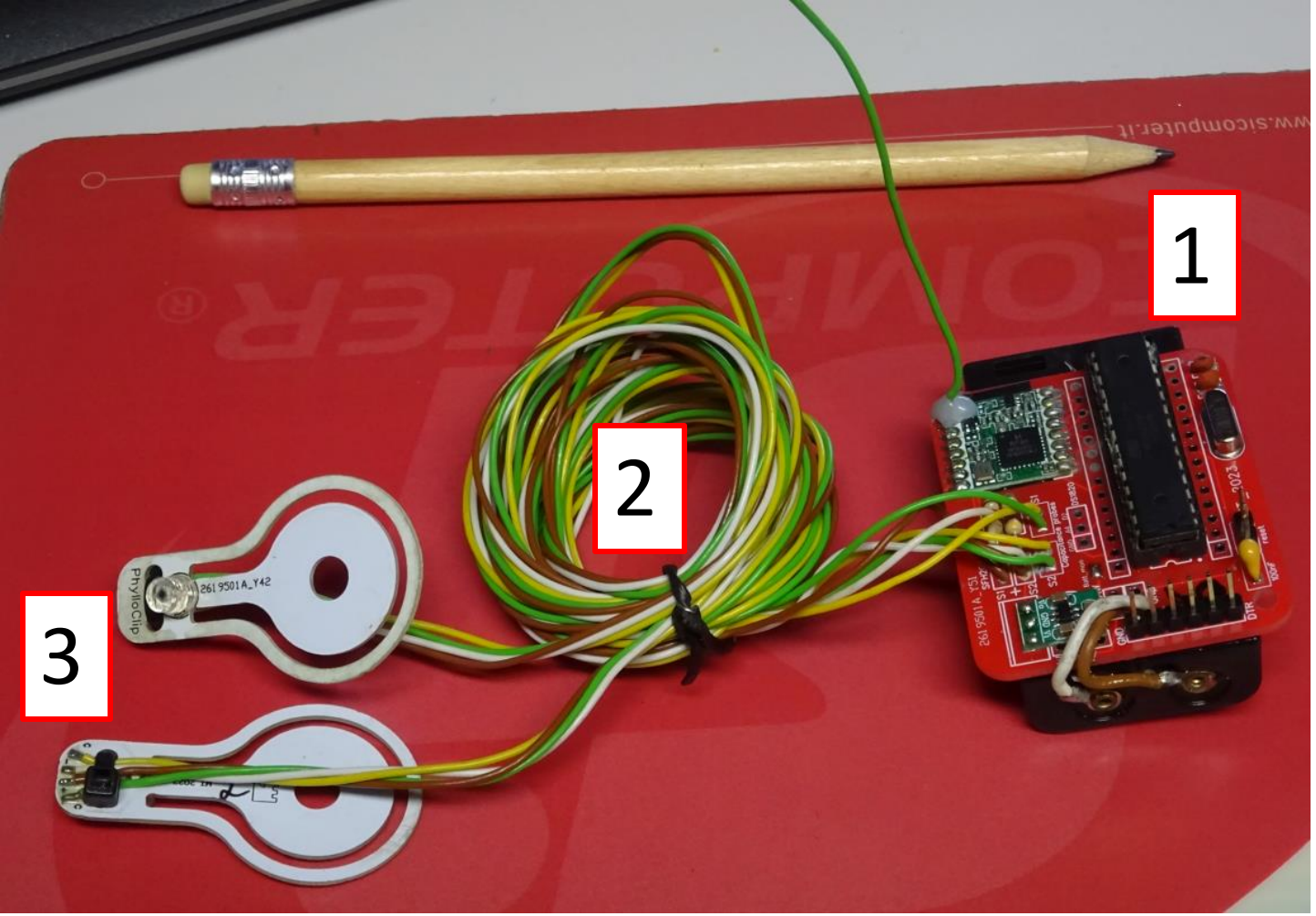
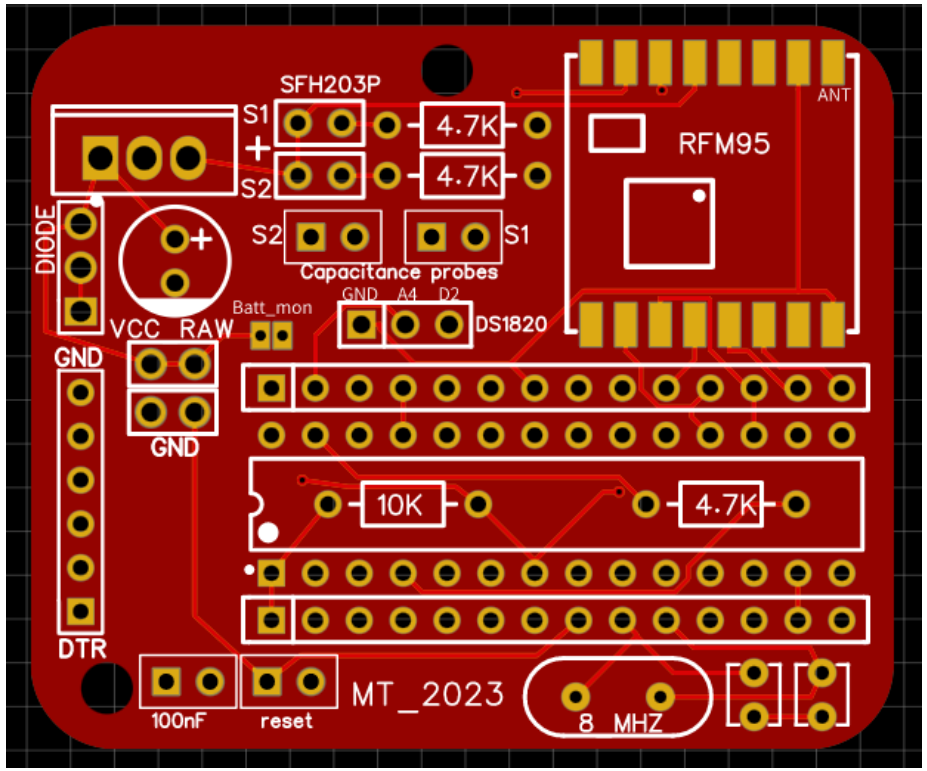
# FylloClip
# hardware overview




