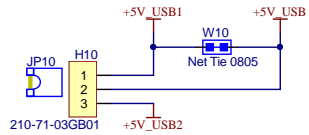
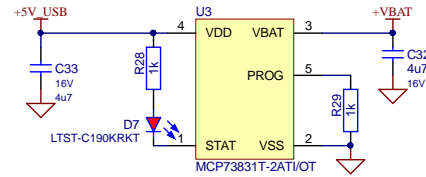


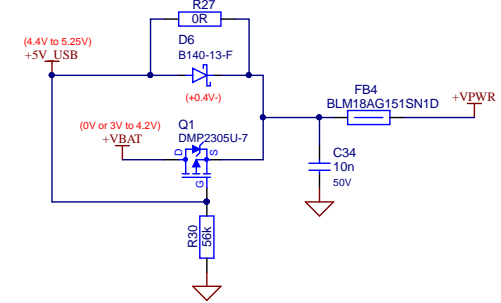
USB input power selector (jumper)



Li-Po Battery Charger

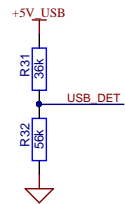


Automatic power path selection

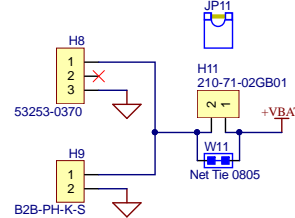


USB power detect

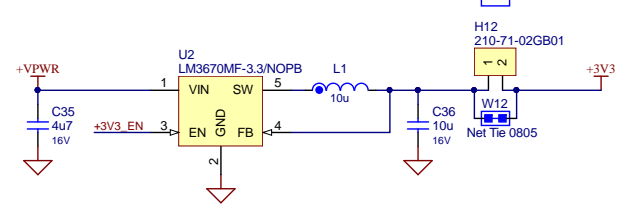
Vusb_min = 4.4V
Vusb_max = 5.25V
Vusb_det_min = 2.66V
Vusb_det_max = 3.22V



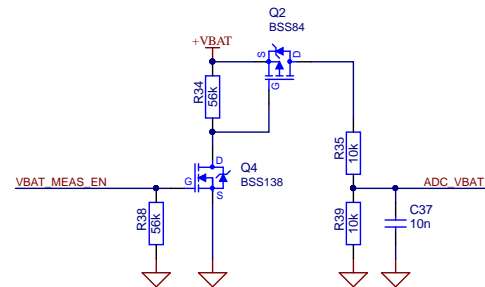
Li-Po Battery Connector (Molex or JST)



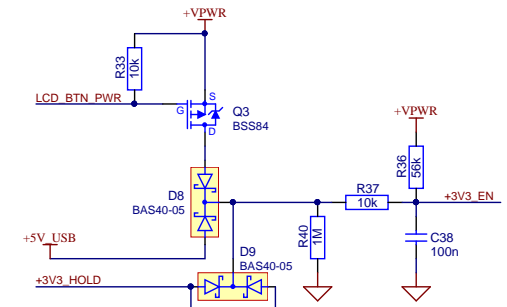
+3V3 high efficiency buck regulator



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

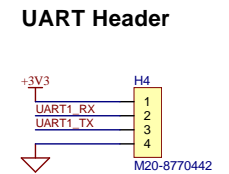
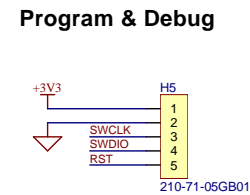
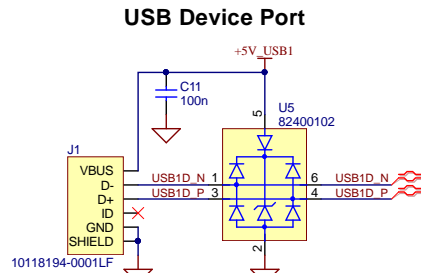
GND Test Points

- 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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[illegible]

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]

