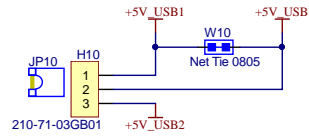
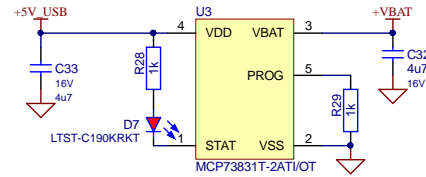


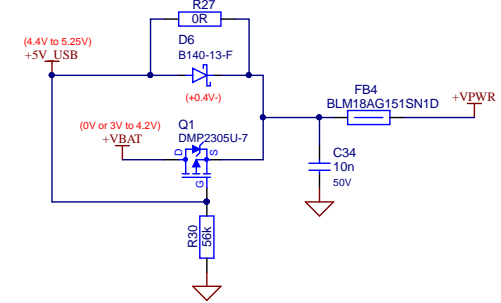
USB input power selector (jumper)



Li-Po Battery Charger

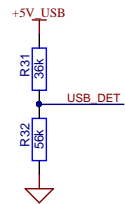


Automatic power path selection

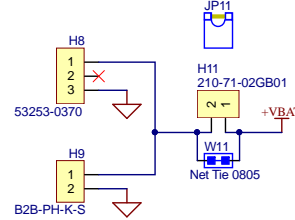


USB power detect

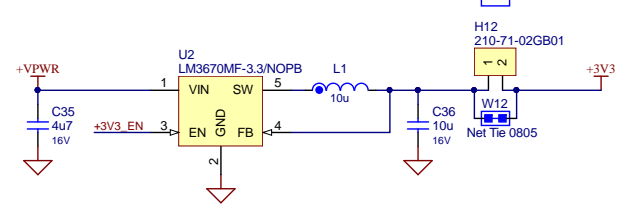
Vusb_min = 4.4V
Vusb_max = 5.25V
Vusb_det_min = 2.66V
Vusb_det_max = 3.22V



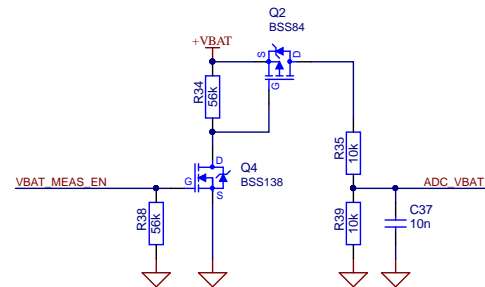
Li-Po Battery Connector (Molex or JST)



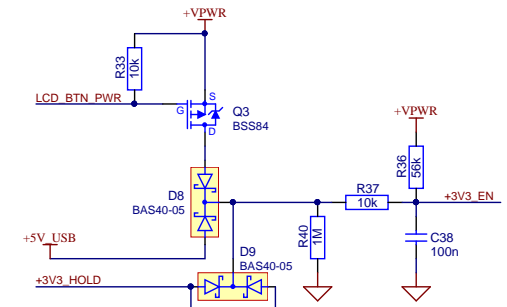
+3V3 high efficiency buck regulator



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

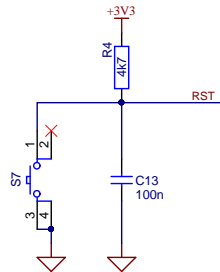
- PCB1
- P0014

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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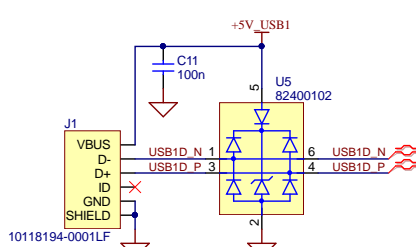
STM32 ARM Cortex M0+ Microcontroller



