

# 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 LoRa IoT platform Part 5: outdoor gateway



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# Before we start

- ④ Look at the tutorial on how to build the simple INTEL-IRRIS WaziGate gateway
  - ④ Tutorial slides on building the INTEL-IRRIS IoT platform. Part 2: edge-enabled gateway
  - ④ <https://docs.google.com/viewer?url=https://github.com/CongducPham/PRIMA-Intel-Irris/raw/main/Tutorials/Intel-Irris-edge-gateway.pdf>
  - ④ Associated YouTube video
  - ④ <https://youtu.be/j-1Nk0tv0xM>

# Overview of the additional parts



RaspberryPi and radio module are taken from the simple INTEL-IRRIS WaziGate gateway. The SD card distribution is unchanged



# Fixing the Raspberry to the case





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WITH POE-5V  
SPLITTER

# Using a PoE – micro USB 5V

Micro USB POE  
48V to 5V





# Power with PoE adaptor or PoE switch

Lincoiah

**EU**  
**US**



## 5 Port Standard POE Switch







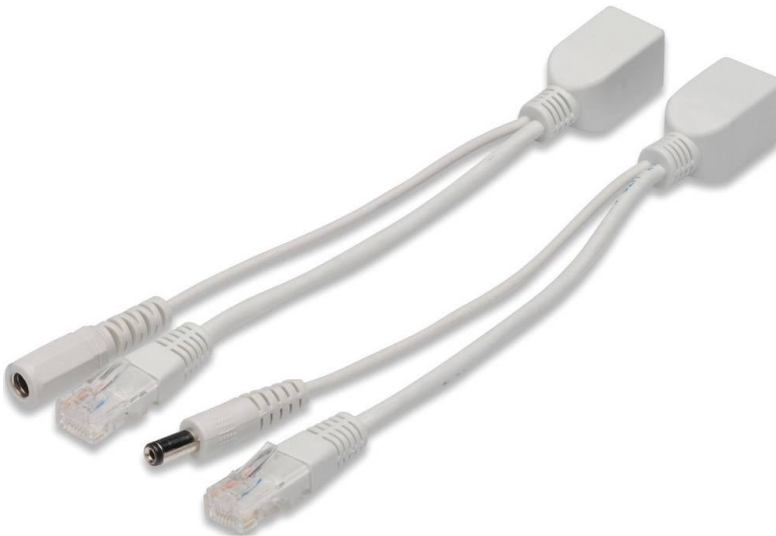
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## BUILD POE-5V SPLITTER

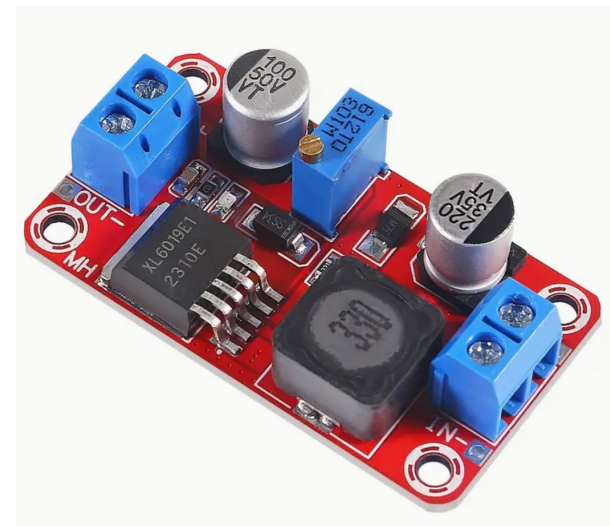
# 1/ Get a simple PoE splitter

- Simple PoE splitter can be connected to AC/DC adaptor (usually 5.5 mm / 2.1 mm)



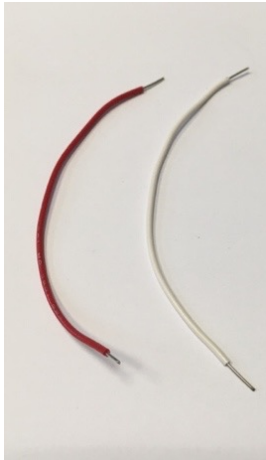
## 2/ Use a DC-DC step down

- Most popular are based on LM2596 module, but there are much newer modules
- Any DC-DC module that delivers 5V and at least 2A is OK