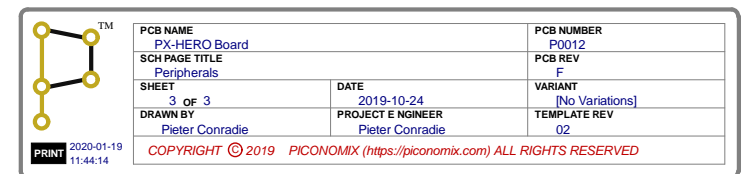
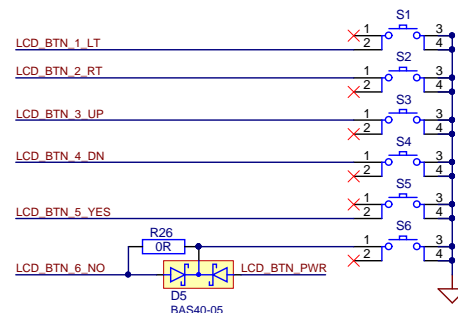
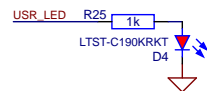
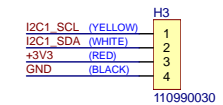
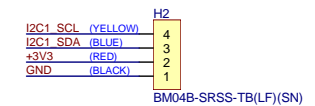
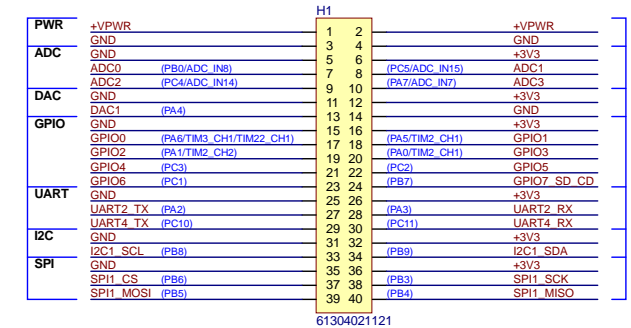
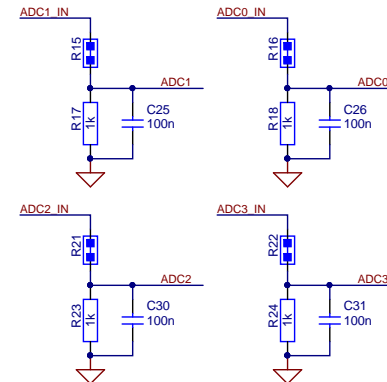
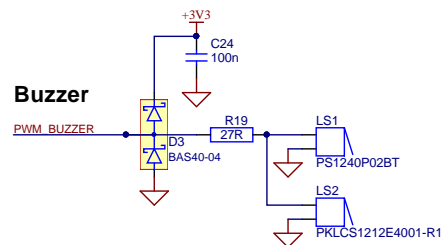
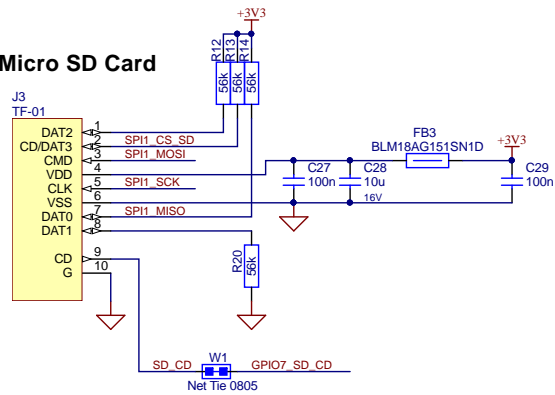
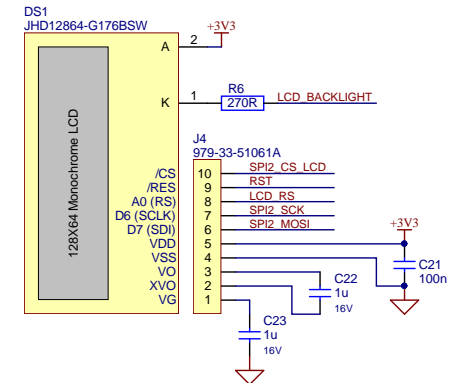
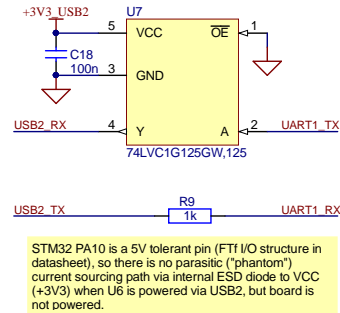
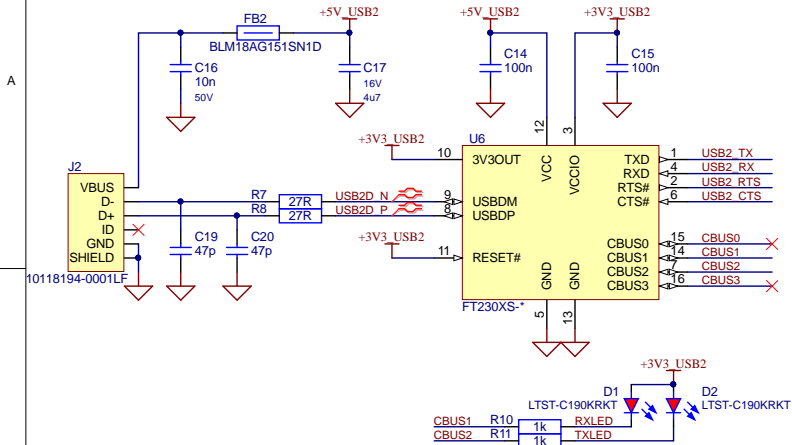
DRAWN BY
Pieter Conradie