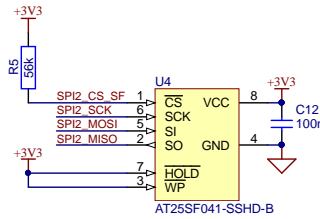
Reset Button



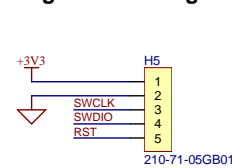
USB Device Port



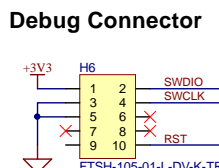
Serial Flash



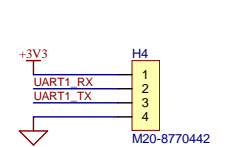
Program & Debug



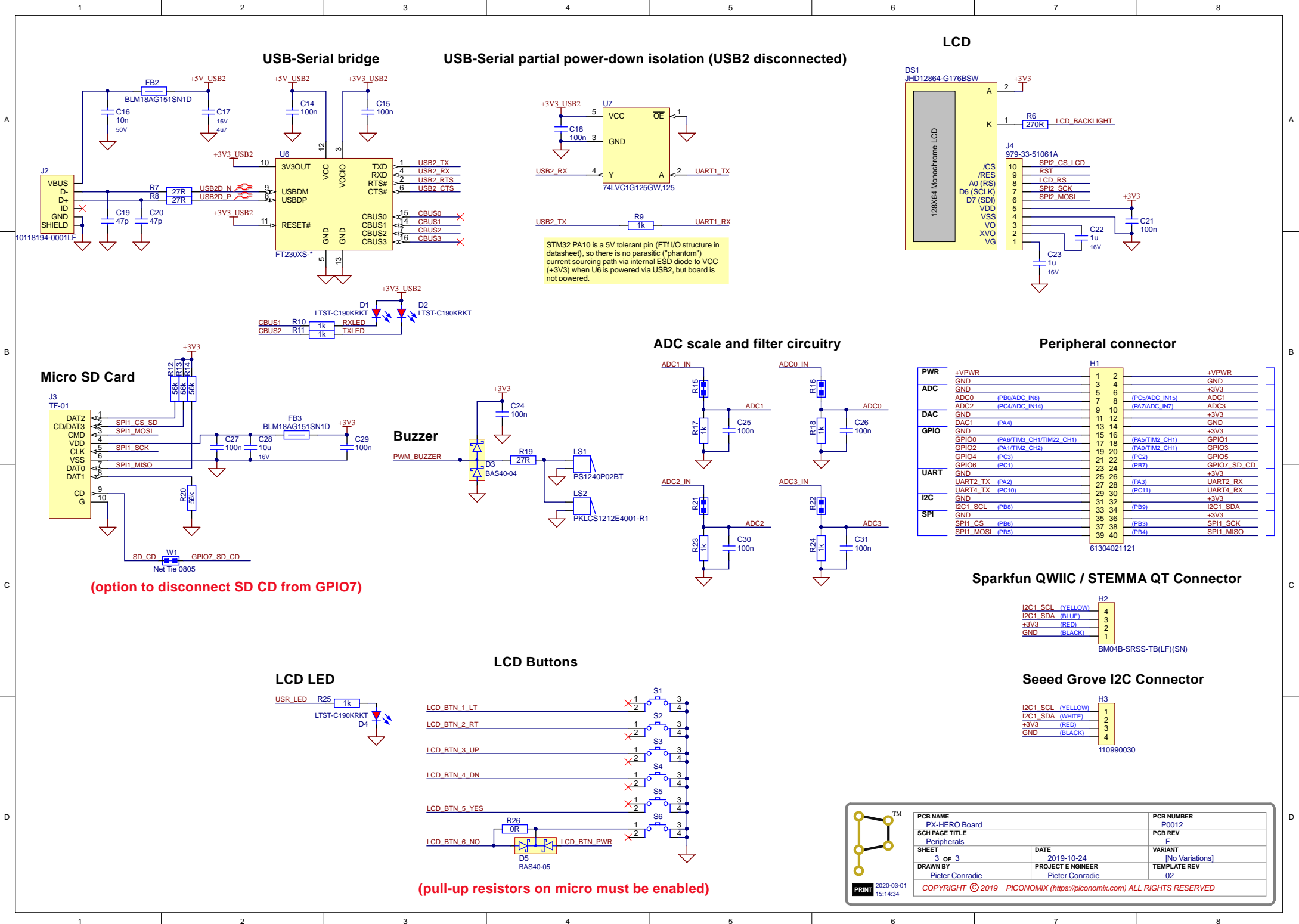
Standard ARM Cortex Debug Connector



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]
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USB-Serial bridge

