Intel-IrriS

PRIMA
PARTNERSHIP FOR RESEARCH AND INNOVATION
IN THE MEDITERRANEAN AREA

Intelligent Irrigation System for Low-cost Autonomous Water Control in Small-scale Agriculture

Intel-IrriS

Building the INTEL-IRRIS IoT platform
Annex-1: ordering PCBs, including PCBA

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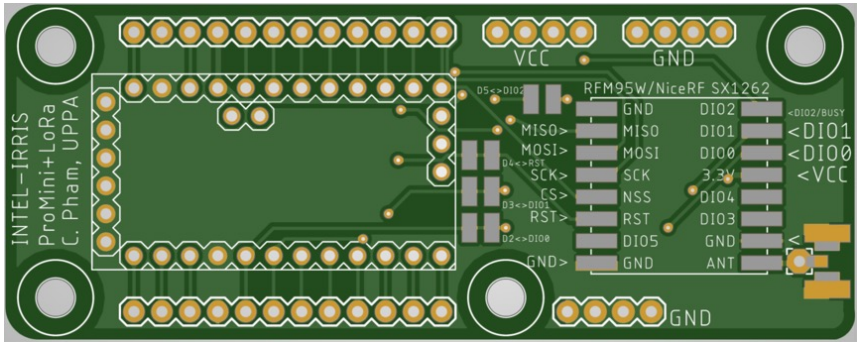
UNIVERSITÉ DE PAU ET DES PAYS DE L'ADOUR

LIUPPA

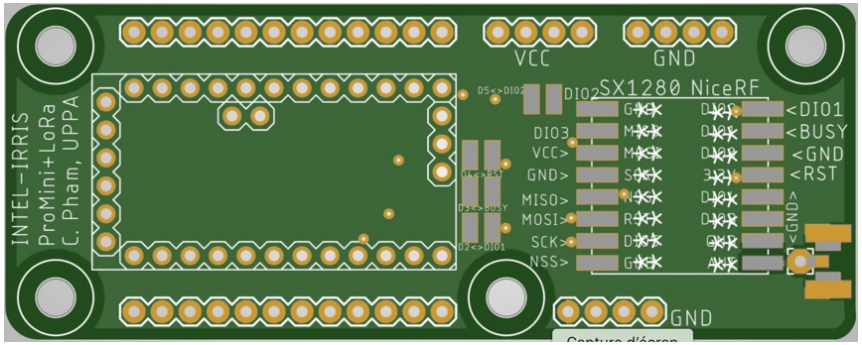
WAZIup
IoT – from idea to reality
WAZIhub

Various PCBs for soil device

Simple PCB v2

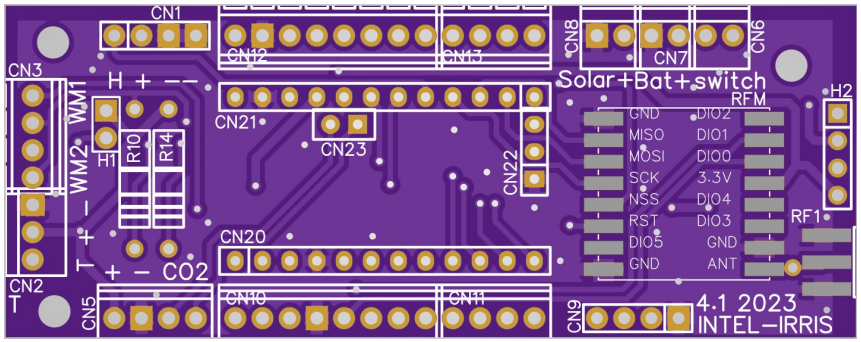


Arduino ProMini with
RFM95W (868MHz)
RFM96W (433MHz)
NiceRF SX1262 (868MHz)

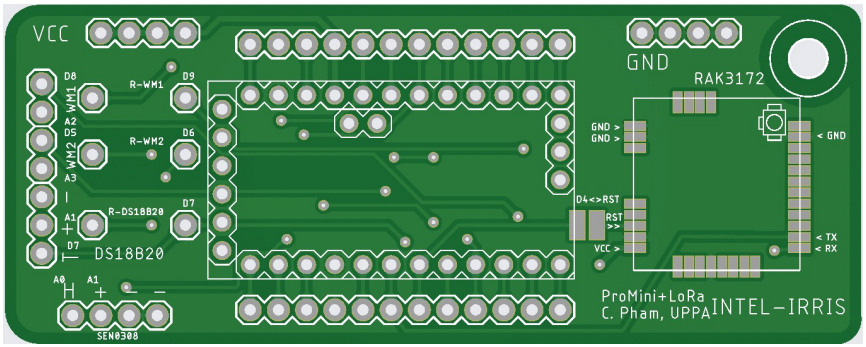


Arduino ProMini with
NiceRF SX1280 (2.4GHz)

IRD PCB v4.1



PCB for RAK3172



Download ProMini PCBs Gerber files

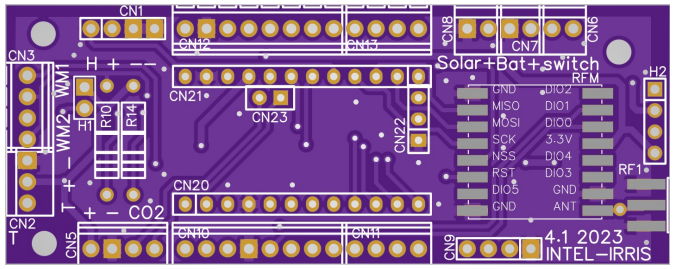
- https://github.com/CongducPham/PRIMA-Intel-IrriS/tree/main/PCBs

PRIMA-Intel-IrriS / PCBs /

CongducPham Update README.md

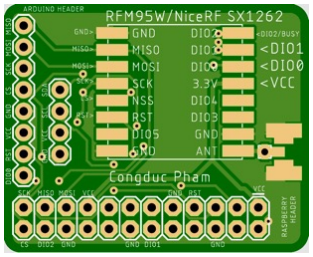
Name	Last commit message
..	
IRD_PCB_4_1	Update PCB files and tutorials
MySecondProMiniLoRaBreakout_2022-01-20.zip	Update PCB files
MySecondProMiniLoRaBreakout_RAK3172_2023-0...	Add new PCBs and update tutorials
MySecondProMiniLoRaBreakout_SX128X_2022-01-...	Update PCB files

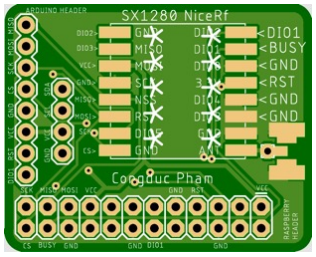
Latest and most achieved PCB is IRD PCB v4.1 in folder IRD_PCB_4_1



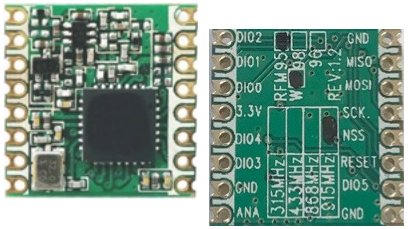
PCBs for LoRa hat, for the gateway

RFM95W
RFM96W
NiceRF SX1262
breakout

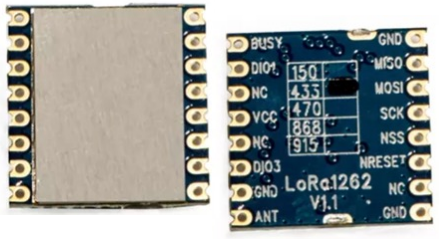




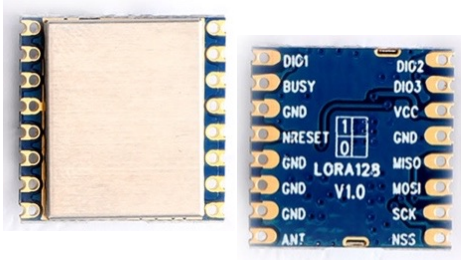
NiceRF SX1280
breakout



RFM95W (868MHz) | RFM96W (433MHz)