PROJECT E ENGINEER
Pieter Conradie

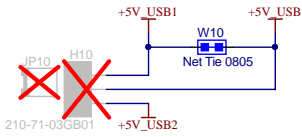
TEMPLATE REV
02

PRINT 2020-01-19
11:44:13

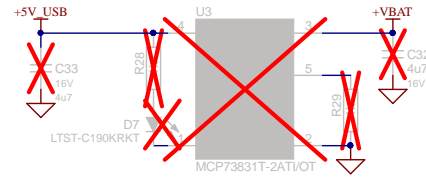
COPYRIGHT © 2019 PICONOMIX (<https://piconomix.com>) ALL RIGHTS RESERVED



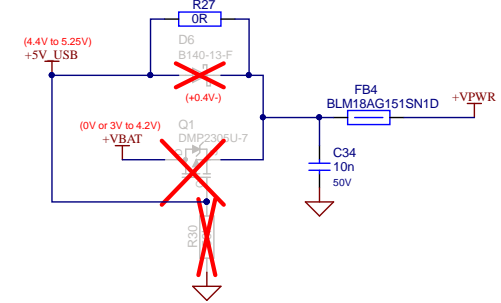
USB input power selector (jumper)



Li-Po Battery Charger

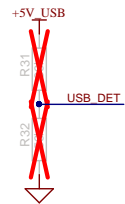


Automatic power path selection

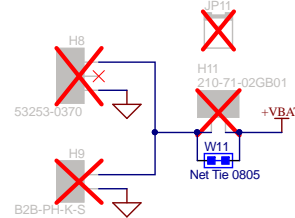


USB power detect

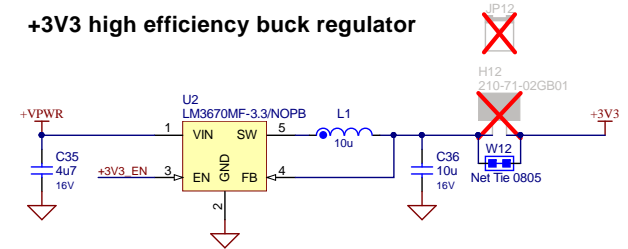
Vusb_min = 4.4V
Vusb_max = 5.25V
Vusb_det_min = 2.66V
Vusb_det_max = 3.22V



