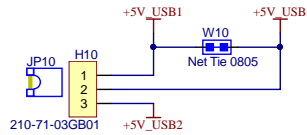
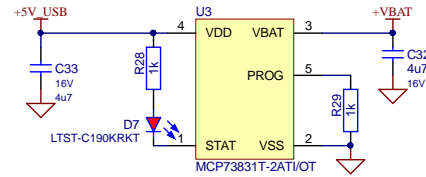


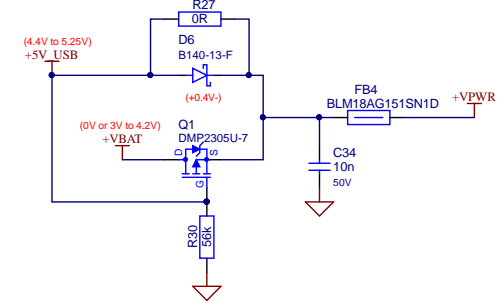
USB input power selector (jumper)



Li-Po Battery Charger

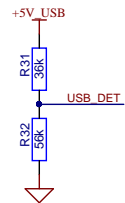


Automatic power path selection

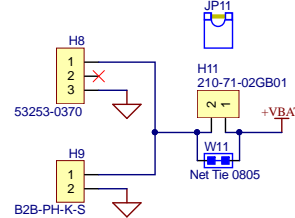


USB power detect

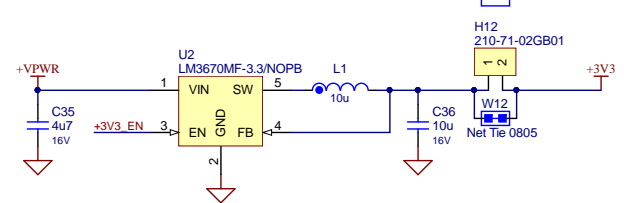
Vusb_min = 4.4V
Vusb_max = 5.25V
Vusb_det_min = 2.66V
Vusb_det_max = 3.22V



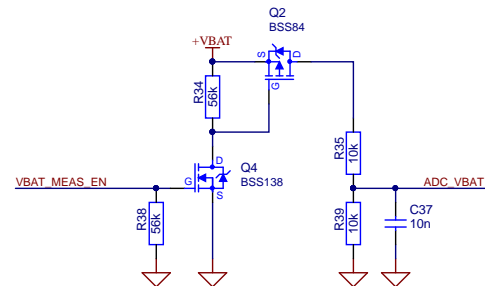
Li-Po Battery Connector (Molex or JST)



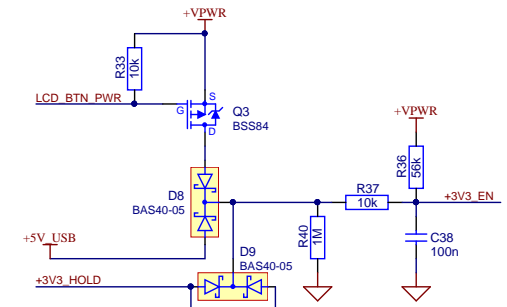
+3V3 high efficiency buck regulator



Battery Voltage Measurement



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



Fiducials

- H14 Fiducial 1mm
- H16 Fiducial 1mm
- H19 Fiducial 1mm
- H21 Fiducial 1mm

Mounting Holes

- H15 Mounting hole, M3
- H17 Mounting hole, M3
- H20 Mounting hole, M3
- H22 Mounting hole, M3

GND Test Points

- H13 210-71-02GB01
- H18 210-71-02GB01

BOM

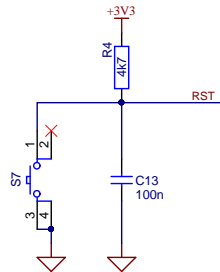
- PCB1
- P0014

PCB NAME PX-HERO Board		PCB NUMBER P0012
SCH PAGE TITLE Power Supply		PCB REV F
SHEET 1 OF 3	DATE 2019-10-24	VARIANT [No Variations]
DRAWN BY Pieter Conradie	PROJECT ENGINEER Pieter Conradie	TEMPLATE REV 02
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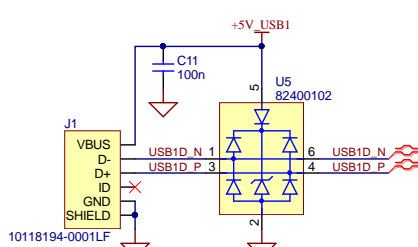
STM32 ARM Cortex M0+ Microcontroller



