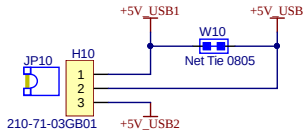
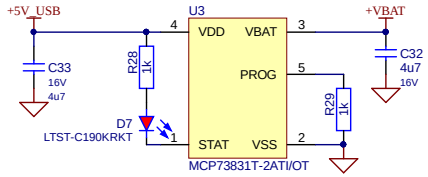
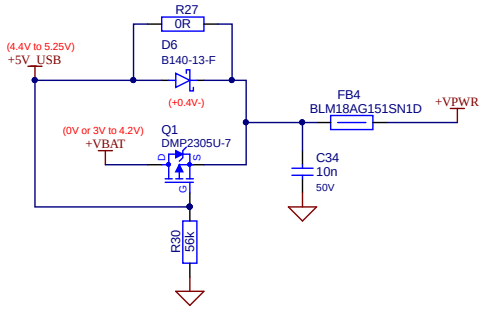
USB input power selector (jumper)



Li-Po Battery Charger

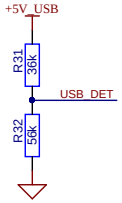


Automatic power path selection

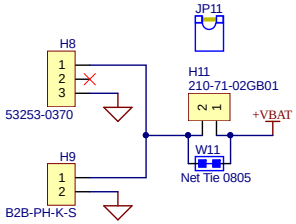


USB power detect

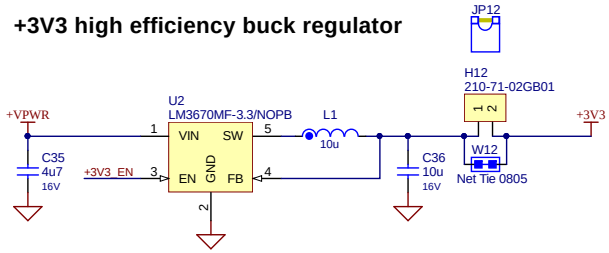
Vusb_min = 4.4V
Vusb_max = 5.25V
Vusb_det_min = 2.66V
Vusb_det_max = 3.22V



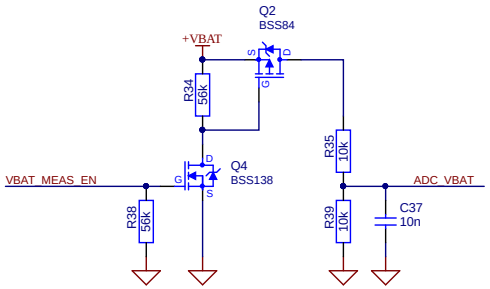
Li-Po Battery Connector (Molex or JST)



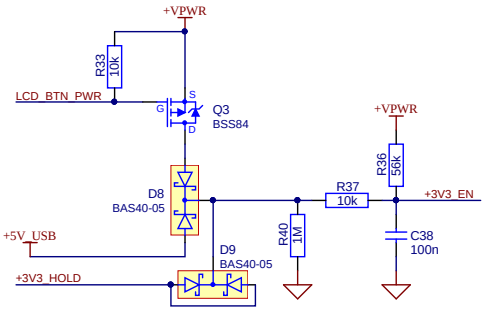
+3V3 high efficiency buck regulator



Battery Voltage Measurement



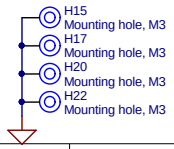
Power on button and microcontroller hold (always on when USB connected)



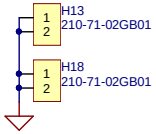
Fiducials

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

Mounting Holes



GND Test Points



BOM

PCB1

P0014

PCB NAME: PX-HERO Board		PCB NUMBER: P0012
SCH PAGE TITLE: Power Supply		PCB REV: G
SHEET: 1 OF 3	DATE: 2020-04-10	VARIANT: [No Variations]
DRAWN BY: Pieter Conradie	PROJECT E NGINEER: Pieter Conradie	TEMPLATE REV: 02

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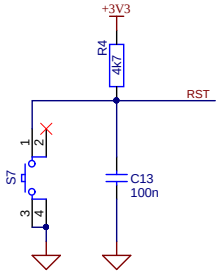
STM32 ARM Cortex M0+ Microcontroller

