



190p-1b-IO-Board-Design-hl-2023-7-6.odp

IO-NANO-W100

CTI One Corporation

This document is created by:

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Yusuke Yakuwa

Nicole Wang, Youran Zheng,

Keyang Qin

First Created: July 9, 2023

Adding the Relay Control Board for HDMI Monitor and LED (8/1-7/27/23)

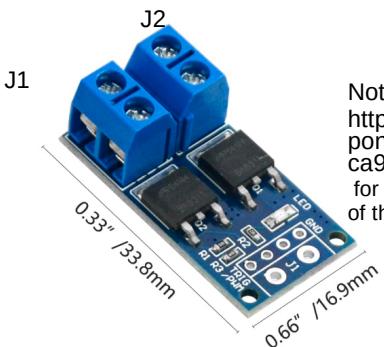
Objectives: (1) the Relay carrier board holds 2 relay boards (see yellow highlight) and 2 gpio from a cable, which can be integrated into the current IO board; See one relay board shown inside the red frame here.

Dimension of the Relay Boards:

https://www.amazon.com/dp/B07ZHC5M7H?psc=1&ref=ppx_yo2ov_dt_b_product_details

Table 0

L: 33.8 mm (0.33")
W: 16.9 mm (0.66")



Note: YZ 2023-7-31
<https://easyeda.com/component/c7284d8ab74643ca9251835118047854>
 for the footprint with update of the dimension

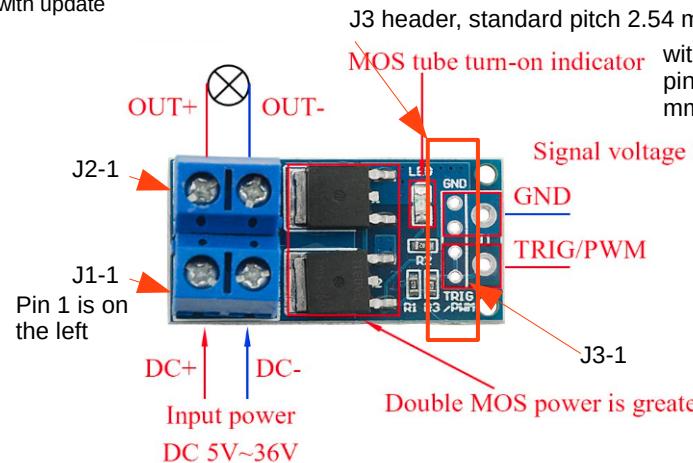
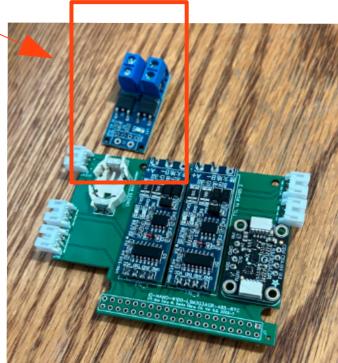
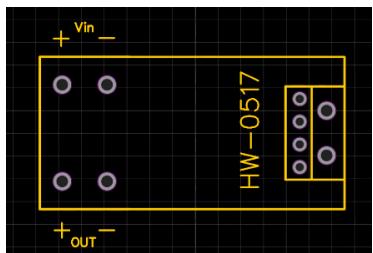


Table 1. Connectivity of the Relay board, J1-J3 connectors

J1 2 pins	Input connector
J2 2 pins	Output connector
J3 4 pins	Control (input) connector

Table 1b. Connectivity of J1 and J2

	Description	Note
J1-1 input + J1-2 GND	Vcc = 12 VDC	Terminal block is on, Cable from 36-to-12V output
J2-1 output + J2-2 GND	Vcc = 12 VDC	Terminal block is on, Cable to the panel mount Connector for the power distribution to HDMI and LED

PWR from Battery Bank (36V-to-12V)

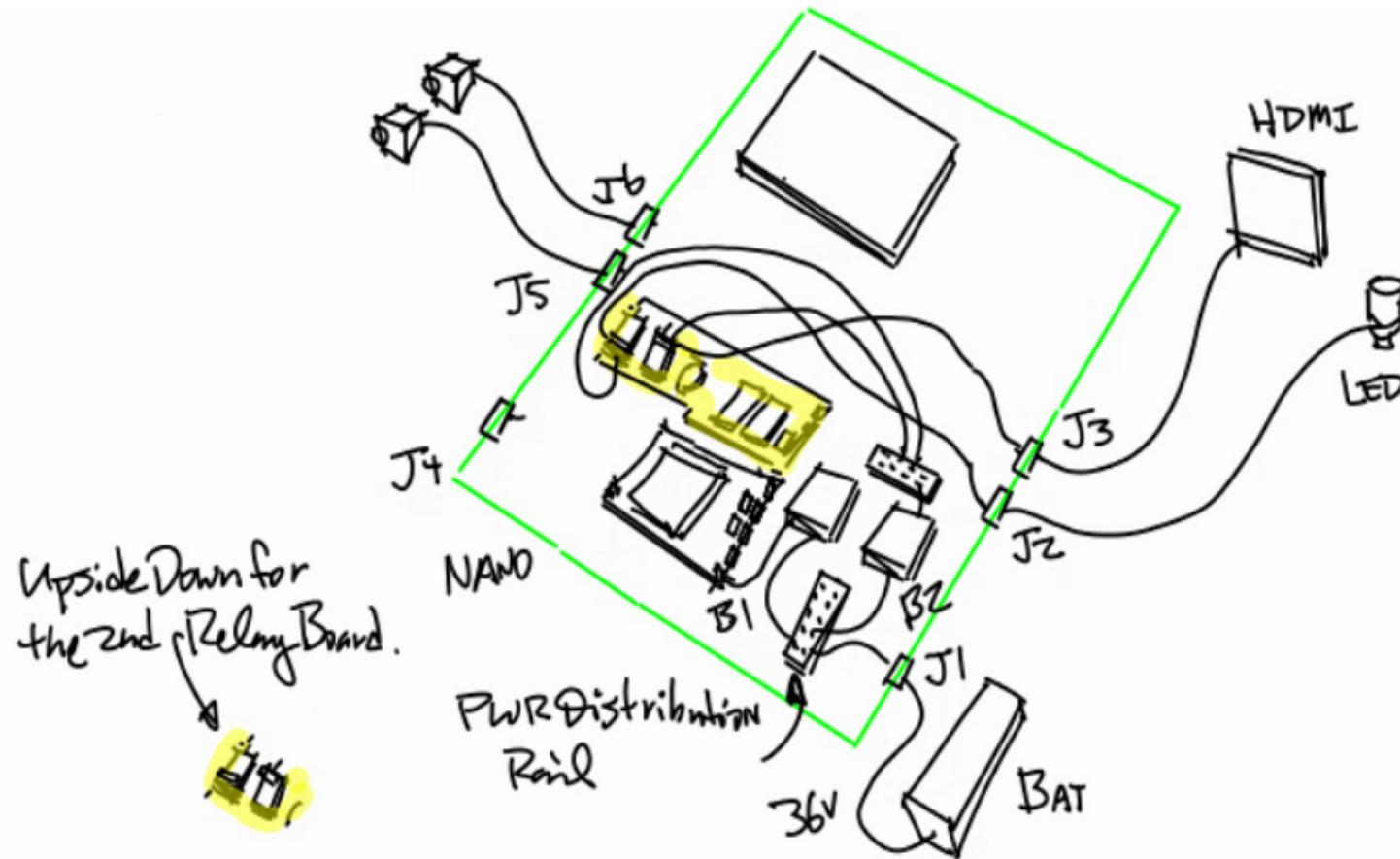
Note: HL/YZ 2023-8-1, gpio 78 ad 79 both are utilized for JST based interface, so use gpio 232 and 15 (J41-16, and J41-18)

Table 2. Connectivity for J3 for relay board 1	
J3-1 input +	NANO gpio 79 (J41-12) gpio 78 (J41-40) for r-board2
J3-2 N/C	
J3-3 N/C	
J3-4 GND	NANO GND (Copper layer, J41-6)

Table 2. Connectivity for J3 for relay board 1

J3-1 input +	NANO gpio 232 (J41-16) gpio 15 (J41-18) for r-board2
J3-2 N/C	
J3-3 N/C	
J3-4 GND	NANO GND (Copper layer, J41-6)

Illustration of the Connectors and Cabling (7/31-7/27/23)



Jetson Nano J41 Header Pinout for GPIO/PWM

<https://www.jetsonhacks.com/nvidia-jetson-nano-j41-header-pinout/>

Note: I2C and UART pins are connected to hardware and should not be reassigned. By default, all other pins (except power) are assigned as GPIO. Pins labeled with other functions are recommended functions if using a different device tree.

nnn-n—2023-3-15-#2022S-107c-pwm-v4-hl-2022-3-3, pp. 2

	GND	25	26	SPI_1_CS1	gpio20
	I2C_1_SDA I2C Bus 0	27	28	I2C_1_SCL I2C Bus 0	
gpio149	CAM_AF_EN	29	30	GND	
gpio200	GPIO_PZ0	31	32	LCD_BL_PWM	gpio168
gpio38	GPIO_PE6	33	34	GND	
gpio76	I2S_4_LRCK	35	36	UART_2_CTS	gpio51
gpio12	SPI_2_MOSI	37	38	I2S_4_SDIN	gpio77
	GND	39	40	I2S_4_SDOUT	gpio78

Use pin 32 for PWM

pin 12 for gpio78

Sysfs GPIO	Name	Pin	Pin	Name	Sysfs GPIO
	3.3 VDC Power	1	2	5.0 VDC Power	
	I2C_2_SDA I2C Bus 1	3	4	5.0 VDC Power	
	I2C_2_SCL I2C Bus 1	5	6	GND	
gpio216	AUDIO_MCLK	7	8	UART_2_TX <code>/dev/ttyTHS1</code>	
	GND	9	10	UART_2_RX <code>/dev/ttyTHS1</code>	
gpio50	UART_2_RTS	11	12	I2S_4_SCLK	gpio79
gpio14	SPI_2_SCK	13	14	GND	
gpio194	LCD_TE	15	16	SPI_2_CS1	gpio232
	3.3 VDC Power	17	18	SPI_2_CS0	gpio15
gpio16	SPI_1_MOSI	19	20	GND	
gpio17	SPI_1_MISO	21	22	SPI_2_MISO	gpio13
gpio18	SPI_1_SCK	23	24	SPI_1_CS0	gpio19
	GND	25	26	SPI_1_CS1	gpio20

pin 12 for gpio79

Adding the Relay Control Board for HDMI Monitor and LED (7/31-7/27/23)

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https://www.amazon.com/dp/B07ZHC5M7H?psc=1&ref=ppx_yo2ov_dt_b_product_details

Table 0

L: 33.8 mm (0.33")
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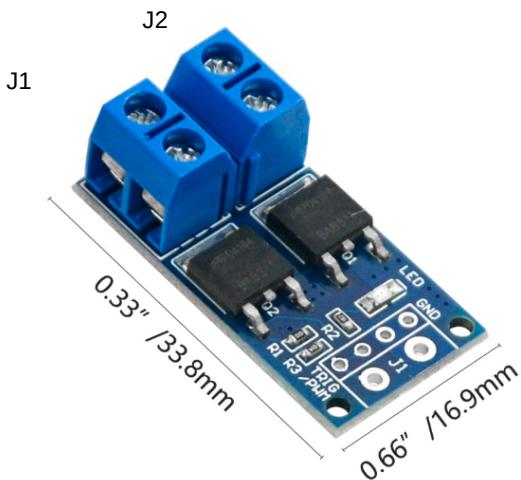
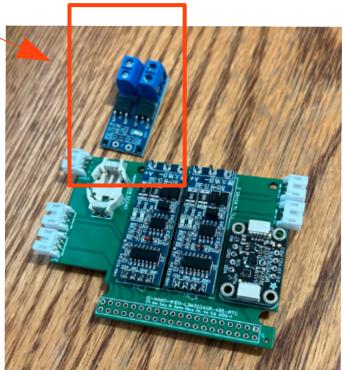


Table 1. Connectivity of the Relay board

J1-1	input +
J1-2	input -
J2-1	output +
J2-2	output -

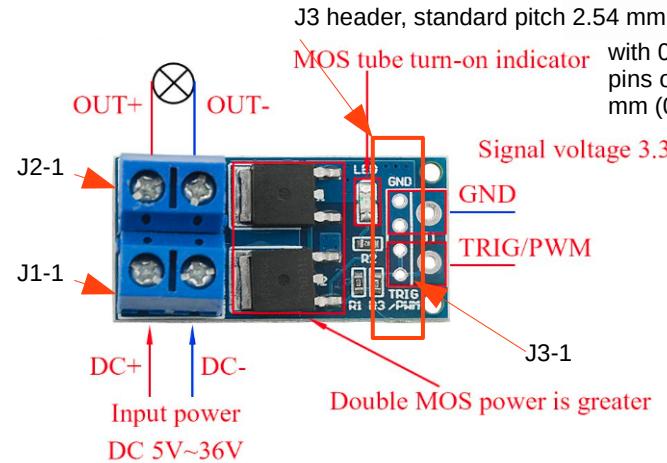
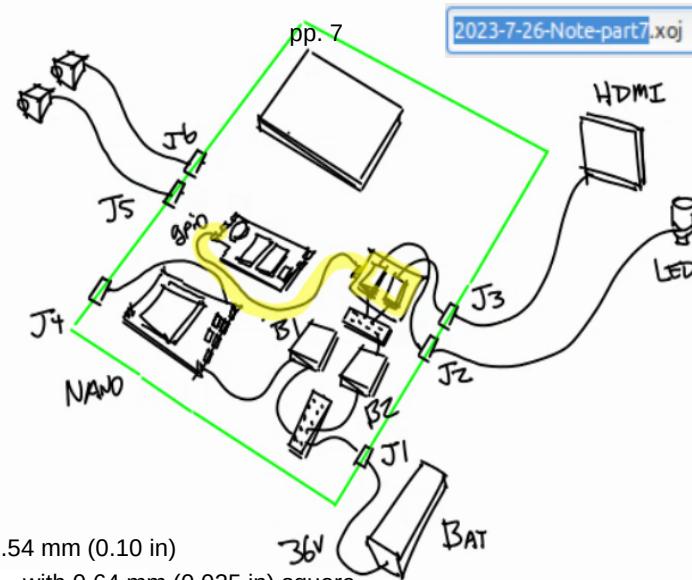


Table 2. Connectivity of the Relay board

J3-1	input + ??? gpio 49 (J41-12)
J3-2	N/C
J3-3	N/C
J3-4	GND – ???