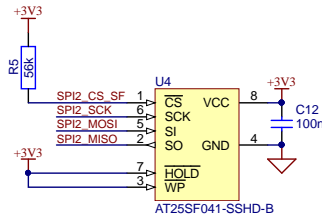
Reset Button



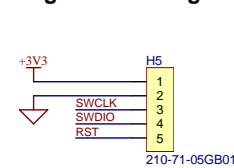
USB Device Port



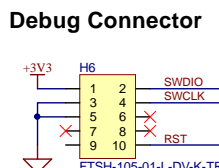
Serial Flash



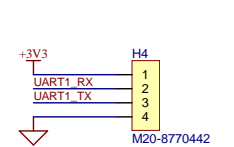
Program & Debug



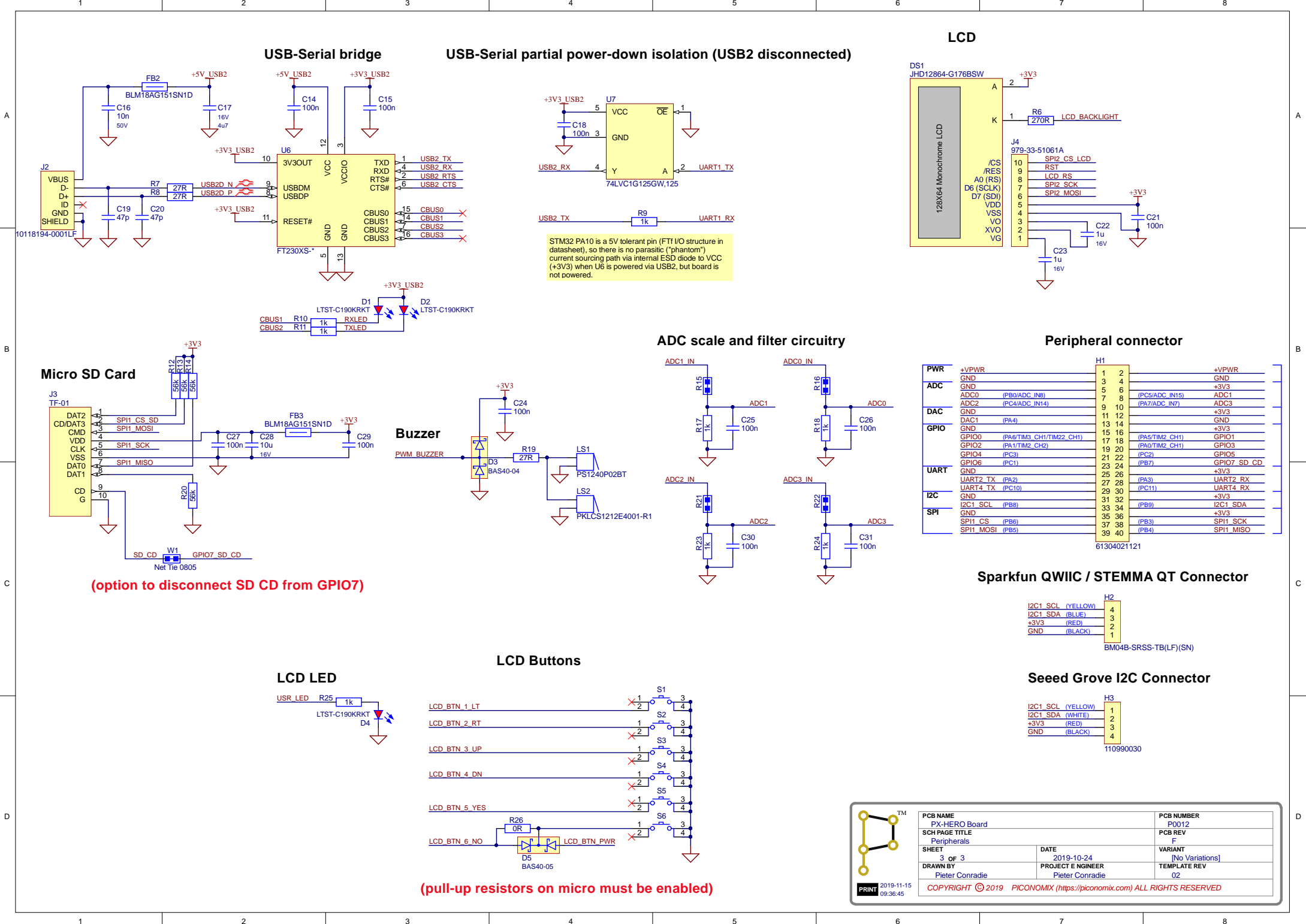
Standard ARM Cortex Debug Connector



UART Header



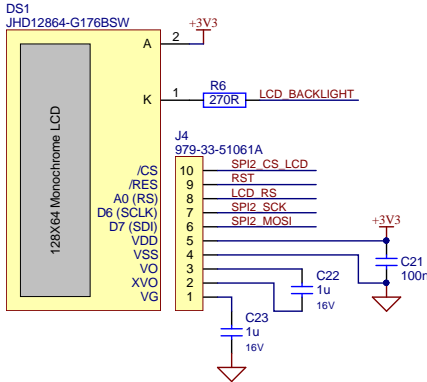
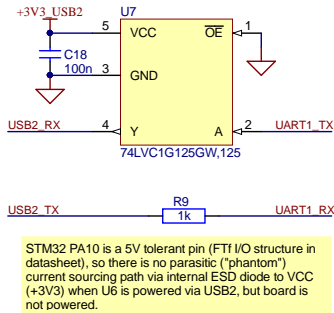
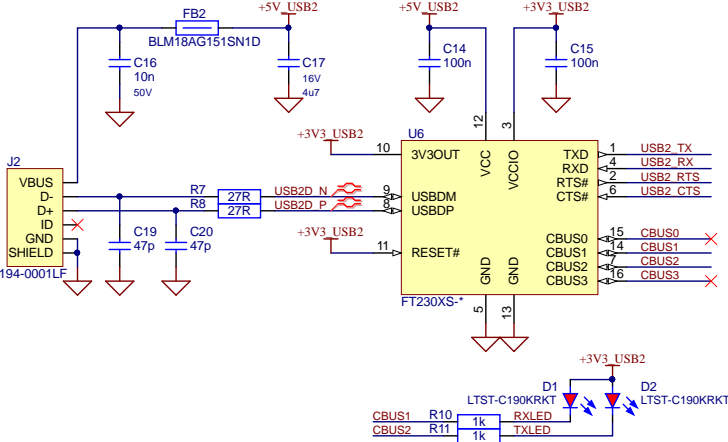
PCB NAME PX-HERO Board		PCB NUMBER P0012
SCH PAGE TITLE Microcontroller		PCB REV F
SHEET 2 OF 3	DATE 2019-10-24	VARIANT [No Variations]
DRAWN BY Pieter Conradie	PROJECT ENGINEER Pieter Conradie	TEMPLATE REV 02
