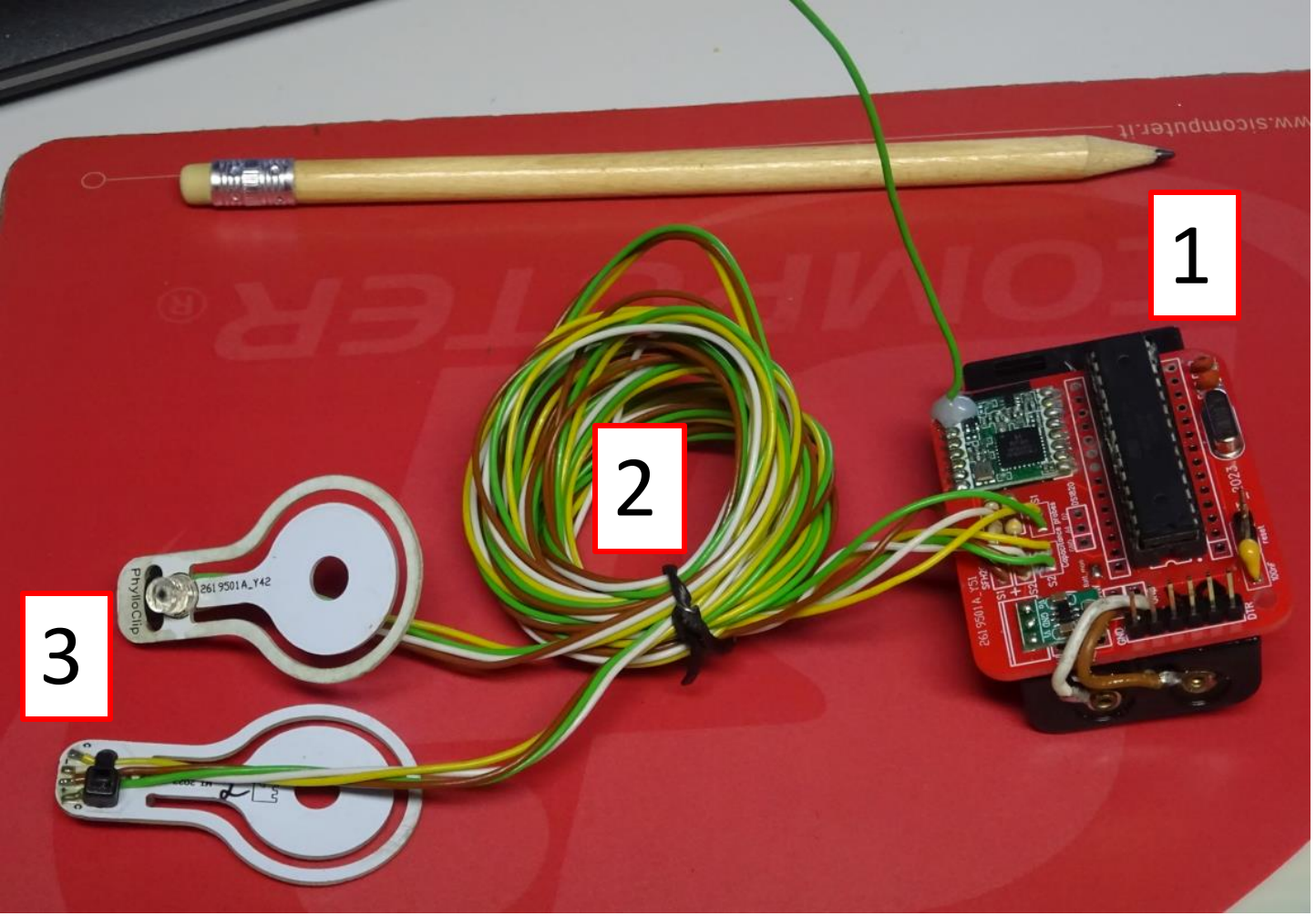
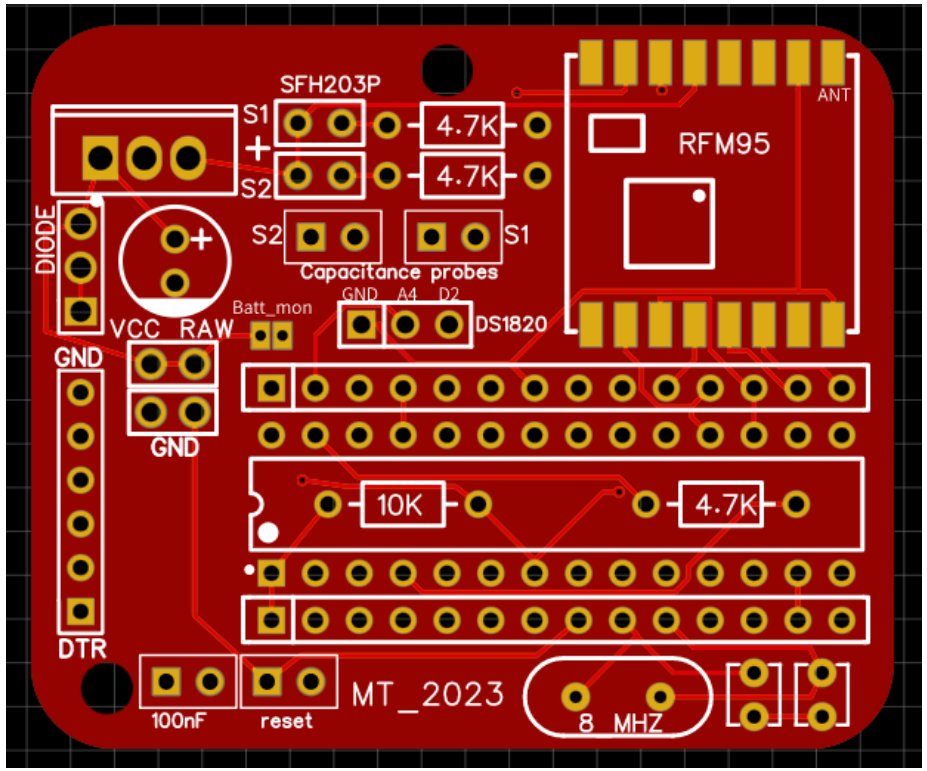
FylloClip
hardware overview