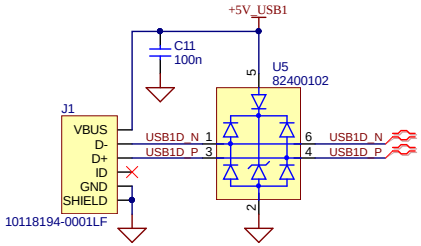
32kHz Crystal

Boot select

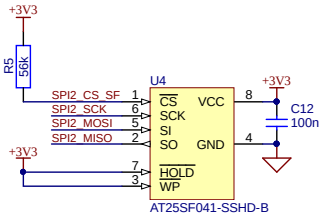
Reset Button



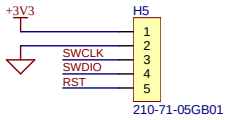
USB Device Port



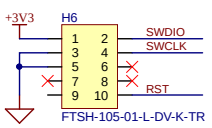
Serial Flash



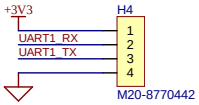
Program & Debug



Standard ARM Cortex Debug Connector



UART Header



PCB NAME: PX-HERO Board			PCB NUMBER: P0012
SCH PAGE TITLE: Microcontroller			PCB REV: G
SHEET: 2 OF 3	DATE: 2020-04-10		VARIANT: [No Variations]
DRAWN BY: Pieter Conradie	PROJECT E NGINEER: Pieter Conradie		TEMPLATE REV: 02

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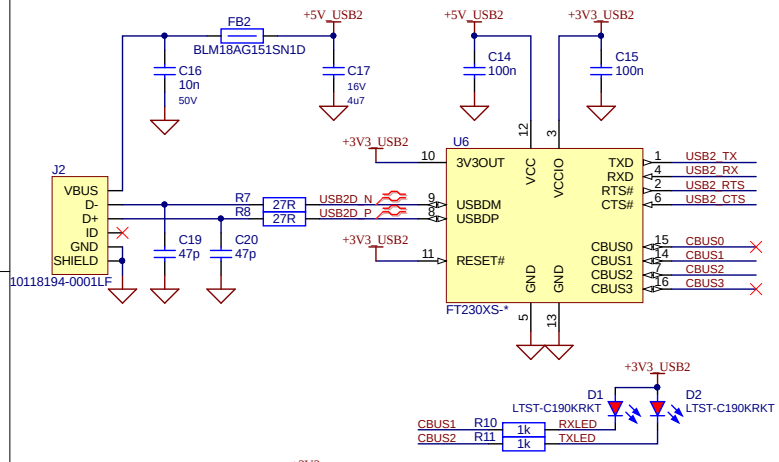
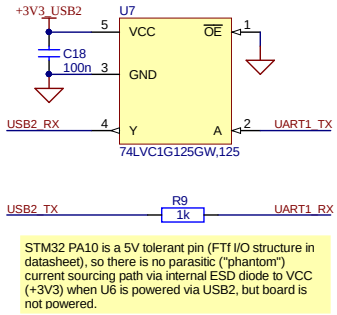
USB-Serial bridge

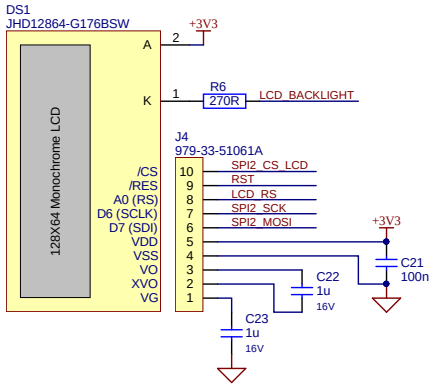


USB-Serial partial power-down isolation (USB2 disconnected)

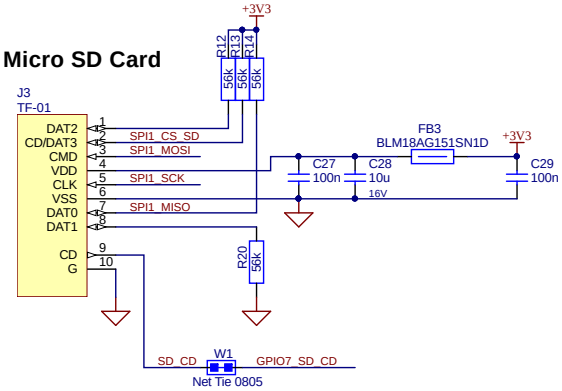


STM32 PA10 is a 5V tolerant pin (FTf I/O structure in datasheet), so there is no parasitic ("phantom") current sourcing path via internal ESD diode to VCC (+3V3) when U6 is powered via USB2, but board is not powered.