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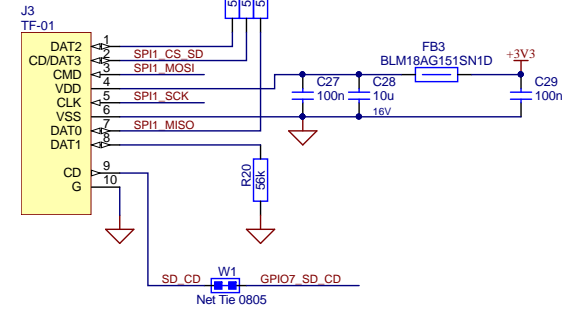
USB-Serial bridge

USB-Serial partial power-down isolation (USB2 disconnected)

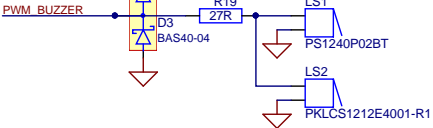
LCD



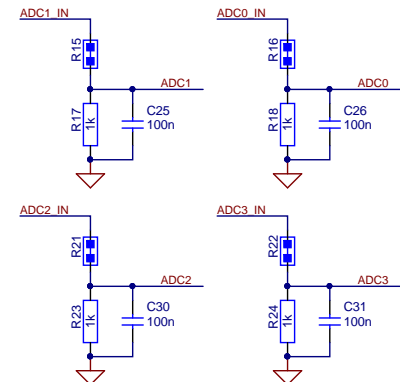
Micro SD Card



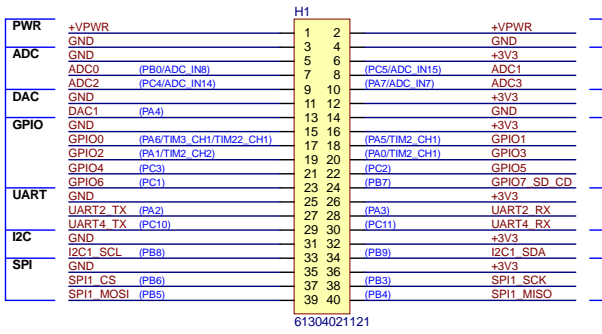
Buzzer



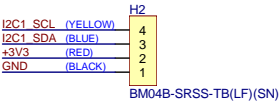
ADC scale and filter circuitry



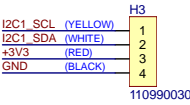
Peripheral connector



Sparkfun QWIIC / STEMMA QT Connector



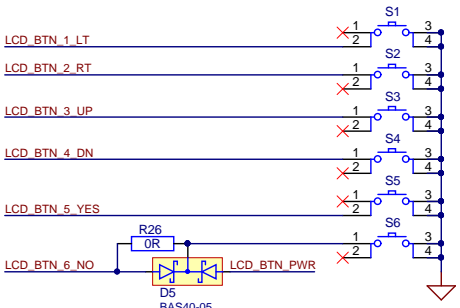
Seeed Grove I2C Connector



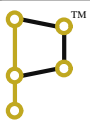
LCD LED



LCD Buttons



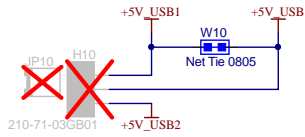
(pull-up resistors on micro must be enabled)