Cable/Connector Naming Convention 7/27/23

Objectives:

- (1) To be able to identify if it is a connector or it is a cable. For example,
- (2) For cable, to be able to define both end of the connectors
- (3) For connector, to be able to define its functionality

ANSI TIA 606-B CABLE LABELING STANDARDS

<https://www.graphicproducts.com/articles/ansi-tia-606-b-cable-labeling-standards/>

Example: <https://www.tek-tips.com/viewthread.cfm?qid=1690333>

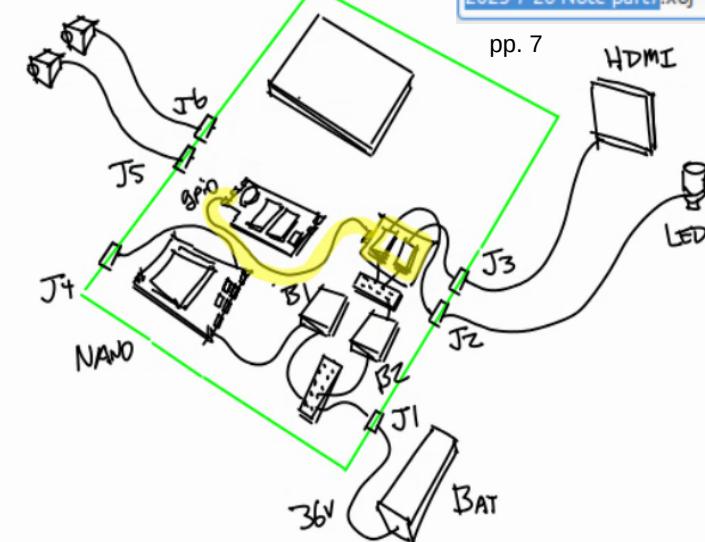
IDF1-R1-A01
~~~~~Room the jack terminates at  
~~~~Rack number in that room  
~~~~Patch panel in that rack  
~~~Port number in that patch panel

So, we have

CAB-NAN1-I01-J0101-J3114

~~~~~the system (NAN1) the cable/jack terminates at  
~~~~the Board and number in that system  
~~~~Connector number (J01) at one end in that board  
~~~Port number (01) in that connector  
~~~~Connector number (J31) at the other end in that board  
~~~port number (14) in that connector

2023-7-26-Note-part7.xoj



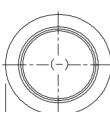
Design Update with CR2032 RTC Battery 7/27/23

ENGINEERING DATASHEET

ENERGIZER NO. CR1225



Industry Standard Dimensions



mm (inches)

Energizer

EVEREADY BATTERY COMPANY, INC. 1-800-383-7323 / CANADA - USA
www.energizer.com + 44 (0) 208 920 2306 / EUROPE

Specifications

| | |
|--------------------------|---|
| Classification: | "Lithium Coin" |
| Chemical System: | Lithium / Manganese Dioxide (Li/MnO ₂) |
| Designation: | ANSI-5020LC, IEC-CR1225 |
| Nominal Voltage: | 3.0 Volts |
| Typical Capacity: | 50 mAh (to 2.0 volts)
(Rated at 45K ohms at 21°C) |
| Typical Weight: | 0.9 grams (0.02 oz.) |
| Typical Volume: | 0.3 cubic centimeters (0.02 cubic inch) |
| Max Rev Charge: | 1 microampere |
| Energy Density: | 161 milliwatt hr/g, 518 milliwatt hr/cc |
| Shipping: | Global (except US): Special Provision A45 of the International Air Transport Association Dangerous Goods Regulations
United States: 49 CFR 173.185 |



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ENSURE LONG LIFE

4.6 ★★★★★ 69 ratings | 3 answered questions

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FREE Returns

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Size: 2PACK

1PACK

\$5.99

prime

2PACK

\$7.99

(\$4.00 / Count)

prime

2 CR2 batteries required. (included)

Number of Batteries

Brand

Battery Cell Composition

Compatible Phone Models

Recommended Uses For Product

LeFix

Lithium Manganese Dioxide

For Computer RTC

Computer Laptop

About this item

- Battery Size Code: CR2032
- Please refer to the image 2 and image 3 to correctly handle the coin battery while you replace it. Please don't touch negative and positive side with your naked fingers
- Battery Key Data: Capacity: 235mAh; Voltage: 3V**
- Battery Terminals: Pressure Contact
- Compatible with Dell Optiplex 740,745,755,760,780,790 Computer HP Pro 6000 8000
- Package Content: 2 CR2032 Batteries; 1 Pair of anti-static gloves

[Report incorrect product information.](#)

The previous CR1225 only has **50mAh** capacity, which is inadequate to last for the entire life span of the W100.

The CR2032 has **235mAh** capacity, which is compatible with desktop/laptops requirements (Dell, HP etc). It is considered as a new option to provide longer life span of the W100.

Further discussion is needed.

In Stock

Qty: 1

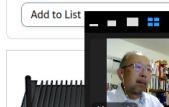
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Returns: Eligible for Return, Refund or Replacement within 30 days of receipt

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[Add to List](#)

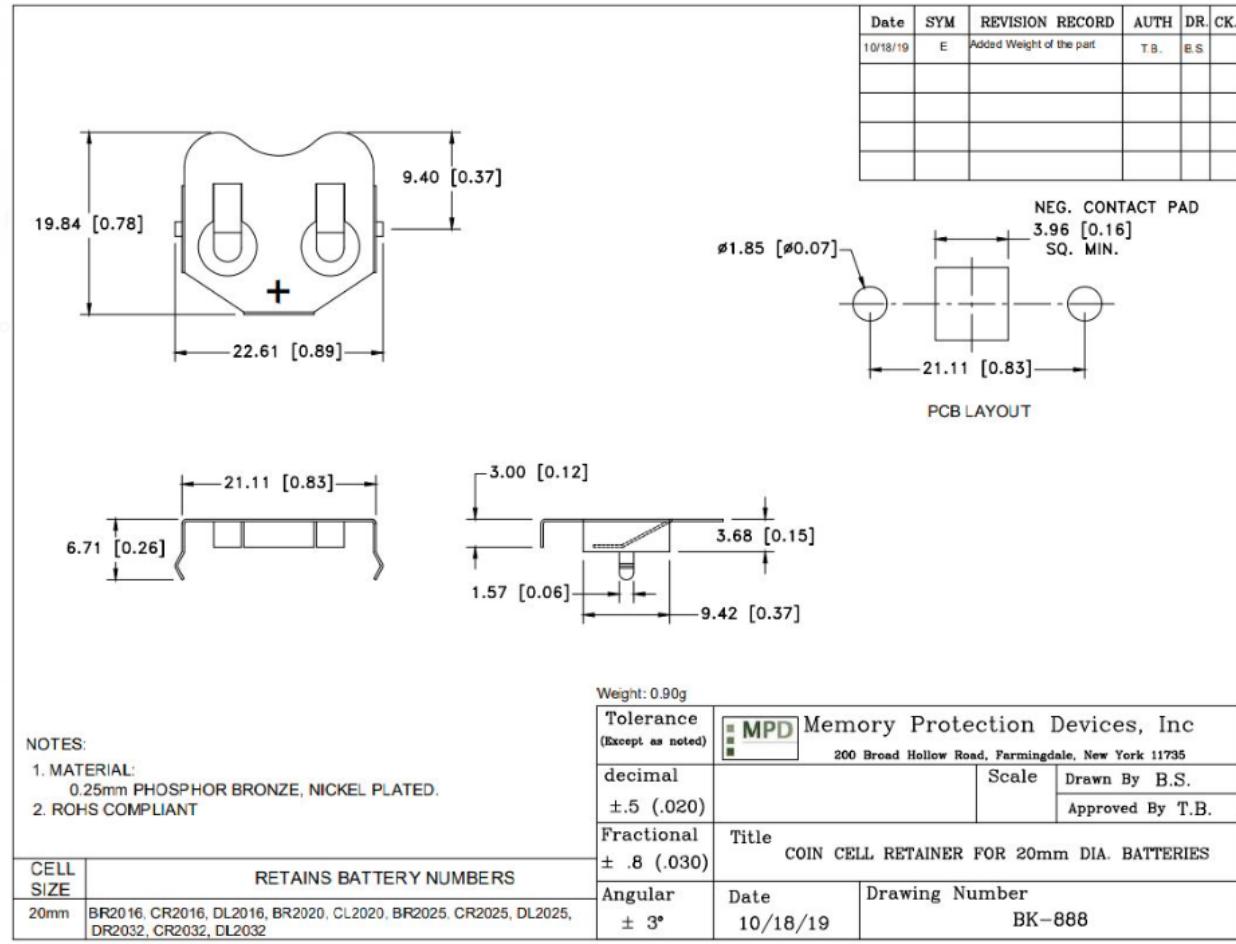
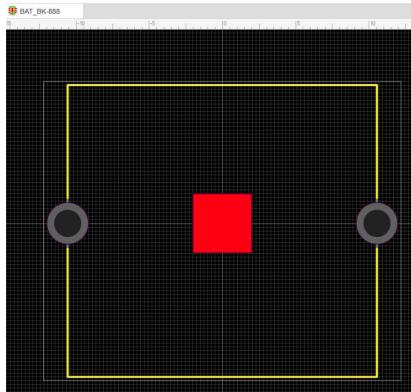


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Chrome d

Design Update with CR2032 RTC Battery 7/27/23

Update (1) parts number and manufacturer???,
\$0.87/PCS (2) Datasheet
<https://www.memoryprotectiondevices.com/datasheets/BK-888-datasheet.pdf>
(3) footprint from EasyEDA <https://easyeda.com/component/31f4dac21ee844b8852fe736cfbbfd95>



I/O Board V2 Soldering Guide 7/16/23



HL 2023-7-16: (1) IO V2 (Version 2) is for LSM303 AGR, dual 485 controllers, RTC battery holders, in addition to have dual GPIOs, and dual PWMS. (2) Soldering guide is built based on the connectivity tables on pp. 3 and pp. 14 in this document. (3) the general guide is to have all the pins in the connectivity tables to be soldered, e.g., to have some of the J41 pins to be soldered to connect to dual 485 converters and LSM303 AGR.

Table 1. pp3

| | |
|------|---------|
| GPIO | |
| 12 | gpio 79 |
| 40 | gpio 78 |

| | |
|-----|------|
| PWM | |
| 32 | pwm0 |
| 33 | pwm2 |

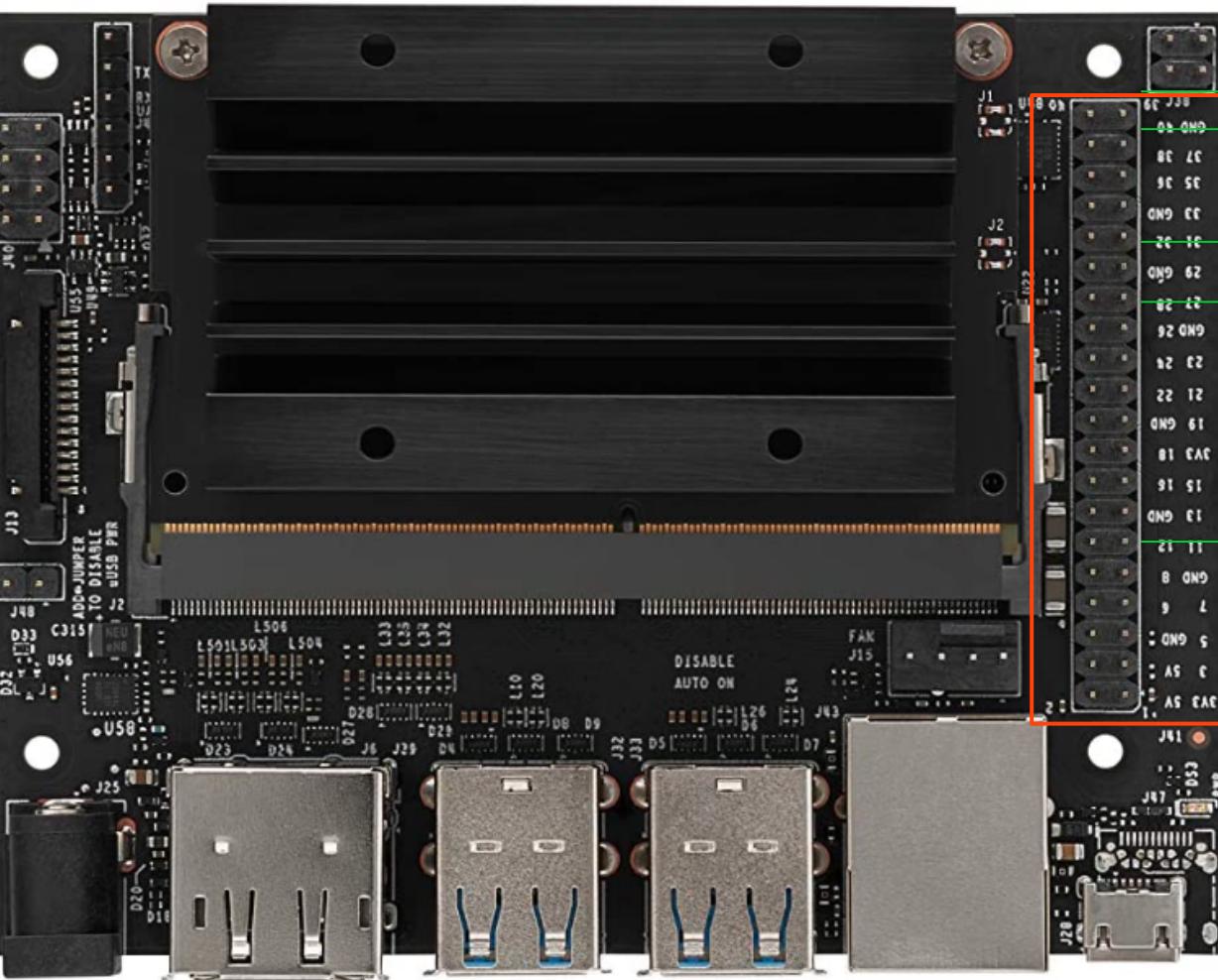
| | |
|-----|-----|
| I2C | |
| 27 | SDA |
| 28 | SCL |