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

LCD

Peripheral connector

Sparkfun QWIC / STEMMA QT Connector

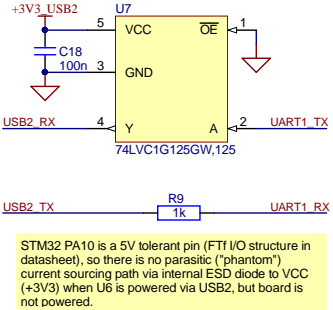
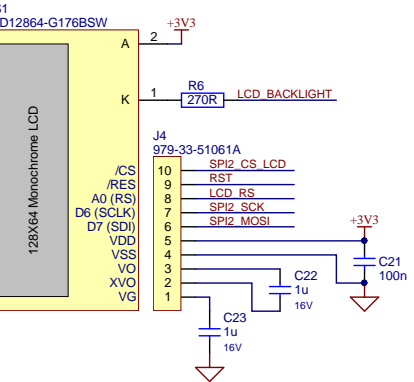
Seeed Grove I2C Connector

Micro SD Card

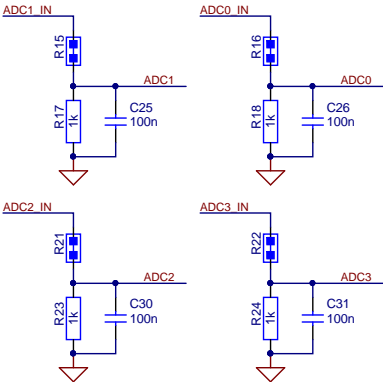
Buzzer

LCD Buttons

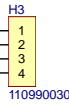
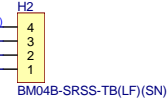
LCD LED




ADC scale and filter circuitry



PWR	+VPWR	1	2	+VPWR
ADC	GND	3	4	GND
	GND	5	6	(PC5/ADC_IN15) +3V3
	ADC0 (PB0/ADC_IN8)	7	8	ADC1
	ADC2 (PC4/ADC_IN14)	9	10	ADC3
DAC	GND	11	12	+3V3
	DAC1 (PA4)	13	14	GND
GPIO	GND	15	16	+3V3
	GPIO0 (PA6/TIM3_CH1/TIM22_CH1)	17	18	GPIO1
	GPIO2 (PA1/TIM2_CH2)	19	20	GPIO3
	GPIO4 (PC3)	21	22	GPIO5
	GPIO6 (PC1)	23	24	GPIO7 SD_CD
UART	GND	25	26	+3V3
	UART2_TX (PA2)	27	28	UART2_RX
	UART4_TX (PC19)	29	30	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





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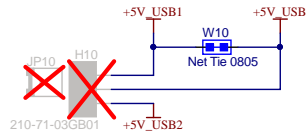
PCB NAME PX-HERO Board		PCB NUMBER P0012
SCH PAGE TITLE Peripherals		PCB REV F
SHEET 3 OF 3	DATE 2019-10-24	VARIANT [No Variations]
DRAWN BY Pieter Conradie	PROJECT ENGINEER Pieter Conradie	TEMPLATE REV 02
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STM32 PA10 is a 5V tolerant pin (FT1/I/O structure 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.

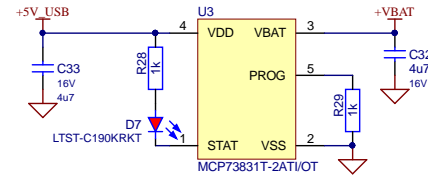
(option to disconnect SD CD from GPIO7)

(pull-up resistors on micro must be enabled)

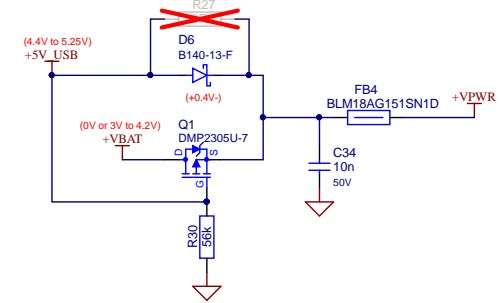
USB input power selector (jumper)



Li-Po Battery Charger

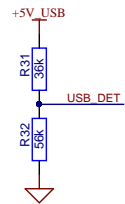


Automatic power path selection

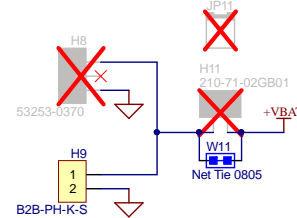


USB power detect

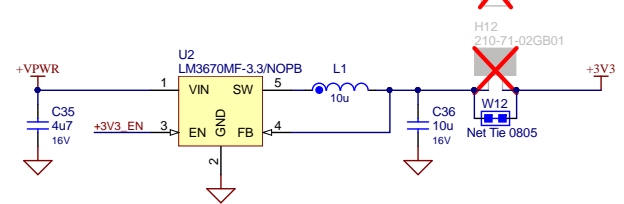
Vusb_min = 4.4V
Vusb_max = 5.25V
Vusb_det_min = 2.66V
Vusb_det_max = 3.22V