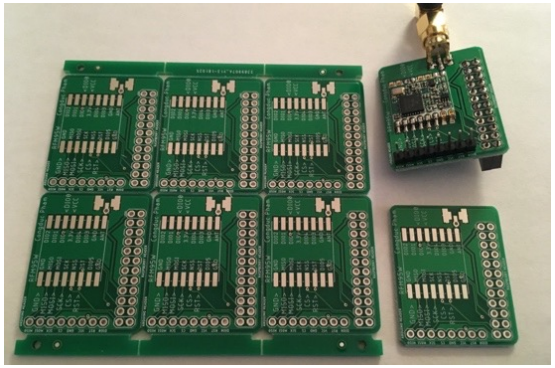
NiceRF SX1262 (868MHz)

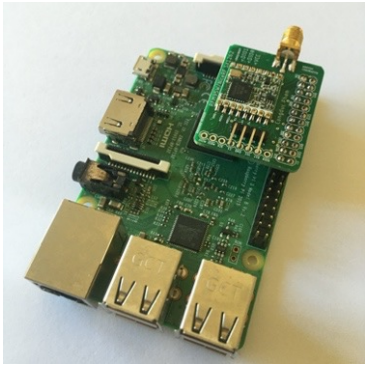


NiceRF SX1280 (2.4GHz)

https://github.com/CongducPham/LowCostLoRaGw/blob/master/PCBs/RFM95Breakout_2020-11-14.zip

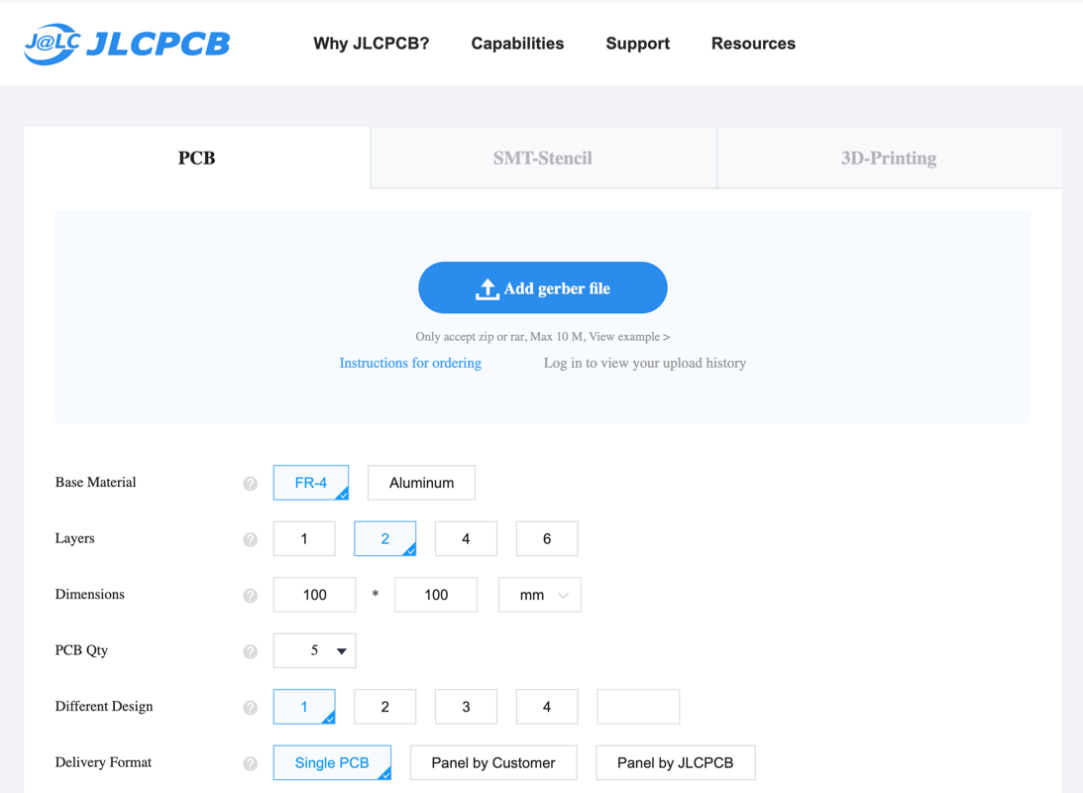
https://github.com/CongducPham/LowCostLoRaGw/blob/master/PCBs/SX1280Breakout_2020-11-14.zip





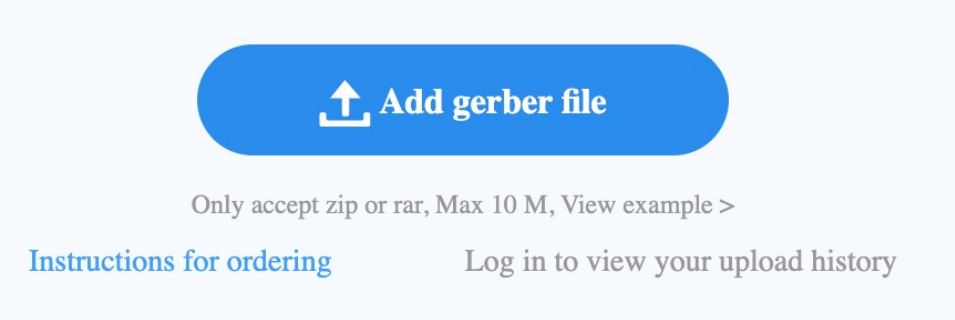
Manufacture the PCBs

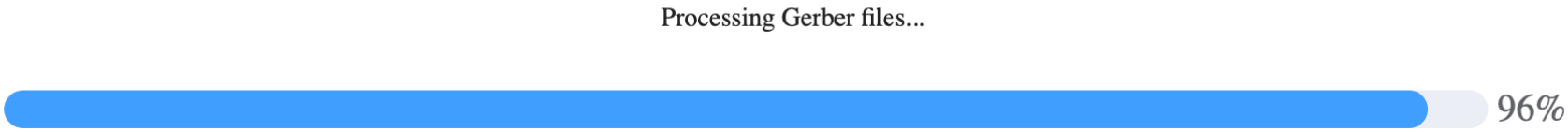
- Example: JLCPCB: https://jlcpcb.com/
- Click on "Instant Quote"



