

PORTFOLIO

Osman Mazinov

1. One-channel room light controller

Power supply: AC 220V 50Hz.

One 250v 10A relay output.

PIR-sensor HC-SR501.

External light sensor.

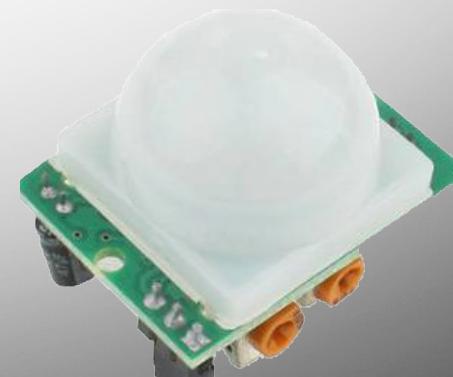
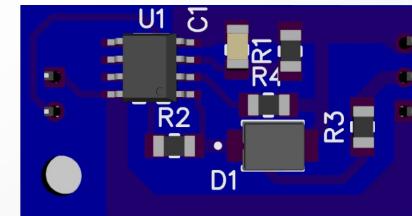
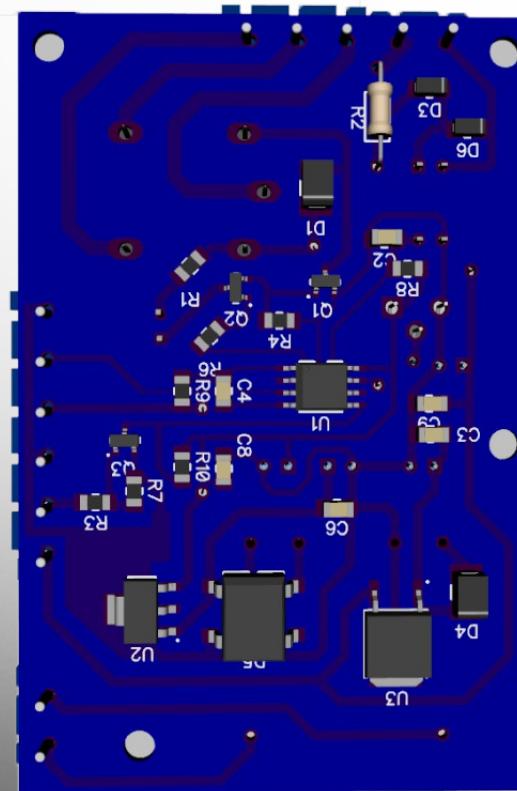
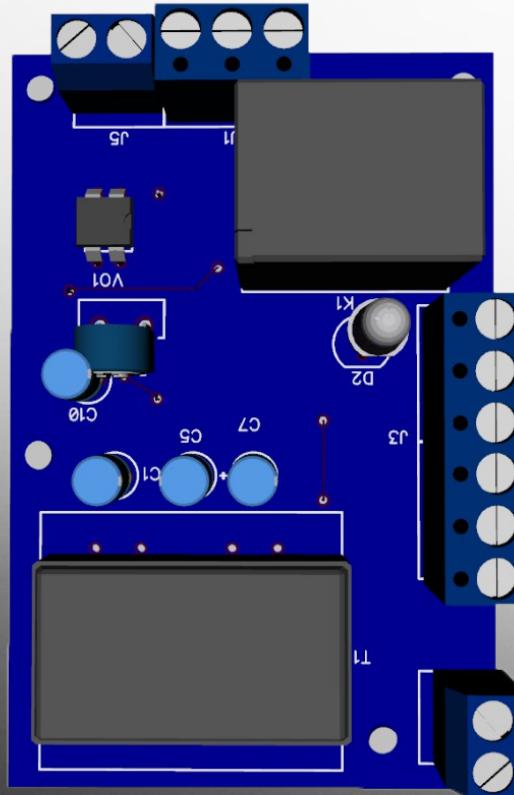
Powered by Atmel Attiny 13a MCU.