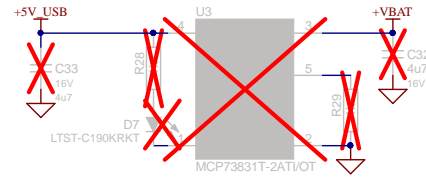
PRINT 2019-11-15 09:36:45

PCB NAME PX-HERO Board		PCB NUMBER P0012
SCH PAGE TITLE Peripherals		PCB REV F
SHEET 3 OF 3	DATE 2019-10-24	VARIANT [No Variations]
DRAWN BY Pieter Conradie		TEMPLATE REV 02
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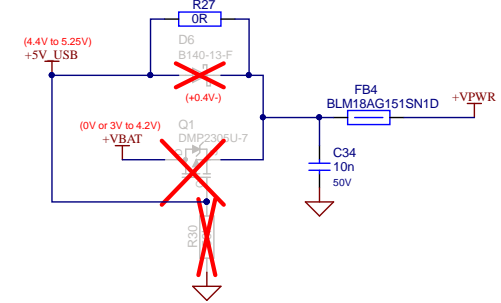
USB input power selector (jumper)



Li-Po Battery Charger

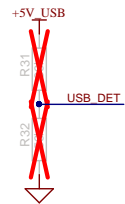


Automatic power path selection

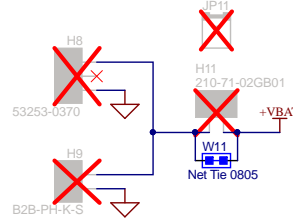


USB power detect

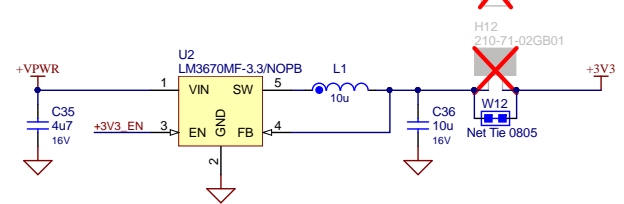
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Vusb_max = 5.25V
Vusb_det_min = 2.66V
Vusb_det_max = 3.22V



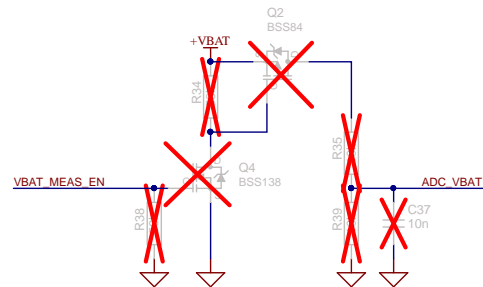
Li-Po Battery Connector (Molex or JST)



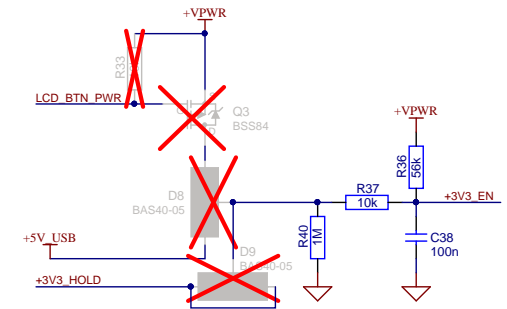
+3V3 high efficiency buck regulator



Battery Voltage Measurement



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



Fiducials

- H14 Fiducial 1mm
- H16 Fiducial 1mm
- H19 Fiducial 1mm
- H21 Fiducial 1mm

Mounting Holes


- H15 Mounting hole, M3
- H17 Mounting hole, M3
- H20 Mounting hole, M3
- H22 Mounting hole, M3