LCD

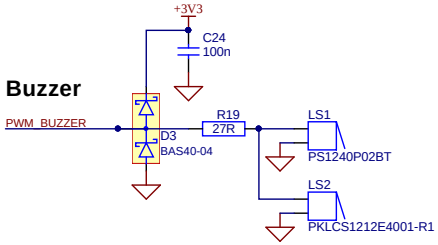


Micro SD Card

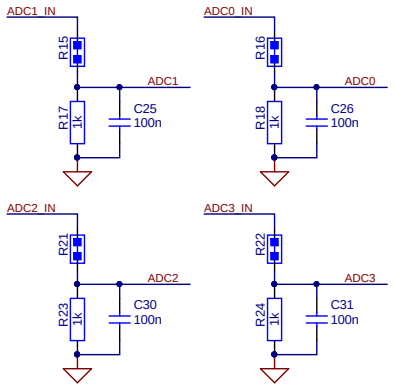


(option to disconnect SD CD from GPIO7)

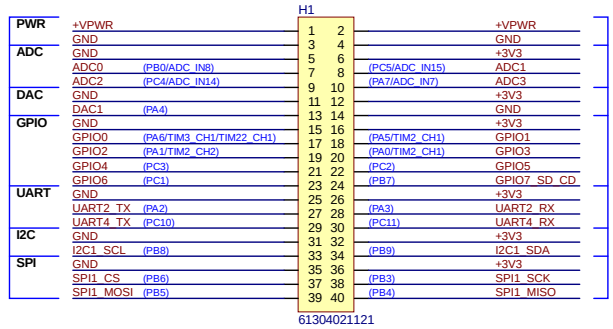
Buzzer



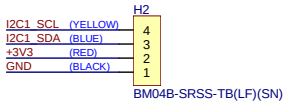
ADC scale and filter circuitry



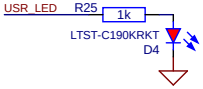
Peripheral connector



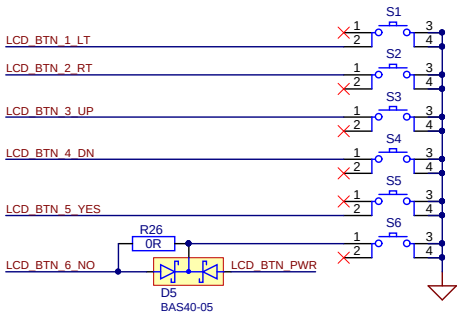
Sparkfun QWIIC / STEMMA QT Connector



LCD LED

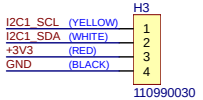


LCD Buttons



(pull-up resistors on micro must be enabled)

Seeed Grove I2C Connector



PCB NAME: PX-HERO Board		PCB NUMBER: P0012
SCH PAGE TITLE: Peripherals		PCB REV: G
SHEET: 3 OF 3	DATE: 2020-04-10	VARIANT: [No Variations]
DRAWN BY: Pieter Conradie	PROJECT E NGINEER: Pieter Conradie	TEMPLATE REV: 02

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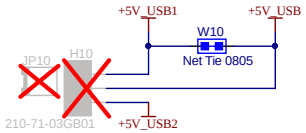
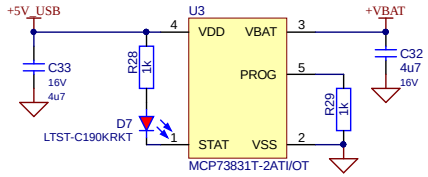
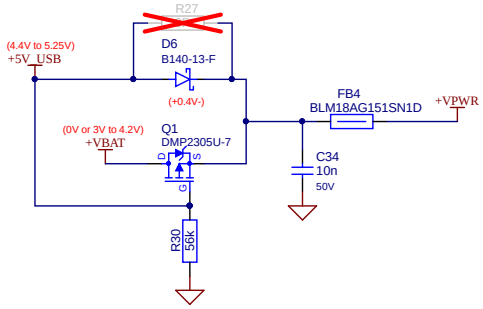
USB input power selector (jumper)



