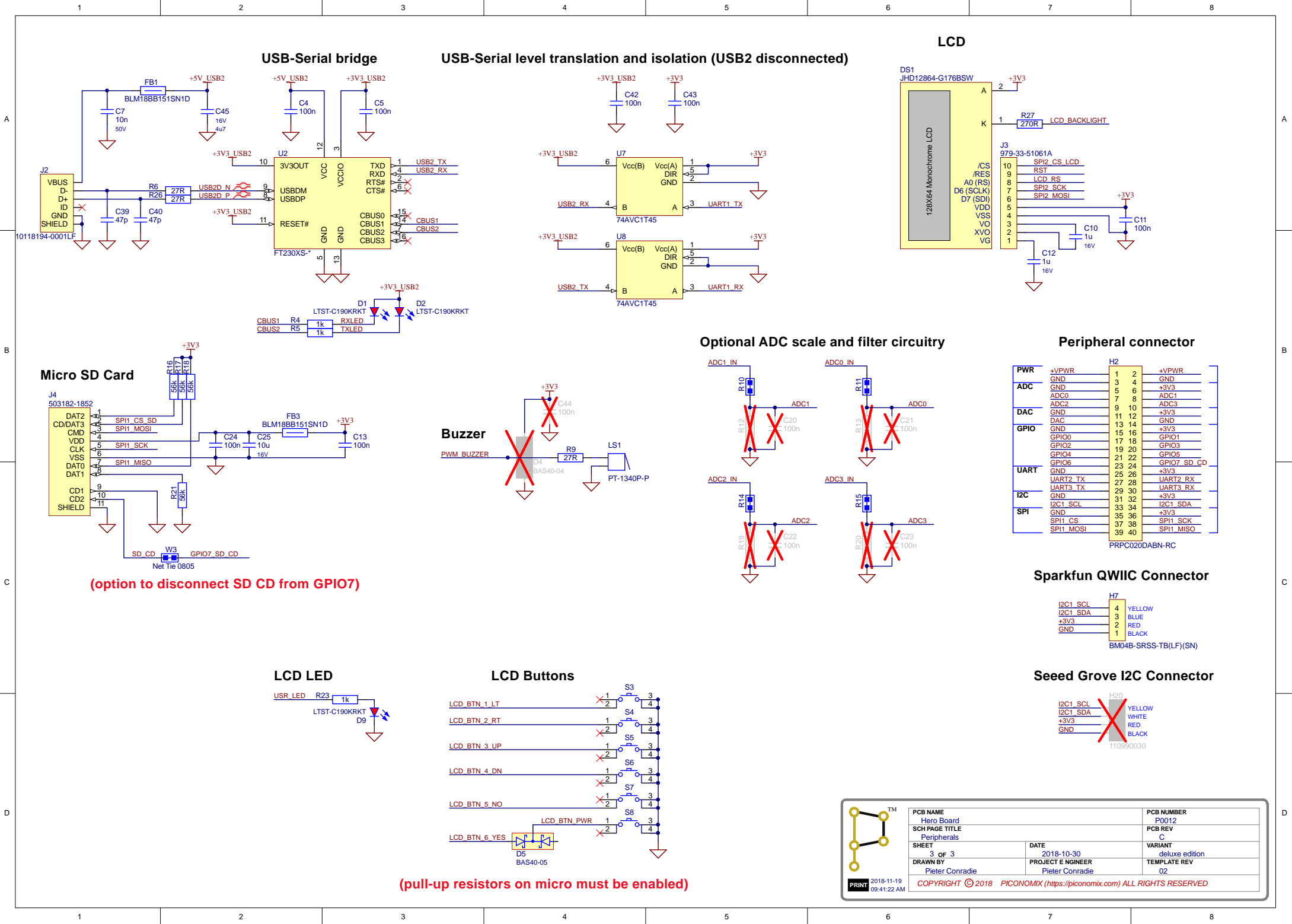
BOM

- PCB1 P0014-A

| | | |
|--|---------------------------------------|---------------------------|
| PCB NAME Hero Board | | PCB NUMBER P0012 |
| SCH PAGE TITLE Power Supply | | PCB REV C |
| SHEET 1 OF 3 | DATE 2018-10-30 | VARIANT deluxe edition |
| DRAWN BY Pieter Conradie | PROJECT E ENGINEER Pieter Conradie | TEMPLATE REV 02 |
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The schematic diagram illustrates the STM32L072RBT6 microcontroller board. The microcontroller is shown with its pinout, and various pins are connected to external components. The power supply section includes VDD, VSS, VDDA, VSSA, VDD_USB, and VSS, all connected to a +3V3 supply. A 32kHz crystal (Y1) is connected to pins 51 (UART3_TX) and 52 (UART3_RX). A 32kHz crystal is also shown at the bottom left. The microcontroller is connected to a USB port (JP4) via pins 18 (USB_DET), 31 (USB_D+), and 63 (USB_D-). The board also features a boot select switch (JP4) and a reset button (RST).