Light sensor sensitivity adjustable.

220V 50Hz input from a light switch.

Led status indicator.

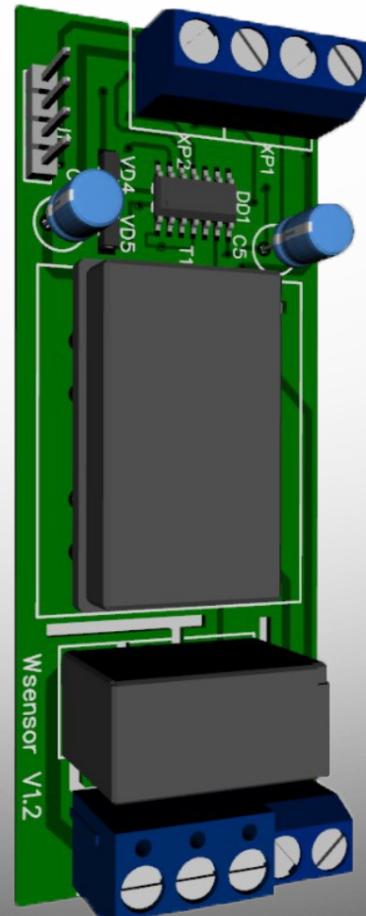
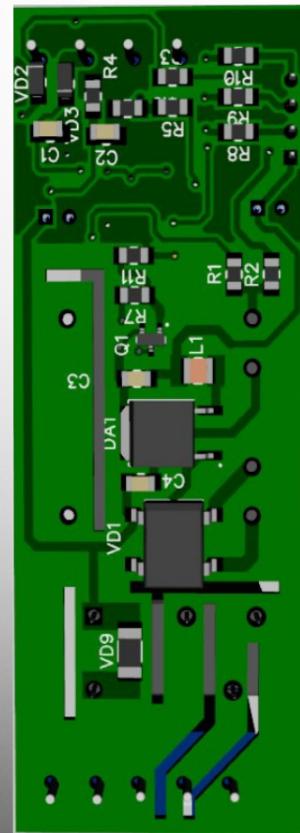
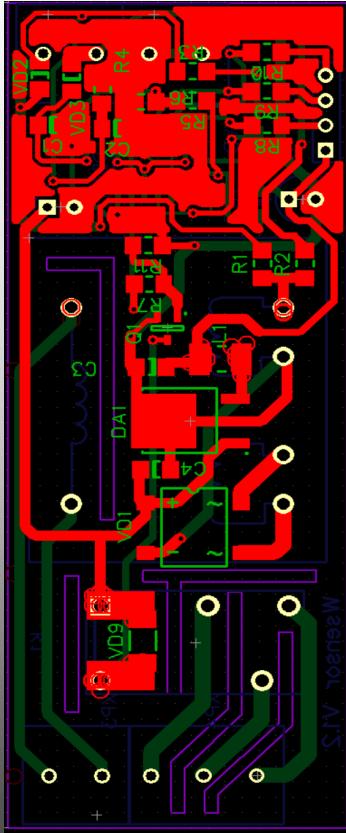
6-hour light turn off timer.



2. Water tank controller with tank emptying mode

Power supply: AC 220V 50Hz.
One 250V 10A relay output for pump.
Three inputs for water sensors.
9V 50Hz AC signals for water sensors.