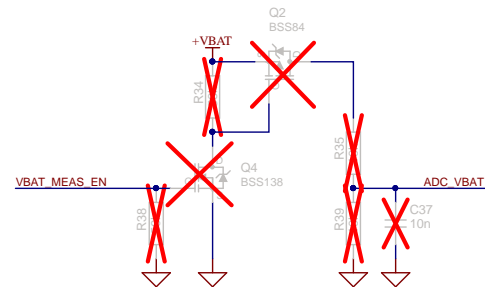
Li-Po Battery Connector (Molex or JST)



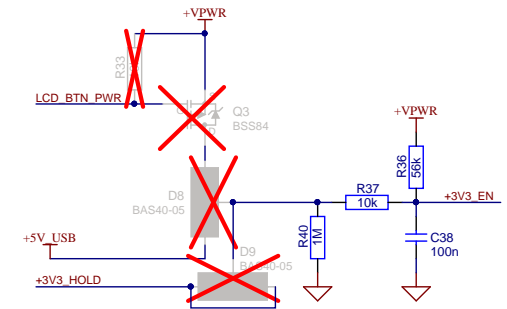
+3V3 high efficiency buck regulator



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

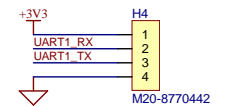
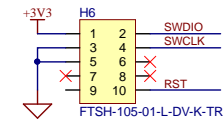
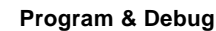
GND Test Points

