

INTEL-IRRIS

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



Intel-Irris



INTELLIGENT IRRIGATION SYSTEM FOR LOW-COST AUTONOMOUS WATER CONTROL IN SMALL-SCALE AGRICULTURE



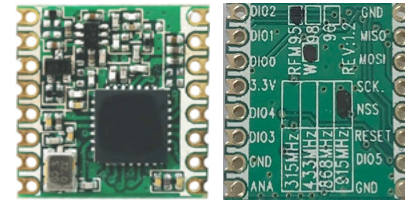
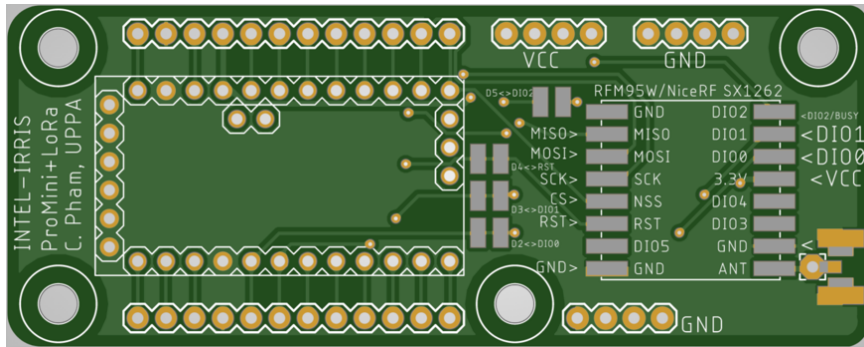
Building the Intel-IrriS IoT platform Annex-1: ordering PCBs



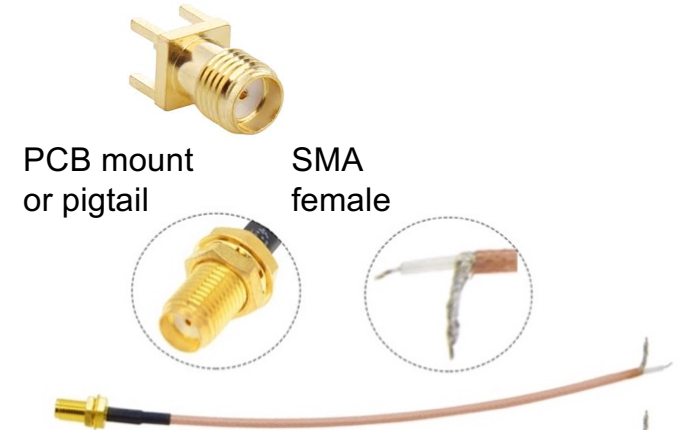
Prof. Congduc Pham
<http://www.univ-pau.fr/~cpham>
Université de Pau, France



Soil sensor: electronic parts



RFM95W (868MHz)
RFM96W (433MHz)
NiceRF SX1262 (868MHz)
NiceRF SX1268 (433MHz)
NiceRF SX1280 (2.4GHz)