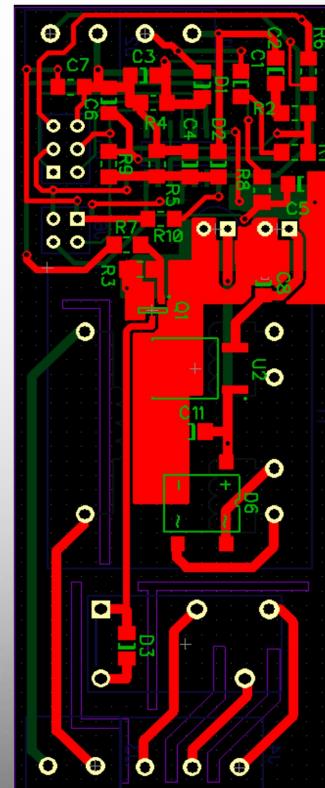
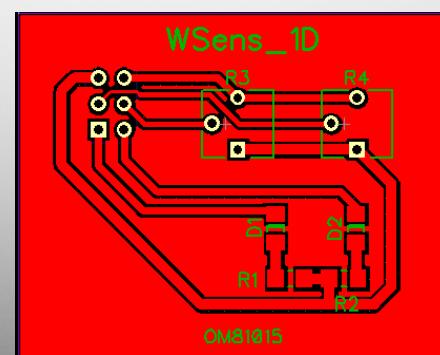
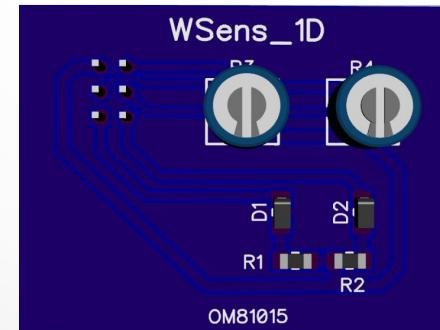
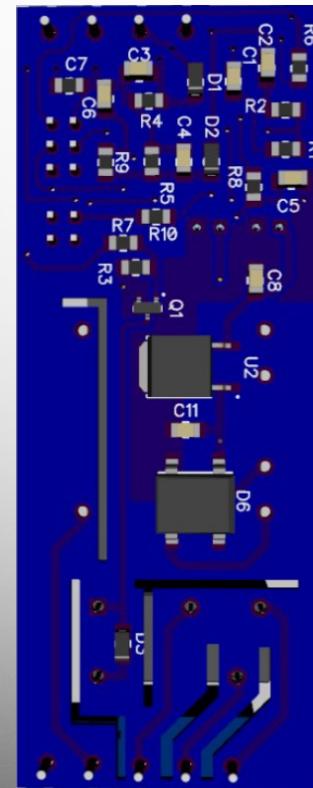
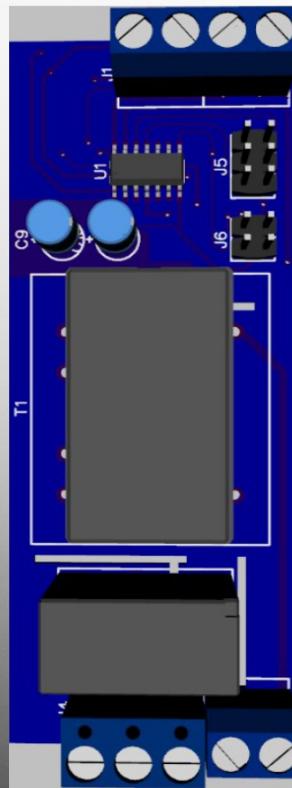
Led status indicator.
Inputs overload protection.
Three-second delay for the pump start.
DIN Rail Enclosure (2DIN).



3. Water tank controller with tank emptying and filling mode

Power supply: AC 220V 50Hz.
One 250V 10A relay output for pump.
Three inputs for water sensors.
Pulse TTL signals for water probes.
Powered by Atmel Attiny44 MCU.

Led status indicator.
Adjustable sensitivity for water resistance measurement.
Adjustable delay for pump start (0-15 sec).
DIN Rail enclosure (2din).
Two working modes (selected by jumper).



4. Expansion board for ISA I/O card TMC10

Power supply: DC 12V.

Ten high-speed opto-isolated inputs.

Schmitt trigger inputs.

External pulse generator.