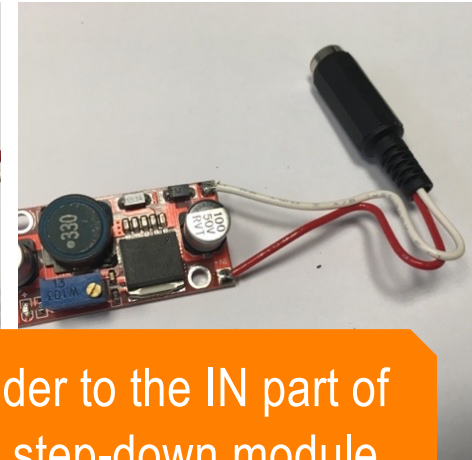
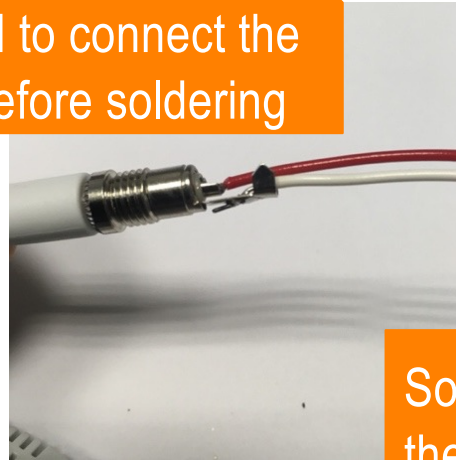


- Final assembling depends on which module you have

# Ex: Simple DC-DC based on LM2596



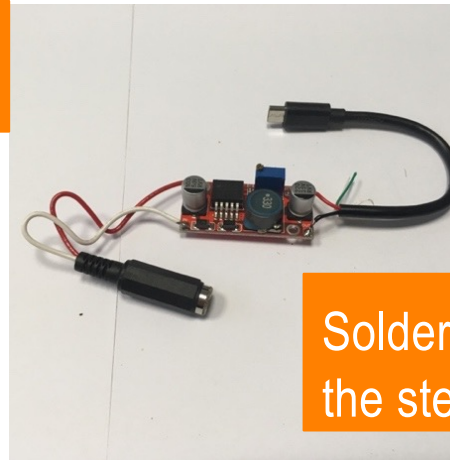
It is advised to connect the DC plugs before soldering



Solder to the IN part of the step-down module



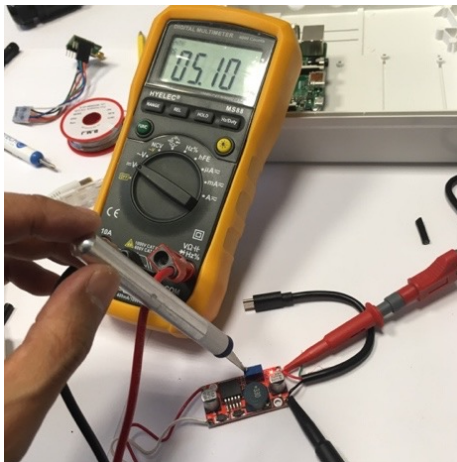
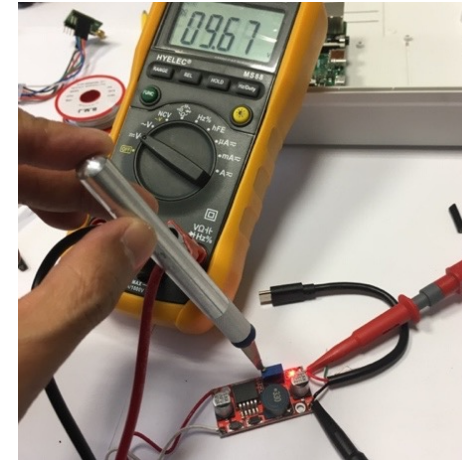
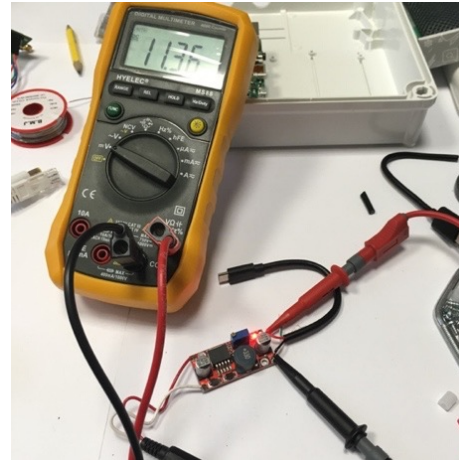
Cut a USB cable, keeping the micro-USB side