# the main components


1. circuit board with microcontroller, radio module and battery holder at the back
2. connecting wires
3. foliar sensors

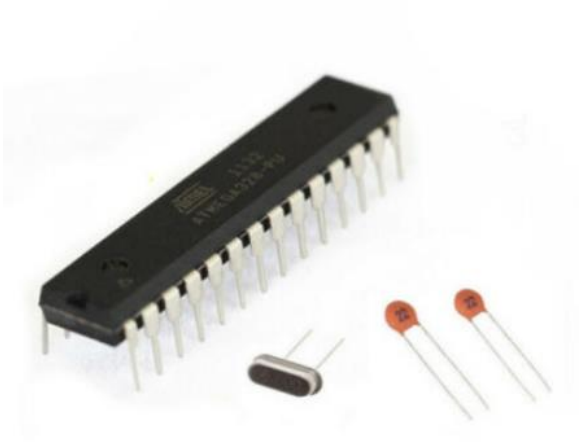
# The printed circuit board (PCB)




It holds and connects the various electronic parts of the system:

- voltage regulator
- the ATMEGA328P-PU microcontroller
- the RFM95 LoRa module
- a few other peripheral components (crystal, resistors, capacitors, connectors, antenna...

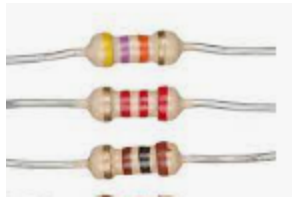
# The main components of the circut board

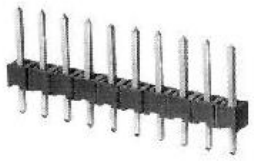


Atmega328P-PU with 8 Mhz crystal and 2 capacitors (22pF)


RFM95w LoRa module (868 Mhz Europe, 915 Mhz Australia)