Table 2. J50 UART, pp 14

| | | | |
|---------------|-----|--------|-----------|
| UART1(left)_1 | VCC | J41-1 | 3V3 |
| UART1(left)_2 | TXD | J41-10 | UART_2_RX |
| UART1(left)_3 | RXD | J41-8 | UART_2_TX |
| UART1(left)_4 | GND | J41-8 | gnd |

| | | | |
|---------------|-----|--------|-----|
| UART2(left)_1 | VCC | J41-1 | 3V3 |
| UART2(left)_2 | TXD | J50_RX | |
| UART2(left)_3 | RXD | J50_TX | |
| UART2(left)_4 | GND | J41-8 | gnd |

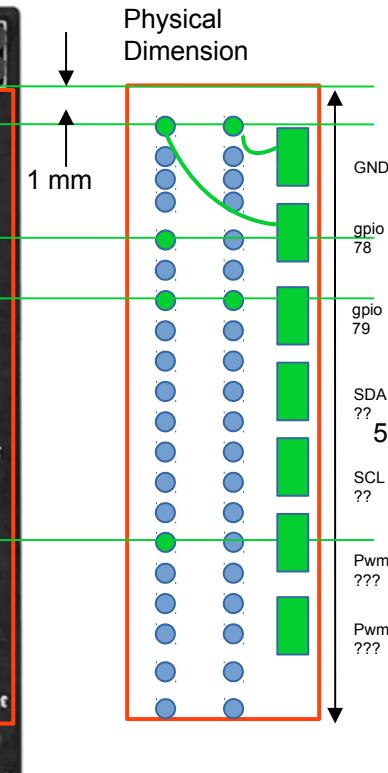
70 x 45 mm



IO Board Design 6/22/23

<https://jetsonhacks.com/2019/06/07/jetson-nano-gpio/>

NVIDIA Jetson Nano
Developer Kit (945-13450-
0000-100)



Cross reference:
</media/harry/easystore1/bac>
[kup-2020-2-15/SJSU/CMPE](#)
[242/242-2-homework-](#)
[projects/242-4-](#)
[SubmissionProjects/2023S-](#)
[adc-i2c-motor-python/](#)
[7Justin_Stokes_PWM-](#)
[GPIO-Motor-LSM303-](#)
[ADC_CMPE242-1/](#)
[Justin_Stokes_PWM-GPIO-](#)
[Motor-LSM303-](#)
[ADC_CMPE242](#)

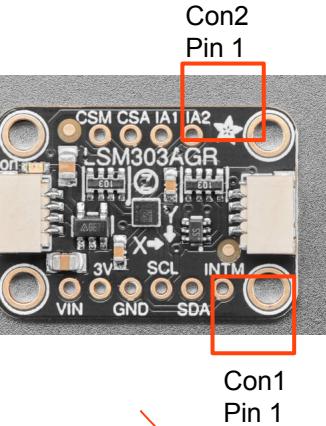
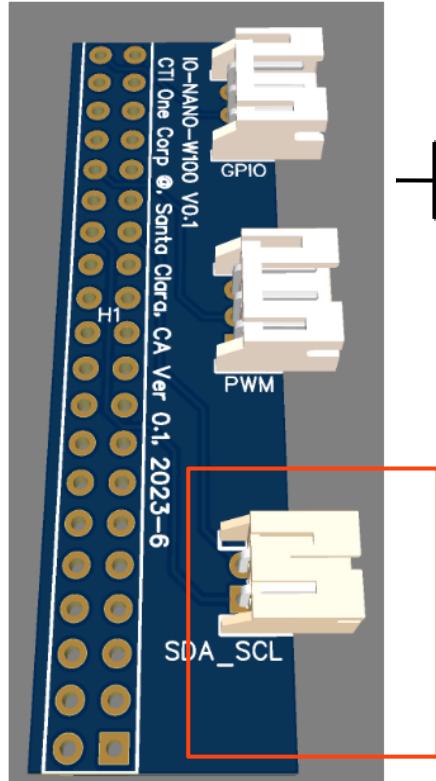
<https://electronics.stackexchange.com/questions/77910/standard-length-of-male-header-pins>



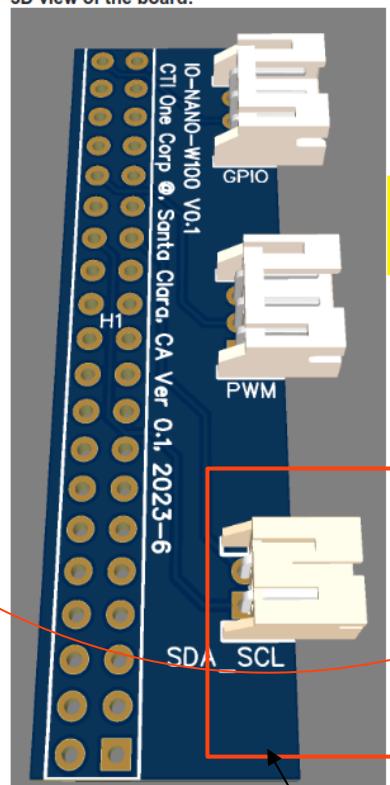
IO Board Design Update with LSM303AGR 6/22/23

<https://learn.adafruit.com/lsm303-accelerometer-slash-compass-breakout/pinouts>

3D view of the board:



3D view of the board:



HL 2023-6-22:
<https://www.mouser.com/datasheet/2/389/lsm303agr-954987.pdf>



LSM303AGR

Ultra-compact high-performance eCompass module:
ultra-low-power 3D accelerometer and 3D magnetometer

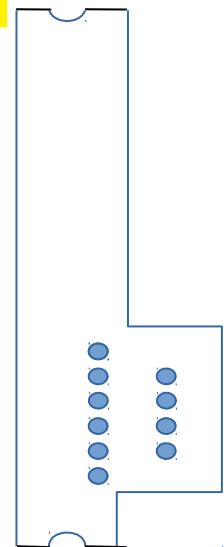
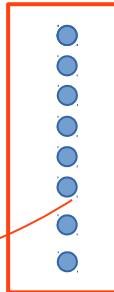
Replace it with 8-pin connector for LSM303AGR

| | | | | |
|--------|----------|----------|-------------|-------------|
| Con1-1 | INTM | J41-31 | gpio200 | INT for Mag |
| Con1-2 | SDA | J41-27 | SCK0 (bus0) | |
| Con1-3 | SCL | J41-28 | SDA0 (bus0) | |
| Con1-4 | GND | J41-6/39 | GND | |
| Con1-5 | Vo (3V3) | N/C | | |
| Con1-6 | VIN(3V3) | J41-1 | 3V3 | |

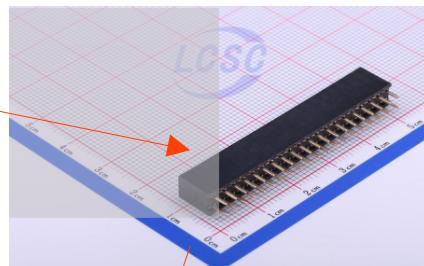
| | | | | |
|--------|-----|--------|--------|-----------------------|
| Con2 | | | | |
| Con2-1 | IA2 | J41-21 | gpio17 | INT for accel |
| Con2-2 | IA1 | J41-23 | gpio18 | INT for accel |
| Con2-3 | CSA | J41-24 | gpio19 | CS(Chip Sel)for Accel |
| Con2-4 | CSM | J41-26 | gpio20 | CS for Mag |

XW 2023-6-26:
<https://jetsonhacks.com/nvidia-jetson-nano-j41-header-pinout/>

0.1" pitch, 0.025" square pins

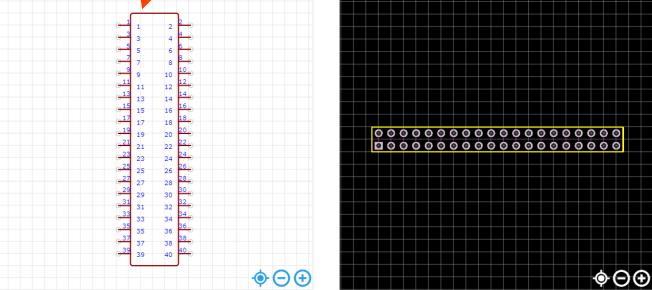


IO Board Design Components Selection 6/23/23

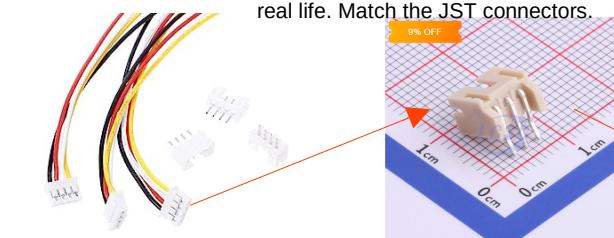
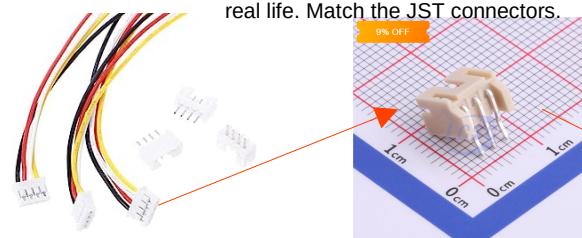


BOOMELE(Boom Precision Elec) C50982 Component in real life.
Match part J41 of Jetson Nano.

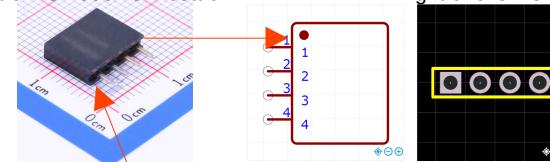
BOOMELE(Boom Precision Elec) C50982 Component which is H1 HDR-F-2.54_2x20 Model in EasyEDA. (Left one is schematic model, right one is PCB model.)



JST Sales America S3B-PH-K(LF)(SN) Component in real life. Match the JST connectors.



CJT(Changjiang Connectors) A2541HWV-4P Component in real life.
Match the Top part of LSM303AGR board.



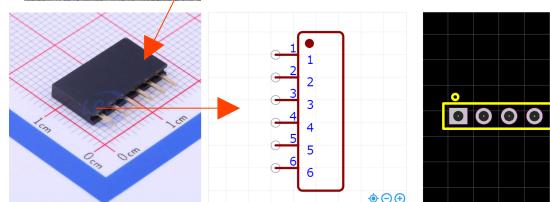
LSM303AGR



Ultra-compact high-performance eCompass module:
ultra-low-power 3D accelerometer and 3D magnetometer

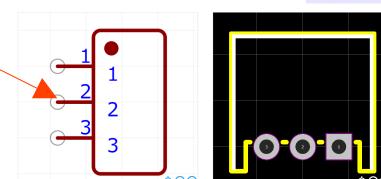


BOOMELE(Boo m Precision Elec) C40877 Component in real life.
Match the Bottom part of LSM303AGR board.