Li-Po Battery Charger

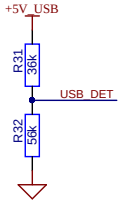


Automatic power path selection

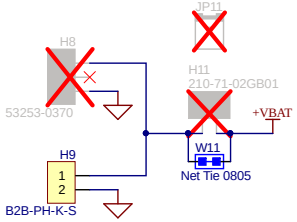


USB power detect

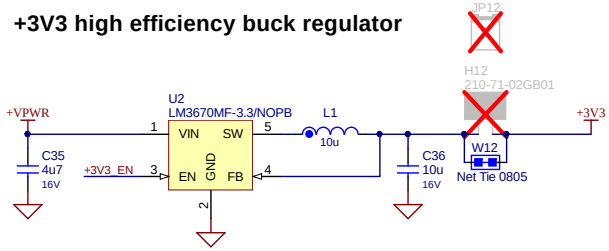
Vusb_min = 4.4V
Vusb_max = 5.25V
Vusb_det_min = 2.66V
Vusb_det_max = 3.22V



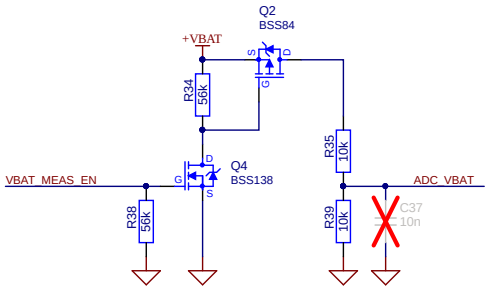
Li-Po Battery Connector (Molex or JST)



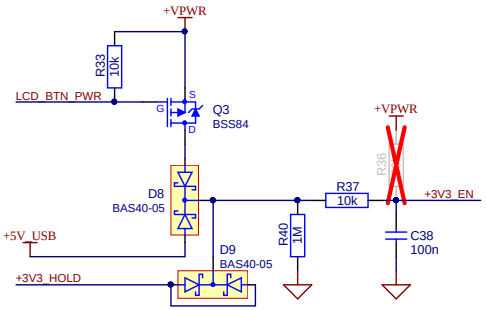
+3V3 high efficiency buck regulator



Battery Voltage Measurement



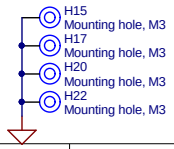
Power on button and microcontroller hold (always on when USB connected)



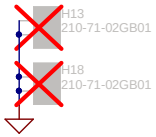
Fiducials

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

Mounting Holes



GND Test Points



BOM

PCB1

P0014

PCB NAME: PX-HERO Board			PCB NUMBER: P0012
SCH PAGE TITLE: Power Supply			PCB REV: G
SHEET: 1 OF 3	DATE: 2020-04-10		VARIANT: deluxe edition
DRAWN BY: Pieter Conradie	PROJECT E NGINEER: Pieter Conradie		TEMPLATE REV: 02

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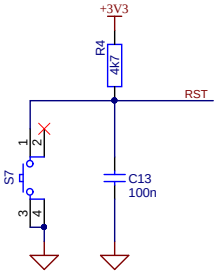
STM32 ARM Cortex M0+ Microcontroller

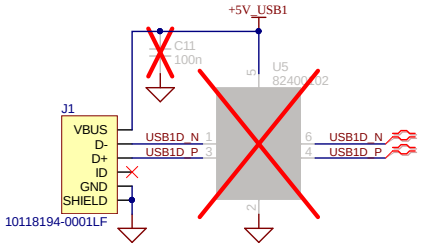
32kHz Crystal

Boot select

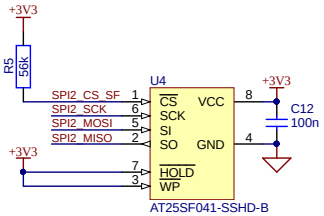
Reset Button



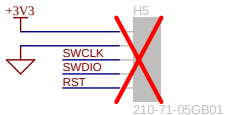
USB Device Port



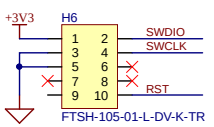
Serial Flash



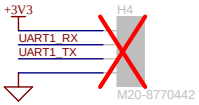
Program & Debug



Standard ARM Cortex Debug Connector



UART Header



PCB NAME: PX-HERO Board			PCB NUMBER: P0012
SCH PAGE TITLE: Microcontroller			PCB REV: G
SHEET: 2 OF 3	DATE: 2020-04-10		VARIANT: deluxe edition
DRAWN BY: Pieter Conradie	PROJECT E NGINEER: Pieter Conradie		TEMPLATE REV: 02