Add your PCB Gerber files

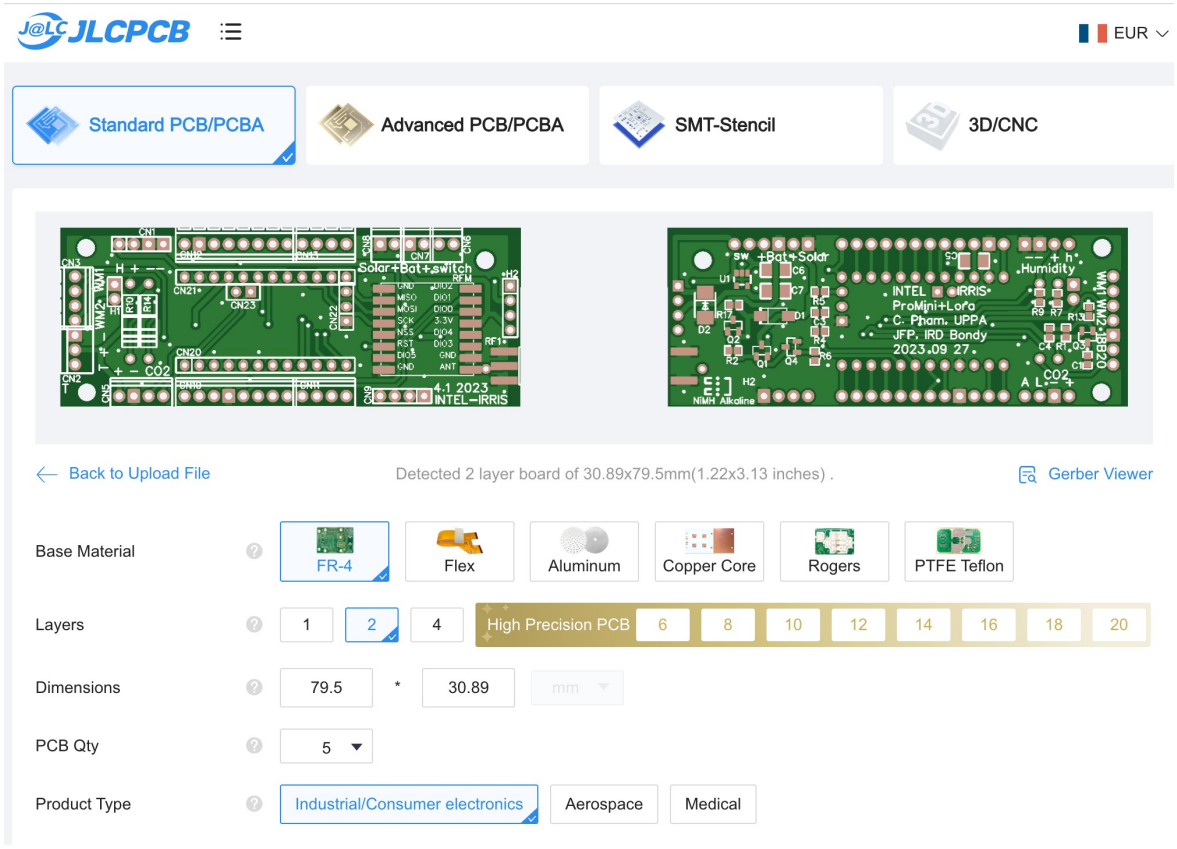
- Click "Add gerber files" and select one of the PCB .zip files, do not unzip the downloaded file





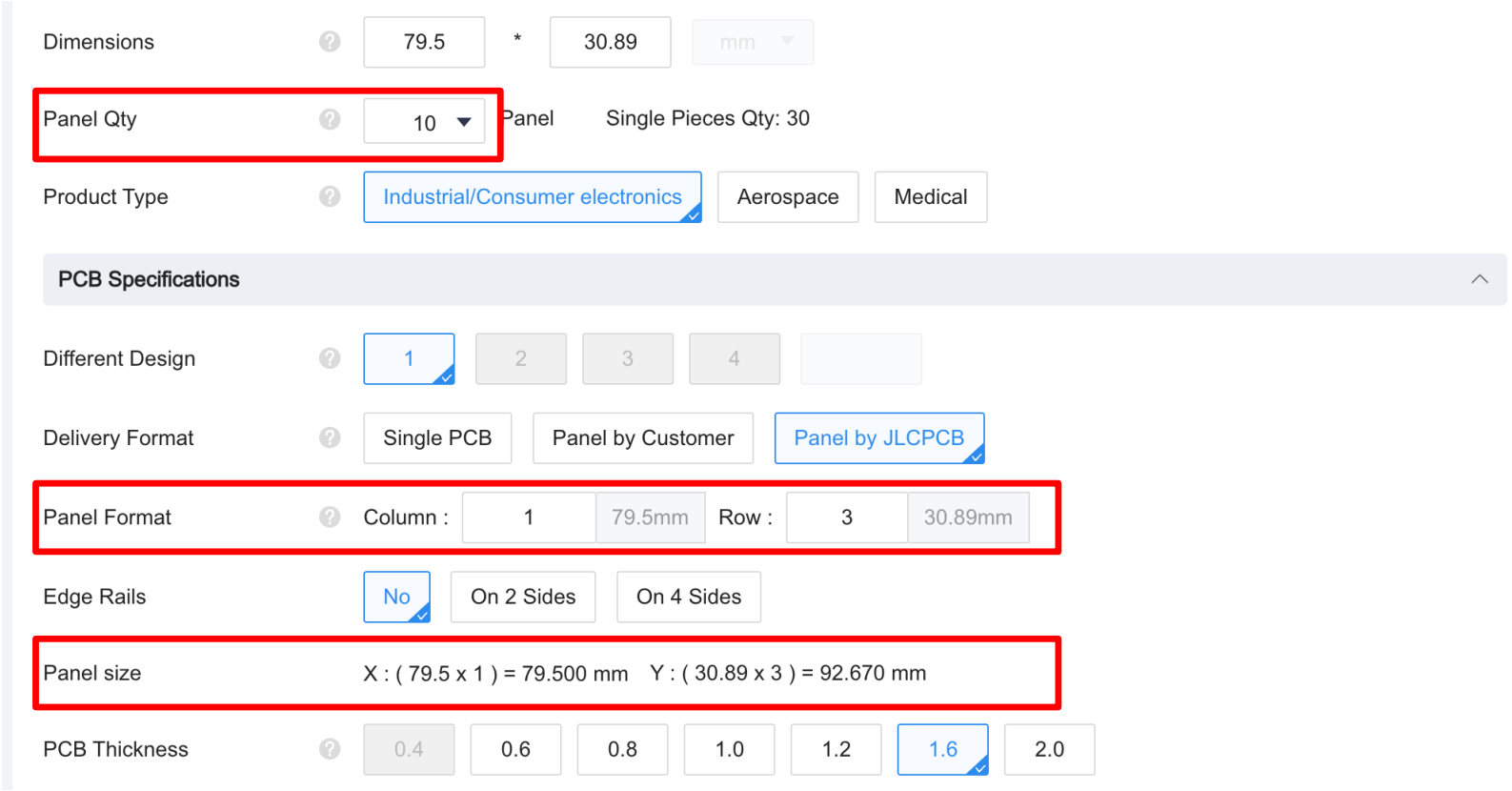
PCB parameters

- Some parameters will be defined by the Gerber file itself, for instance the PCB size