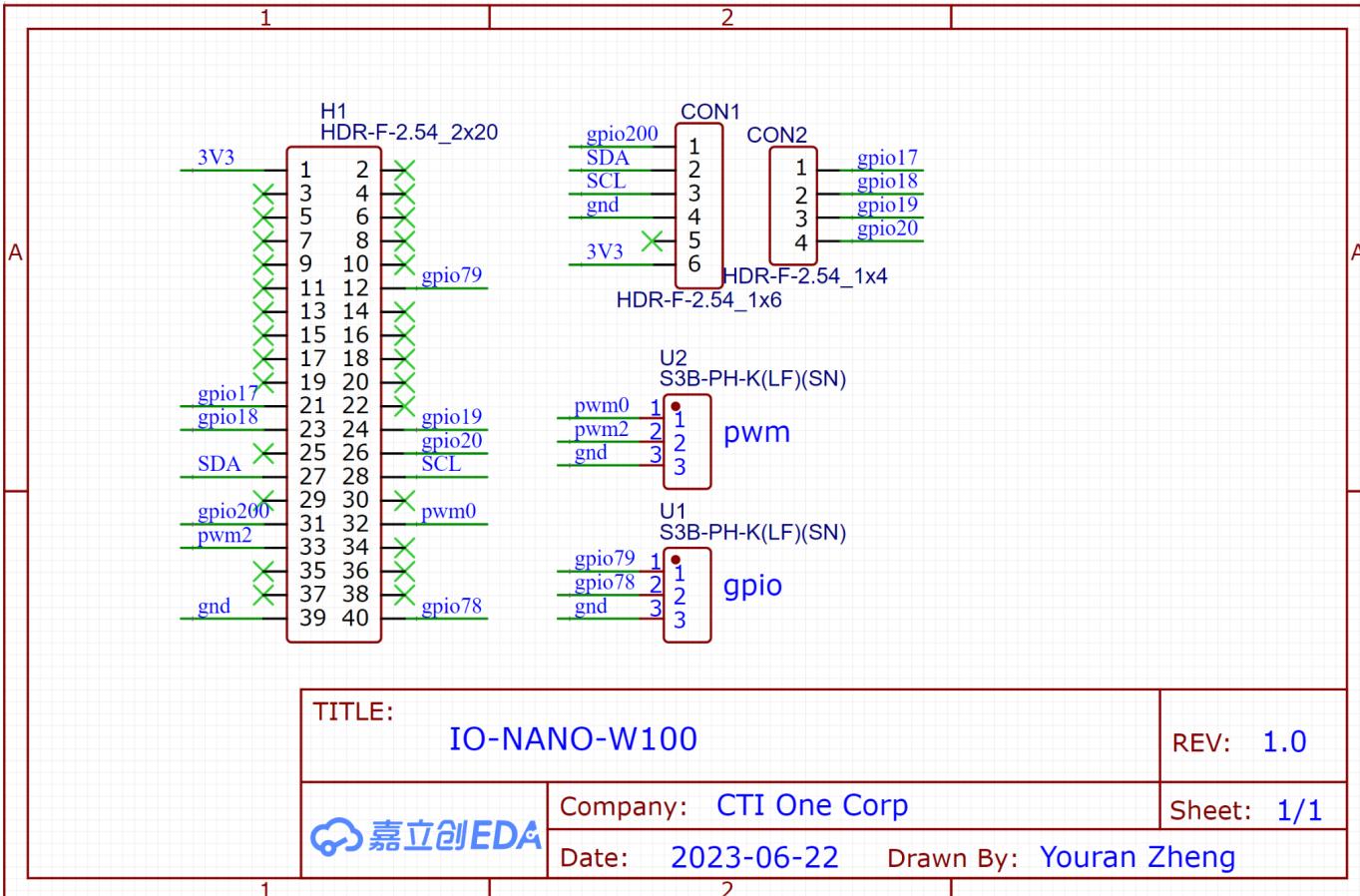


BOOMELE(Boo m Precision Elec) C40877 which is CON1 HDR-F-2.54_1x6 Model in EasyEDA.
(Left one is schematic model, right one is PCB model.)

JST Sales America S3B-PH-K(LF)(SN) Component which is U1 U2 S3B-PH-K(LF)(SN) model in EasyEDA. (Left one is schematic model, right one is PCB model.)



IO Board Design Schematic 6/23/23



| | | | | |
|--------|----------|----------|-------------|-----------------------|
| Con1-1 | INTM | J41-31 | gpio200 | INT for Mag |
| Con1-2 | SDA | J41-27 | SCK0 (bus0) | |
| Con1-3 | SCL | J41-28 | SDA0 (bus0) | |
| Con1-4 | GND | J41-6/39 | GND | |
| Con1-5 | Vo (3V3) | N/C | | |
| Con1-6 | VIN(3V3) | J41-1 | 3V3 | |
|
 | | | | |
| Con2 | | | | |
| Con2-1 | IA2 | J41-21 | gpio17 | INT for accel |
| Con2-2 | IA1 | J41-23 | gpio18 | INT for accel |
| Con2-3 | CSA | J41-24 | gpio19 | CS(Chip Sel)for Accel |
| Con2-4 | CSM | J41-26 | gpio20 | CS for Mag |

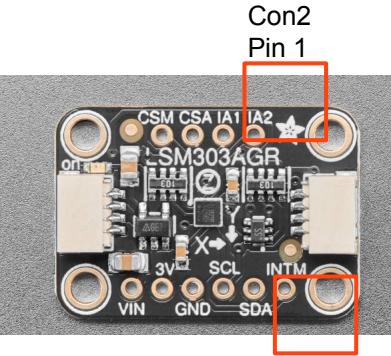
According the table above, connect each model with corresponding Pin.

H1-1 ----- > CON1-6
 H1-12 ----- > U1-1
 H1-21 ----- > CON2-1
 H1-23 ----- > CON2-2
 H1-24 ----- > CON2-3
 H1-26 ----- > CON2-4
 H1-27 ----- > CON1-2
 H1-28 ----- > CON1-3
 H1-31 ----- > CON1-1
 H1-32 ----- > U2-1
 H1-33 ----- > U2-2
 H1-39 ----- > CON1-4, U2-3, U1-3
 H1-40 ----- > U1-2

Determine the Dimension of PCB board 6/22/23

<https://learn.adafruit.com/assets/83161>

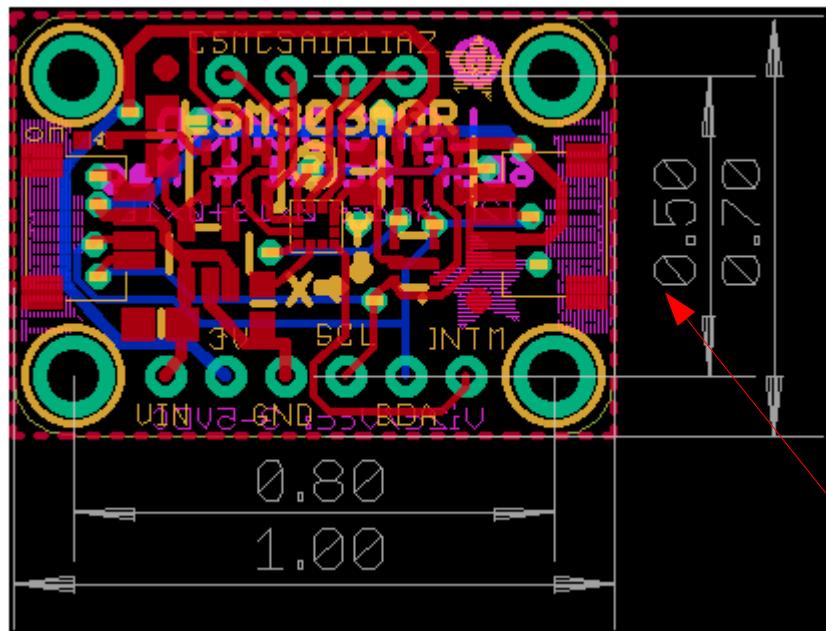
LSM303AGR Board



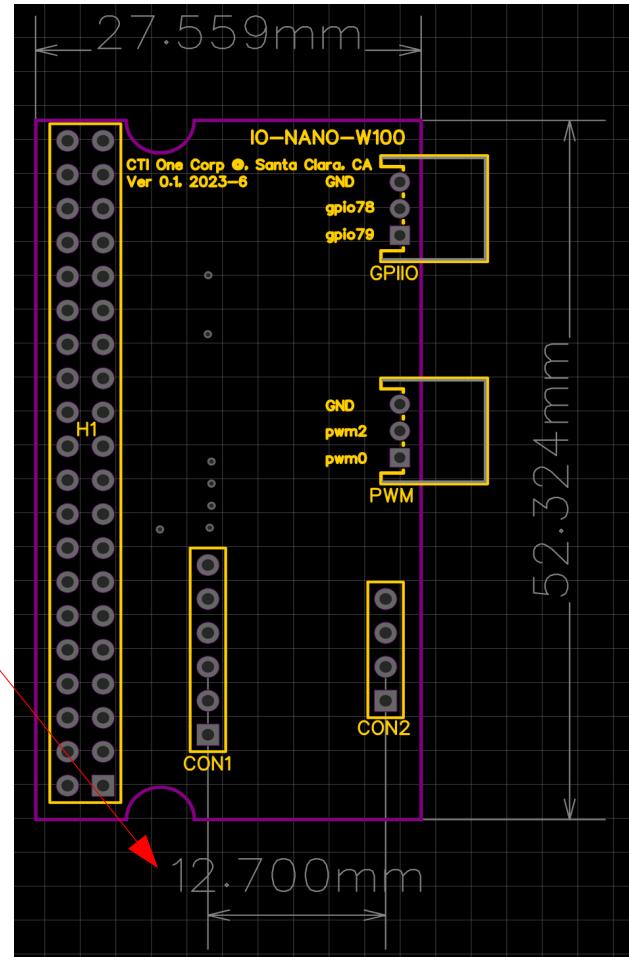
YZ 2023-6-22:
The unit is inch. 0.5 inch = 12.7 mm

After finishing the schematic design, convert the schematic to PCB. Then rearrange the position of components, and determine the dimension.

Dimension of LSM303AGR Board

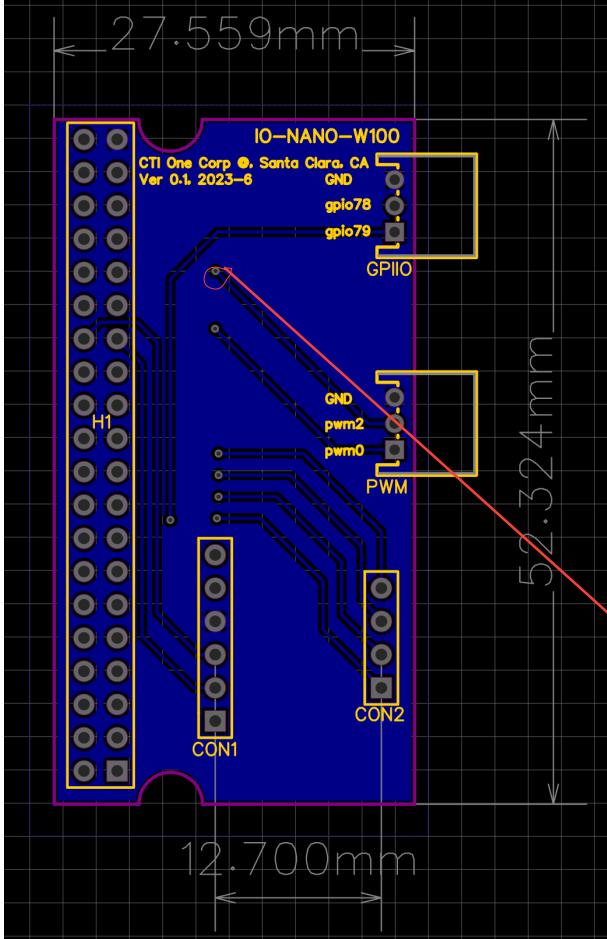


The dimension of the PCB design match the LSM303AGR Board



IO Board Design PCB 6/23/23

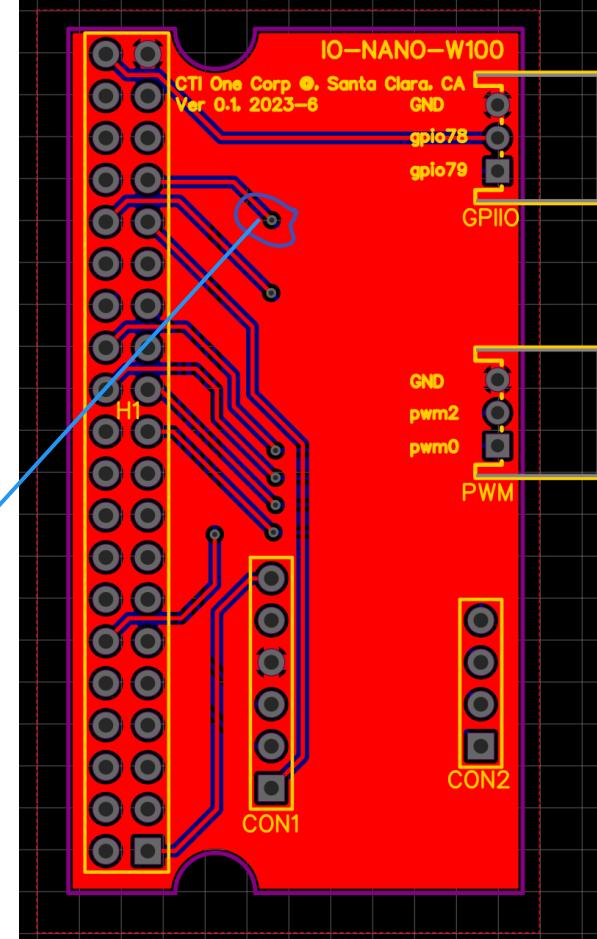
BottomLayer with dimension



According to the Pin connection of schematic design, connect components in PCB by using track. Tracks cannot intersect with each other, and if you can't avoid the intersection, you can put a via in the place before the intersection.

via

TopLayer

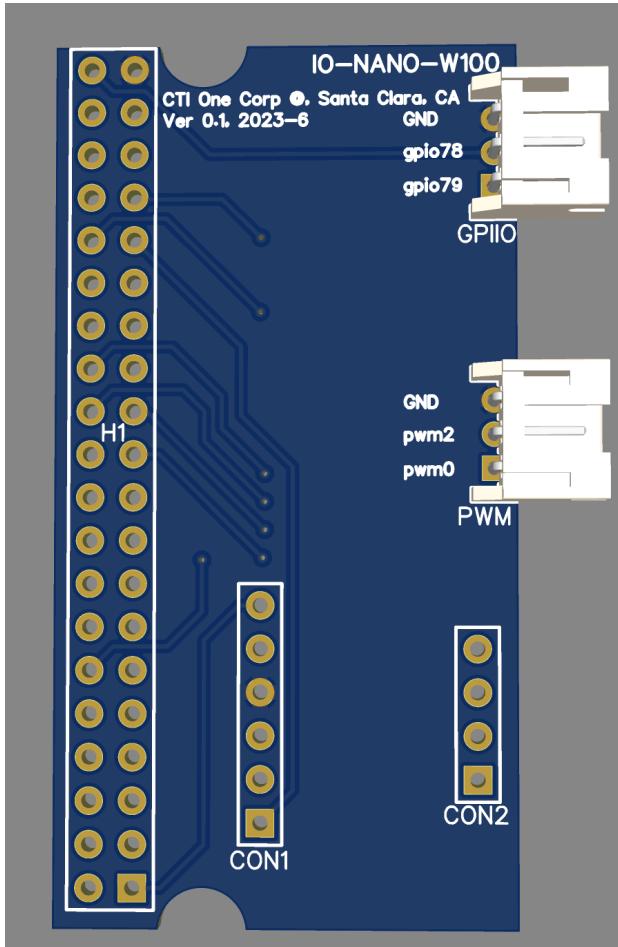


Then continue the connection on another layer from via.