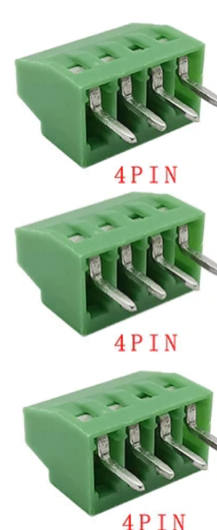
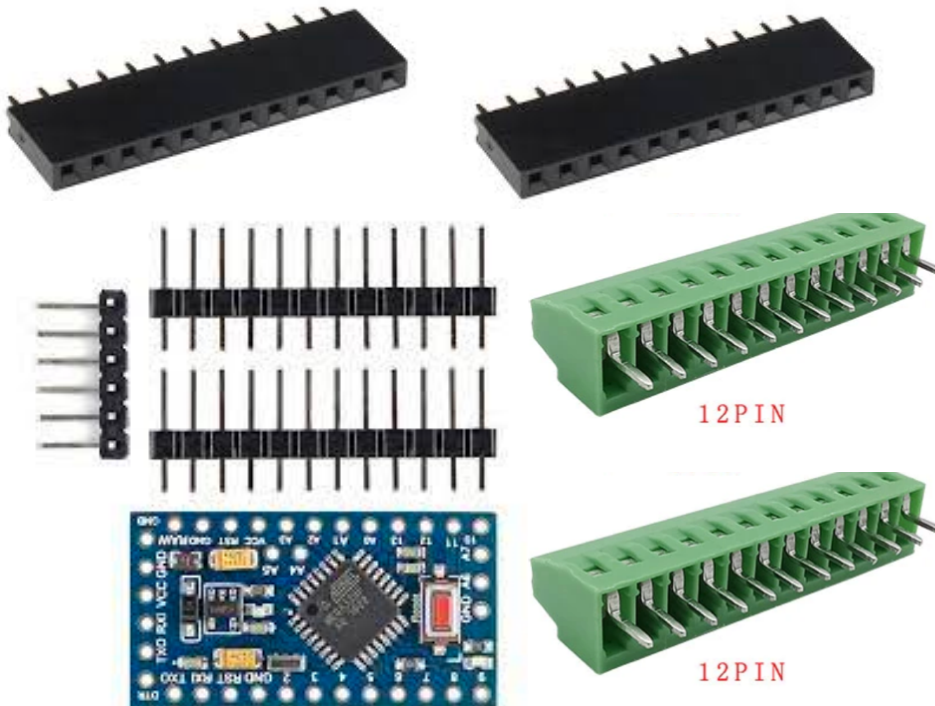


PCB mount
or pigtail

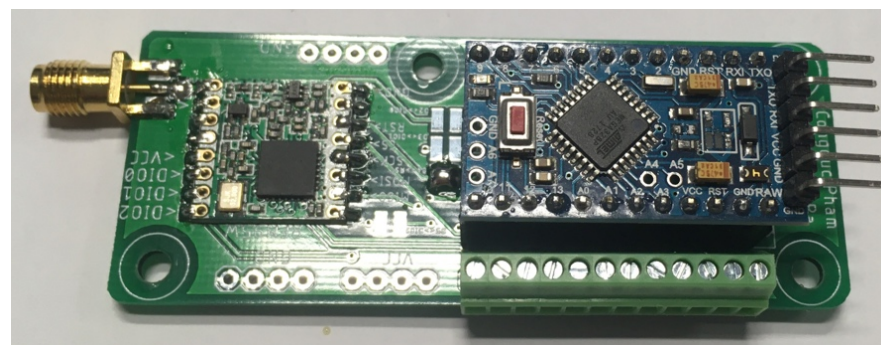
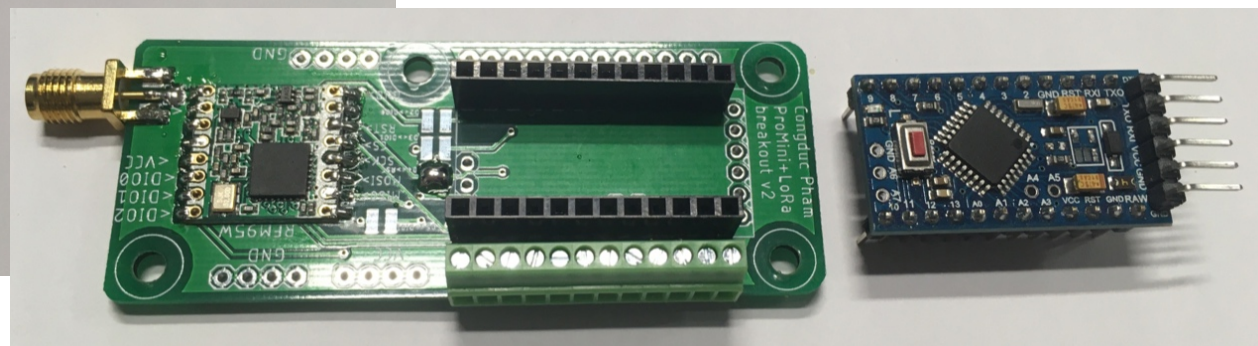
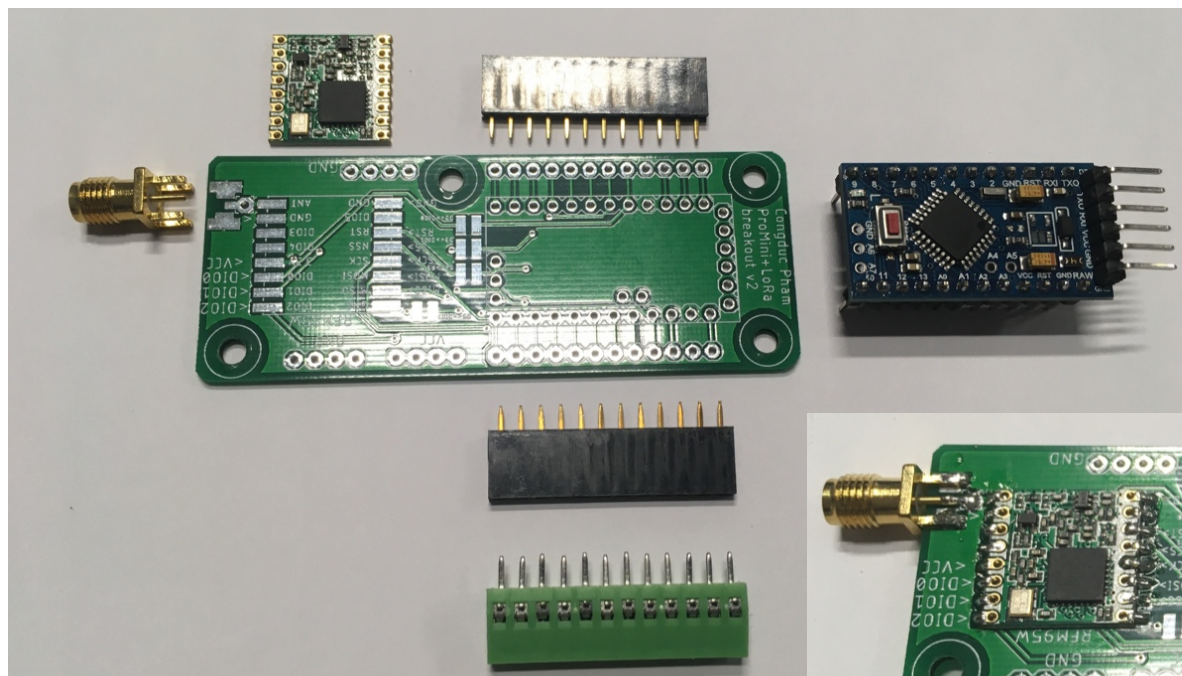
SMA
female