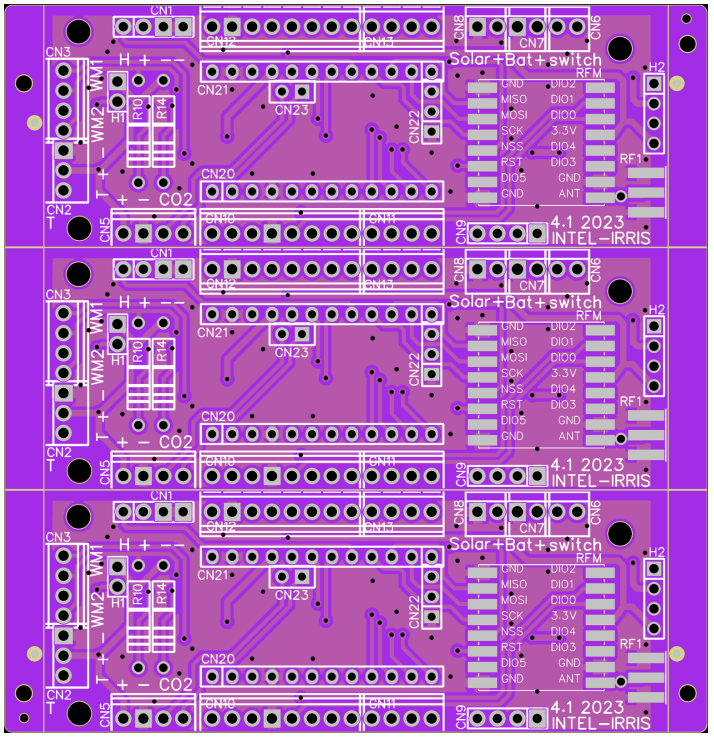
Quantity and Panel format

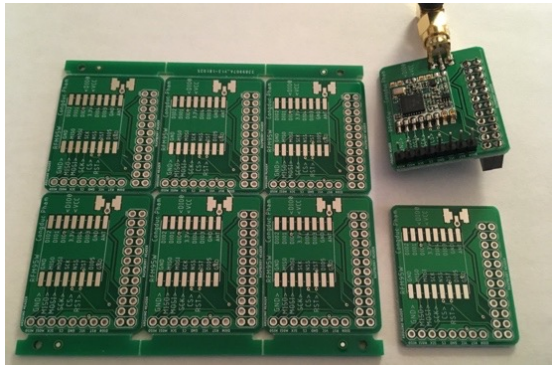
- Change "PCB Qty" to 10 for instance and select "Panel by JLCPCB"
- Indicate 1 (column) by 3 (rows)



What is "panelized"?

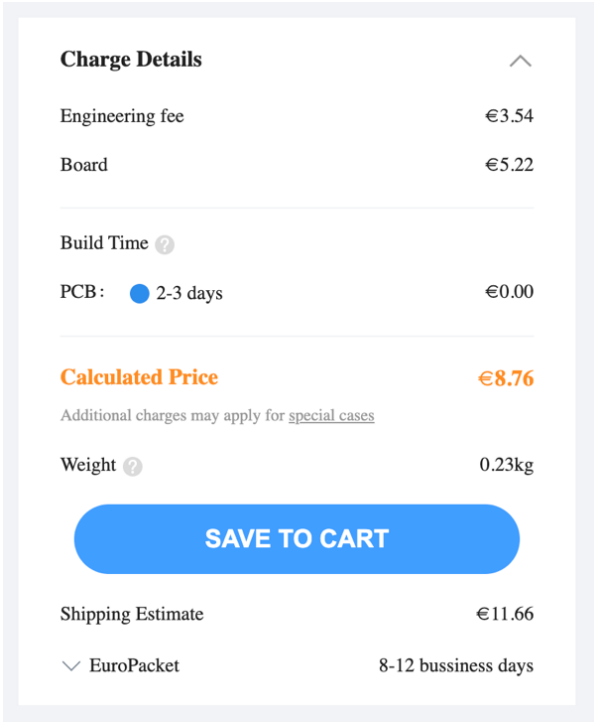
- Panelized will put several PCBs on the same PCB panel, with v-cut so that you will be able to easily separate them by hand
- For minimal cost, JLCPCB offers 10cm X 10cm PCB panel
- Here 1 x 3 will give 3 PCBs per PCB panel
- For radio breakout PCB, use 3 x 2 to have 6 PCB boards
- So if Qty=10, you will have
  - 10x3=30 for the ProMini PCB boards
  - 10x6=60 for the radio breakout PCBs





Save to cart

- You do not need to change the other parameters
- Save your board to cart
- Then, add another PCB .zip file and repeat the same procedure, if needed
- The shipping cost is probably the most expensive cost, so better to order all PCBs at the same time!
- You have several shipping option, you can select faster or cheaper options
- Once you are done, display your cart, review carefully your order and then checkout



INTEL-IRRIS

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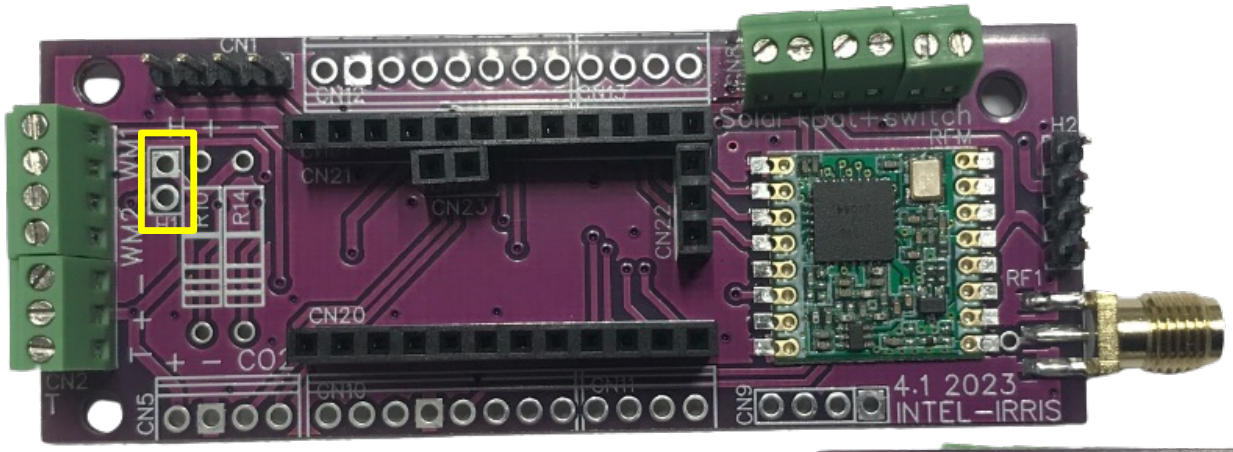
PCBA FOR FULLY ASSEMBLED

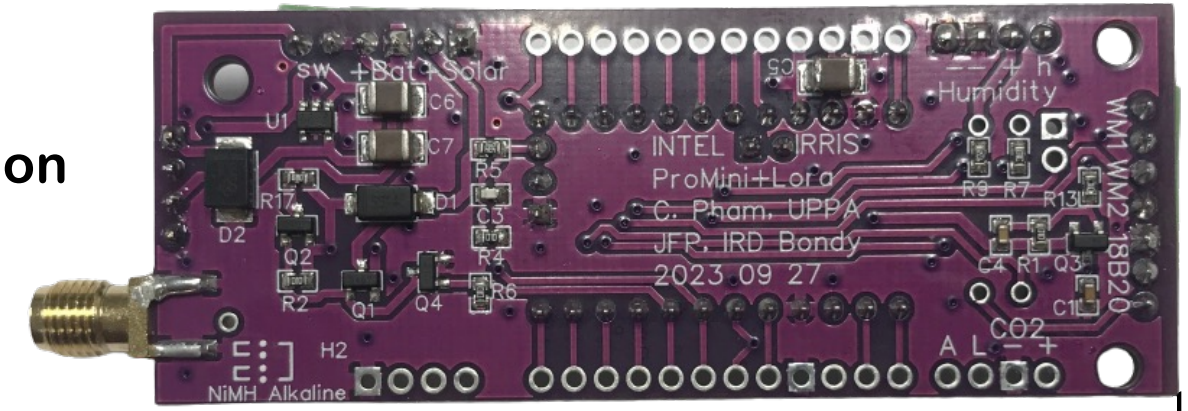
PCB Assembly

- The IRD PCB v4.1 is intended to be fully assembled by the PCB manufacturer in order to have the solar charging circuit