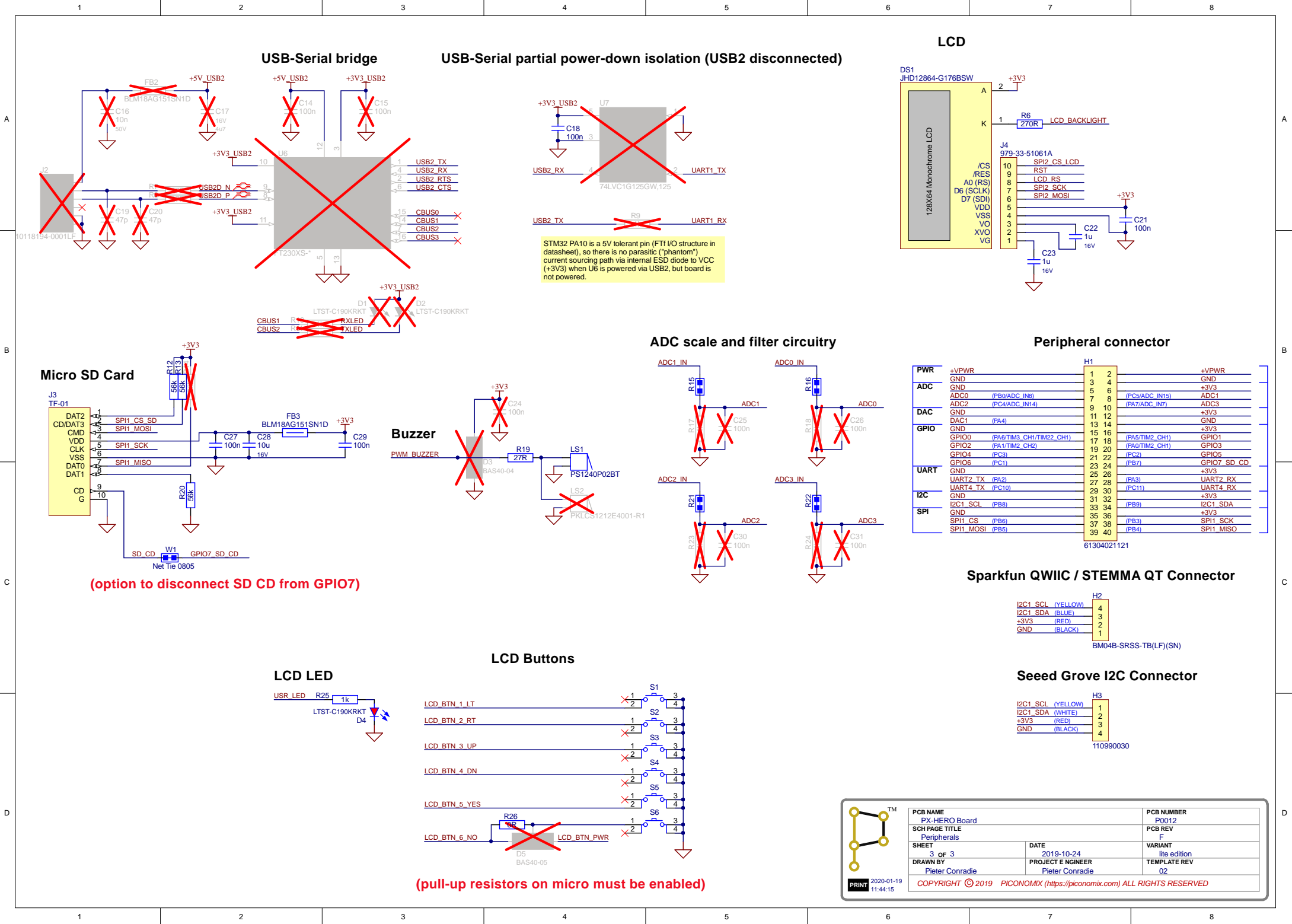
- H13 210-71-02GB01
- H18 210-71-02GB01

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 lite edition	
	DRAWN BY Pieter Conradie	PROJECT E ENGINEER Pieter Conradie	TEMPLATE REV 02	
	2020-01-19 11:44:15		COPYRIGHT © 2019 PICONOMIX (https://piconomix.com) ALL RIGHTS RESERVED	

[illegible]



USB-Serial bridge

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

LCD

Micro SD Card

ADC scale and filter circuitry

Peripheral connector


Buzzer

Sparkfun QWIC / STEMMA QT Connector

LCD Buttons

Seeed Grove I2C Connector

LCD LED



2020-01-19
11:44:15

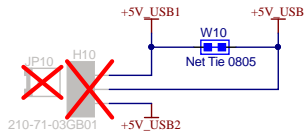
PCB NAME PX-HERO Board		PCB NUMBER P0012
SCH PAGE TITLE Peripherals		PCB REV F
SHEET 3 OF 3	DATE 2019-10-24	VARIANT lite edition
DRAWN BY Pieter Conradie		TEMPLATE REV 02
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STM32 PA10 is a 5V tolerant pin (FT1/I/O structure in datasheet), so there is no parasitic ("phantom") current sourcing path via internal ESD diode to VCC (+3V3) when U6 is powered via USB2, but board is not powered.

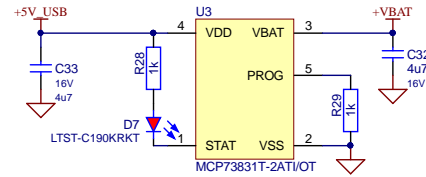
(option to disconnect SD CD from GPIO7)

(pull-up resistors on micro must be enabled)

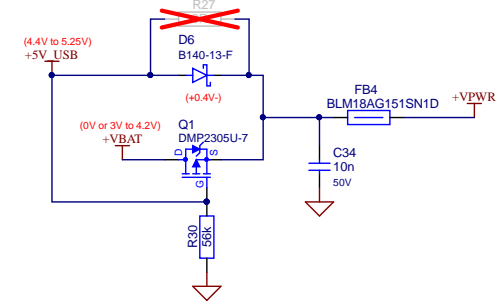
USB input power selector (jumper)



Li-Po Battery Charger

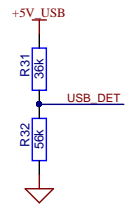


Automatic power path selection

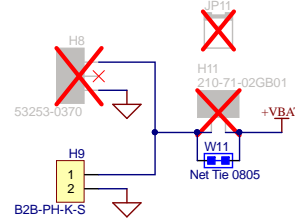


USB power detect

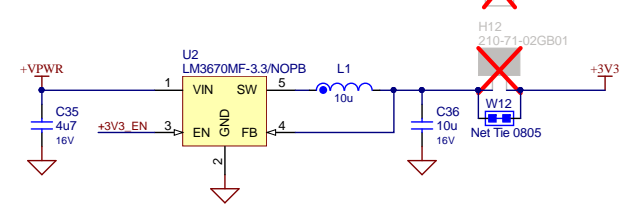
Vusb_min = 4.4V
Vusb_max = 5.25V
Vusb_det_min = 2.66V
Vusb_det_max = 3.22V