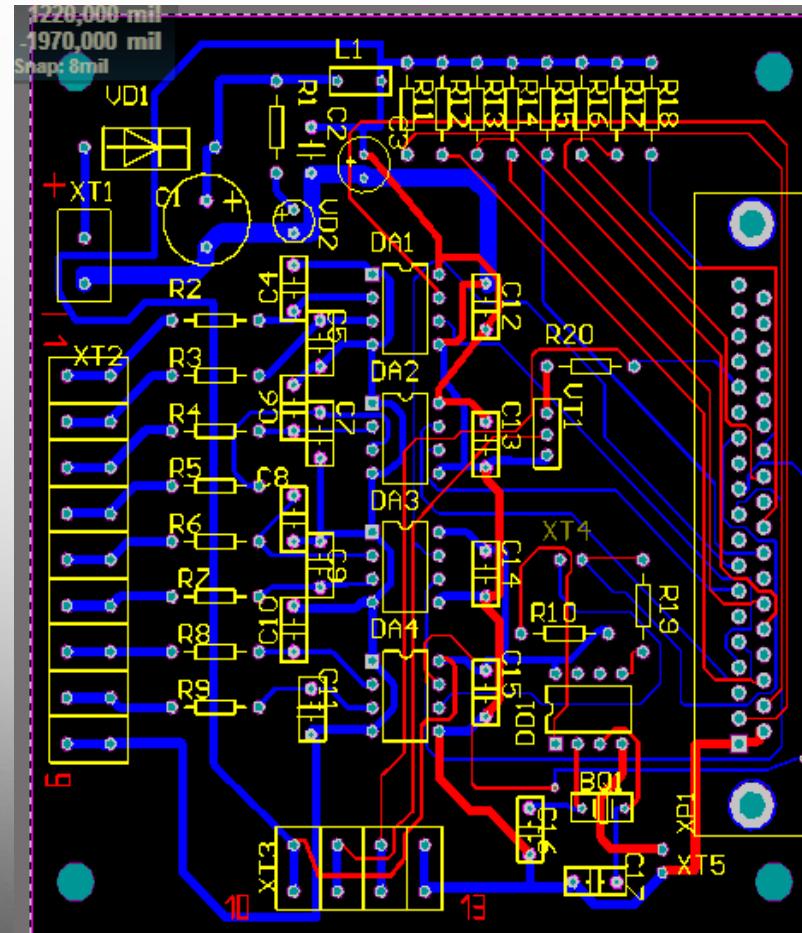
Atmel AT90S2323 MCU on board.

Led status indicator.

DB37 port.

Common collector 800Ma output.

Alarm buzzer output.



5. Power counter

Power supply: DC 27V.

DC/DC power unit.

Optoisolated outputs.

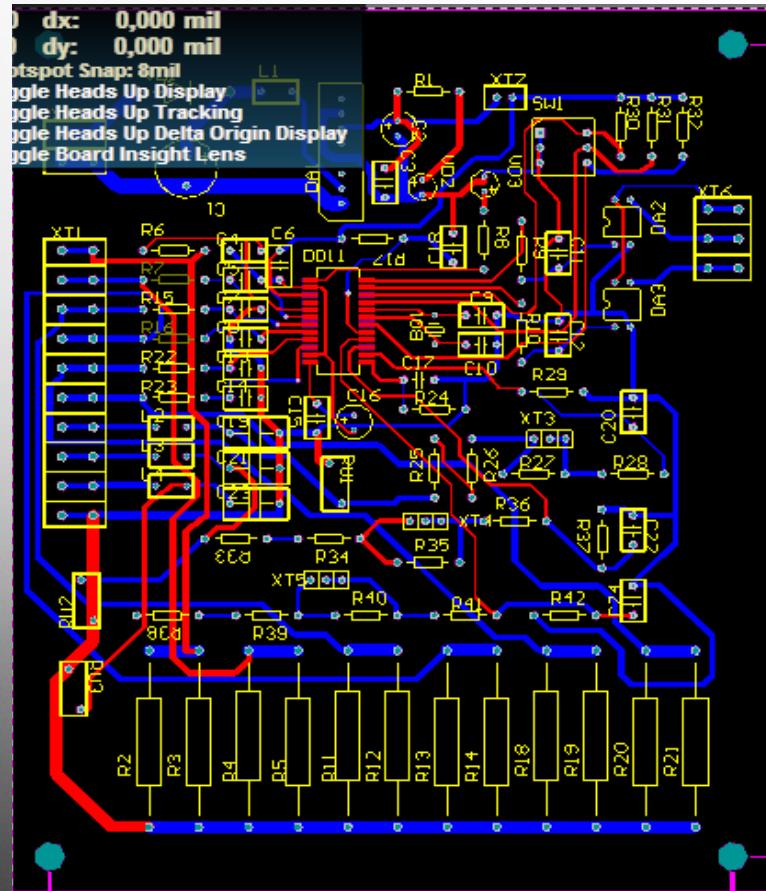
Powered by ADE7752.