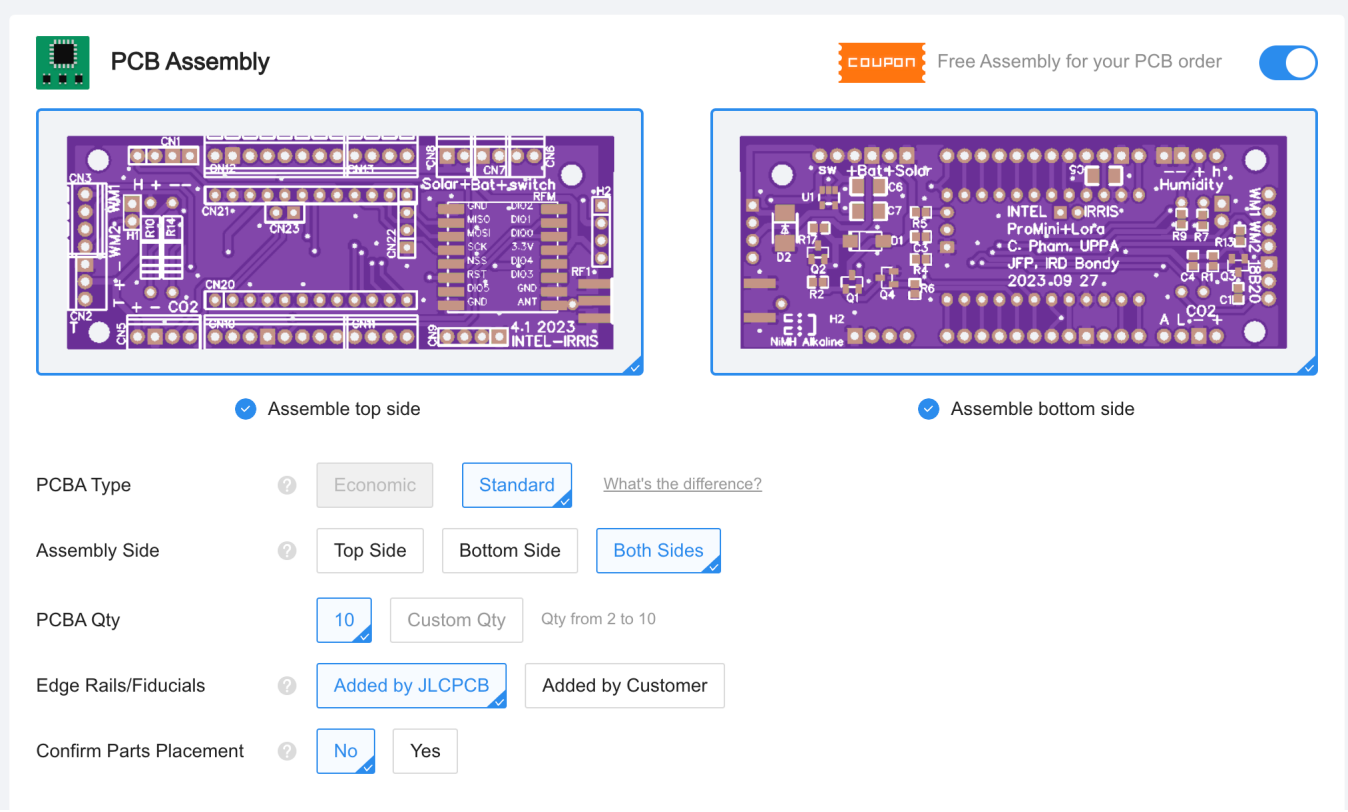
The full version does not need to have header for H1

The solar circuit is on the back side



Enabling PCB assembly

- Click on PCBA to indicate you want PCB assembly
- Choose Standard PCBA type and select "Both sides" option



BOM & CPL

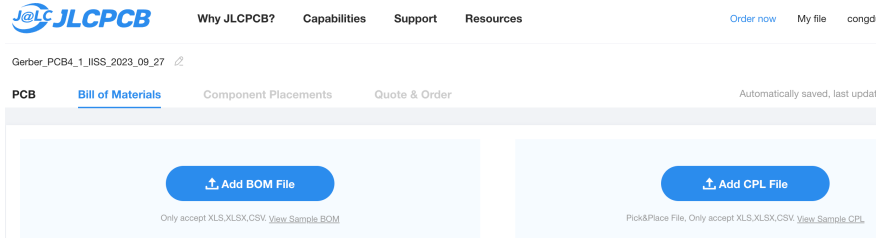
- BOM: Bill of Material file (2 files: RFM95W or RFM96W)
- CPL: Pick&Place file

PRIMA-Intel-IrriS / PCBs / IRD_PCB_4_1 /

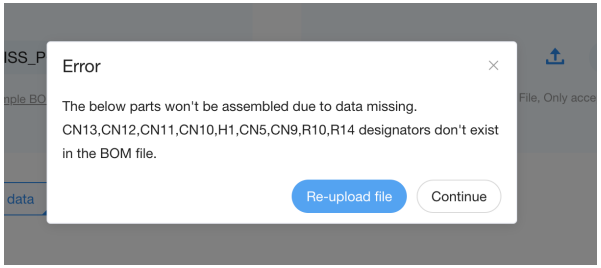
CongducPham Update PCB Gerber, BOM and CPL files for PCB Assembly 42cbaeb · 1 minute ago History

Name	Last commit message	Last commit date
..		
BOM_SMT_TB_RFM95_868_IISS_PCB4_1_wH2.xlsx	Update PCB Gerber, BOM and CPL files for PCB Assembly	1 minute ago
BOM_SMT_TB_RFM96_433_IISS_PCB4_1_wH2.xlsx	Update PCB Gerber, BOM and CPL files for PCB Assembly	1 minute ago
CPL.csv	Update PCB Gerber, BOM and CPL files for PCB Assembly	1 minute ago
Gerber_PCB4_1_IISS_2023_09_27.zip	Update PCB files and tutorials	2 weeks ago
Schematic_IISS_4_1_2023-09-27.pdf	Update PCB files and tutorials	2 weeks ago

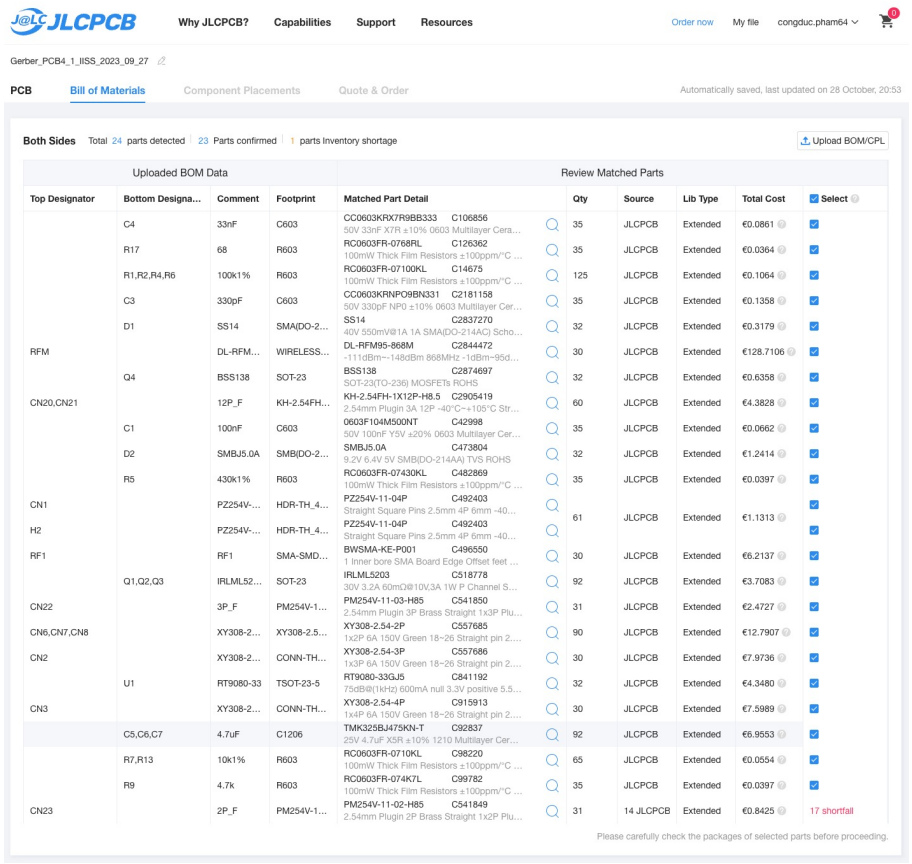
- At next step, you will be invited to upload BOM & CPL files