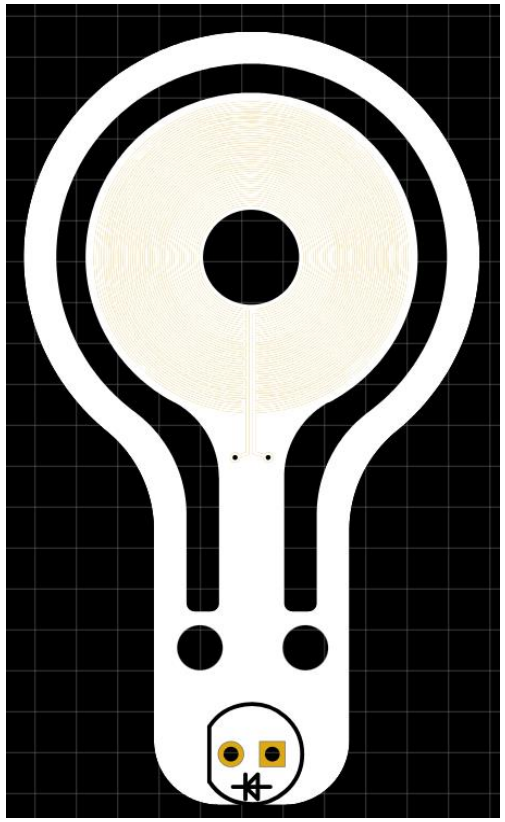
Voltage regulator (boost DC-DC converter)