SMA
male

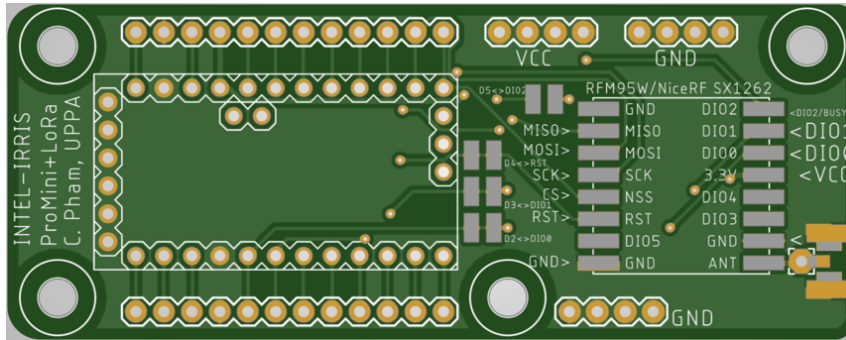
optional



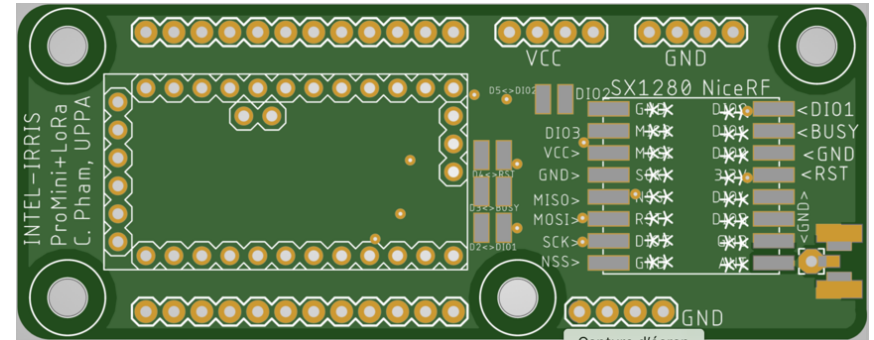
The PCB board will ease assembly Intel-IrriS