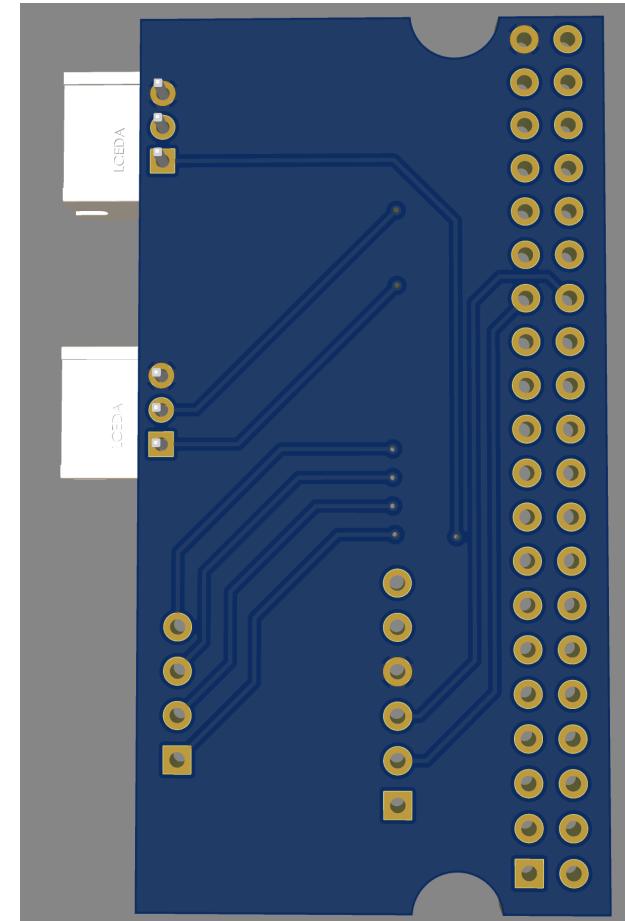
Finally, drill the holes and select copper area.

IO Board Design 3D View 6/23/23

Front View



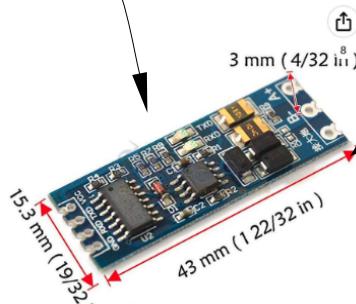
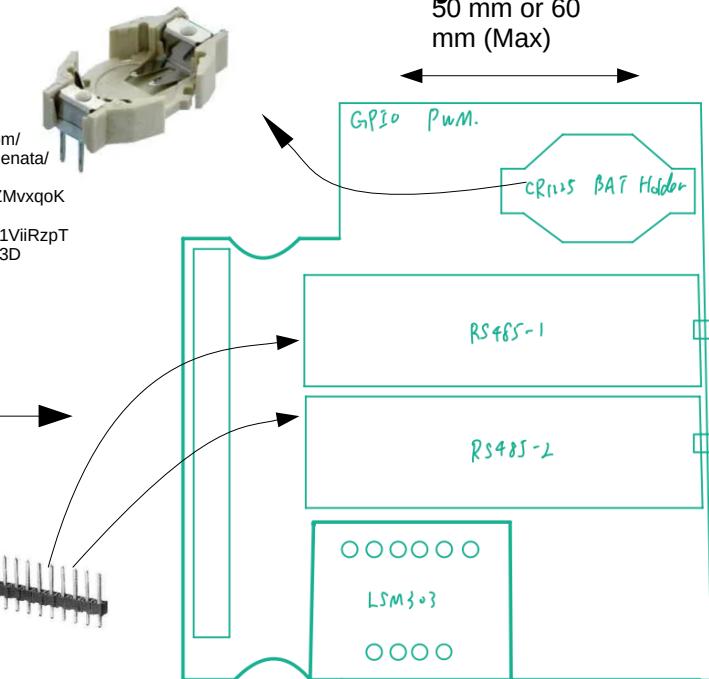
Back View



Design Update with Dual 485 Modules and CR1225 battery holder 7/9/23

Previous version, 6/22
in this document

[https://www.mouser.com/
ProductDetail/Renata/
HU1225-LF?
qs=sGAEpiMZZMvxqoKe%252BDjhrivg1ViRzpTmO5jZl56OM%3D](https://www.mouser.com/ProductDetail/Renata/HU1225-LF?qs=sGAEpiMZZMvxqoKe%252BDjhrivg1ViRzpTmO5jZl56OM%3D)



Note: HL 2023-6-30, (1) design through holes for the male header to connect IO board and 485 boards;
(2) need the physical dimension of the hole spacing to make the through hole on the IO board.

Physical dimension (measurement) of the 485 board

The right connector Spacing given: 3 mm

The left connector Spacing
(1) from the top edge of board: ??? mm
(2) spacing of the through hole: ??? mm

https://www.amazon.com/HiLetgo-Reciprocal-Hardware-Automatic-Converter/dp/B082Y19KV9/ref=sr_1_4?crid=3ND4JA7TYWJEG&keywords=uart+to+485&qid=1688190894&sprefix=uart+to+485%2Caps%2C136&sr=8-4



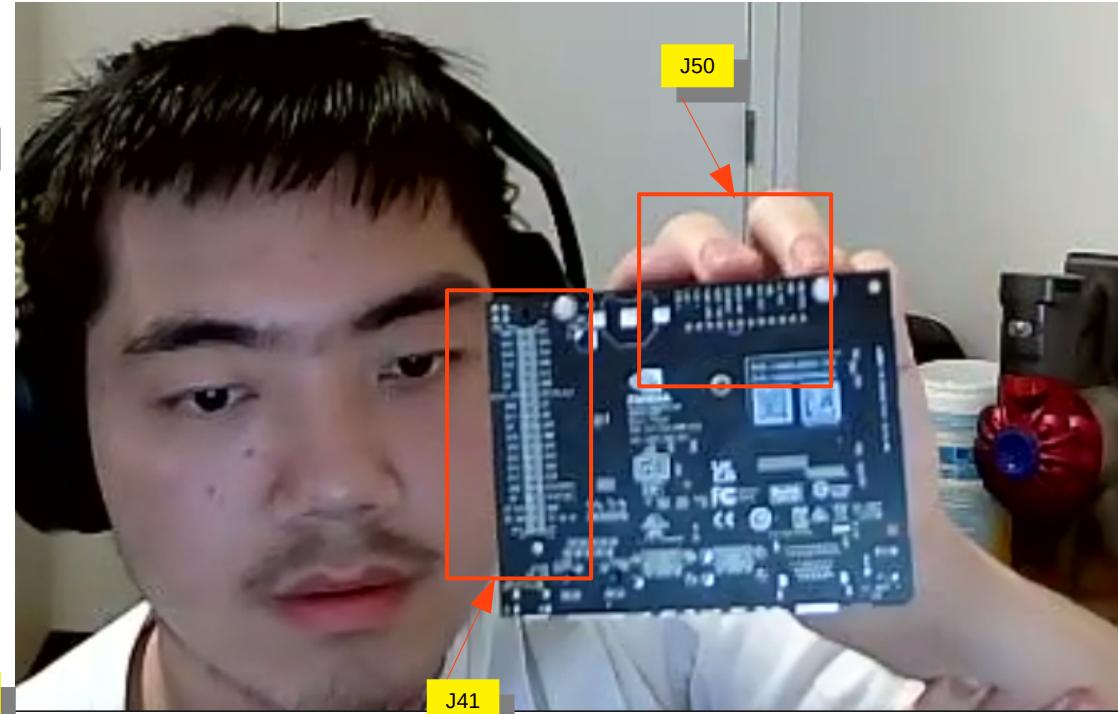
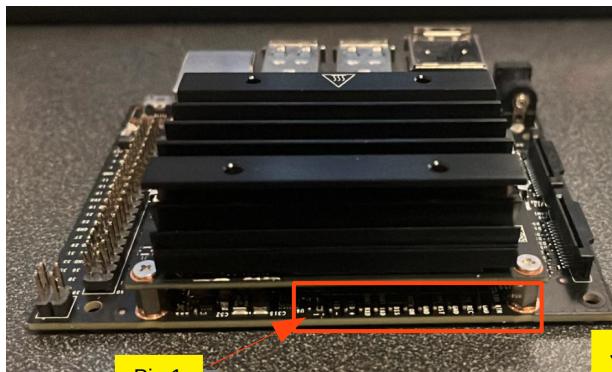
Fig. 1a

Jetson Nano has 3 physical UART ports: UART0 at the M2 Slot for WiFi/BT card. UART1 at the J41 Header (40-pin connector) for System Console after boot up (run by a service), Pin 8 - TX, Pin 10 - RX. UART2 at the J50 header for debug (early access during boot from bootloader), Pin 4 - RX, Pin 5 - TX

The 2nd UART Connector (6/30,23)

Table 1. J50

- 1 - LED-
- 2 - LED+
- 3 - UART RXD
- 4 - UART TXD
- 5 - DISABLE
- 6 - AUTO ON
- 7 - GND
- 8 - SYS RST
- 9 - GND
- 10 - FC REC
- 11 - GND
- 12 - PWR BTN

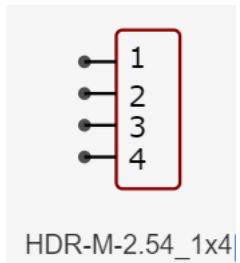
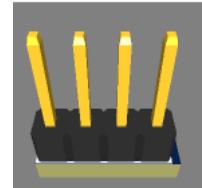
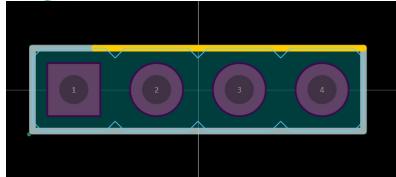
Table 2. J50
UART

J50 header (total 12 pins, one row) for UART Connection
Pin 4 - RX
Pin 5 - TX

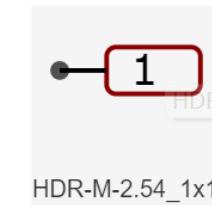
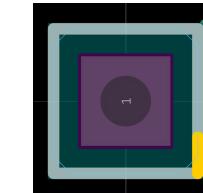
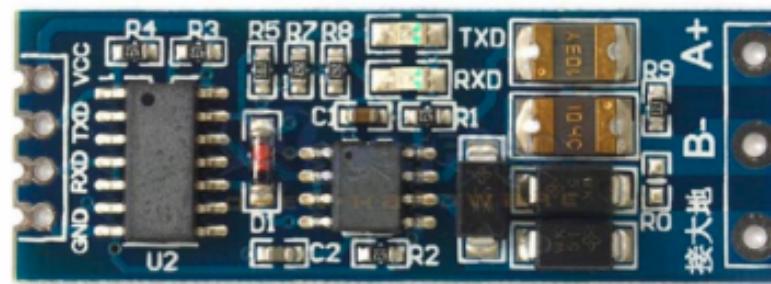


Connector/cable information

Components Selection of the UART part 7/5/23



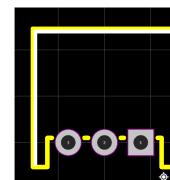
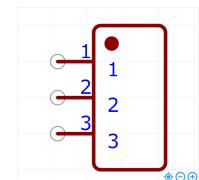
We use the HDR-M-2.54_1X4 to connect the left through holes on the uart board. And here are its schematic model, footprint and 3D view.



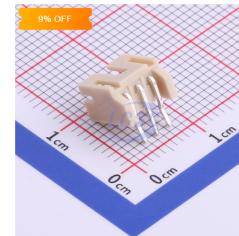
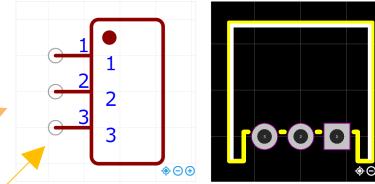
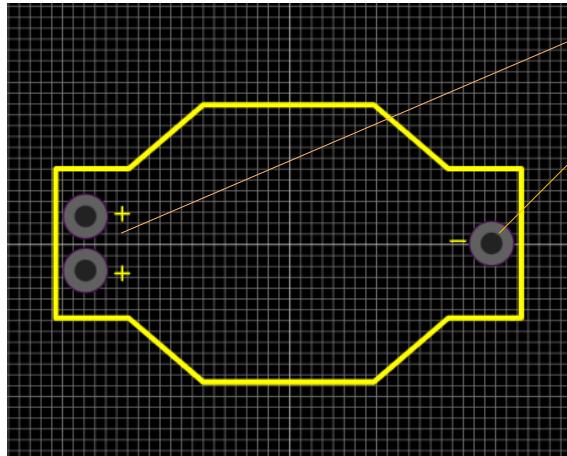
We use the three HDR-M-2.54_1X1 to connect the 3 right through holes on the uart board. And here are its schematic model, footprint and 3D view. And this three head males should be connected to JST connectors.