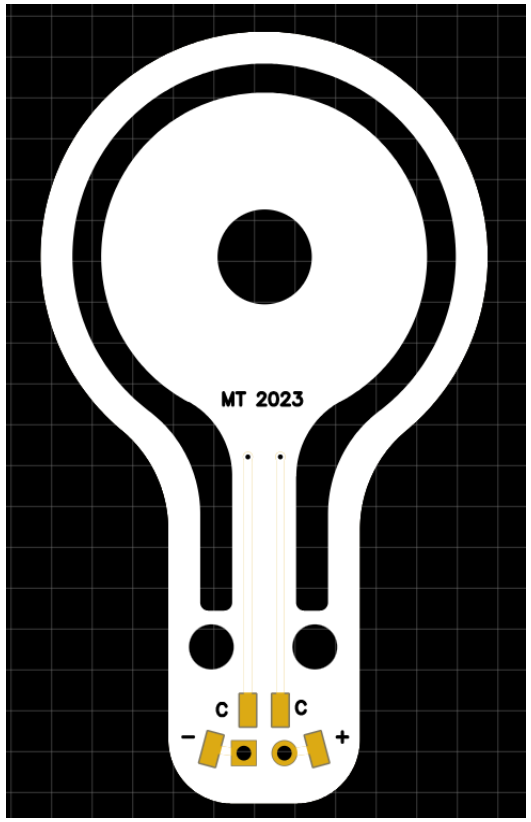


a few resistors, capacitors, connectors

# The foliar sensor



top



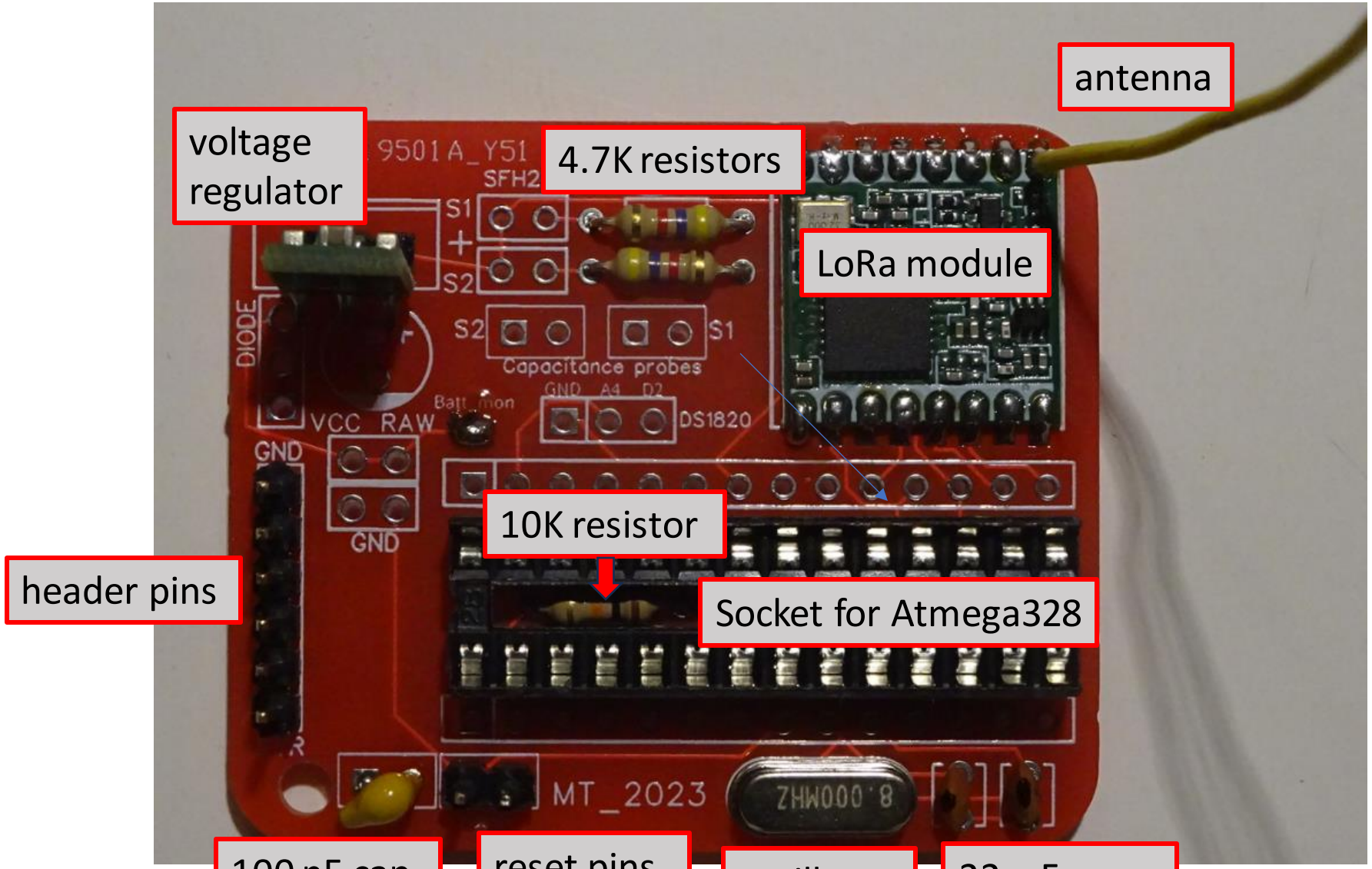

bottom

**PCB** with concentric copper traces acting as planar capacitor

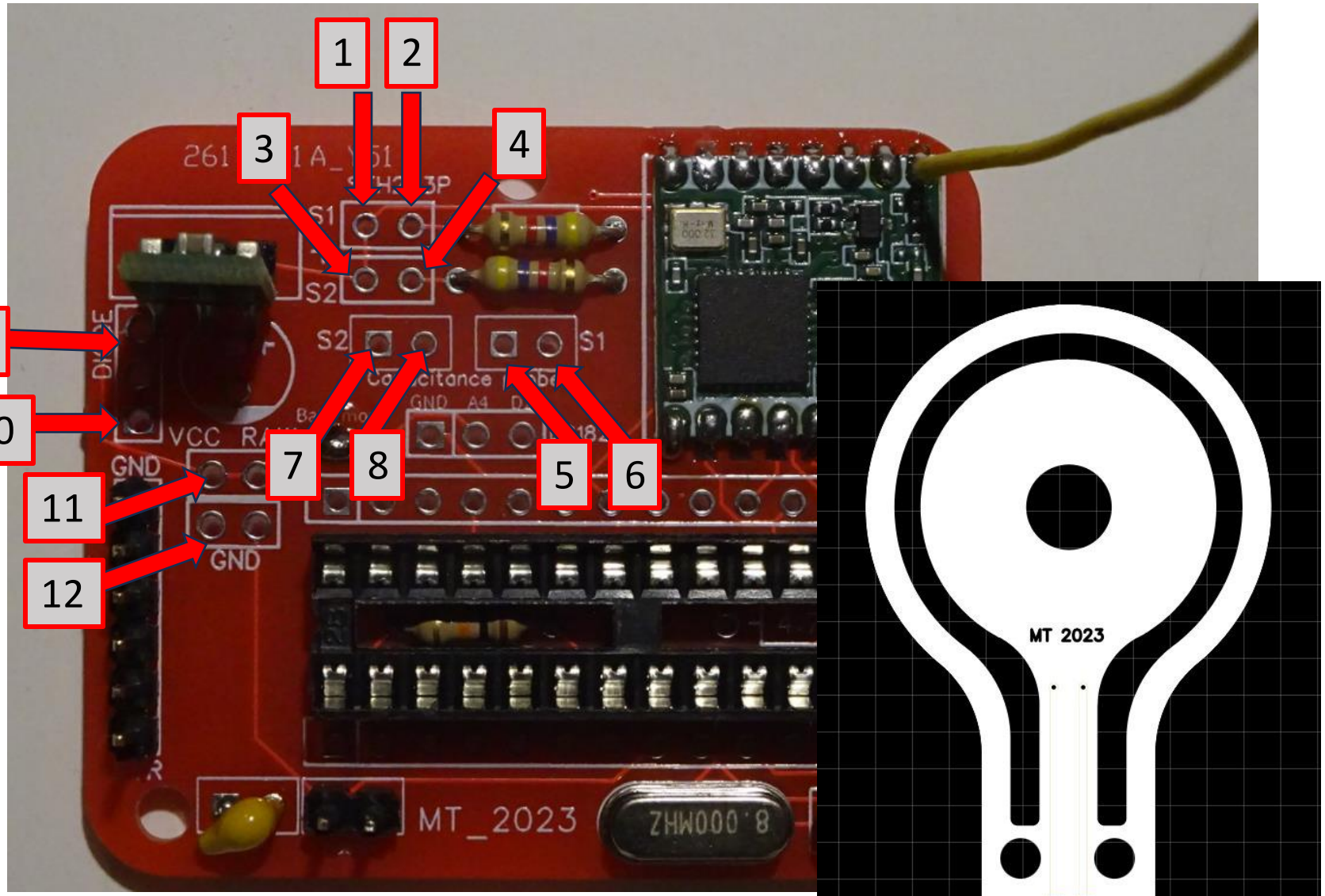
This part can easily be designed and manufactured in different sizes or shapes

**SFH203P photodiode** acting as light sensor

| component | link |
| --- | --- |
| photodiode | https://www.reichelt.com |
| microcontroller atmega328 with bootloader for Arduino Pro Mini 3.3V | https://www.reichelt.com (you need to burn the bootloader onto the chip by yourself) |
| battery holder | https://www.reichelt.com |
| Crystal 8 Mhz | https://www.reichelt.com |
| LoRa mosule RFM95w | https://www.soselectronic.com |
| Socket for microcontroller | https://www.reichelt.com |
| Male header pins | https://www.reichelt.com |