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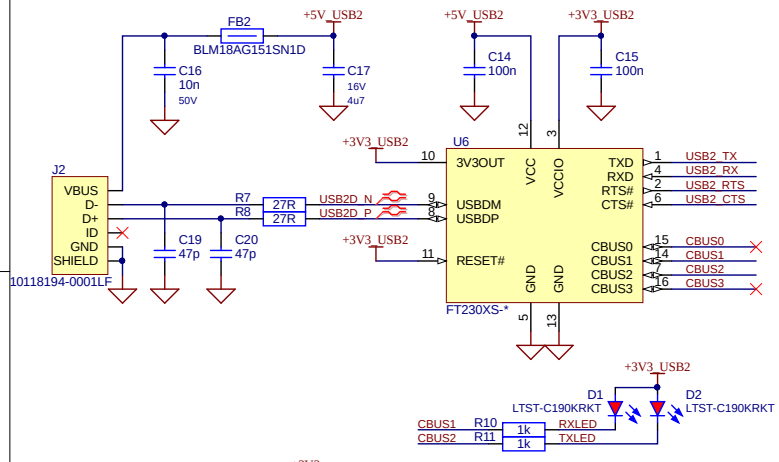
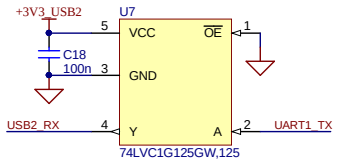
USB-Serial bridge

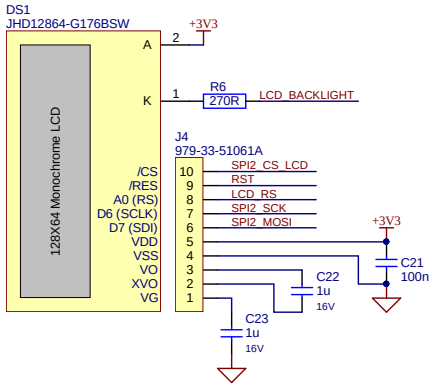


USB-Serial partial power-down isolation (USB2 disconnected)

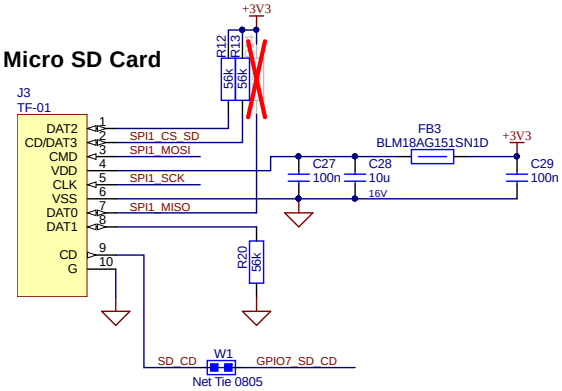


STM32 PA10 is a 5V tolerant pin (FTf I/O structure in datasheet), so there is no parasitic ("phantom") current sourcing path via internal ESD diode to VCC (+3V3) when U6 is powered via USB2, but board is not powered.

LCD

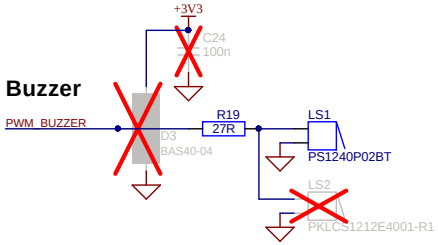


Micro SD Card

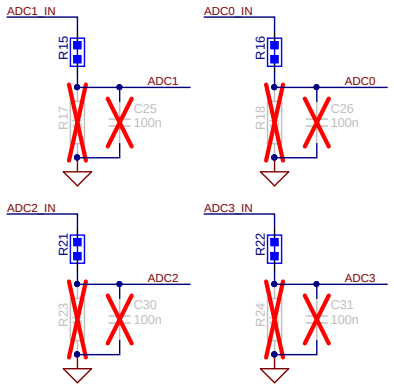


(option to disconnect SD CD from GPIO7)