JST Sales America S3B-PH-K(LF)(SN) Component in real life. Match the JST connectors.



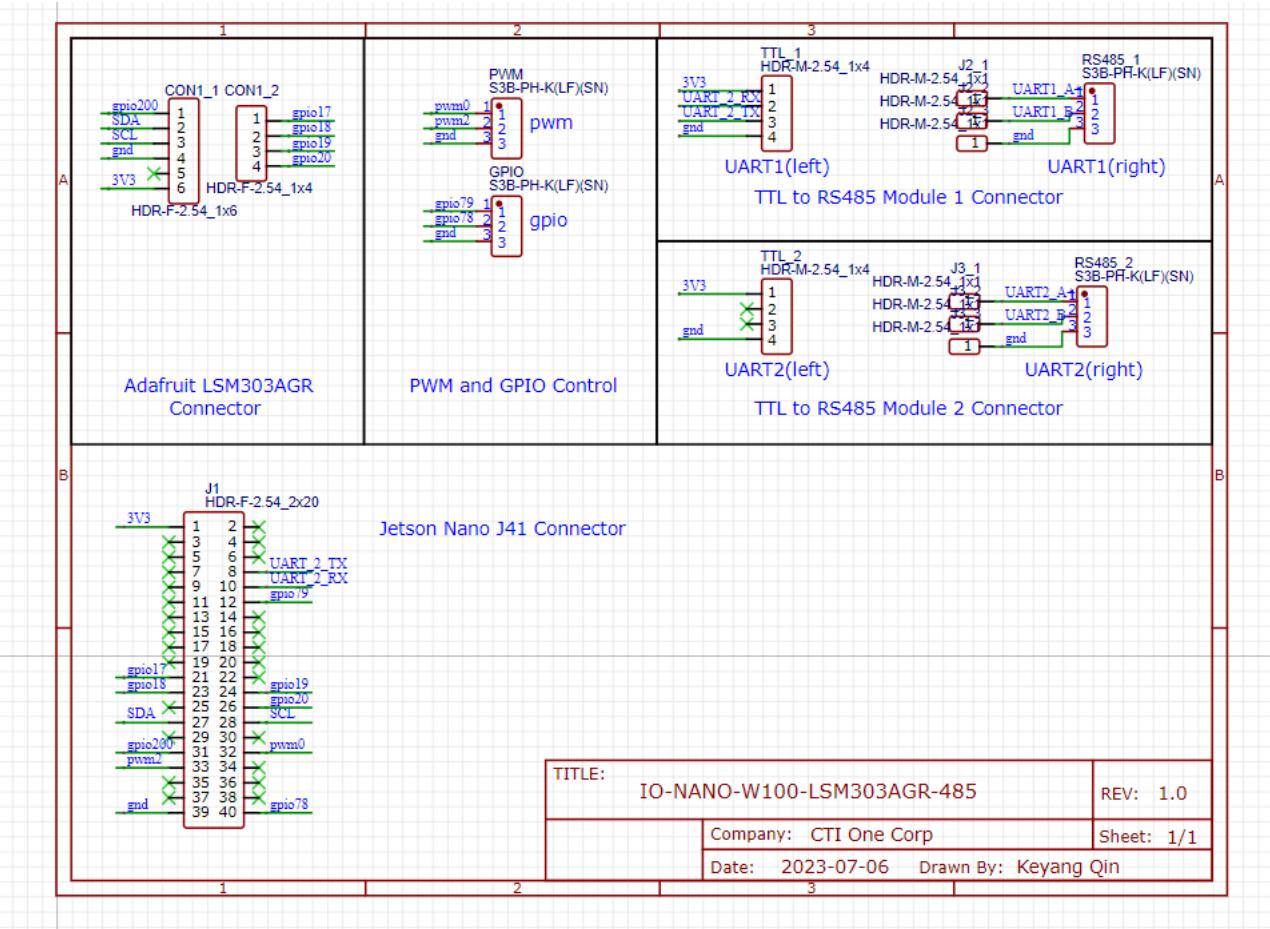
Components Selection of the Battery Holder 7/7/23



JST Sales America S3B-PH-K(LF)(SN) Component in real life. Match the JST connectors.

IO Board Design Schematic with UART (7/21-7/7/23)

HL, YZ, 2023-7-21: corrected the typo by replacing the previous label with "gnd"

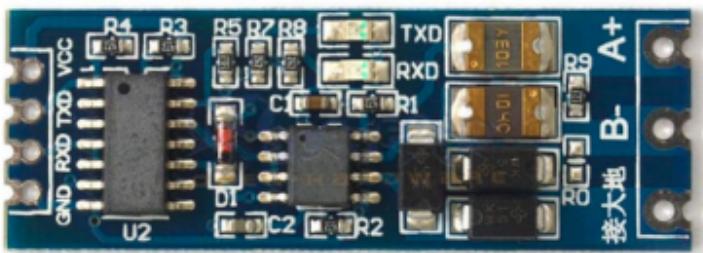
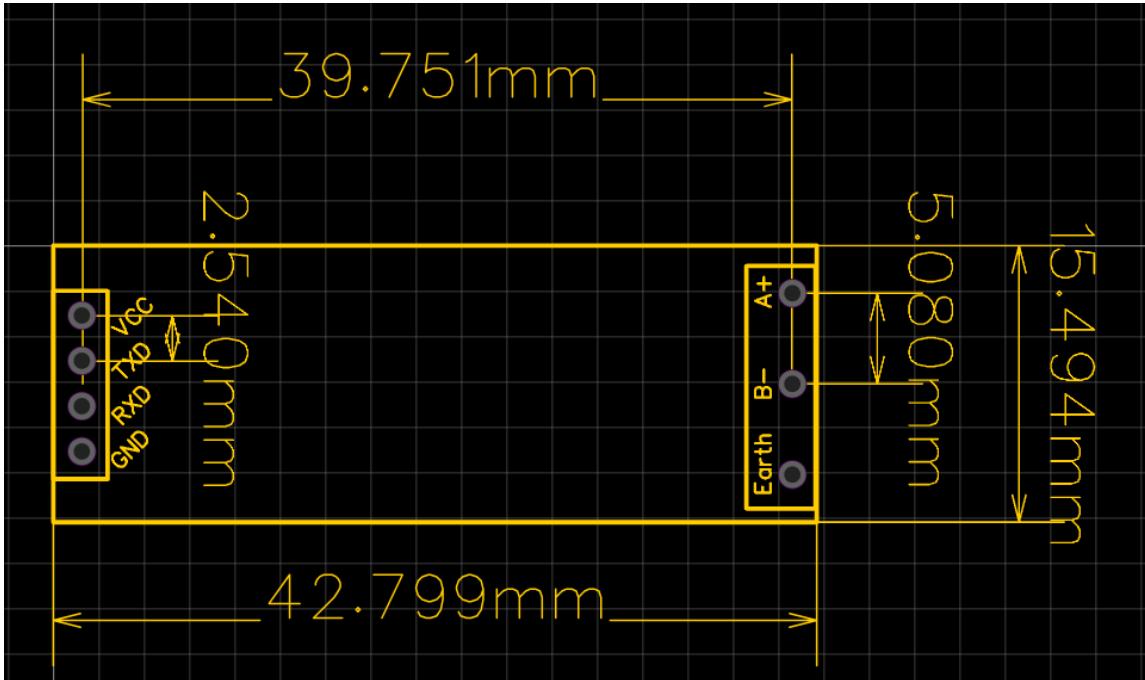


| | | |
|---------------|-----|------------------|
| | | |
| UART1(left)_1 | VCC | J41-1 3V3 |
| UART1(left)_2 | TXD | J41-10 UART_2_RX |
| UART1(left)_3 | RXD | J41-8 UART_2_TX |
| UART1(left)_4 | GND | J41-39 gnd |
| UART2(left)_1 | VCC | J41-1 3V3 |
| UART2(left)_2 | TXD | J50_RX |
| UART2(left)_3 | RXD | J50_TX |
| UART2(left)_4 | GND | J41-39 gnd |

According to the table above, connect each model with corresponding Pin.

J1-1 -----> TTL_1-1
 J1-10 -----> TTL_1-2
 J1-8 -----> TTL_1-3
 J1-39 -----> TTL_1-4
 J1-1 -----> TTL_2-1
 J1-39 -----> TTL_2-4

Footprint of the 485 Module 7/1/23



Here are some important measurements:

Length: 42.799mm Width: 15.494mm

The distance between the left through hole and the right through hole:
39.751mm

Left:
From the top edge to the first through hole: 3.937mm

The spacing of the through hole:
2.540mm

The diameter of the through hole: 1mm

Right:

The spacing of the through hole:
5.080mm

The diameter of the through hole:
1.25mm

Footprint of the Battery Holder (HU1225-LF) 7/18-7/7/23



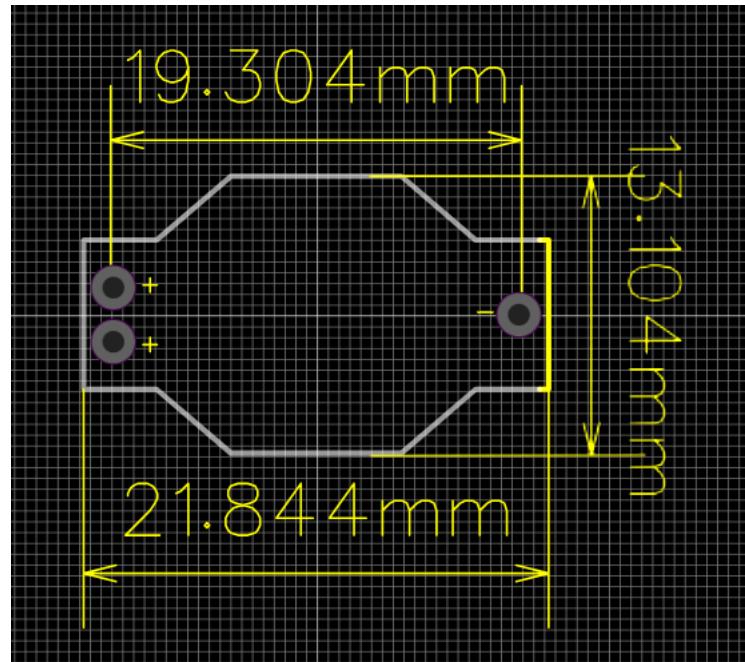
[https://www.mouser.com/
ProductDetail/Renata/HU1225-
LF?
qs=VBDla651eQFgeJRaxFmjFw
%3D%3D](https://www.mouser.com/ProductDetail/Renata/HU1225-LF?qs=VBDla651eQFgeJRaxFmjFw%3D%3D)

Cart

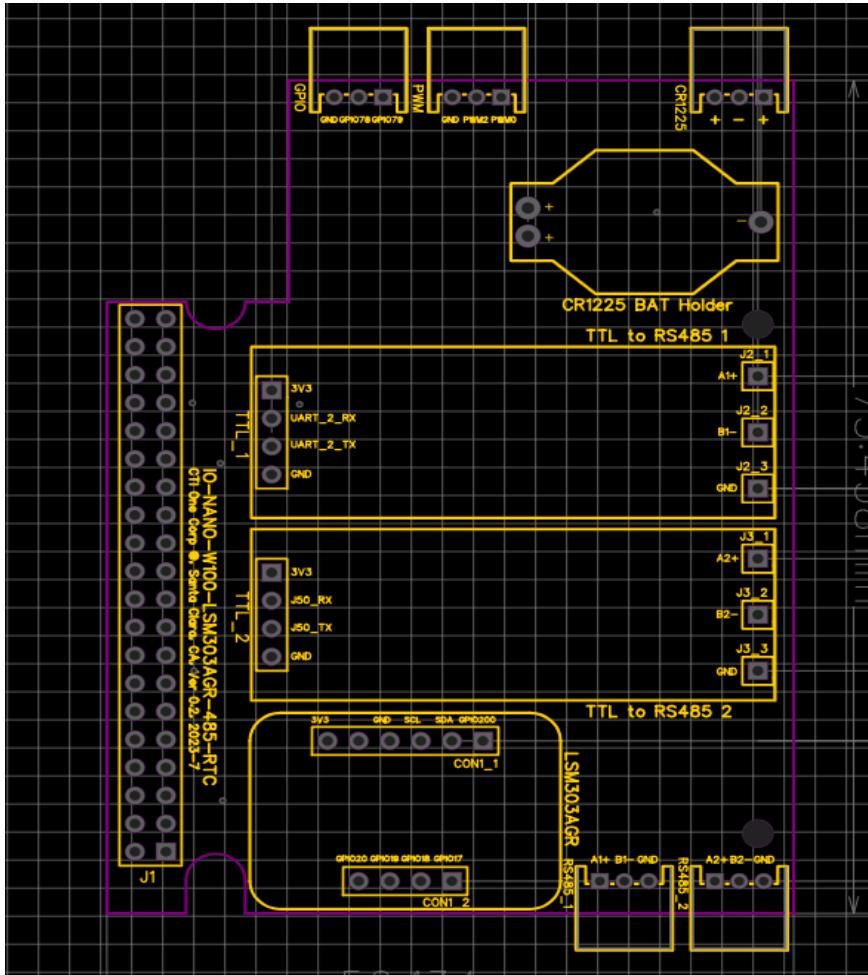
ADDED TO CART

Mfr. Part # HU1225-LF
Mfr.: Renata
Description:
Coin Cell Battery Holders THRU HOLE FOR CR1225
Qty: 10