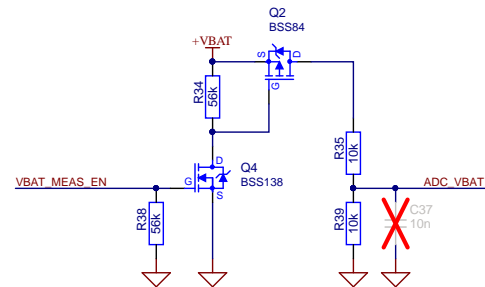
Li-Po Battery Connector (Molex or JST)



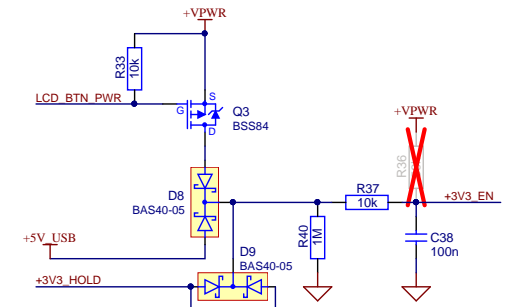
+3V3 high efficiency buck regulator



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 E NGINEER Pieter Conradie	TEMPLATE REV 02	
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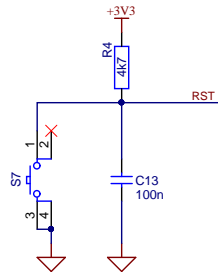
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2020-03-01
15:14:36