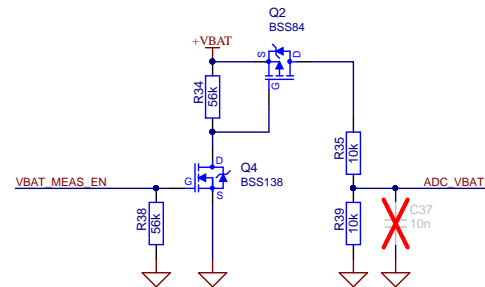
Li-Po Battery Connector (Molex or JST)



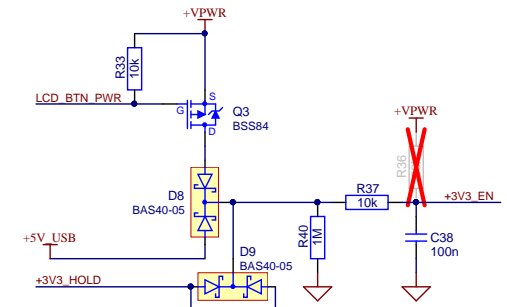
+3V3 high efficiency buck regulator



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

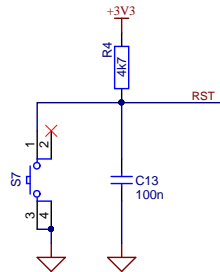
- PCB1
- P0014

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 deluxe edition
DRAWN BY Pieter Conradie	PROJECT ENGINEER Pieter Conradie	TEMPLATE REV 02
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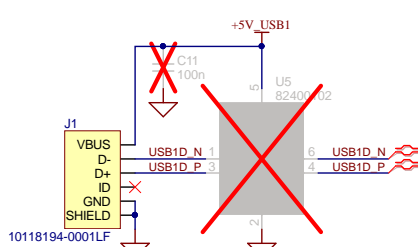
STM32 ARM Cortex M0+ Microcontroller