4 PCBs can be ordered

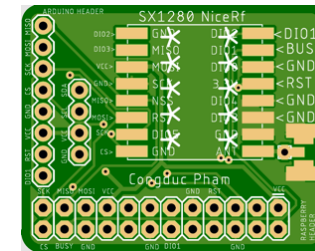
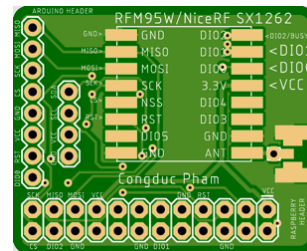


Arduino ProMini with
RFM95W (868MHz)
RFM96W (433MHz)
NiceRF SX1262 (868MHz)

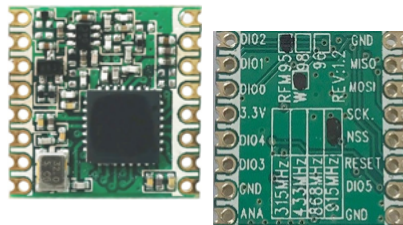


Arduino ProMini with
NiceRF SX1280 (2.4GHz)

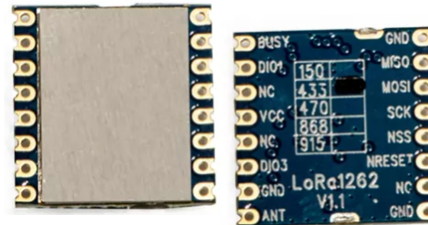
RFM95W
RFM96W
NiceRF SX1262
breakout



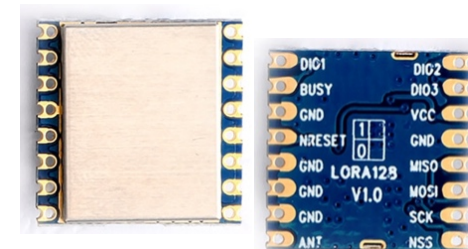
NiceRF SX1280
breakout



RFM95W (868MHz) | RFM96W (433MHz)



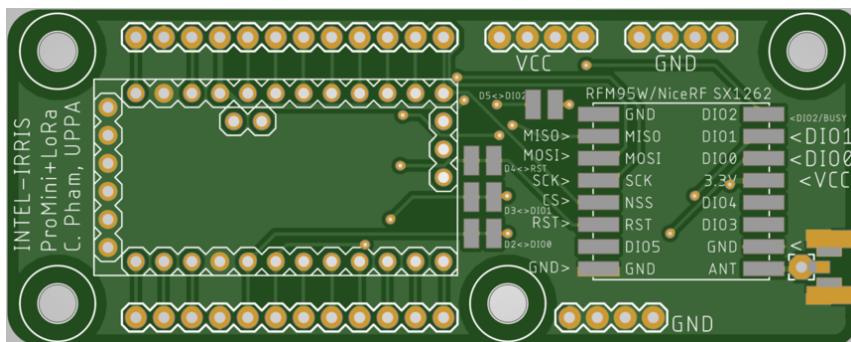
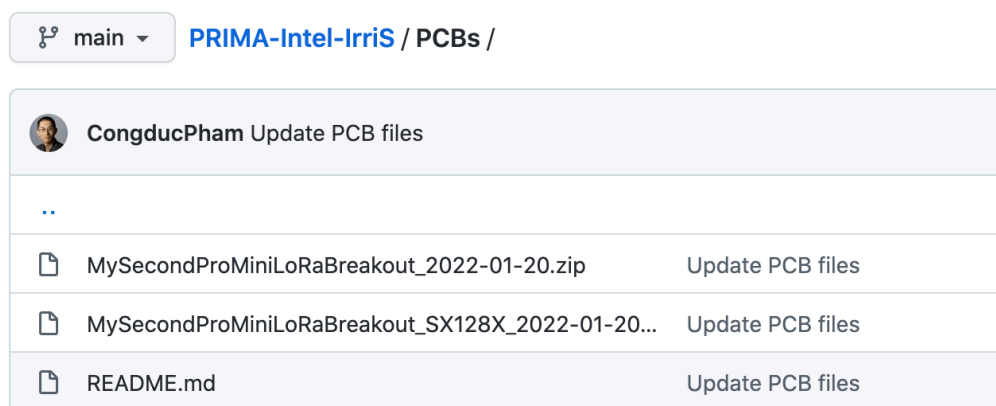
NiceRF SX1262 (868MHz)