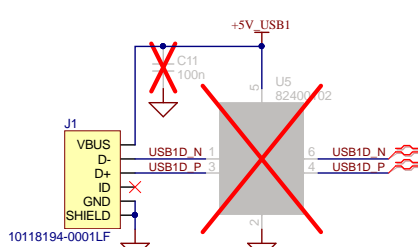
STM32 ARM Cortex M0+ Microcontroller



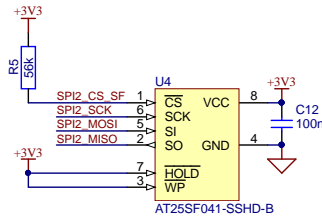
Reset Button



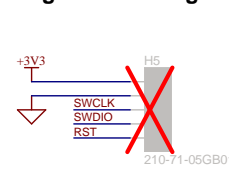
USB Device Port



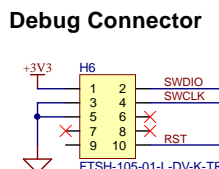
Serial Flash



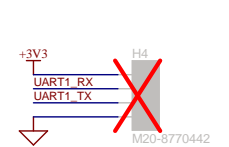
Program & Debug



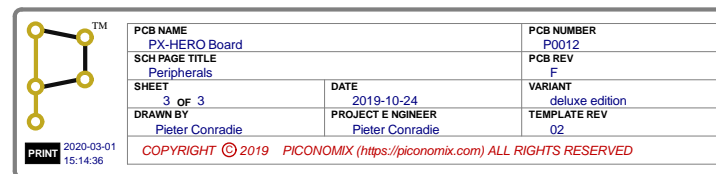
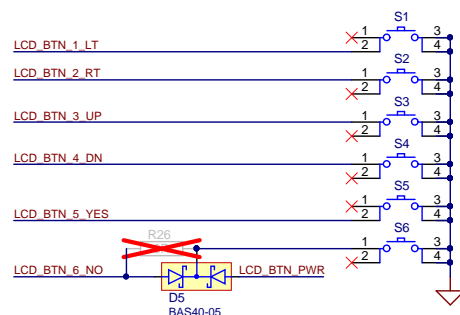
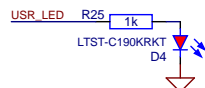
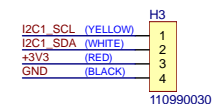
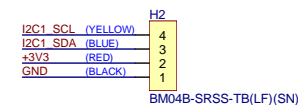
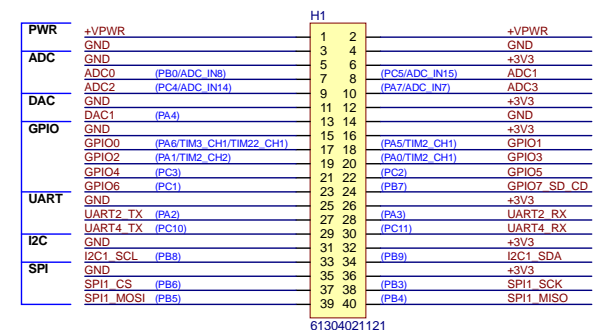
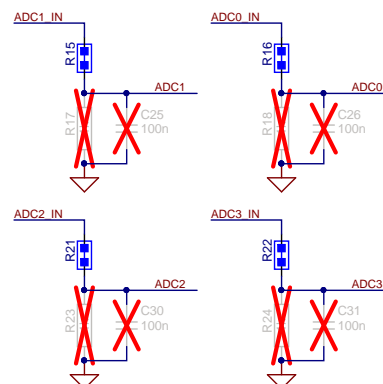
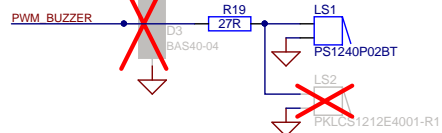
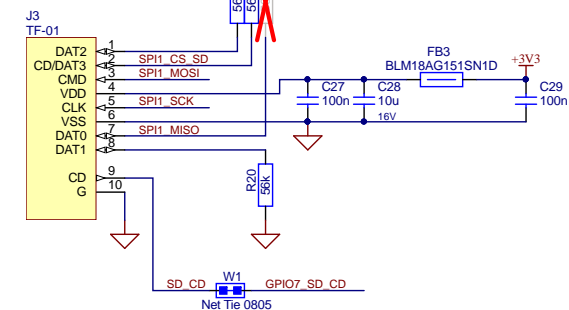
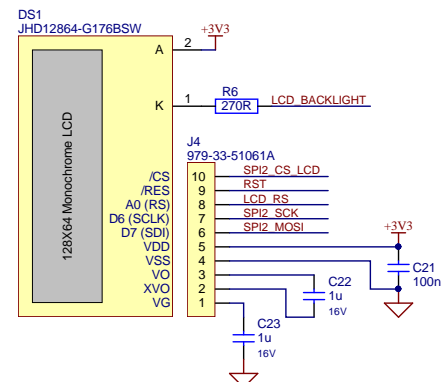
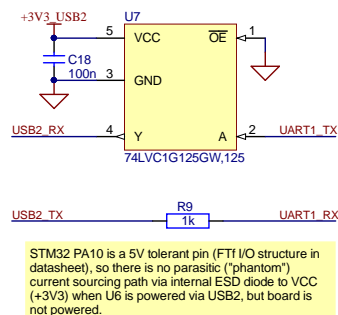
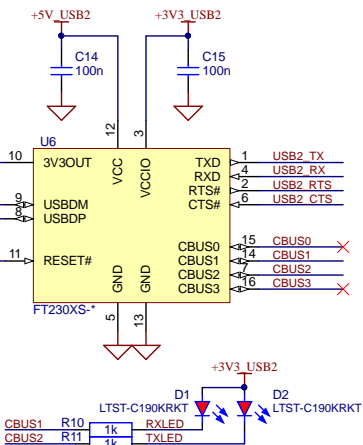
Standard ARM Cortex Debug Connector



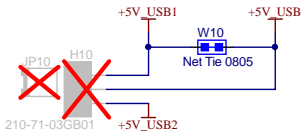
UART Header



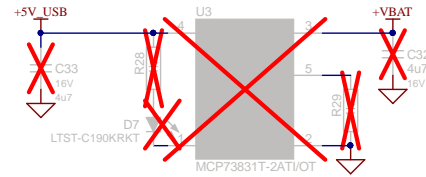
PCB NAME PX-HERO Board		PCB NUMBER P0012
SCH PAGE TITLE Microcontroller		PCB REV F
SHEET 2 OF 3	DATE 2019-10-24	VARIANT deluxe edition
DRAWN BY Pieter Conradie	PROJECT ENGINEER Pieter Conradie	TEMPLATE REV 02
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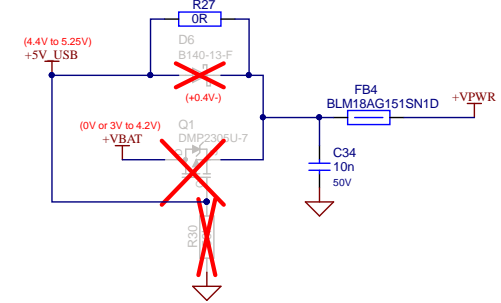
USB input power selector (jumper)