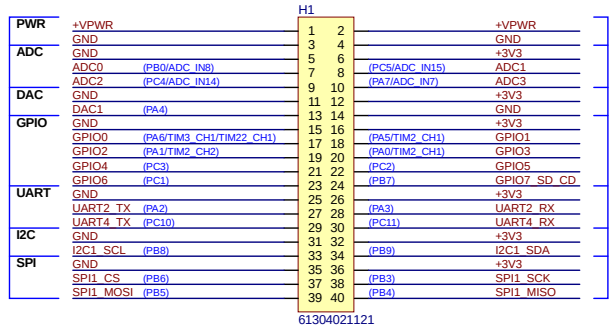
Buzzer



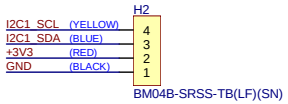
ADC scale and filter circuitry



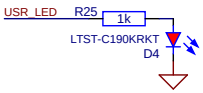
Peripheral connector



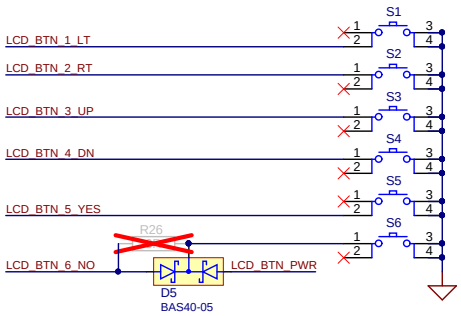
Sparkfun QWIIC / STEMMA QT Connector



LCD LED

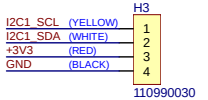


LCD Buttons



(pull-up resistors on micro must be enabled)

Seeed Grove I2C Connector



PCB NAME: PX-HERO Board		PCB NUMBER: P0012
SCH PAGE TITLE: Peripherals		PCB REV: G
SHEET: 3 OF 3	DATE: 2020-04-10	VARIANT: deluxe edition
DRAWN BY: Pieter Conradie	PROJECT E NGINEER: Pieter Conradie	TEMPLATE REV: 02

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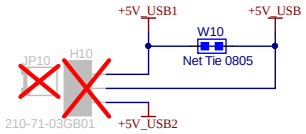
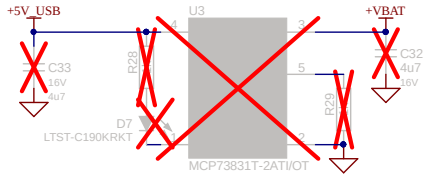
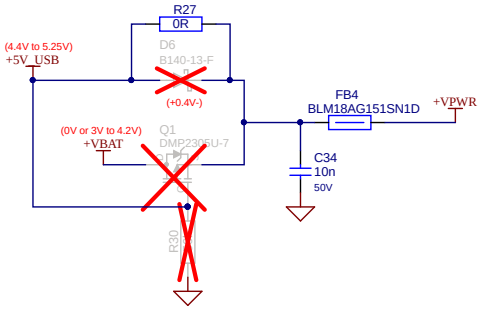
USB input power selector (jumper)



Li-Po Battery Charger

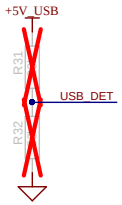


Automatic power path selection

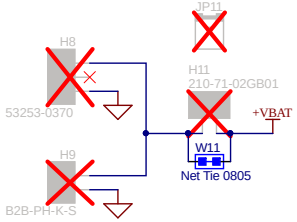


USB power detect

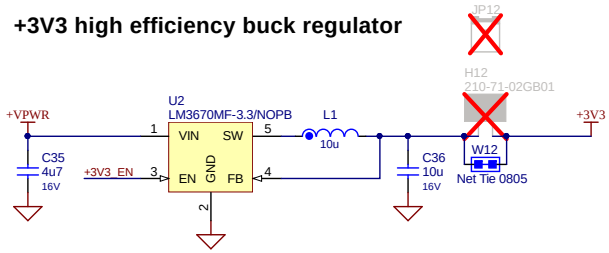
Vusb_min = 4.4V
Vusb_max = 5.25V
Vusb_det_min = 2.66V
Vusb_det_max = 3.22V



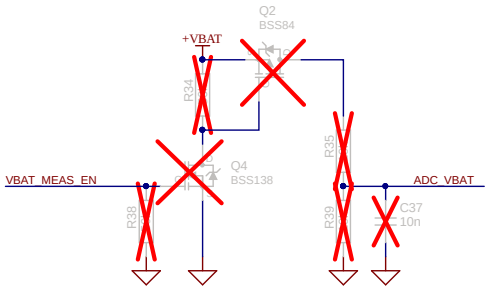
Li-Po Battery Connector (Molex or JST)