Check availability of components



- If you see this message, click on "Continue"
- Then, check that all components are available. Here, there are not enough components for CN23 (2-pin female header).
- You can wait until they are all available (recommended), or decide that you do not want to place them (you must know what you are doing then)
- You can also have the choice to replace by another similar component with , if any



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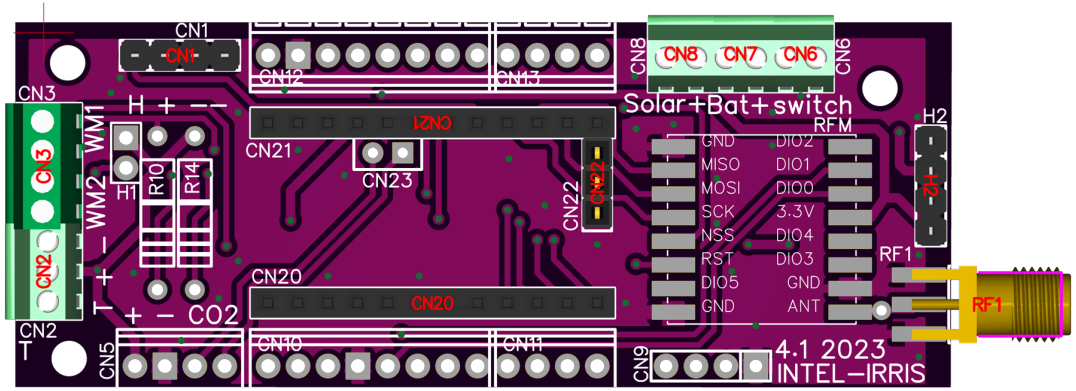
Customize your PCB Assembly

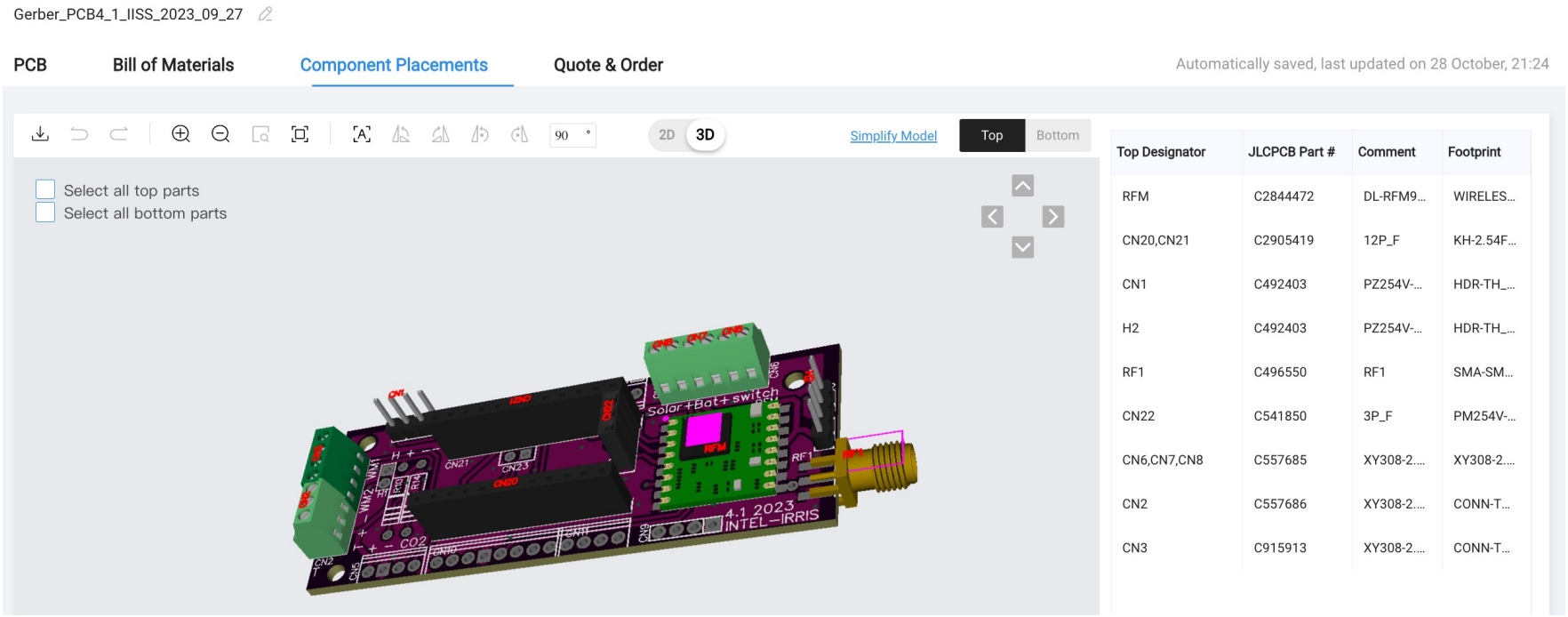
- You can also decide which component you actually do not want the manufacturer to assemble
- For instance, if you un-select the radio module (RFM), you will have a fully assembly board, but without the LoRa module



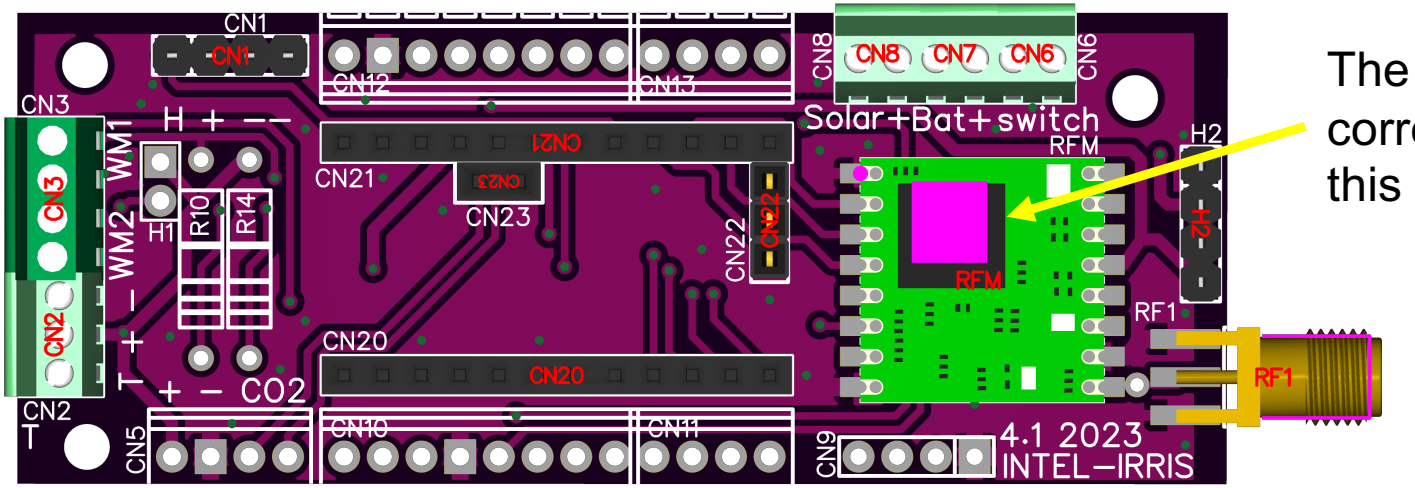
- This solution can be used to have a board where you will solder yourself the radio module (RFM95W 868/915/923 or RFM96W 433), according to the frequency band of the target countries