GND Test Points

- H13 210-71-02GB01
- H18 210-71-02GB01

BOM

- PCB1
- P0014



PCB NAME

PX-HERO Board

SCH PAGE TITLE

Power Supply

SHEET

1 OF 3

DATE

2019-10-24

DRAWN BY

Pieter Conradie

PROJECT E ENGINEER

Pieter Conradie

PCB NUMBER

P0012

PCB REV

F

VARIANT

lite edition

TEMPLATE REV

02

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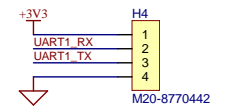
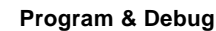
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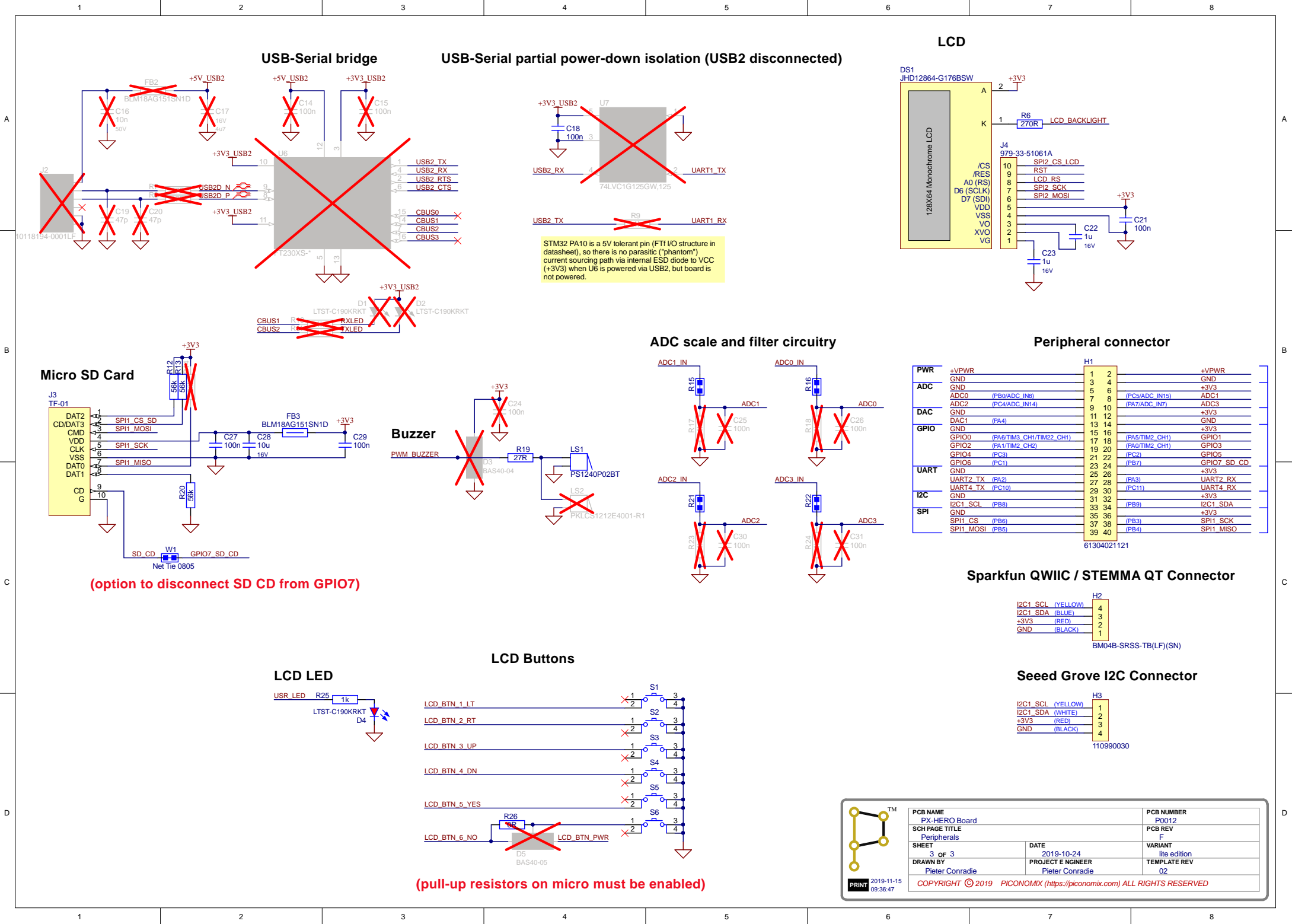
2019-11-15
09:36:46

The schematic diagram illustrates the internal and external components of the STM32L072RBT6 microcontroller board. The microcontroller is shown with its pins and internal modules, including the USB-to-UART bridge, a 32kHz crystal, and a 3.3V voltage regulator. The external components are connected to the microcontroller pins, and the schematic is color-coded to match the physical board. The diagram is labeled with pin numbers and component values, providing a comprehensive view of the board's internal and external connections.

32kHz Crystal

Boot select





USB-Serial bridge

USB-Serial partial power-down isolation (USB2 disconnected)

LCD

Micro SD Card

ADC scale and filter circuitry


Peripheral connector

Sparkfun QWIC / STEMMA QT Connector

Seeed Grove I2C Connector

LCD Buttons

LCD LED



PRINT 2019-11-15 09:36:47

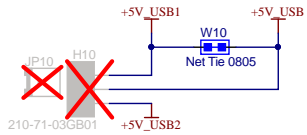
PCB NAME PX-HERO Board		PCB NUMBER P0012
SCH PAGE TITLE Peripherals		PCB REV F
SHEET 3 OF 3	DATE 2019-10-24	VARIANT lite edition
DRAWN BY Pieter Conradie	PROJECT ENGINEER Pieter Conradie	TEMPLATE REV 02
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(pull-up resistors on micro must be enabled)

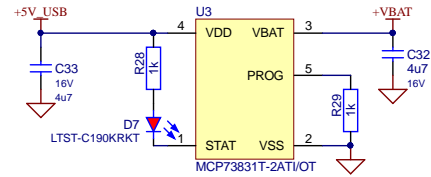
(option to disconnect SD CD from GPIO7)

STM32 PA10 is a 5V tolerant pin (FT1/I/O structure in datasheet), so there is no parasitic ("phantom") current sourcing path via internal ESD diode to VCC (+3V3) when U6 is powered via USB2, but board is not powered.