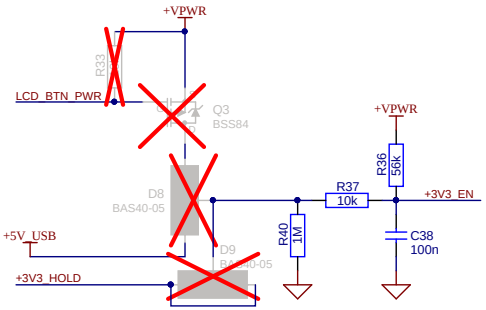
+3V3 high efficiency buck regulator



Battery Voltage Measurement



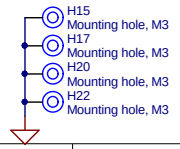
Power on button and microcontroller hold (always on when USB connected)



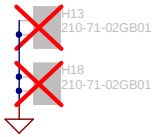
Fiducials

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

Mounting Holes



GND Test Points



BOM

PCB1

P0014

PCB NAME: PX-HERO Board			PCB NUMBER: P0012
SCH PAGE TITLE: Power Supply			PCB REV: G
SHEET: 1 OF 3	DATE: 2020-04-10		VARIANT: lite edition
DRAWN BY: Pieter Conradie	PROJECT E NGINEER: Pieter Conradie		TEMPLATE REV: 02

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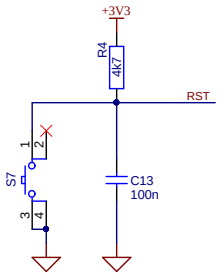
STM32 ARM Cortex M0+ Microcontroller

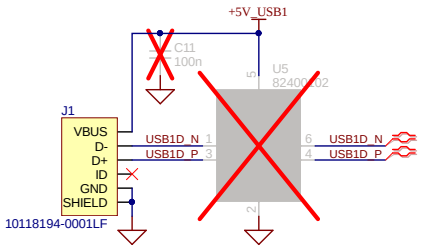
32kHz Crystal

Boot select

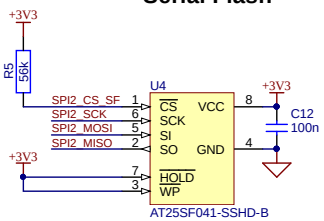
Reset Button



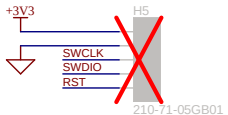
USB Device Port



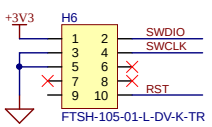
Serial Flash



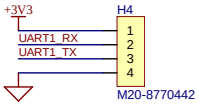
Program & Debug



Standard ARM Cortex Debug Connector



UART Header



PCB NAME: PX-HERO Board			PCB NUMBER: P0012
SCH PAGE TITLE: Microcontroller			PCB REV: G
SHEET: 2 OF 3	DATE: 2020-04-10		VARIANT: lite edition
DRAWN BY: Pieter Conradie	PROJECT E NGINEER: Pieter Conradie		TEMPLATE REV: 02

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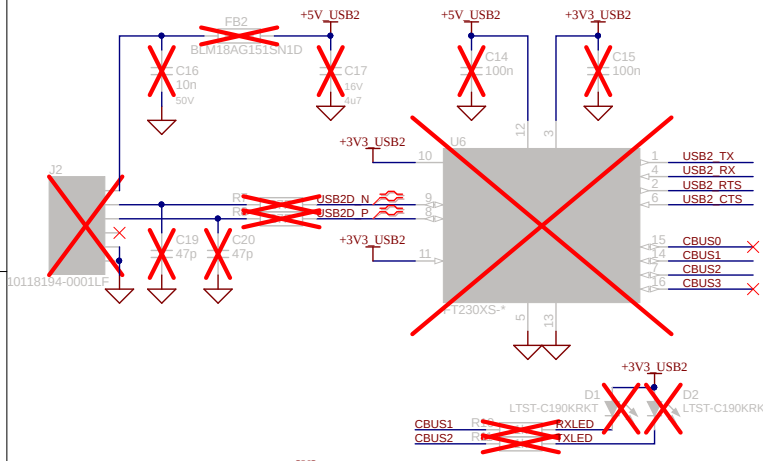
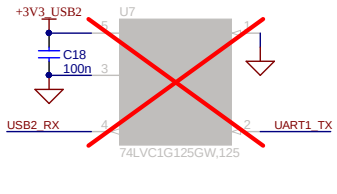
USB-Serial bridge