Cart (2 items)
Cart Subtotal: \$10.26
[Continue Shopping](#)
[View Cart](#)



The basic layout 7/7/23

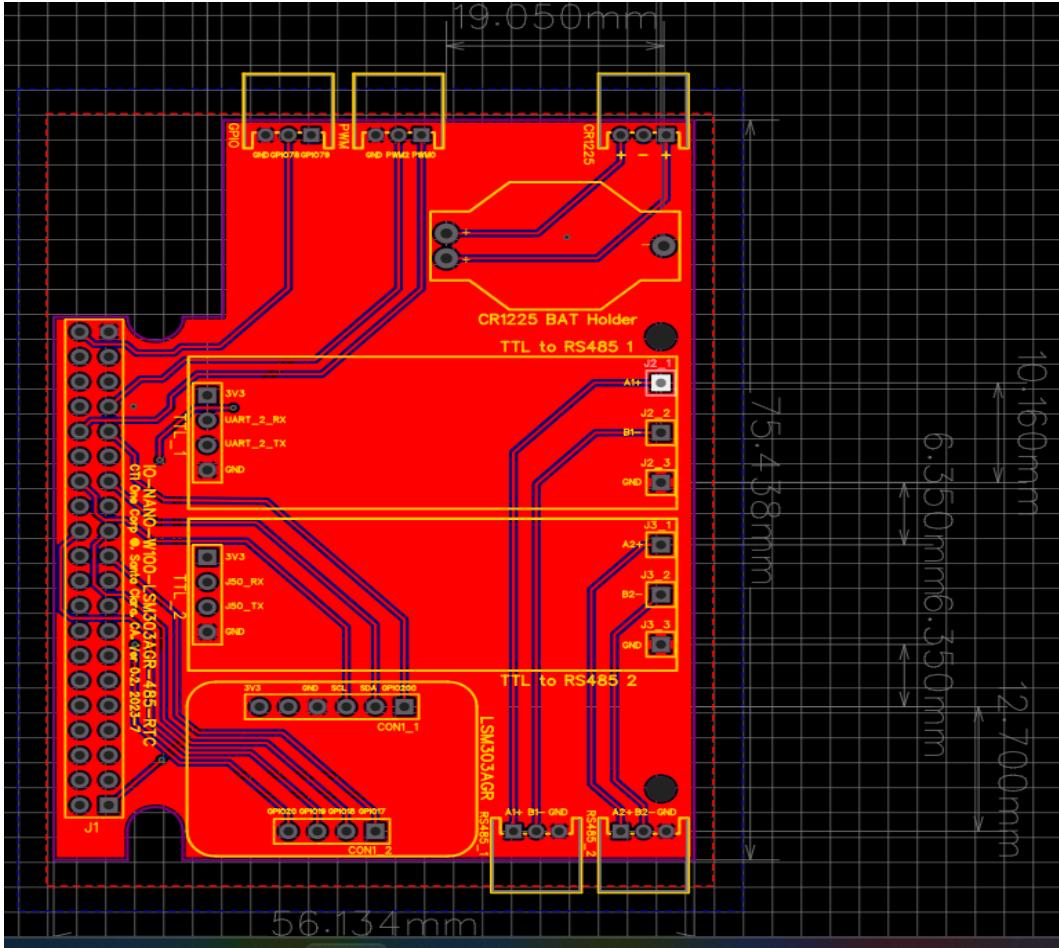


Requirements:

- (1) The length of the original board should not be extended so much.
- (2) The width of the board should be limited to 50-60mm.

IO Board Design PCB 7/7/23

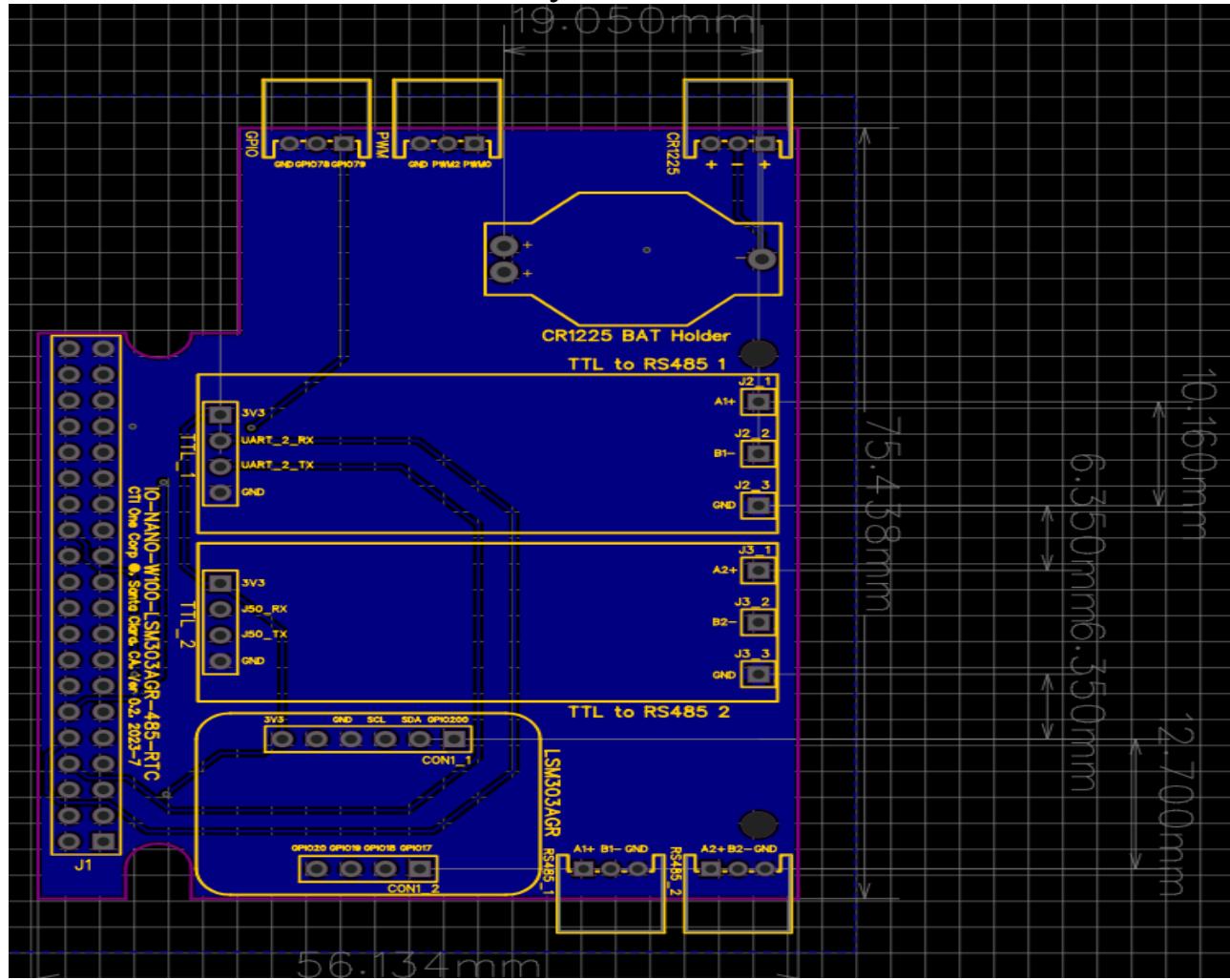
Top layer with dimension



EasyEDA can help update the PCB board based on the modification of the schematic. After assigning the position of the elements. We can wire the components through the track. To avoid the intersection between wires, we can use the vias.

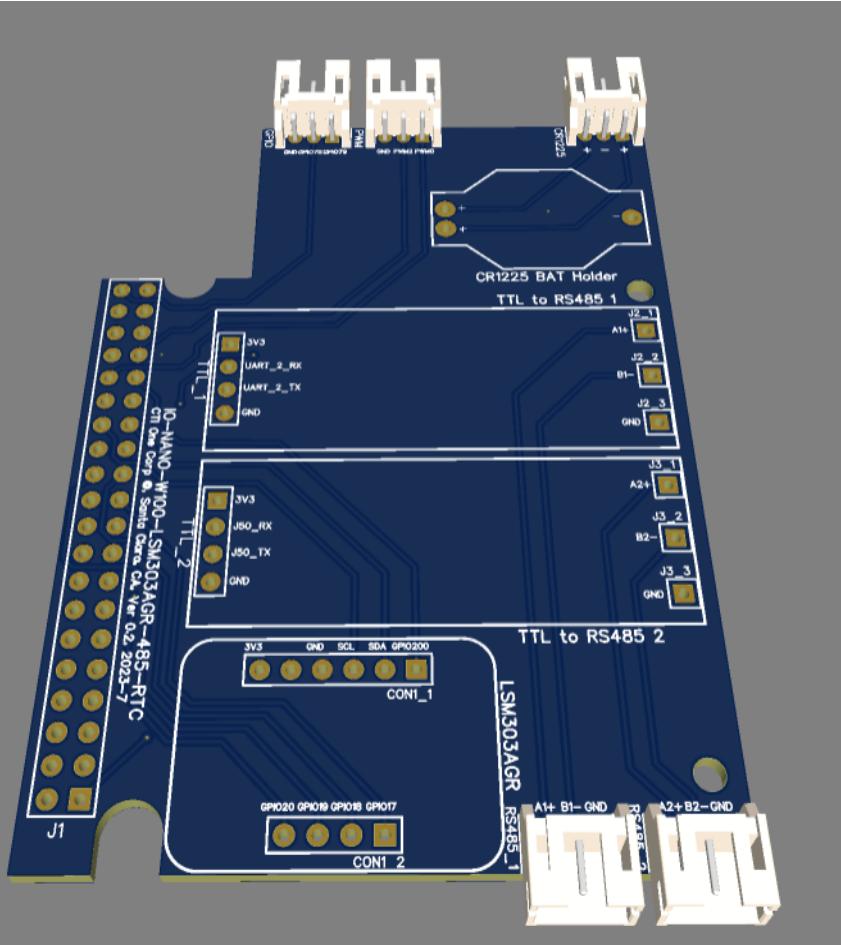
Finally, add a copper pour to the top layer and the bottom layer.