Checking the expected result

- At next step, you will be able to visually check the final result
- You can switch between 2D & 3D display
- Check top & bottom side (see next slide)

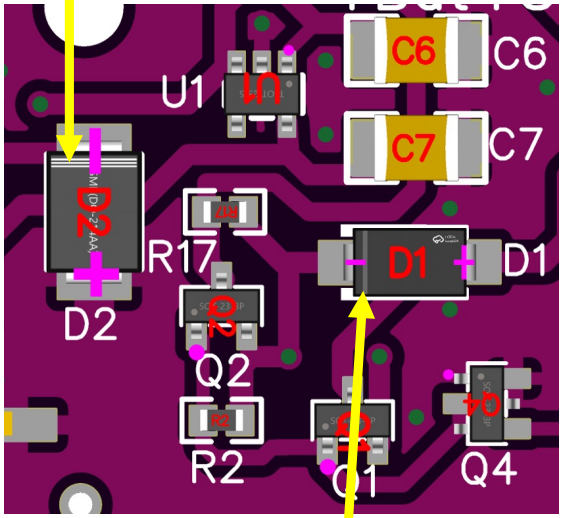


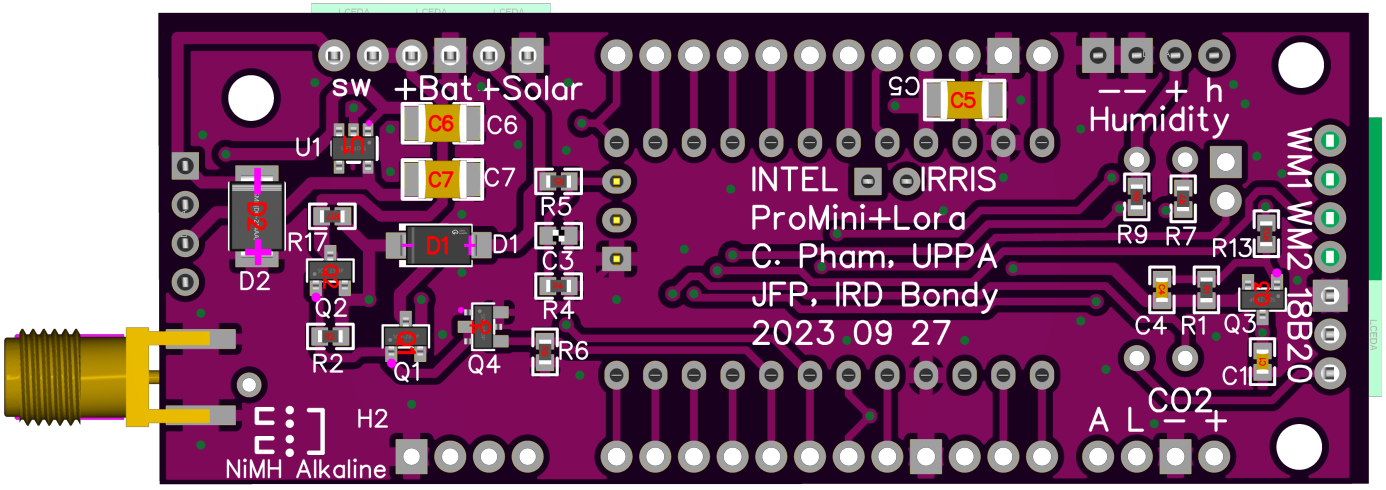
Check top & bottom



The RFM is correctly placed this way

The diode D2 has the hozirontal line on the top

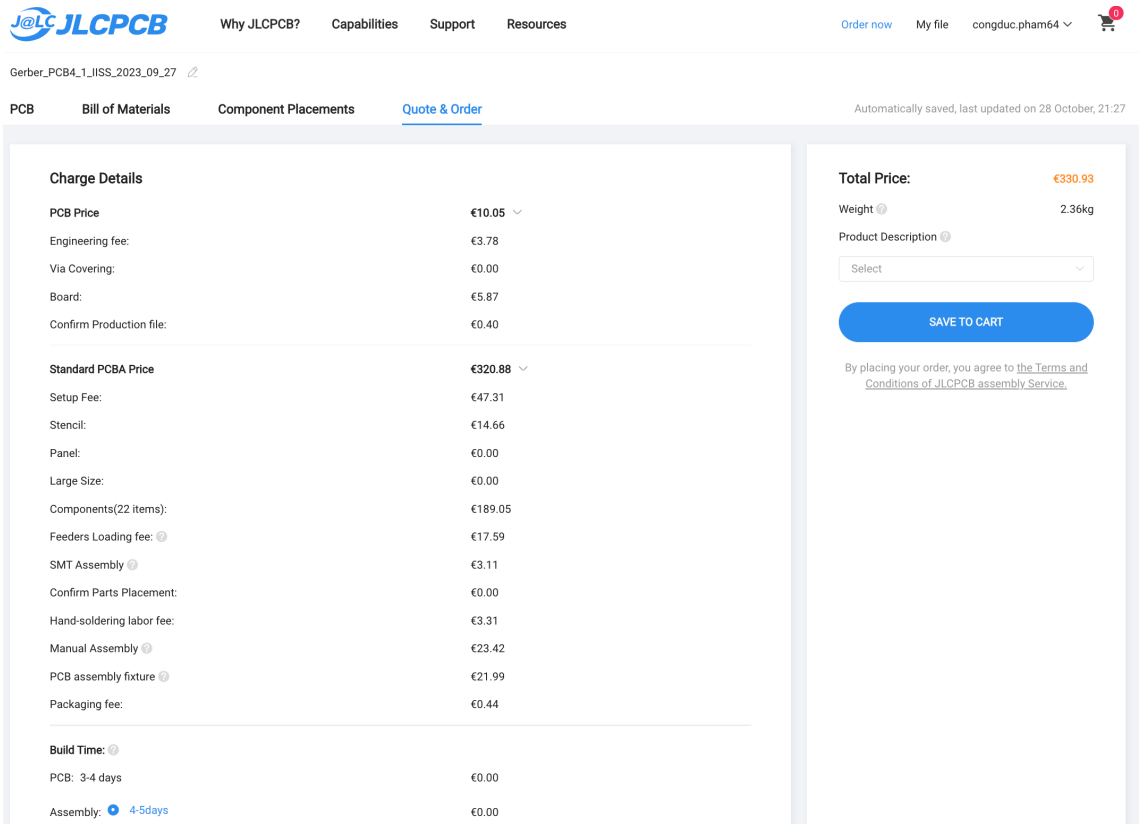




The diode D1 has the vertical line on the left