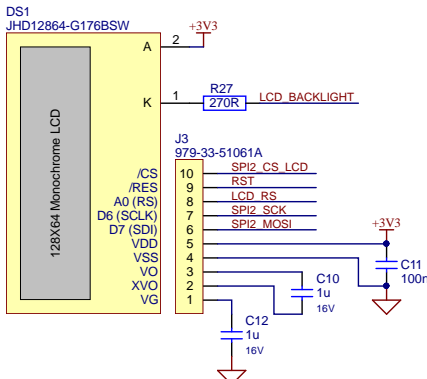
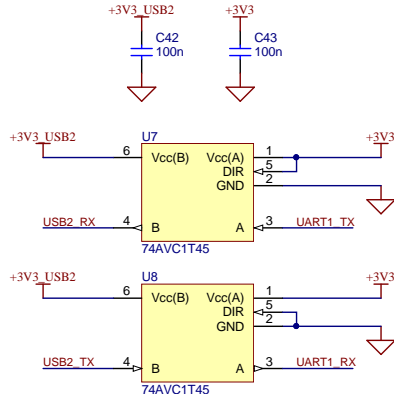
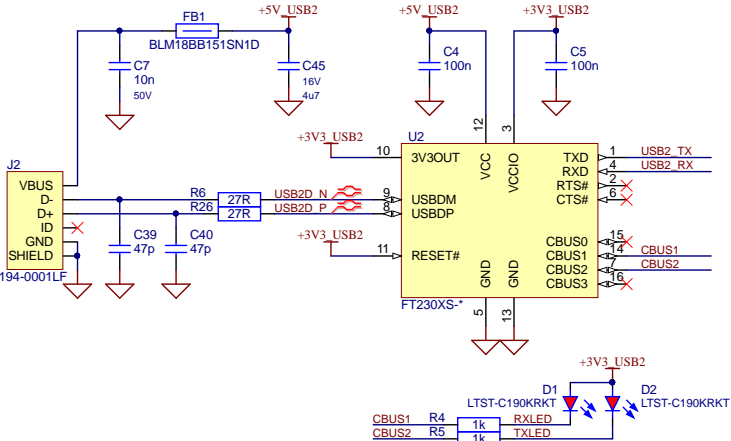




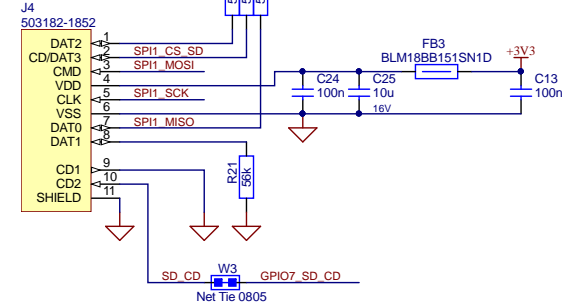
USB-Serial bridge

USB-Serial level translation and isolation (USB2 disconnected)

LCD

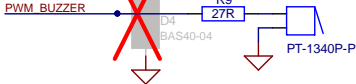


Micro SD Card

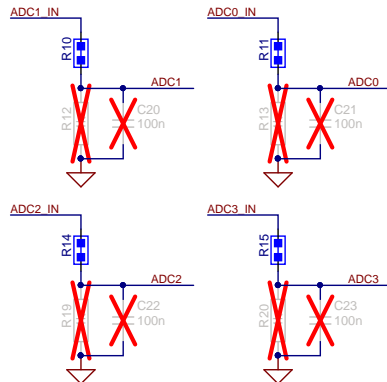


(option to disconnect SD CD from GPIO7)