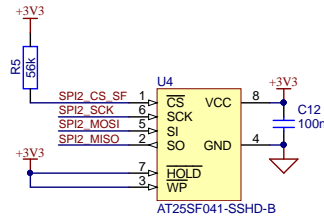
Reset Button



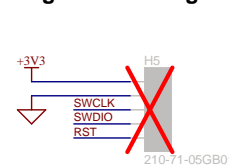
USB Device Port



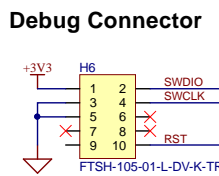
Serial Flash



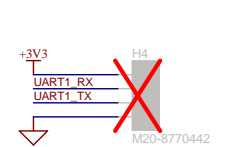
Program & Debug

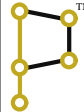


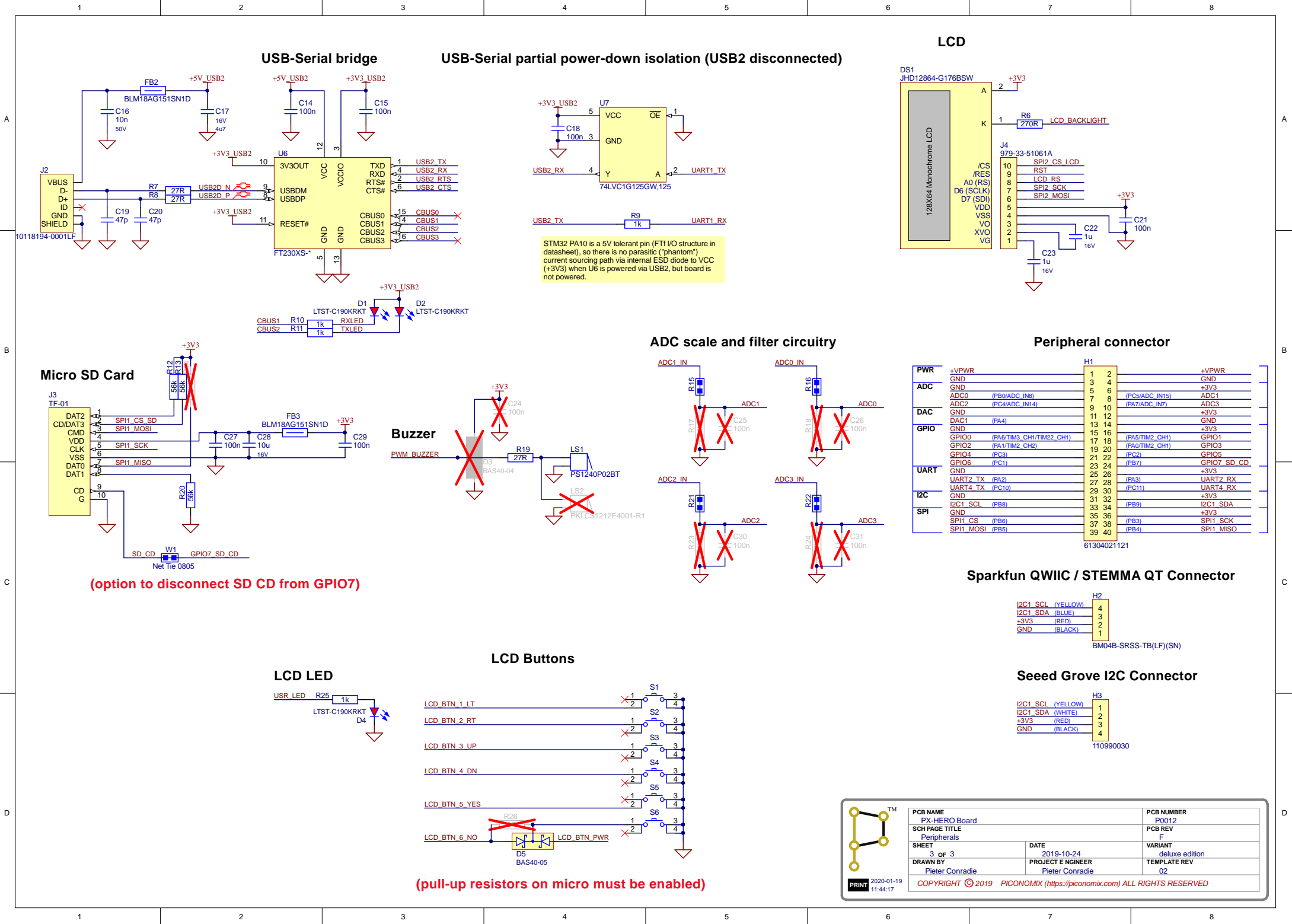
Standard ARM Cortex Debug Connector



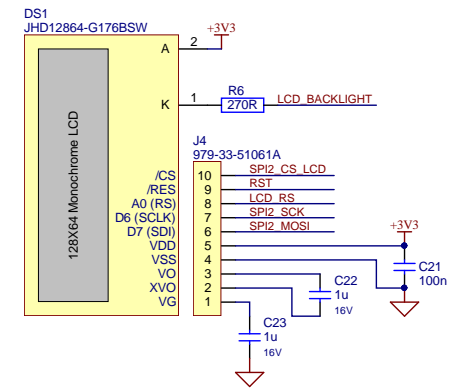
UART Header



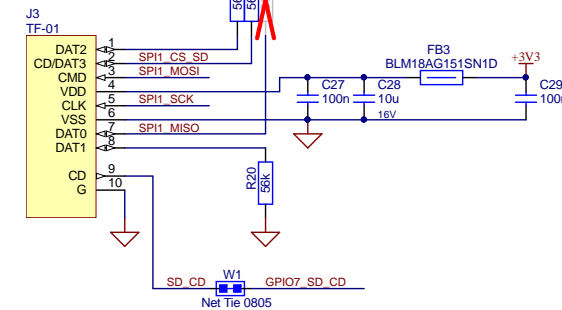
		PCB NAME PX-HERO Board		PCB NUMBER P0012	
SCH PAGE TITLE Microcontroller		DATE 2019-10-24		PCB REV F	
SHEET 2 OF 3		PROJECT E NGINEER Pieter Conradie		VARIANT deluxe edition	
DRAWN BY Pieter Conradie		TEMPLATE REV 02		COPYRIGHT © 2019 PICONOMIX (https://piconomix.com) ALL RIGHTS RESERVED	