the main components

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

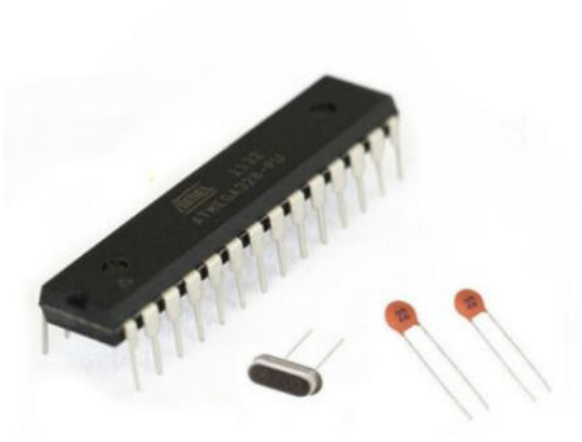
The printed circuit board (PCB)



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...

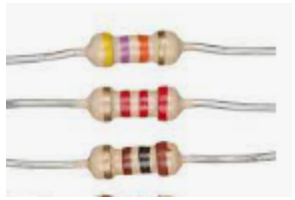
The main components of the circut board

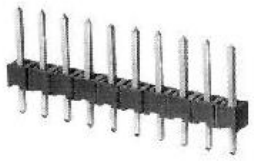


Atmega328P-PU with 8 Mhz crystal and 2 capacitors (22pF)

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

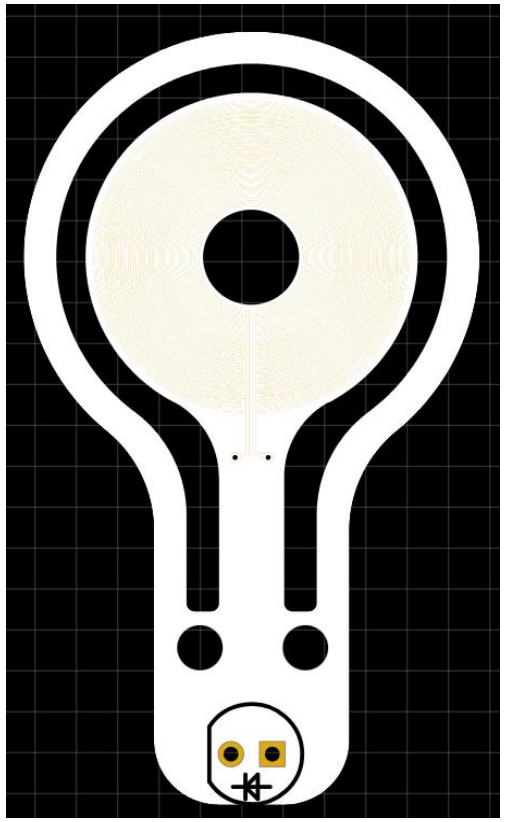
Voltage regulator (boost DC-DC converter)