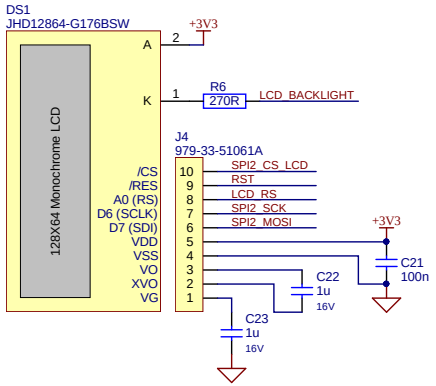


USB-Serial partial power-down isolation (USB2 disconnected)

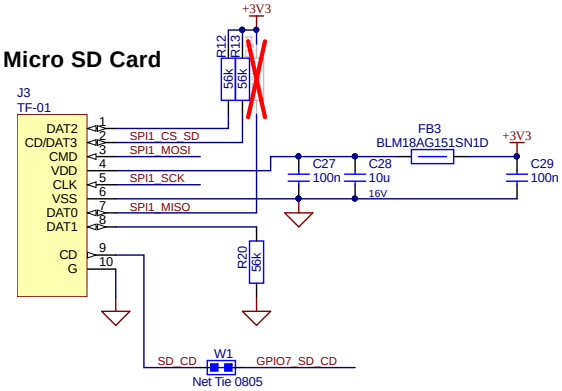


STM32 PA10 is a 5V tolerant pin (FTf I/O structure in datasheet), so there is no parasitic ("phantom") current sourcing path via internal ESD diode to VCC (+3V3) when U6 is powered via USB2, but board is not powered.

LCD

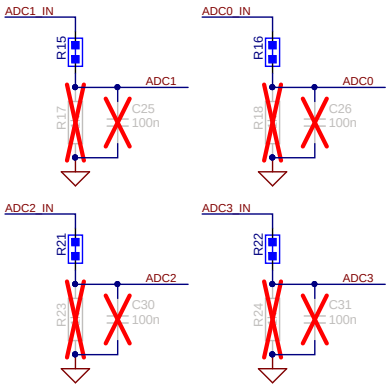


Micro SD Card

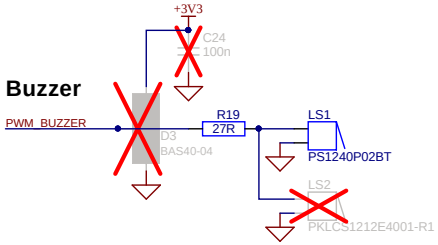


(option to disconnect SD CD from GPIO7)

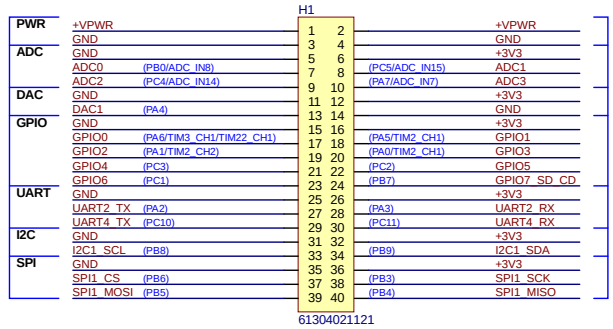
ADC scale and filter circuitry



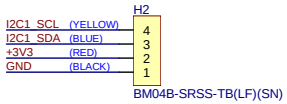
Buzzer



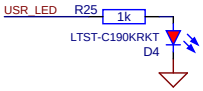
Peripheral connector



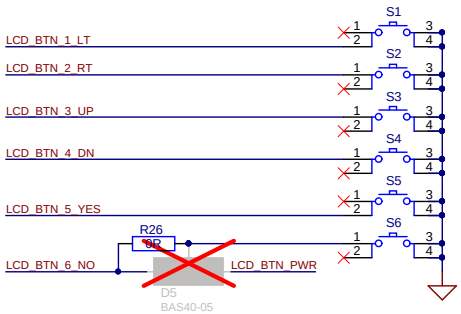
Sparkfun QWIIC / STEMMA QT Connector



LCD LED

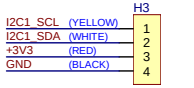


LCD Buttons



(pull-up resistors on micro must be enabled)

Seeed Grove I2C Connector



PCB NAME: PX-HERO Board			PCB NUMBER: P0012
SCH PAGE TITLE: Peripherals			PCB REV: G
SHEET: 3 OF 3	DATE: 2020-04-10		VARIANT: lite edition
DRAWN BY: Pieter Conradie	PROJECT E NGINEER: Pieter Conradie		TEMPLATE REV: 02

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