LCD

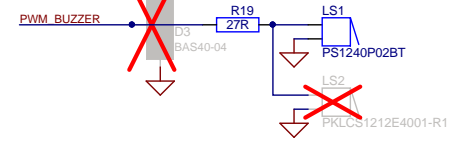


Micro SD Card

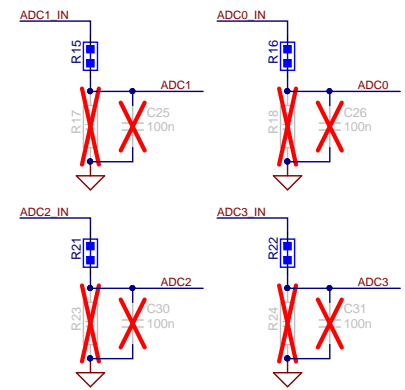


(option to disconnect SD CD from GPIO7)

Buzzer



ADC scale and filter circuitry



Peripheral connector

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

Sparkfun QWIIC / STEMMA QT Connector

I2C1_SCL	(YELLOW)	H2	4
I2C1_SDA	(BLUE)	3	
+3V3	(RED)	2	
GND	(BLACK)	1	

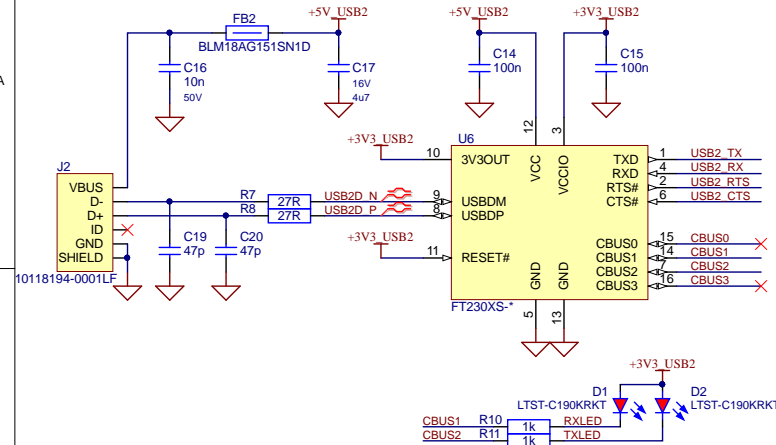
BM04B-SRSS-TB(LF)(SN)

Seed Grove I2C Connector

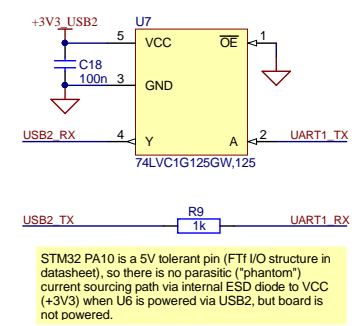
I2C1 SCL (YELLOW)	H3
I2C1 SDA (WHITE)	1
+3V3 (RED)	2
GND (BLACK)	3
	4

110990030

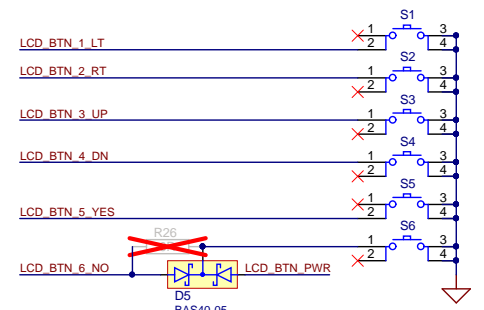
USB-Serial bridge



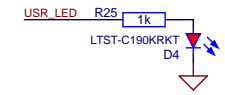
USB-Serial partial power-down isolation (USB2 disconnected)




LCD Buttons



LCD LED





PRINT 2020-01-19 11:44:17

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