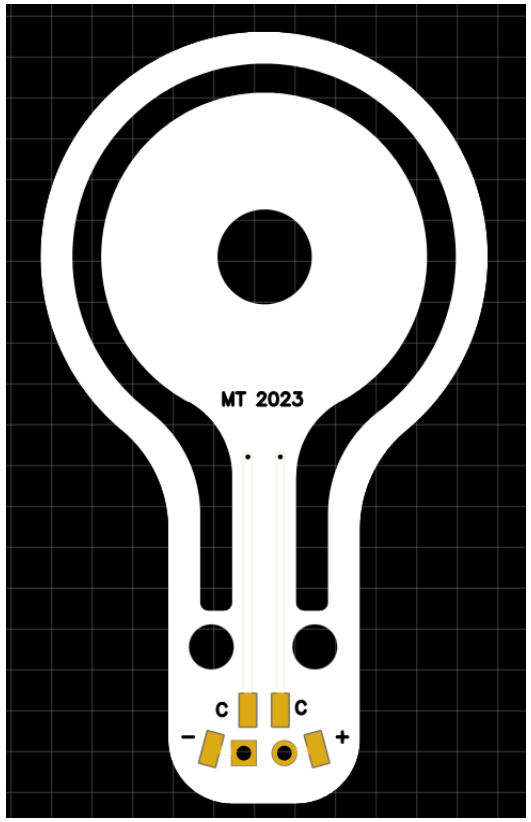


a few resistors, capacitors, connectors

The foliar sensor



top



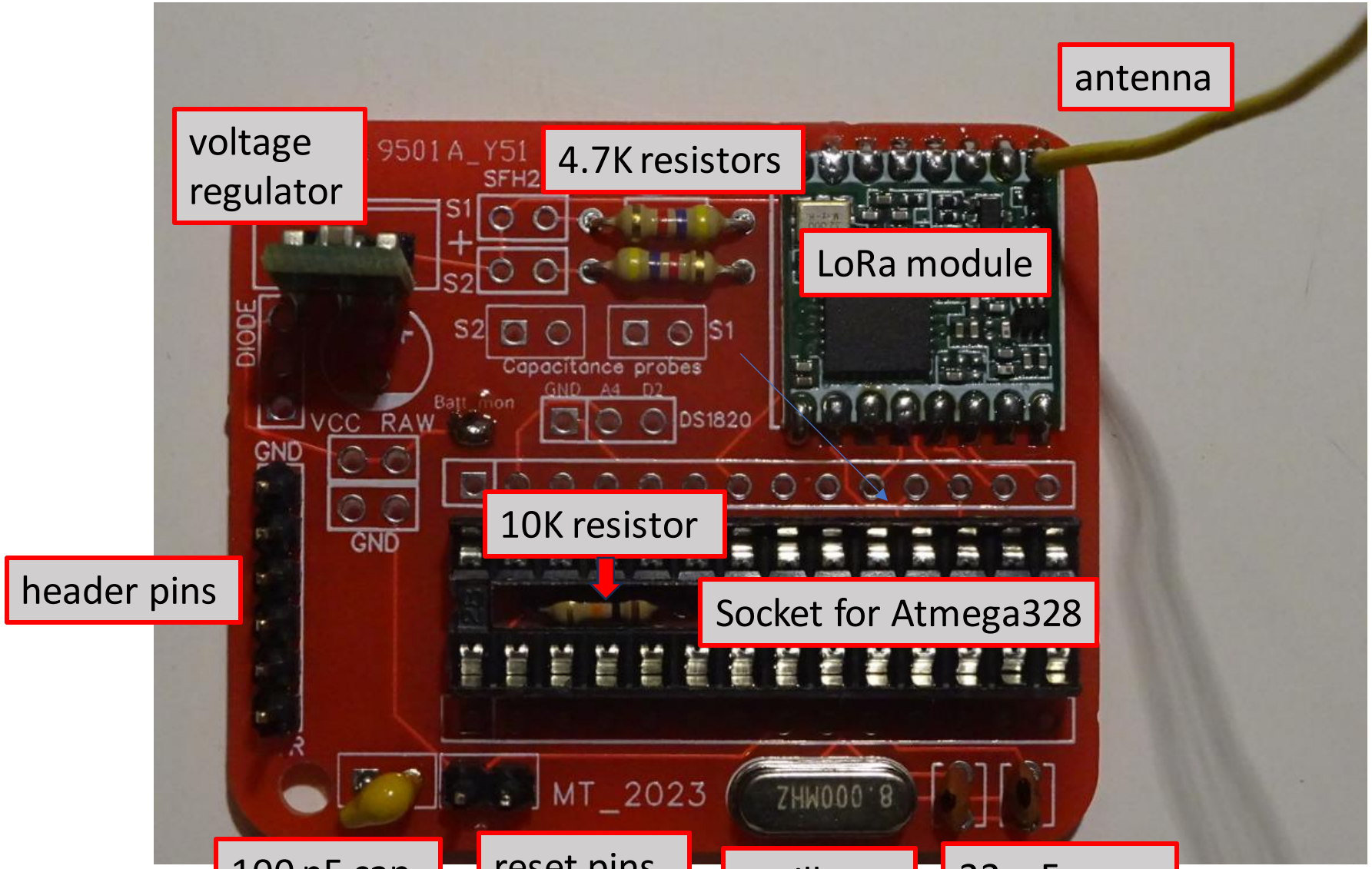
bottom

PCB with concentric copper traces acting as planar capacitor