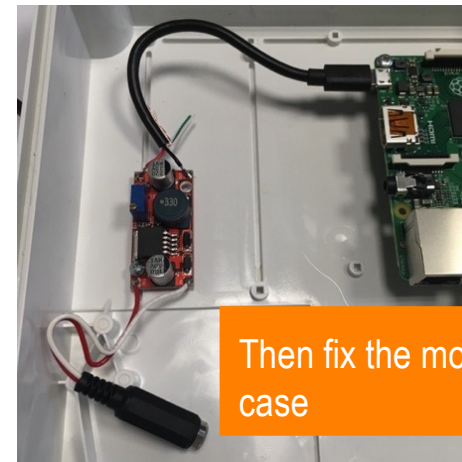
Solder to the OUT part of the step-down module



# Setting the step-down module

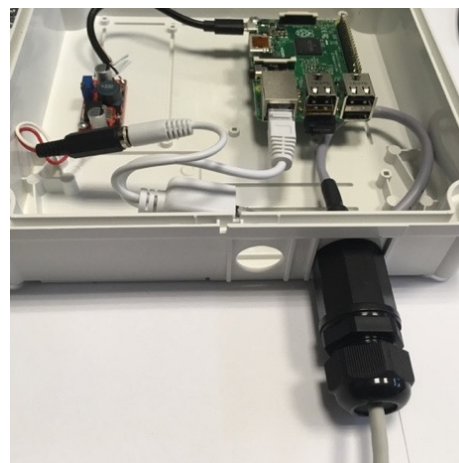
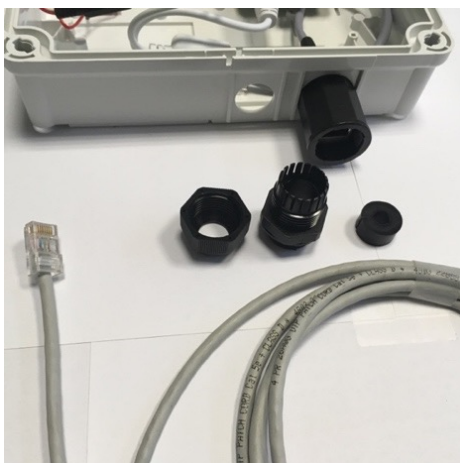
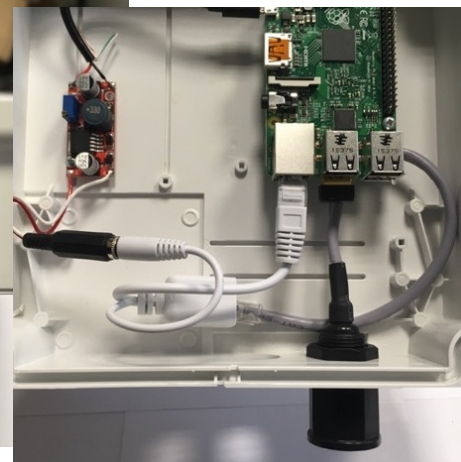
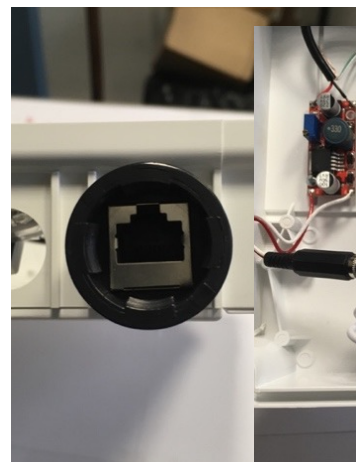
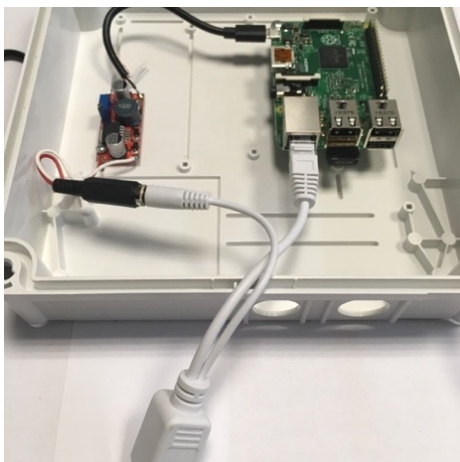


Use for instance a 9v, 12v or 18V AC-DC adaptor, connect to the IN plug, then check the output voltage with a voltmeter and turn the regulation screw until output is about 5.1v.