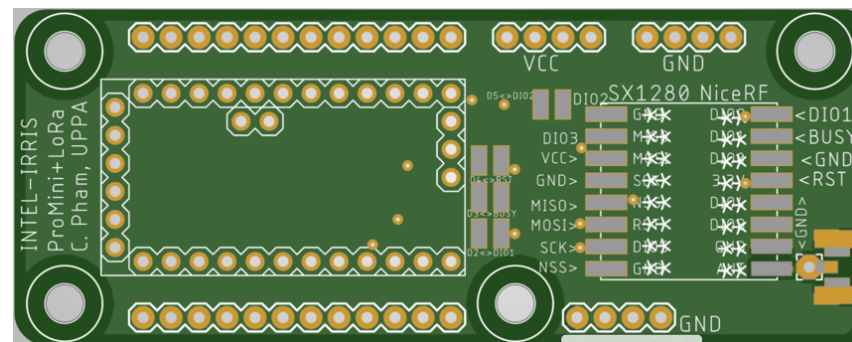
NiceRF SX1280 (2.4GHz)

Download ProMini PCBs Gerber files

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



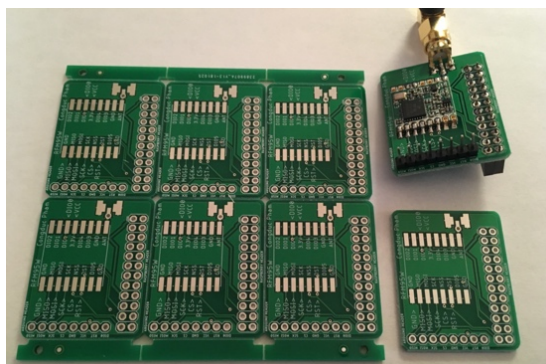
https://github.com/CongducPham/PRIMA-Intel-IrriS/raw/main/PCBs/MySecondProMiniLoRaBreakout_2022-01-20.zip



https://github.com/CongducPham/PRIMA-Intel-IrriS/raw/main/PCBs/MySecondProMiniLoRaBreakout_SX128X_2022-01-20.zip