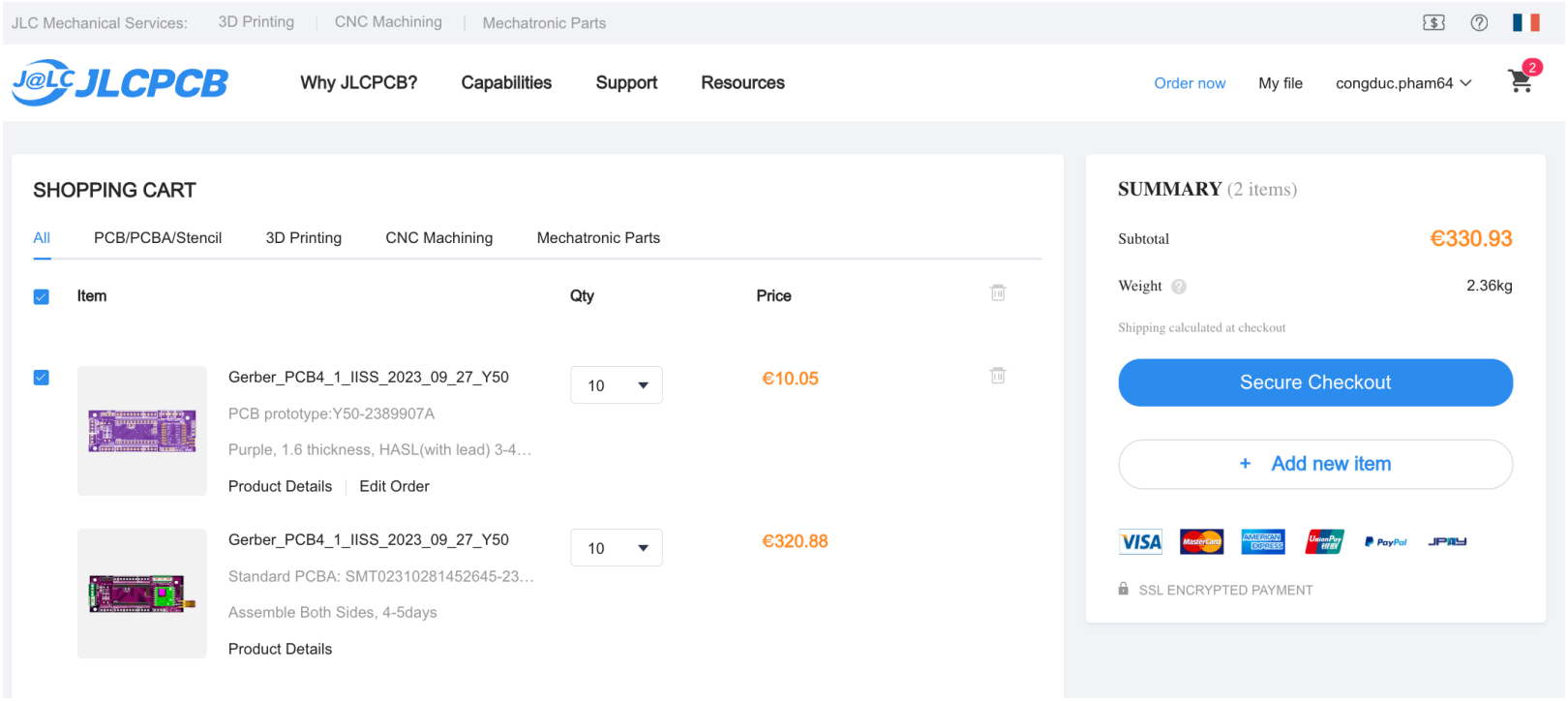
Saving to cart

- Finally, you will be able to save the configured PCBA to cart
- You will also have the detail of all the pricing

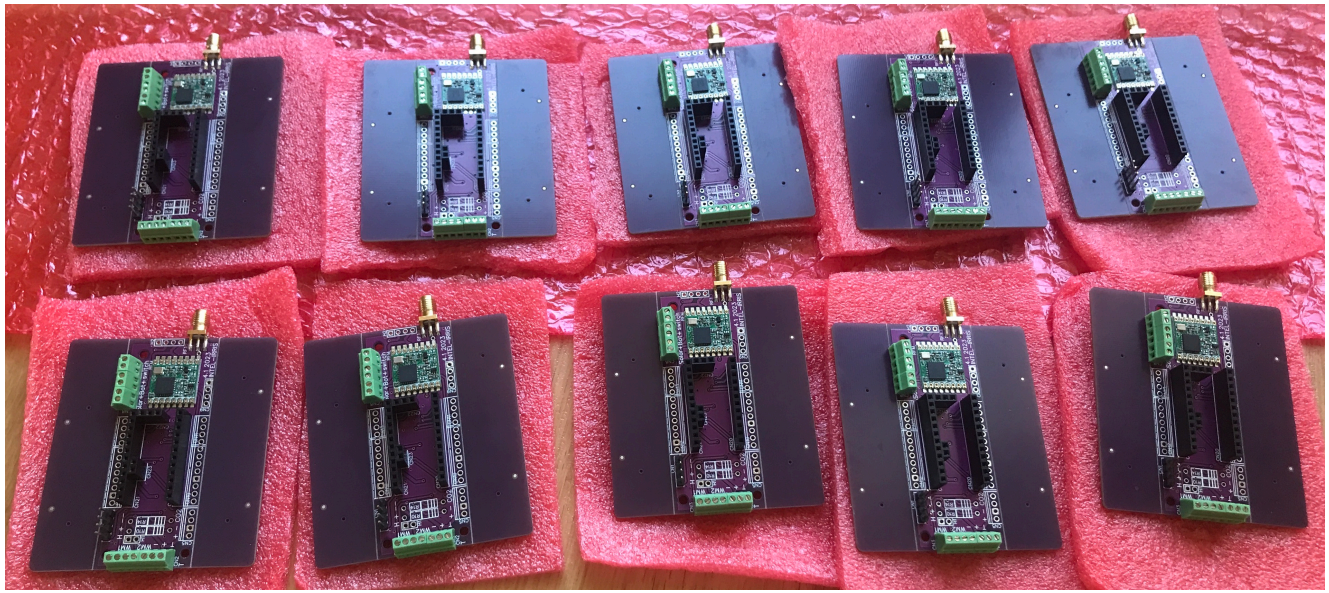


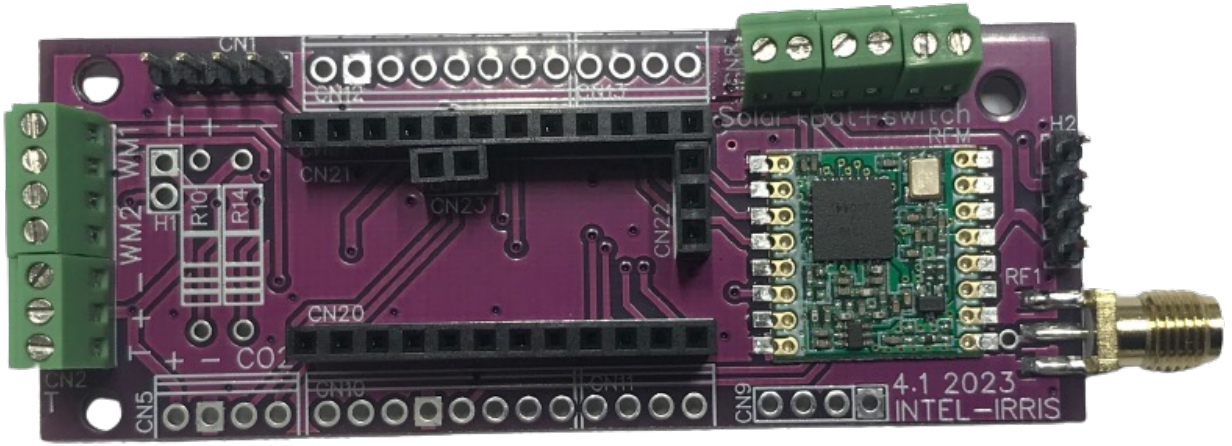
Final step, pay to order!

- This is the final step, pay to order your PCBA
- You will be able to choose the shipping methods and other details



Receiving your PCBA!





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