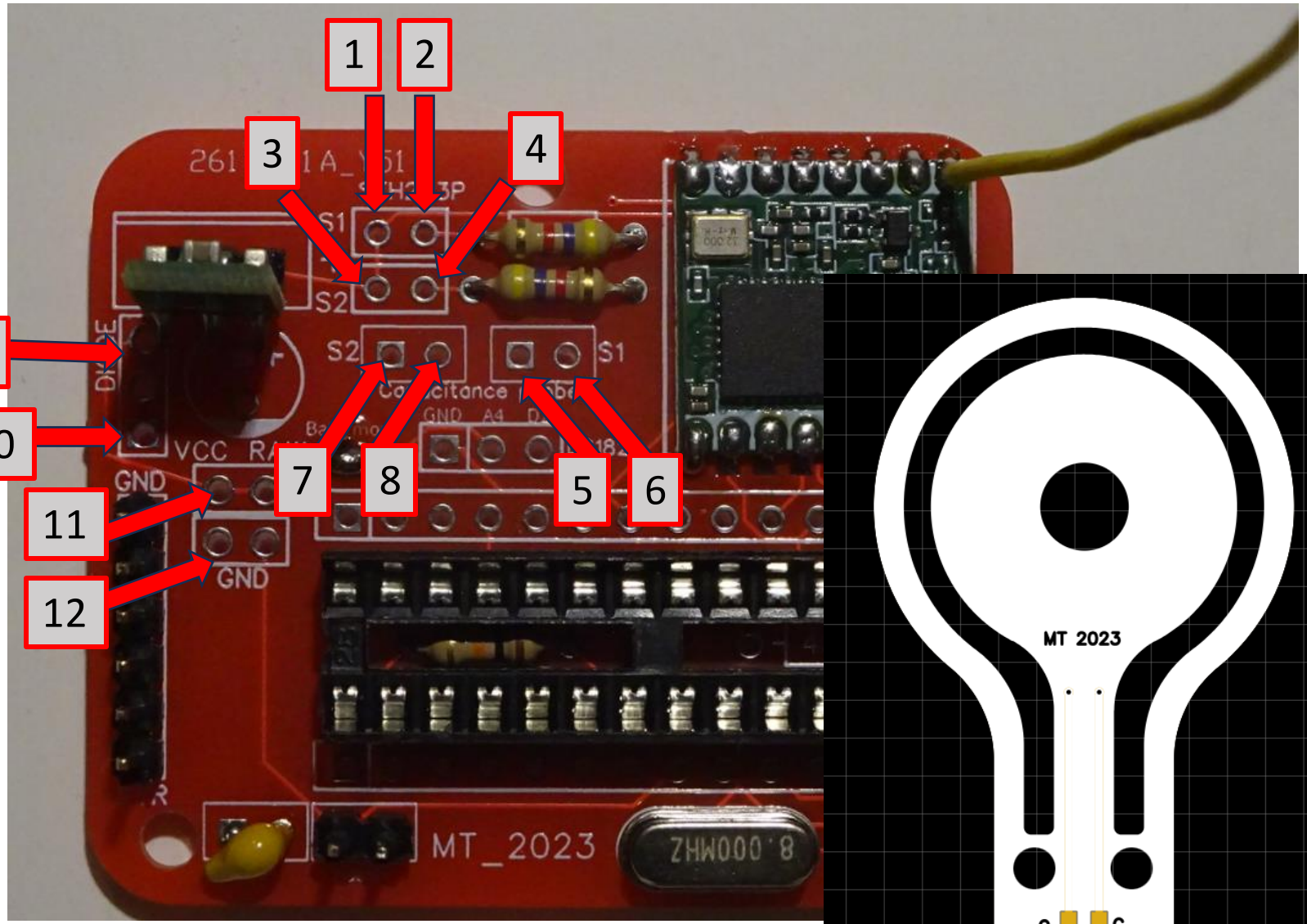
This part can easily be designed and manufactured in different sizes or shapes

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)