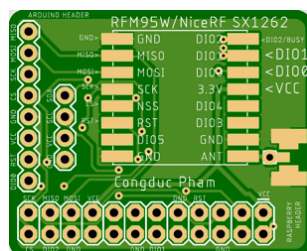
Download radio PCB breakouts

- ⦿ The radio PCB breakouts are for the RPI-based IoT gateway

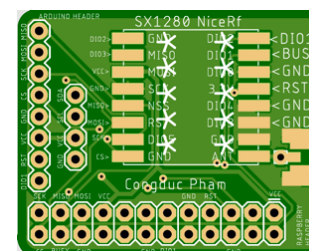


- ⦿ <https://github.com/CongducPham/LowCostLoRaGw/tree/master/PCBs>

RFM95W
RFM96W
NiceRF SX1262
breakout



NiceRF SX1280
breakout

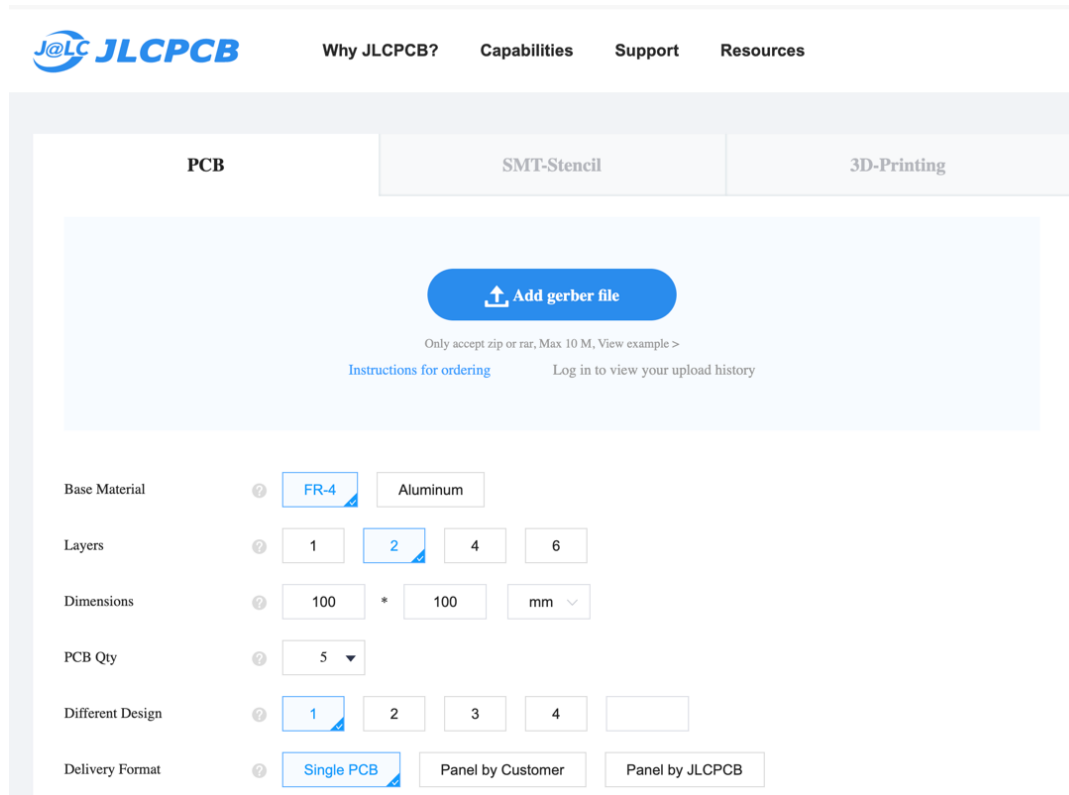


https://github.com/CongducPham/LowCostLoRaGw/blob/master/PCBs/RFM95Breakout_2020-11-14.zip

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"

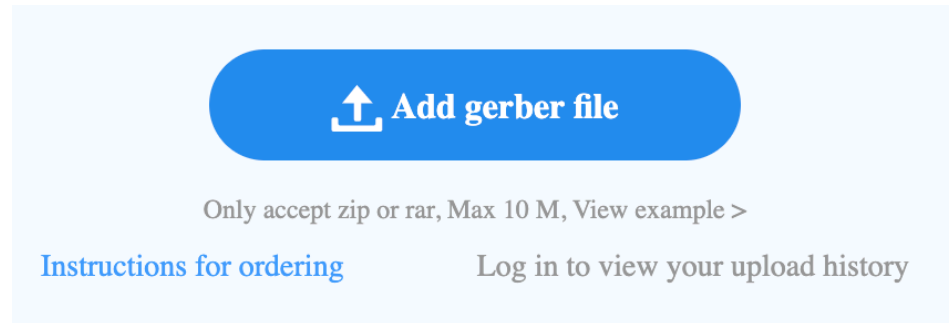


The screenshot shows the JLCPCB website's 'Instant Quote' form. The navigation bar includes the JLCPCB logo and links for 'Why JLCPCB?', 'Capabilities', 'Support', and 'Resources'. The main content area has three tabs: 'PCB' (selected), 'SMT-Stencil', and '3D-Printing'. Below the tabs is a large blue button labeled 'Add gerber file' with an upload icon. Below this button, it states 'Only accept zip or rar, Max 10 M, View example >' and provides links for 'Instructions for ordering' and 'Log in to view your upload history'. The form fields are as follows:

Field	Value
Base Material	FR-4 (selected), Aluminum
Layers	1, 2 (selected), 4, 6
Dimensions	100 * 100 mm
PCB Qty	5
Different Design	1 (selected), 2, 3, 4
Delivery Format	Single PCB (selected), Panel by Customer, Panel by JLCPCB

Add your PCB Gerber files

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



Processing Gerber files...