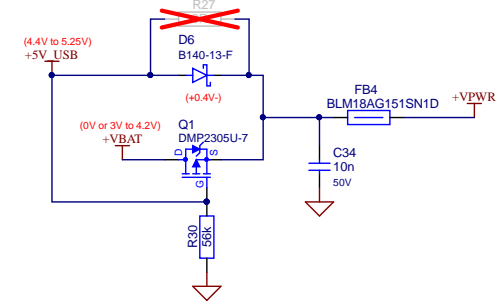
USB input power selector (jumper)



Li-Po Battery Charger

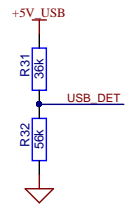


Automatic power path selection

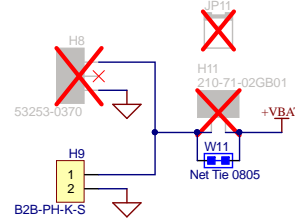


USB power detect

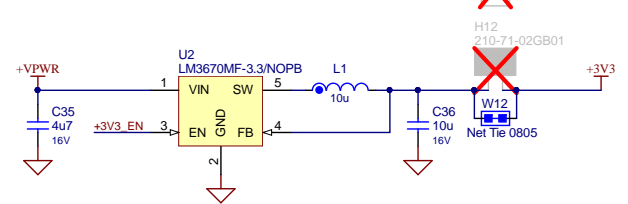
Vusb_min = 4.4V
Vusb_max = 5.25V
Vusb_det_min = 2.66V
Vusb_det_max = 3.22V



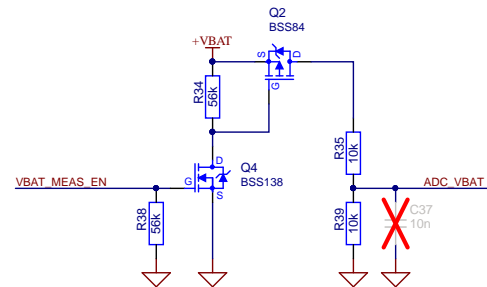
Li-Po Battery Connector (Molex or JST)



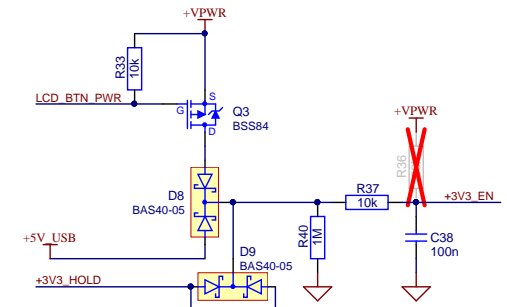
+3V3 high efficiency buck regulator



Battery Voltage Measurement



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



Fiducials

- H14 Fiducial 1mm
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- H19 Fiducial 1mm
- H21 Fiducial 1mm

Mounting Holes

- H15 Mounting hole, M3
- H17 Mounting hole, M3
- H20 Mounting hole, M3
- H22 Mounting hole, M3