| Female header pins | https://www.reichelt.com/it/de/buchsenleiste-2-54mm-1x20-trennbar-verzinnt-fis-bl1-20-z-p283794.html?&trstct=pol_1&nbc=1 (only in case you want to use female headers for the serial port) |
| Resistor 4.7K | https://www.reichelt.com |
| Resistor 10K | https://www.reichelt.com |
| Capacitor 100nF | https://www.reichelt.com |
| Capacitor 22pF | https://www.reichelt.com |
| Step-up voltage regulator | https://www.aliexpress.com |


antenna
voltage regulator
4.7K resistors
LoRa module
10K resistor
header pins
Socket for Atmega328
100 nF cap
reset pins
oscillator
22 pF caps
9501 A_Y51
SFH2
S1
S2
DIODE
Capacitance probes
GND A4 D2
DS1820
Batt_mon
VCC RAW
GND
GND
MT_2023
ZHW000 8

# Wiring connections







| | |
|---|---|
| 1 | Sensor 1, + |
| 2 | Sensor 1, - |
| 3 | Sensor 2, + |
| 4 | Sensor 2, - |
| 5 | Sensor 1, C |
| 6 | Sensor 1, C |
| 7 | Sensor 2, C |
| 8 | Sensor 2, C |
| 9 | optional safety diode |
| 10 | VCC (battery) in case of safety diode (2-5V) |
| 11 | GND |
| 12 | VCC (battery) in case of no safety diode (2-5V) |

# Wiring diagram