PCB parameters

- Some parameters will be defined by the Gerber file itself

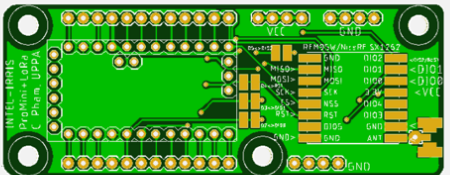
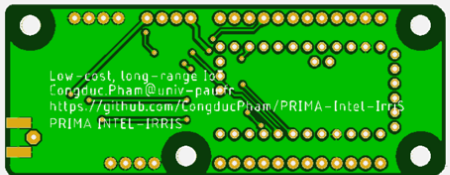
PCB

SMT-Stencil

3D-Printing

Detected 2 layer board of 30.47x77.2mm(1.2x3.04 inches) .

Your upload has finished processing. Enter the project details below and we'll move on to checking all the individual layers to make sure that they're correct.

[Back to Upload File](#)
[Gerber Viewer](#)

Base Material

FR-4

Aluminum

Layers

1

2

4

6

Dimensions

30.47

*

77.2

mm

PCB Qty

5

Different Design

1

2

3

4

Quantity and Panel format

- Change "Panel Qty" to 10 for instance and select "Panel by JLCPCB"
- Indicate 3 by 1