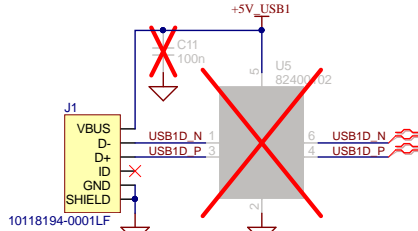
GND Test Points

- H13 210-71-02GB01
- H18 210-71-02GB01

BOM

- PCB1
- P0014

PCB NAME PX-HERO Board		PCB NUMBER P0012
SCH PAGE TITLE Power Supply		PCB REV F
SHEET 1 OF 3	DATE 2019-10-24	VARIANT deluxe edition
DRAWN BY Pieter Conradie	PROJECT ENGINEER Pieter Conradie	TEMPLATE REV 02
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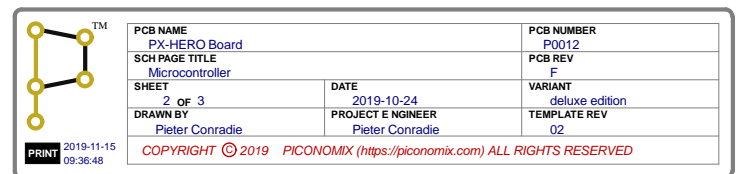
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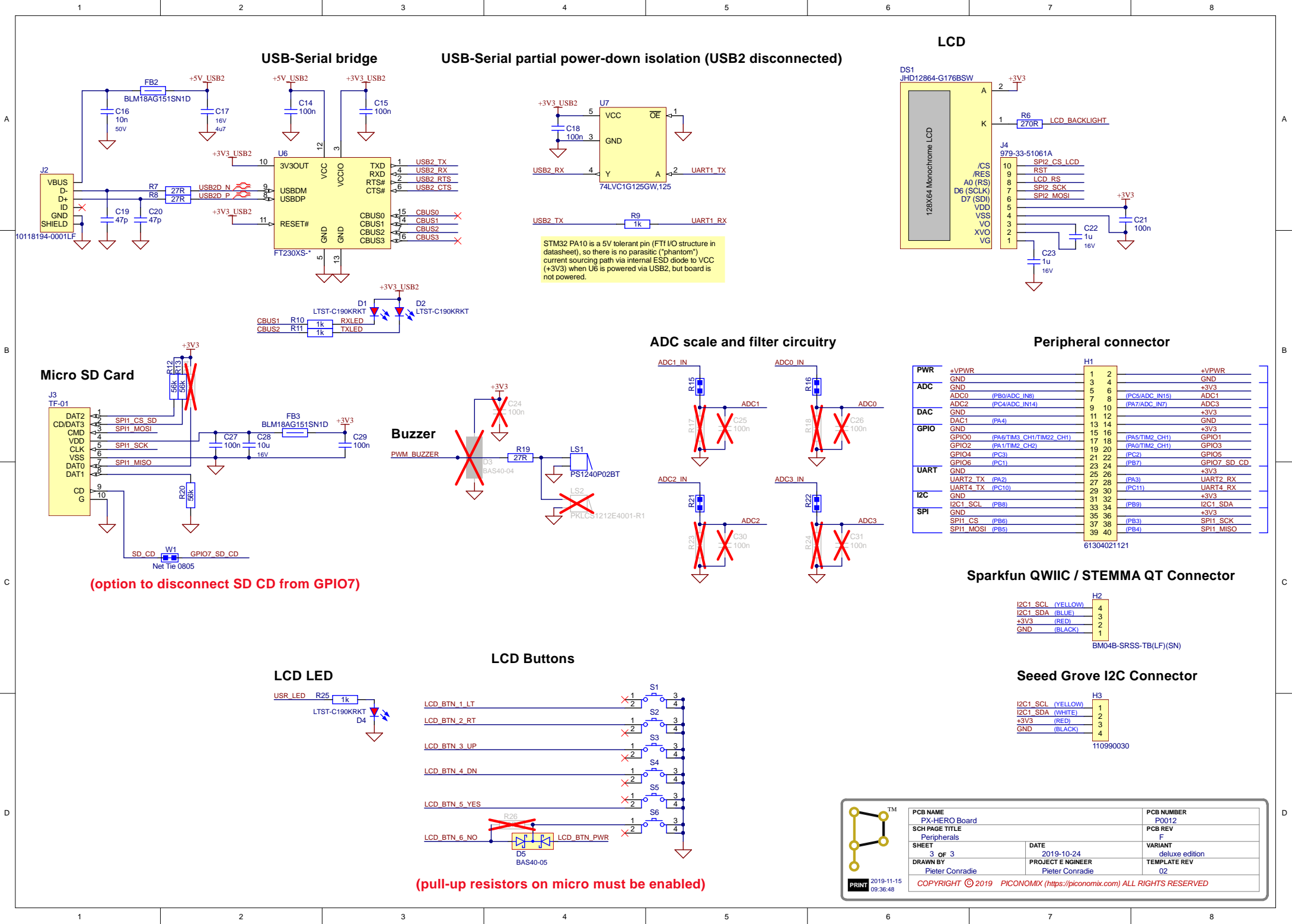
AT25SF041-SSHD-B

Diagram illustrating the connection for Pin 1:

- Pin 1 is connected to +3V3.
- Pin 2 is connected to SWCLK.
- Pin 3 is connected to SWDIO.
- Pin 4 is connected to RST.
- Pin 5 is connected to H5.

Component ID: 210-71-05GB01

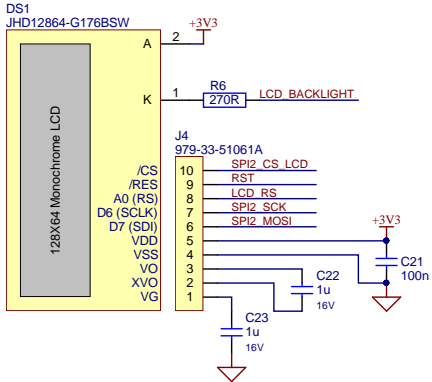
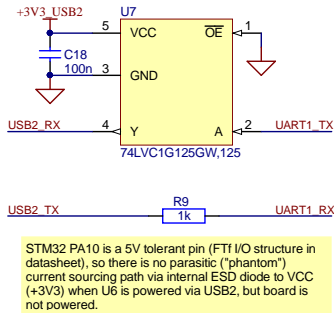
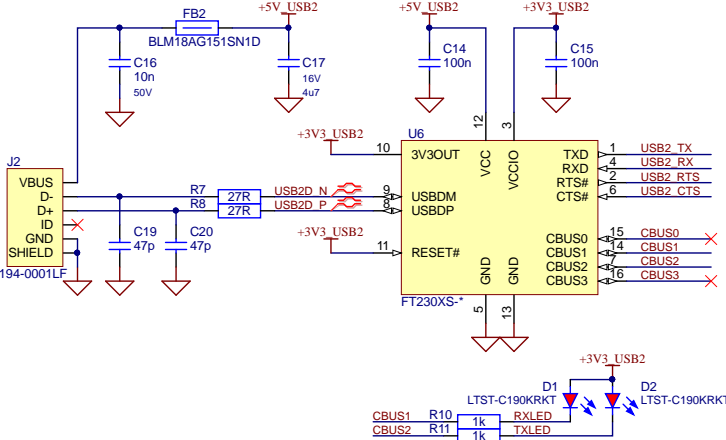