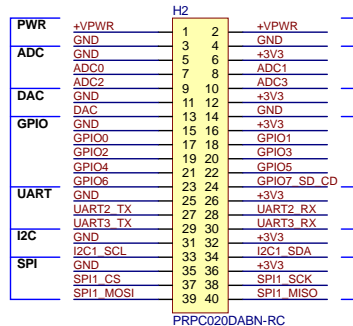
Buzzer



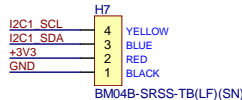
Optional ADC scale and filter circuitry



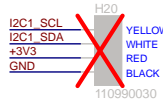
Peripheral connector



Sparkfun QWIC Connector



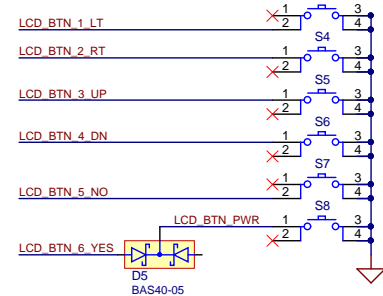
Seed Grove I2C Connector




LCD LED



LCD Buttons



(pull-up resistors on micro must be enabled)



PCB NAME

SCH PAGE TITLE

SHEET

DRAWN BY

2018-11-19

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Hero Board

Peripherals

3 OF 3

Pieter Conradie

2018-10-30

PROJECT ENGINEER

Pieter Conradie

PCB NUMBER

PCB REV

VARIANT

TEMPLATE REV

P0012

C

deluxe edition

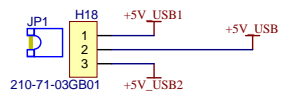
02

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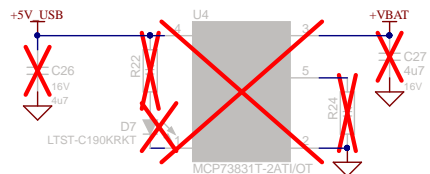
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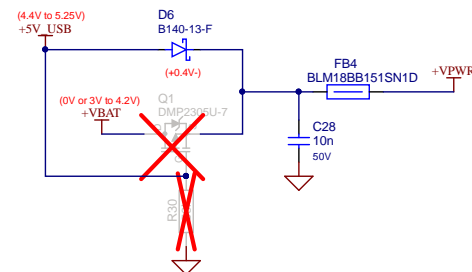
USB input power selector (jumper)



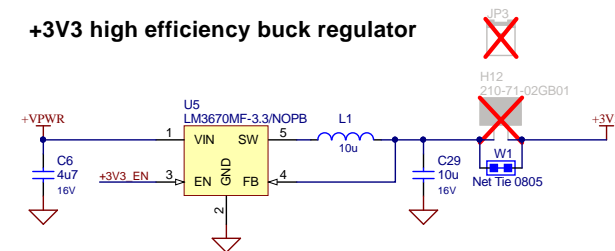
Li-Po Battery Charger



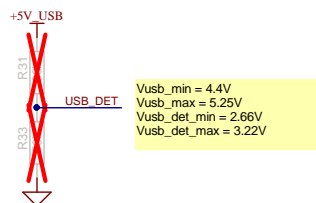
Automatic power path selection



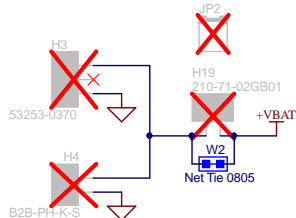
+3V3 high efficiency buck regulator



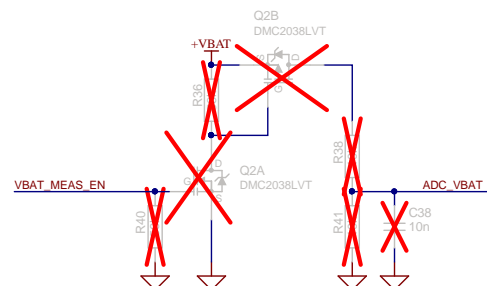
USB power detect



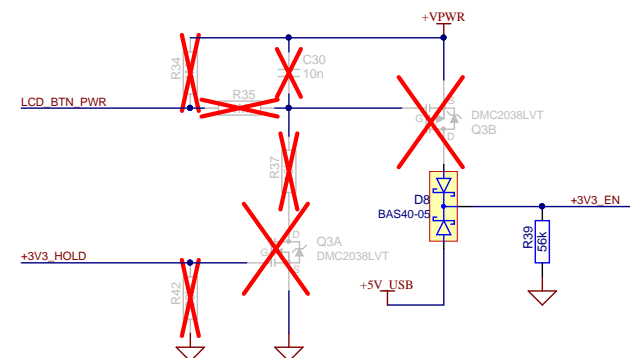
Li-Po Battery Connector (Molex or JST)