Base Material ☐ FR-4 ☐ Aluminum

Layers ☐ 1 ☒ 2 ☐ 4 ☐ 6

Dimensions *

Panel Qty

Different Design ☒ 1 ☐ 2 ☐ 3 ☐ 4

Delivery Format ☐ Single PCB ☐ Panel by Customer ☒ Panel by JLCPCB

Panel Format

Edge Rails ☒ No ☐ On 2 Sides ☐ On 4 Sides

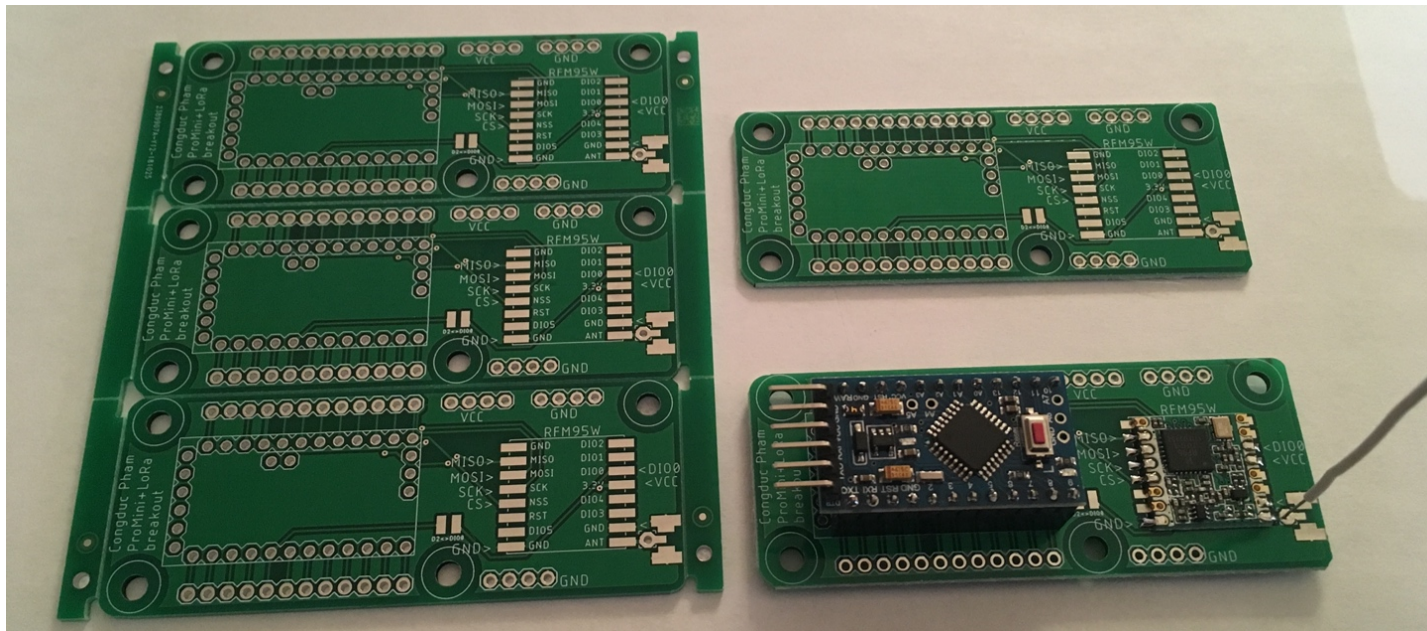
Panel size

PCB Thickness ☐ 0.4 ☐ 0.6 ☐ 0.8 ☐ 1.0 ☐ 1.2 ☒ 1.6 ☐ 2.0

PCB Color ☒ Green ☐ Purple ☐ Red ☐ Yellow ☐ Blue ☐ White ☐ Black

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 with hand
- For minimal cost, JLCPCB offers 10cmX10cm PCB panel
- Here 3 x 1 will give 3 PCBs per PCB panel

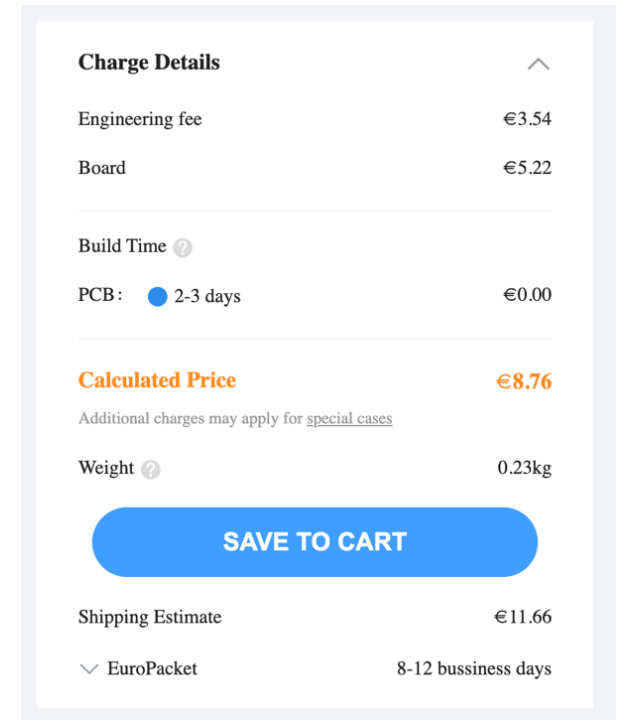


Use panelized to reduce cost

- ⦿ For ProMini PCB, each panel will contain 3 PCB boards
- ⦿ For radio breakout PCB, use 3 x 2 to have 6 PCB boards
- ⦿ So if you indicate Quantity=10, you will have
 - ⦿ $10 \times 3 = 30$ for the ProMini PCB boards
 - ⦿ $10 \times 6 = 60$ for the radio breakout PCBs
- ⦿ So select the quantity that you want

Save to cart

- ④ You do not need to change the other parameters
- ④ Save your board to cart
- ④ Then, add another PCB .zip file and repeat the same procedure
- ④ The shipping cost is probably the most expensive cost, so better to order all PCBs at the same time!
- ④ You have several shipping option, you can select faster or cheaper options
- ④ Once you are done, display your cart, review carefully your order and then checkout



The screenshot shows a pricing and shipping summary for a PCB order. It includes a 'Charge Details' section with 'Engineering fee' at €3.54 and 'Board' at €5.22. Below this is the 'Build Time' section, showing 'PCB: 2-3 days' at €0.00. The 'Calculated Price' is highlighted in orange as €8.76, with a note that additional charges may apply for special cases. The 'Weight' is 0.23kg. A prominent blue 'SAVE TO CART' button is centered. At the bottom, the 'Shipping Estimate' is €11.66 for 'EuroPacket' delivery, which takes 8-12 business days.

Charge Details	
Engineering fee	€3.54
Board	€5.22
Build Time	
PCB: 2-3 days	€0.00
Calculated Price €8.76	
Additional charges may apply for special cases	
Weight	0.23kg
SAVE TO CART	
Shipping Estimate	€11.66
▼ EuroPacket	8-12 bussiness days