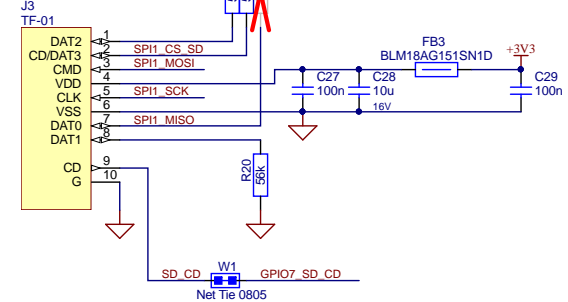
USB-Serial bridge

USB-Serial partial power-down isolation (USB2 disconnected)

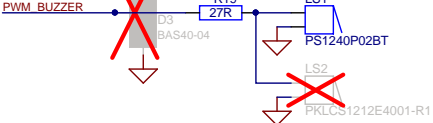
LCD



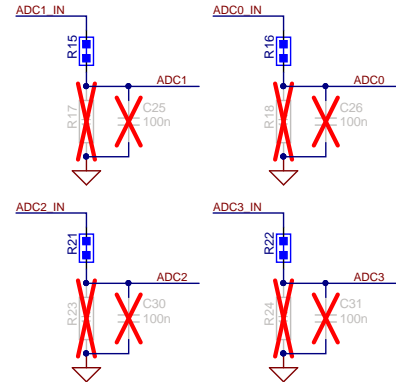
Micro SD Card



Buzzer



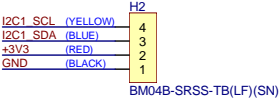
ADC scale and filter circuitry



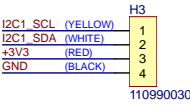
Peripheral connector

PWR	+VPWR	H1	1	2	+VPWR
ADC	GND		3	4	+3V3
	GND		5	6	(PC5/ADC_IN15) ADC3
	ADC0 (PB0/ADC_IN8)		7	8	(PA7/ADC_IN7) ADC1
	ADC2 (PC4/ADC_IN14)		9	10	+3V3
DAC	GND		11	12	GND
	DAC1 (PA4)		13	14	+3V3
GPIO	GND		15	16	+3V3
	GPIO0 (PA6/TIM3_CH1/TIM22_CH1)		17	18	(PA5/TIM2_CH1) GPIO1
	GPIO2 (PA1/TIM2_CH2)		19	20	(PA0/TIM2_CH1) GPIO3
	GPIO4 (PC3)		21	22	(PC2) GPIO5
	GPIO6 (PC1)		23	24	(PB7) GPIO7 SD_CD
UART	GND		25	26	+3V3
	UART2_TX (PA2)		27	28	(PA3) UART2_RX
	UART4_TX (PC19)		29	30	(PC11) UART4_RX
I2C	GND		31	32	+3V3
	I2C1_SCL (PB8)		33	34	(PB9) I2C1_SDA
SPI	GND		35	36	+3V3
	SPI1_CS (PB6)		37	38	(PB3) SPI1_SCK
	SPI1_MOSI (PB5)		39	40	(PB4) SPI1_MISO

Sparkfun QWIIC / STEMMA QT Connector



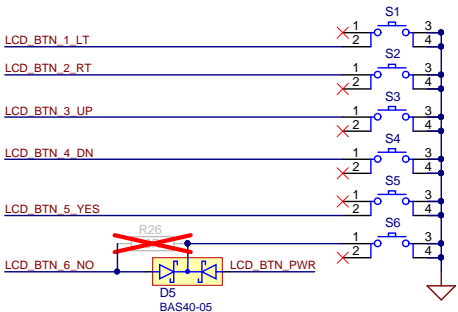
Seeed Grove I2C Connector




LCD LED



LCD Buttons



(pull-up resistors on micro must be enabled)



PCB NAME
PX-HERO Board

SCH PAGE TITLE
Peripherals

SHEET
3 OF 3

DRAWN BY
Pieter Conradie

DATE
2019-10-24

PROJECT ENGINEER
Pieter Conradie

PCB NUMBER
P0012

PCB REV
F

VARIANT
deluxe edition

TEMPLATE REV
02

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