Battery Voltage Measurement



Power on button and microcontroller hold (always on when USB connected)



Fiducials

- H5 Fiducial 1mm
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- H13 Fiducial 1mm
- H14 Fiducial 1mm

Mounting Holes

- H6 Mounting hole, M3
- H9 Mounting hole, M3
- H10 Mounting hole, M3
- H11 Mounting hole, M3

GND Test Points

- H1 210-71-02GB01

BOM

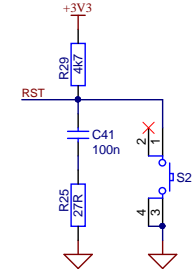
- PCB1 P0014-A

| | | |
|--|-------------------------------------|-------------------------|
| PCB NAME Hero Board | | PCB NUMBER P0012 |
| SCH PAGE TITLE Power Supply | | PCB REV C |
| SHEET 1 OF 3 | DATE 2018-10-30 | VARIANT lite edition |
| DRAWN BY Pieter Conradie | PROJECT ENGINEER Pieter Conradie | TEMPLATE REV 02 |
| PRINT 2018-11-19 09:41:23 AM COPYRIGHT © 2018 PICONOMIX (https://piconomix.com) ALL RIGHTS RESERVED | | |

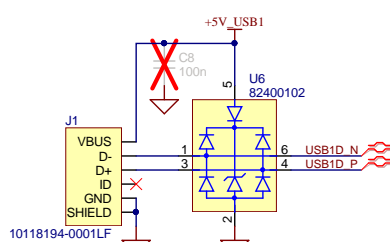
ARM Cortex M0+ Microcontroller



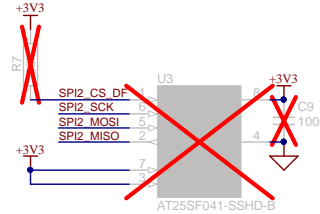
Reset Button



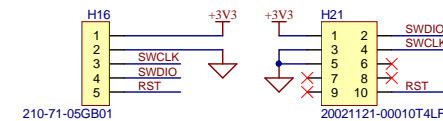
USB Device Port



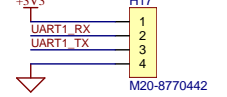
DataFlash

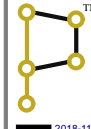


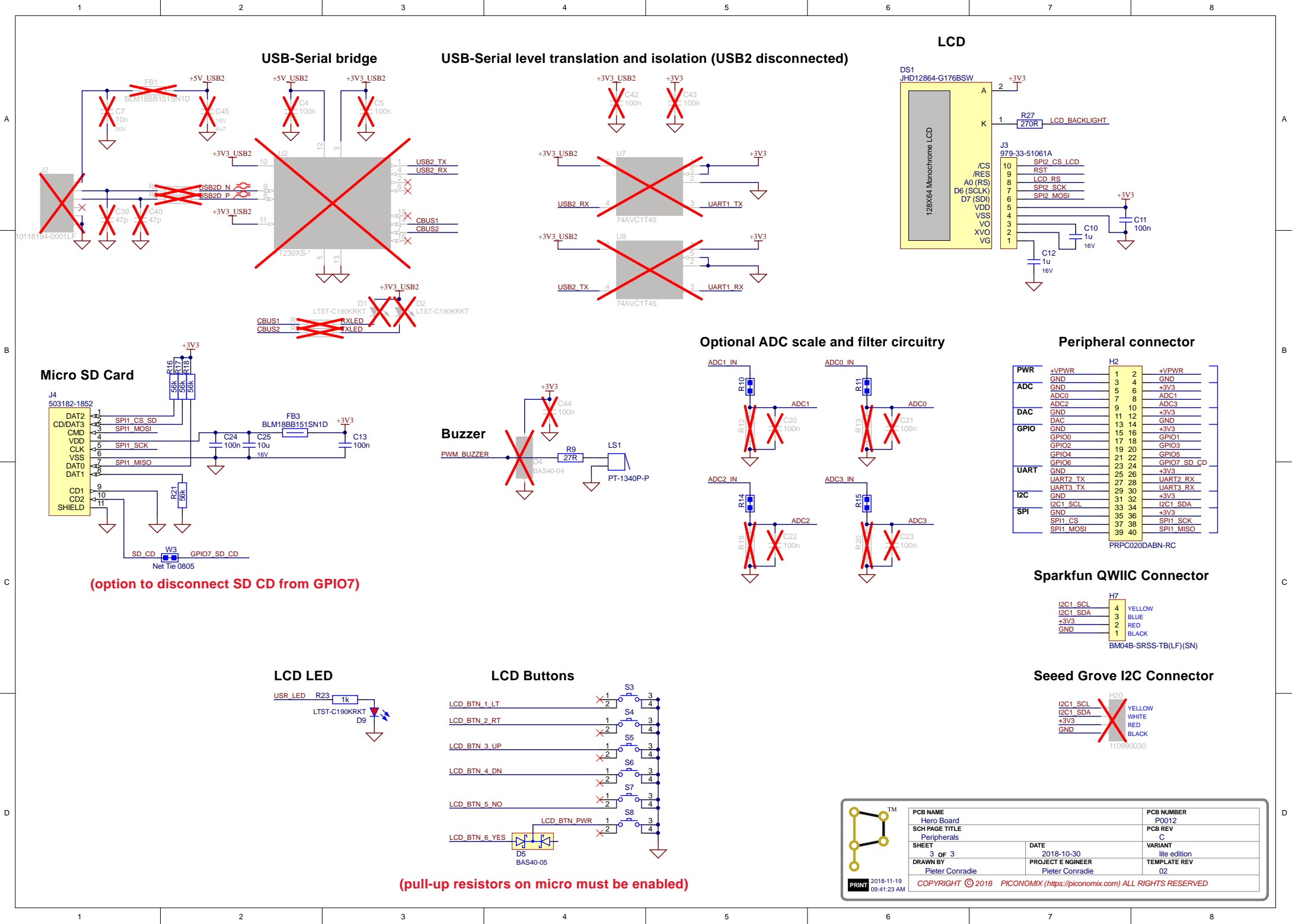
Program & Debug



UART Header



| | | | |
|--|--|---|---|
|  | | PCB NAME Hero Board SCH PAGE TITLE Microcontroller | PCB NUMBER P0012 PCB REV C |
| SHEET 2 OF 3 DRAWN BY Pieter Conradie | DATE 2018-10-30 PROJECT E NGINEER Pieter Conradie | VARIANT lite edition TEMPLATE REV 02 | |
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USB-Serial bridge