Bottom layer with dimension

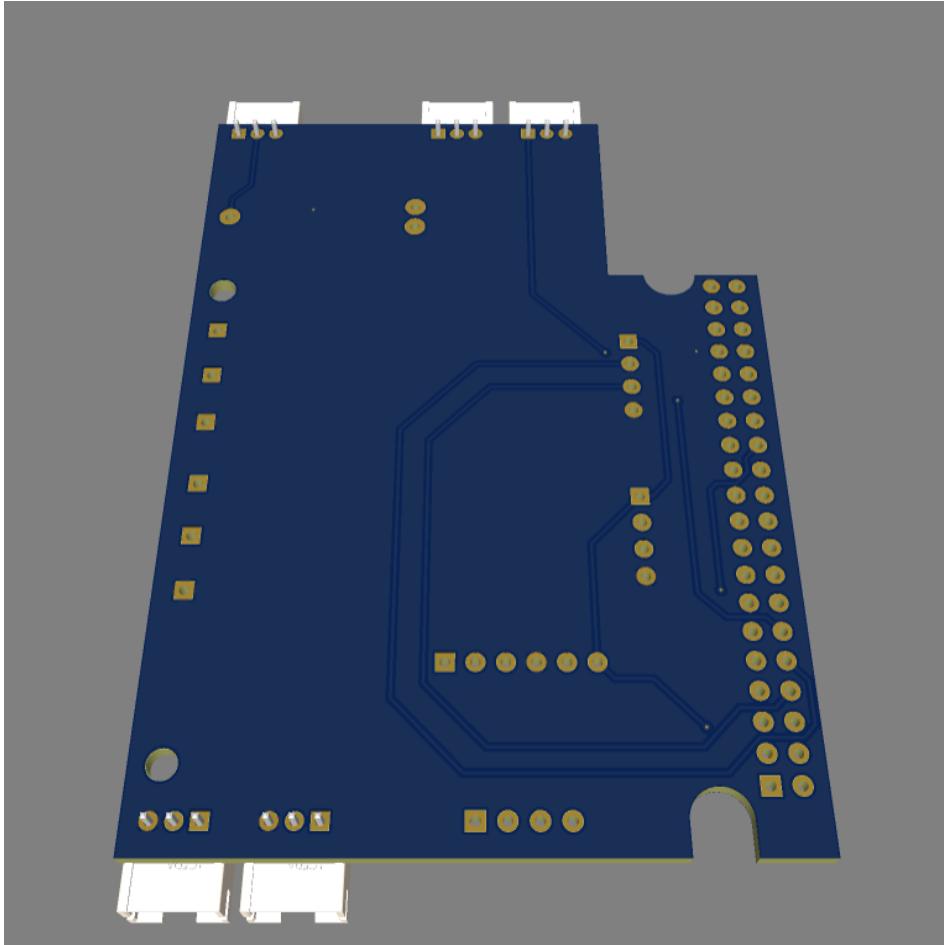


IO Board Design 3D View 7/7/23

Front View

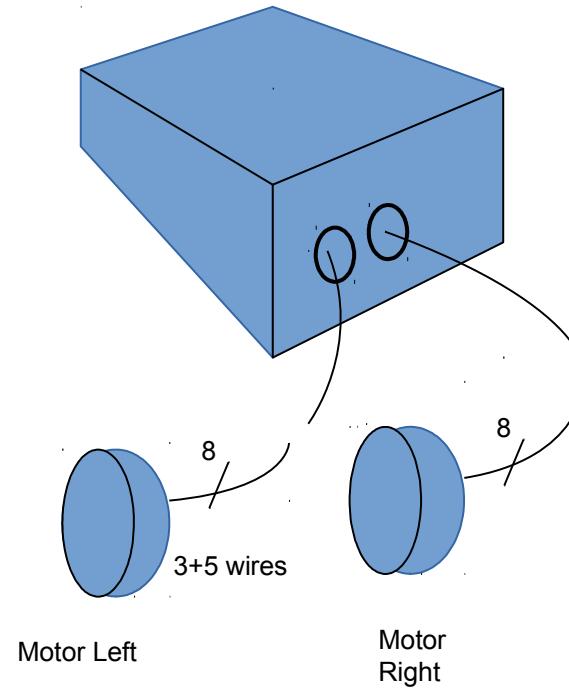
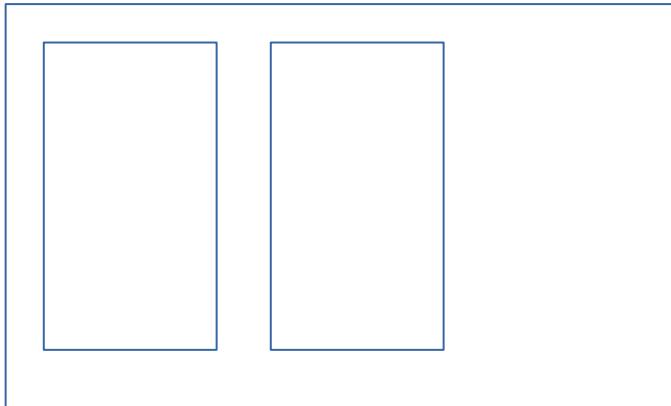
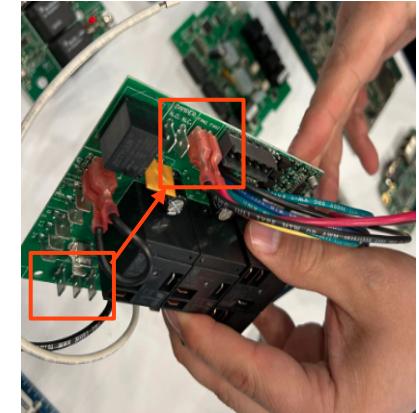
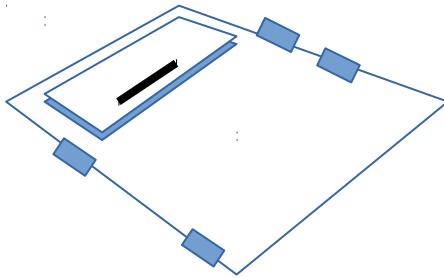


Back View



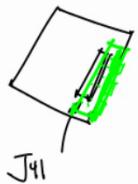
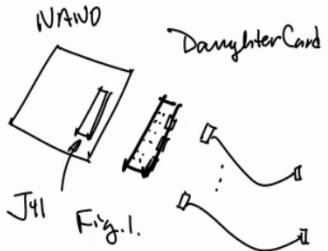
Connectors and Cable 6/16/23

1. USB CAMs x 2;
2. Motor drive x 2;
3. LED Flash Light x 1;
4. Battery Power Cable x 1;
5. HDMI touch screen monitor x 1;

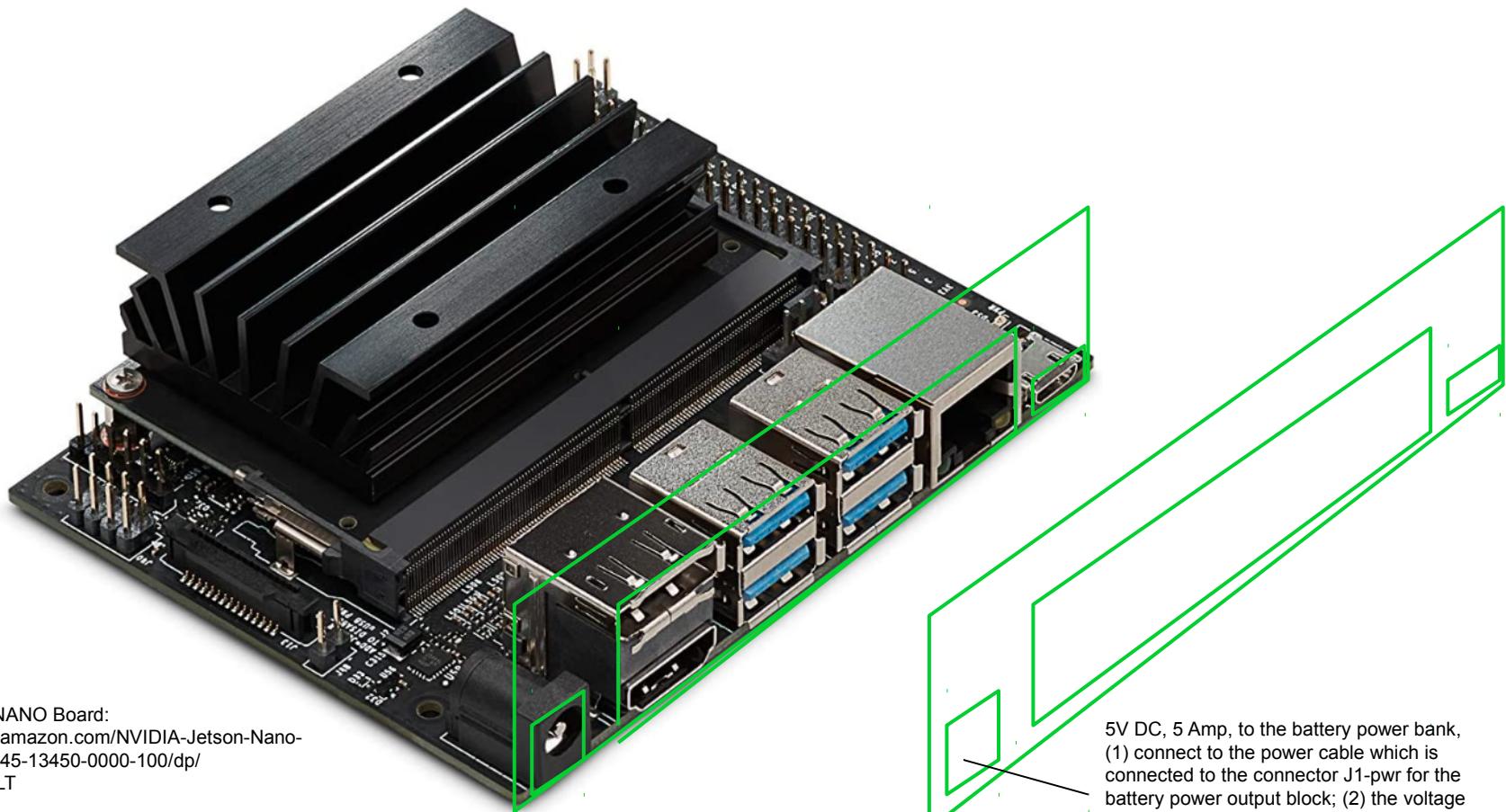


??? 6/21/23

PCB Design Meeting
Jun 21, Wednesday



Metal Blocking Plate for the Panel 6/21/23



The NVDA NANO Board:
<https://www.amazon.com/NVIDIA-Jetson-Nano-Developer-945-13450-0000-100/dp/B084DSDDLT>

5V DC, 5 Amp, to the battery power bank,
(1) connect to the power cable which is
connected to the connector J1-pwr for the
battery power output block; (2) the voltage
conversion block with output terminal block
(5V) then is connected to the cable which
is then plugged into the J1-pwr connector

Metal Blocking Plate for the Panel 6/21/23

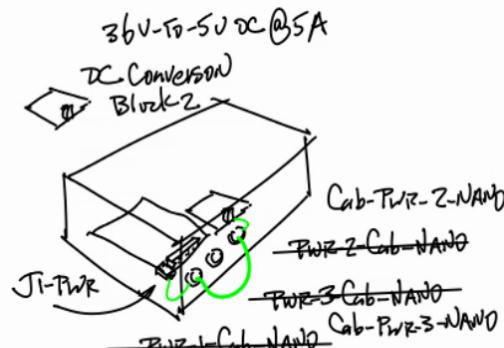
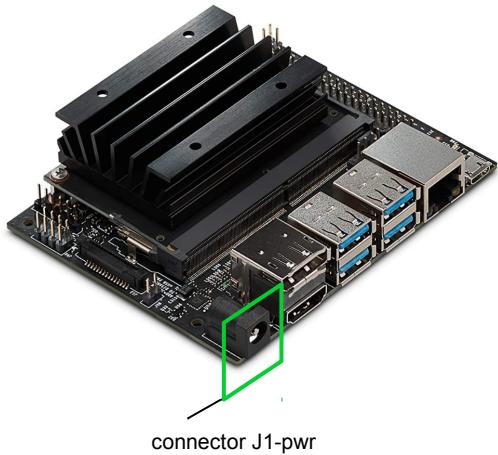


Fig. 2. NAND Connector for DC Supply.

PWR
CableType:
ConnectorType:

Fig. 2,
pp. 6

Xournal - 2023-5-11-Note-part7.xoj

DC Connector Power Male Jack Panel
Mount Through Hole 180 Unshiled
Plastic

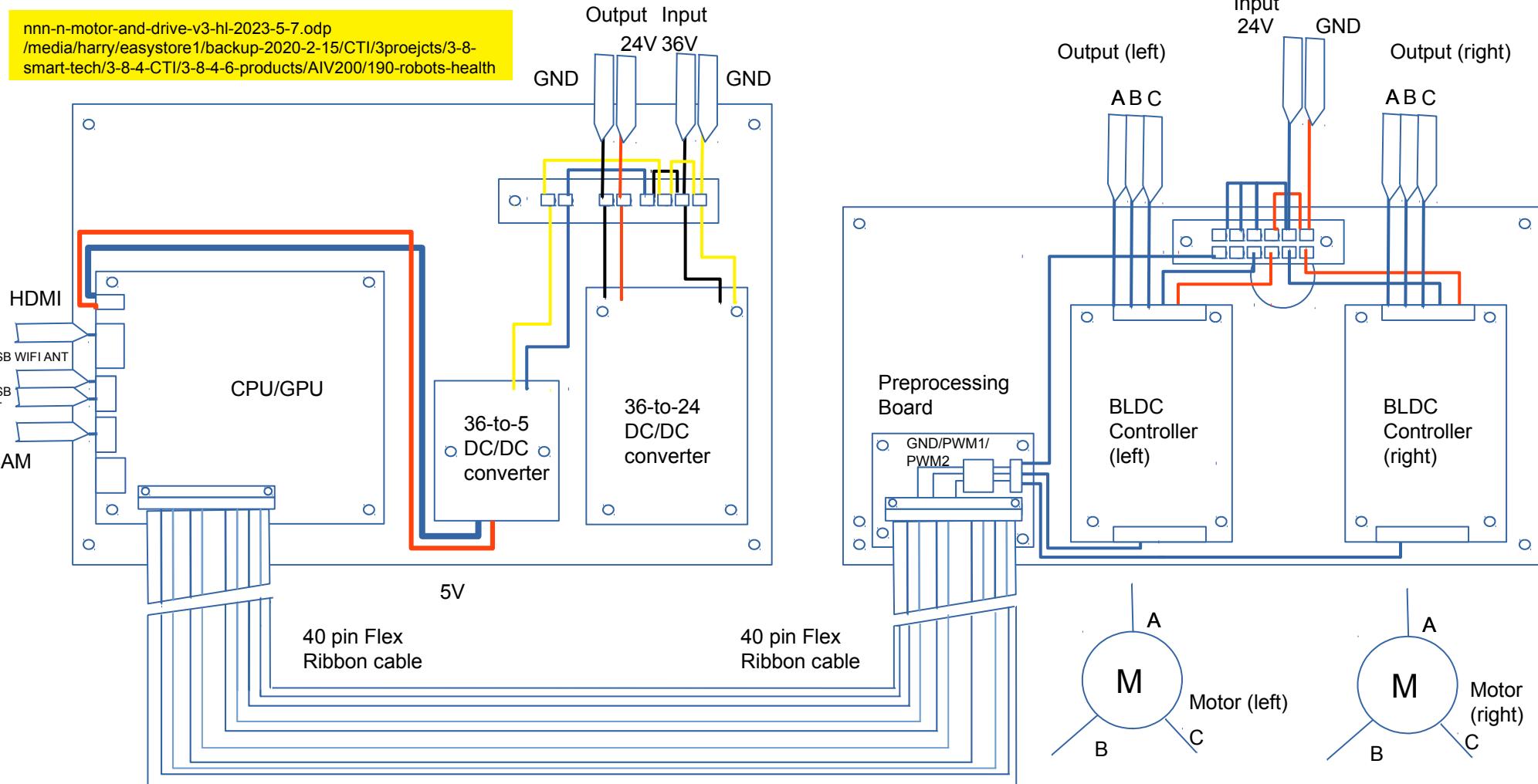


Cable Assembly 2.1mm ID, 5.5mm OD Jack to
Wire Leads Round 1.00' (305.00mm)

Layout Version 2.0 (3/27,2023)

nnn-n-motor-and-drive-v3-hl-2023-5-7.odp

/media/harry/easystore1/backup-2020-2-15/CTI/3projects/3-8-smart-tech/3-8-4-CTI/3-8-4-6-products/AIV200/190-robots-health



Connector Design with Layout Version 2.0 (6/17,2023)

nnn-n-motor-and-drive-v3-hl-2023-5-7.odp

/media/harry/easystore1/backup-2020-2-15/CTI/3projects/3-8-smart-tech/3-8-4-CTI/3-8-4-6-products/AIV200/190-robots-health