Then fix the module to the case

# Installing the PoE injector





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# ANTENNA



# Adding external antenna connector

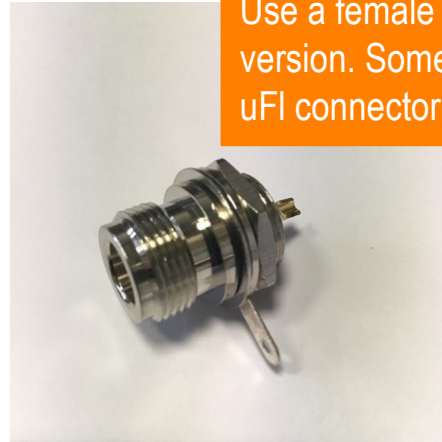
Outdoor antenna can have an N-connector, could be male (left) or female (right)



It is better to take an antenna with male N to be connected to a female N



Use a female N-connector in mount version. Some already have an SMA or uFl connector (pigtail) at the other end



Drill a hole in the case and do not forget to put a rubber seal if your connector does not have one.

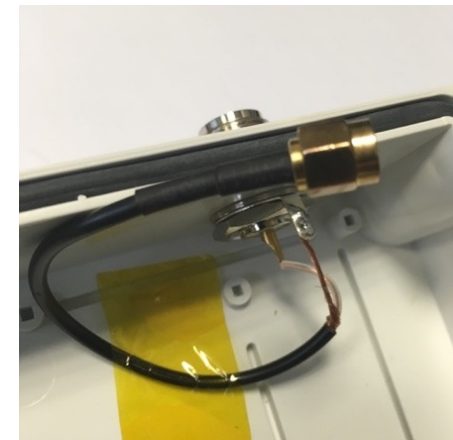
If you only have the simple version, take a short SMA cable where one end has a connector that fits your radio module. Usually it should be SMA or RP-SMA male. Cut the other end. Then solder to the N-Connector



SMA Male



RP-SMA Male





# Installing & connecting the LoRa hat Intel-Irris



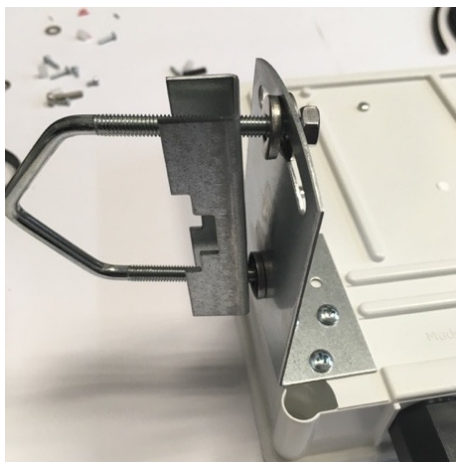
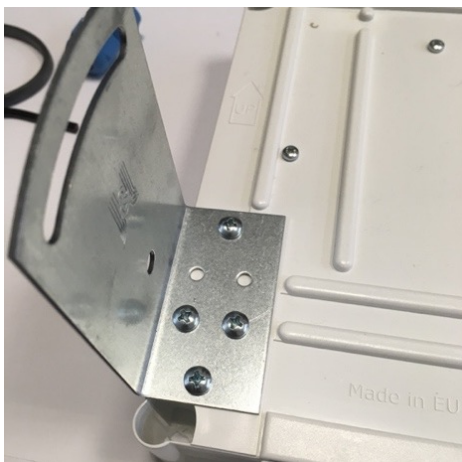