USB-Serial level translation and isolation (USB2 disconnected)

LCD

Micro SD Card

Optional ADC scale and filter circuitry

Peripheral connector

| PWR | | H2 | | +VPWR | |
|-----------|----|----|----|-------------|--|
| GND | 3 | 4 | | GND | |
| ADC | 5 | 6 | | +3V3 | |
| ADC0 | 7 | 8 | | ADC1 | |
| ADC2 | 9 | 10 | | ADC3 | |
| DAC | 11 | 12 | | GND | |
| GPIO | 13 | 14 | | +3V3 | |
| GPIO0 | 15 | 16 | | GPIO1 | |
| GPIO2 | 17 | 18 | | GPIO3 | |
| GPIO4 | 19 | 20 | | GPIO5 | |
| GPIO6 | 21 | 22 | | GPIO7 SD_CD | |
| GND | 23 | 24 | | +3V3 | |
| UART2_TX | 25 | 26 | | UART2_RX | |
| UART3_TX | 27 | 28 | | UART3_RX | |
| GND | 29 | 30 | | +3V3 | |
| I2C1_SCL | 31 | 32 | | I2C1_SDA | |
| GND | 33 | 34 | | +3V3 | |
| SPI1_CS | 35 | 36 | | SPI1_SCK | |
| SPI1_MOSI | 37 | 38 | | SPI1_MISO | |
| | | 39 | 40 | | |

Sparkfun QWII Connector

| H7 | | |
|----------|---|--------|
| I2C1_SCL | 4 | YELLOW |
| I2C1_SDA | 3 | BLUE |
| +3V3 | 2 | RED |
| GND | 1 | BLACK |

Seed Grove I2C Connector

| H20 | | |
|----------|---|--------|
| I2C1_SCL | 4 | YELLOW |
| I2C1_SDA | 3 | WHITE |
| +3V3 | 2 | RED |
| GND | 1 | BLACK |

| | | |
|--|-------------------------------------|-------------------------|
| PCB NAME Hero Board | | PCB NUMBER P0012 |
| SCH PAGE TITLE Peripherals | | PCB REV C |
| SHEET 3 OF 3 | DATE 2018-10-30 | VARIANT lite edition |
| DRAWN BY Pieter Conradie | PROJECT ENGINEER Pieter Conradie | TEMPLATE REV 02 |
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(pull-up resistors on micro must be enabled)