Led status indicators.

Inputs overload protection.

Three 220AC voltage inputs.

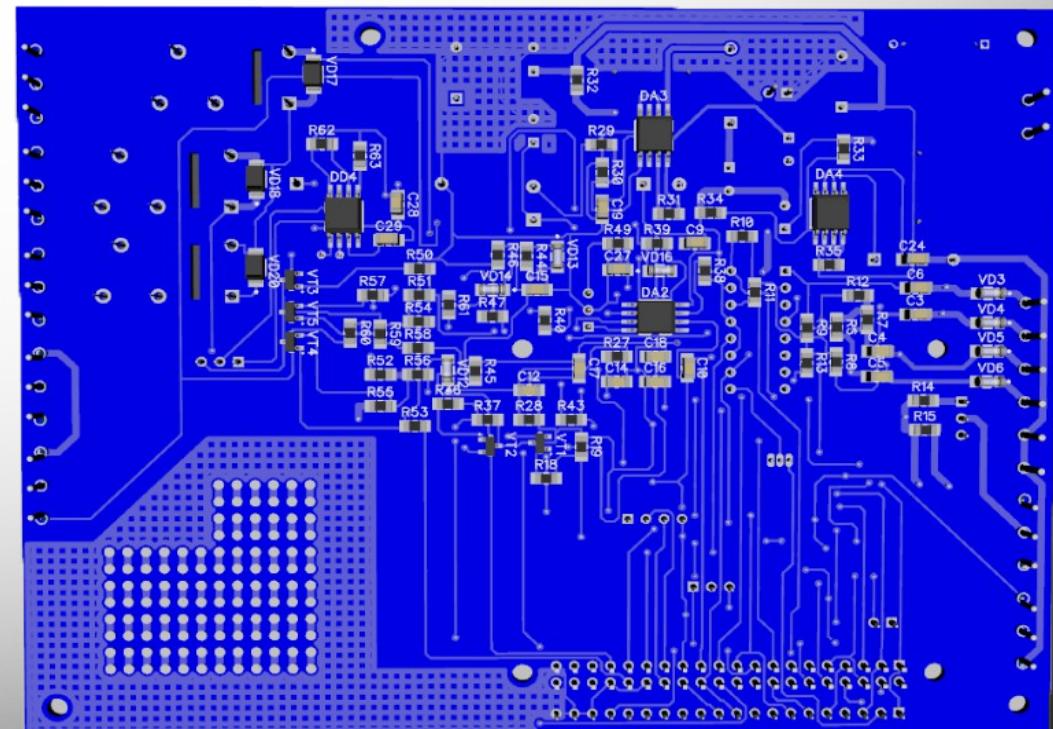
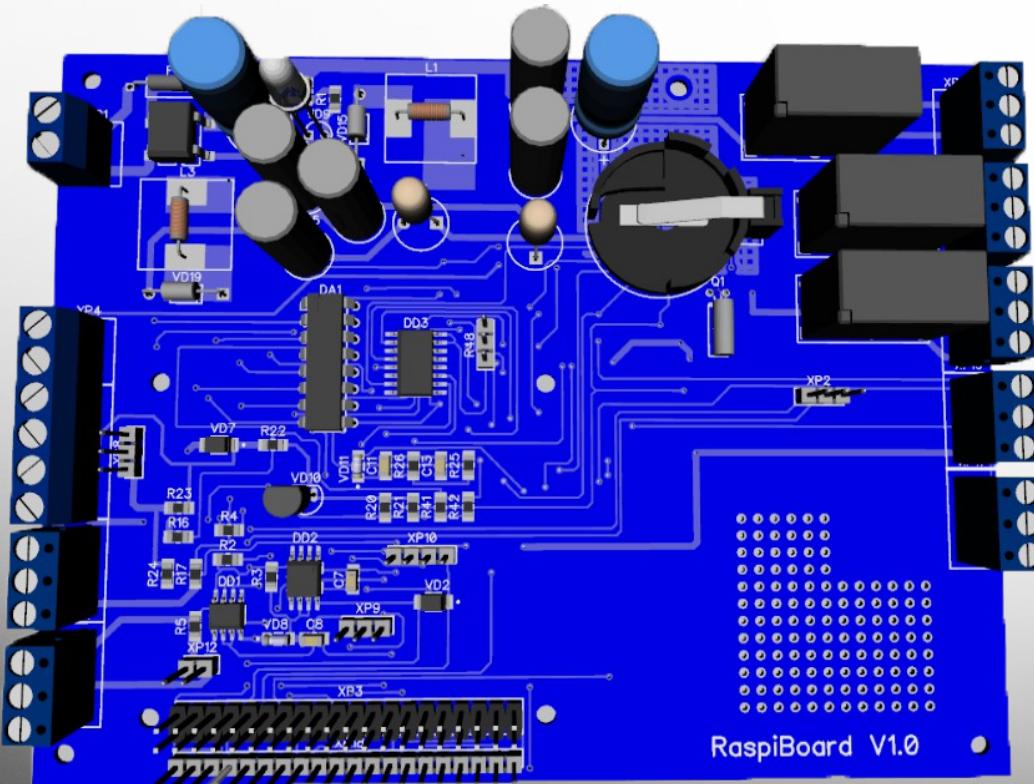
Three inputs for current measurements.