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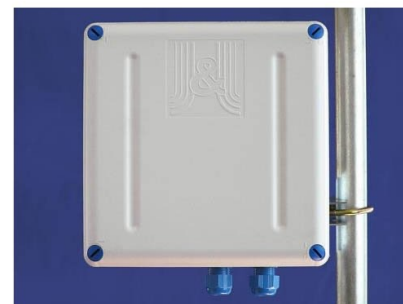
## FINAL RESULT

# Install fixing parts of the case



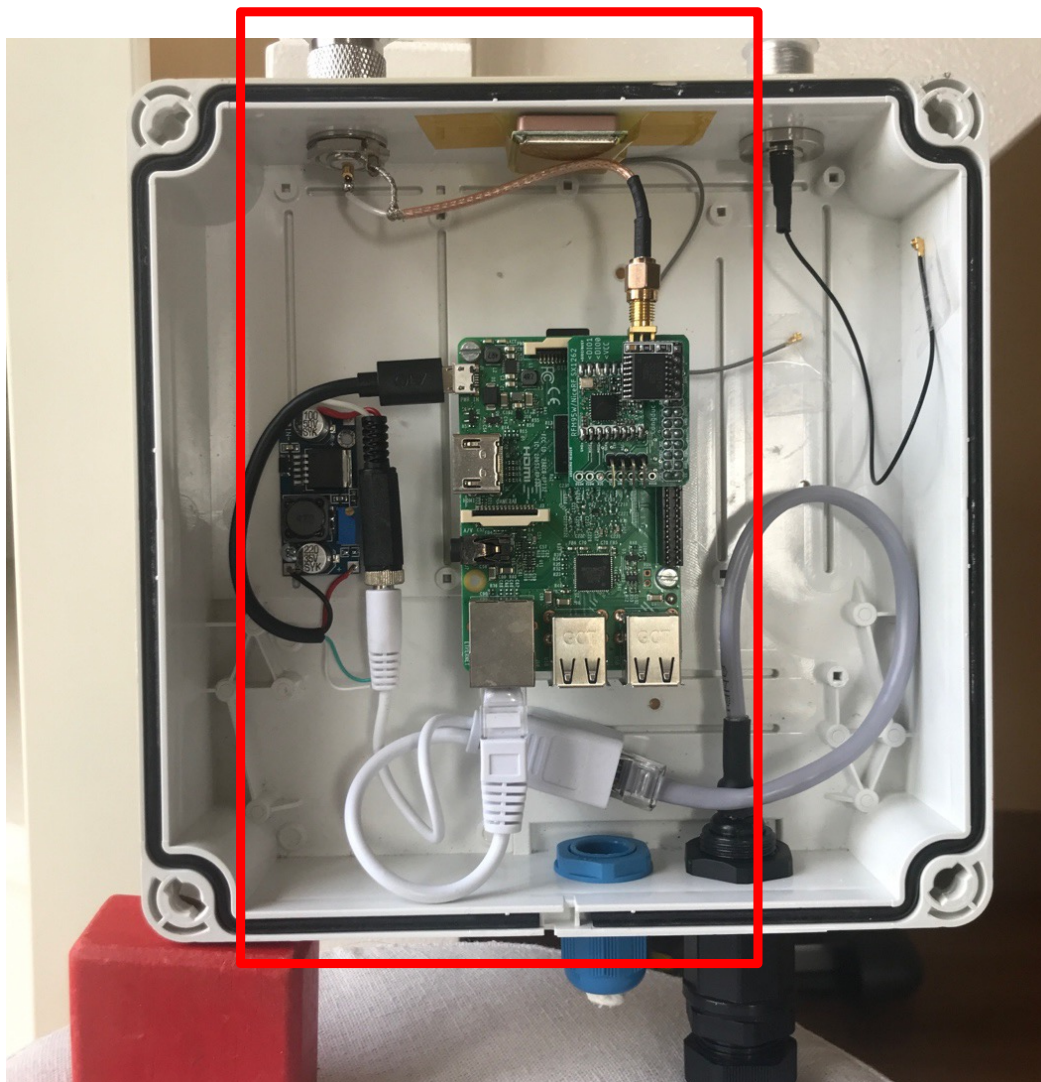
These parts of course depends on the case that you have.

Here we use the GentleBOX JE-200 case from MHzShop.





# Final result





# Connect to Internet

With PoE adaptor  
or PoE switch



Without PoE switch, use an AC-DC  
9V-24V adaptor