Li-Po Battery Charger

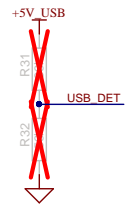


Automatic power path selection

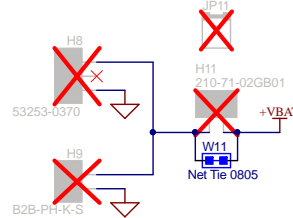


USB power detect

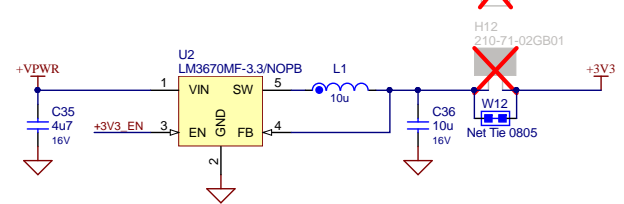
Vusb_min = 4.4V
Vusb_max = 5.25V
Vusb_det_min = 2.66V
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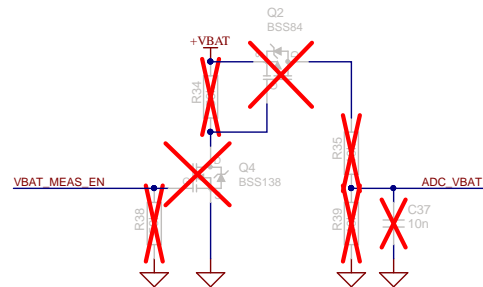
Li-Po Battery Connector (Molex or JST)



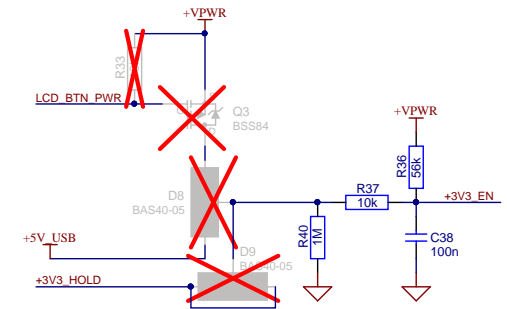
+3V3 high efficiency buck regulator



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



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- H22 Mounting hole, M3

GND Test Points

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

BOM

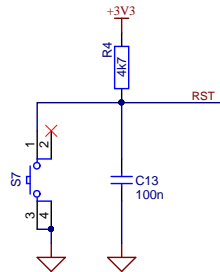
- PCB1
- P0014

	PCB NAME <u>PX-HERO Board</u>		PCB NUMBER <u>P0012</u>	
	SCH PAGE TITLE <u>Power Supply</u>		PCB REV <u>F</u>	
	SHEET <u>1</u> OF <u>3</u>	DATE <u>2019-10-24</u>	VARIANT <u>lite edition</u>	
	DRAWN BY <u>Pieter Conradie</u>	PROJECT E ENGINEER <u>Pieter Conradie</u>	TEMPLATE REV <u>02</u>	
	PRINT 2020-03-01 15:14:37		COPYRIGHT © 2019 PICONOMIX (https://piconomix.com) ALL RIGHTS RESERVED	

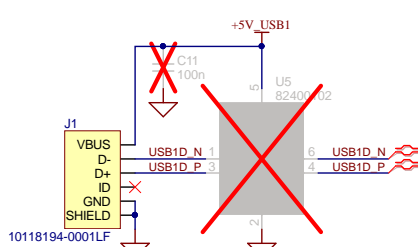
STM32 ARM Cortex M0+ Microcontroller



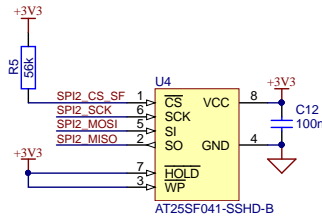
Reset Button



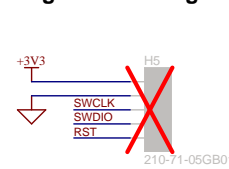
USB Device Port



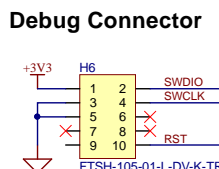
Serial Flash



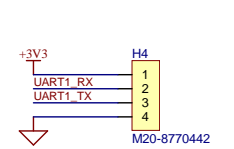
Program & Debug



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 lite edition
DRAWN BY Pieter Conradie	PROJECT ENGINEER Pieter Conradie	TEMPLATE REV 02
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