6. Raspberry Pi B+ Expansion board

Power supply: DC 12V.
DC step-down converter.
Eight 500mA common collector outputs.

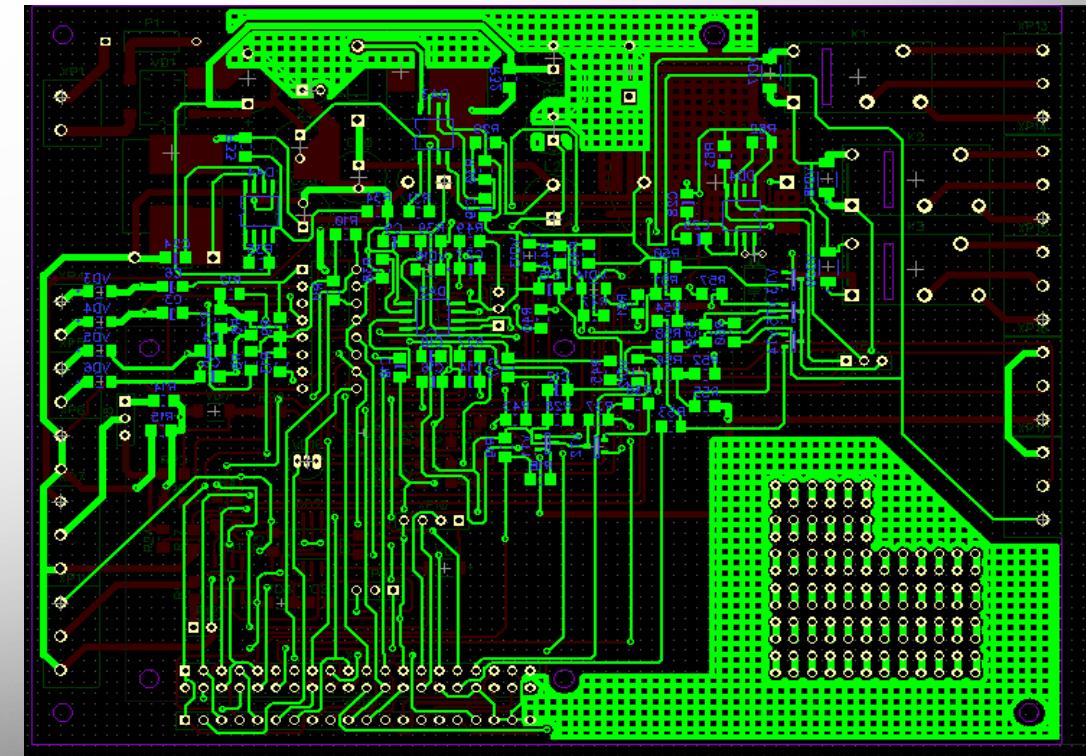
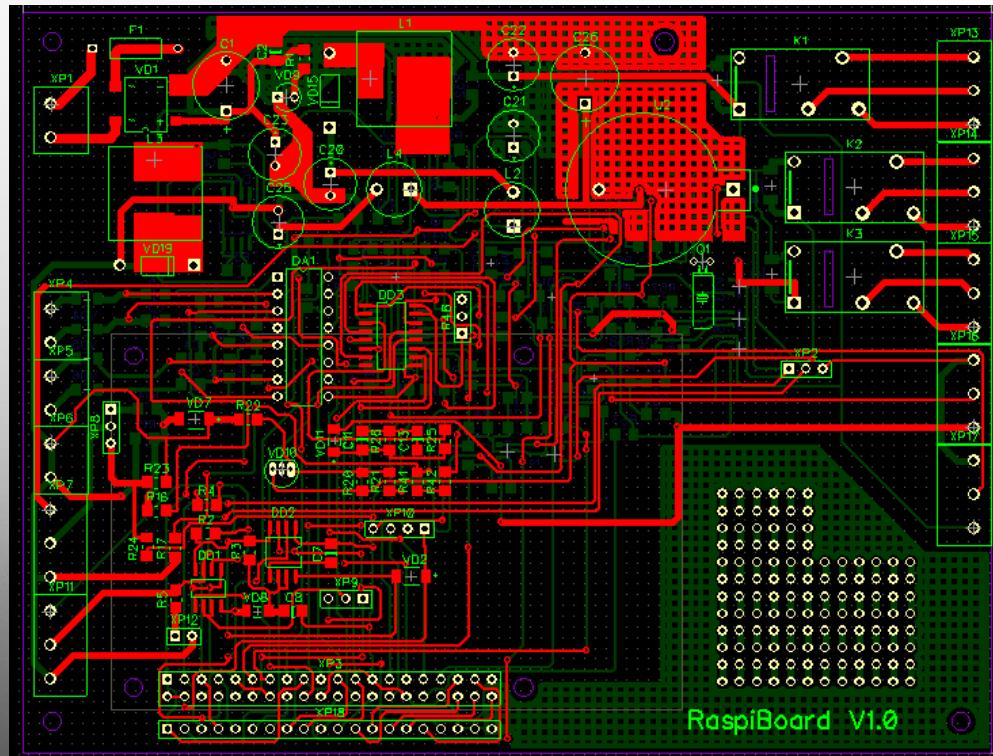
DC 24V step-up converter for industrial sensors.
Five discrete inputs with overload protection.
Real-time clock.



6. Raspberry Pi B+ Expansion board

TTL-LVTTL converter.
10 bit 8 channel ADC.

Three 250V 5A relay outputs.
Bit-bangig 1-Wire interface



7. PIC prototype based on Raspberry Pi II (programmable logic controller)

Power supply: DC 8-24V.

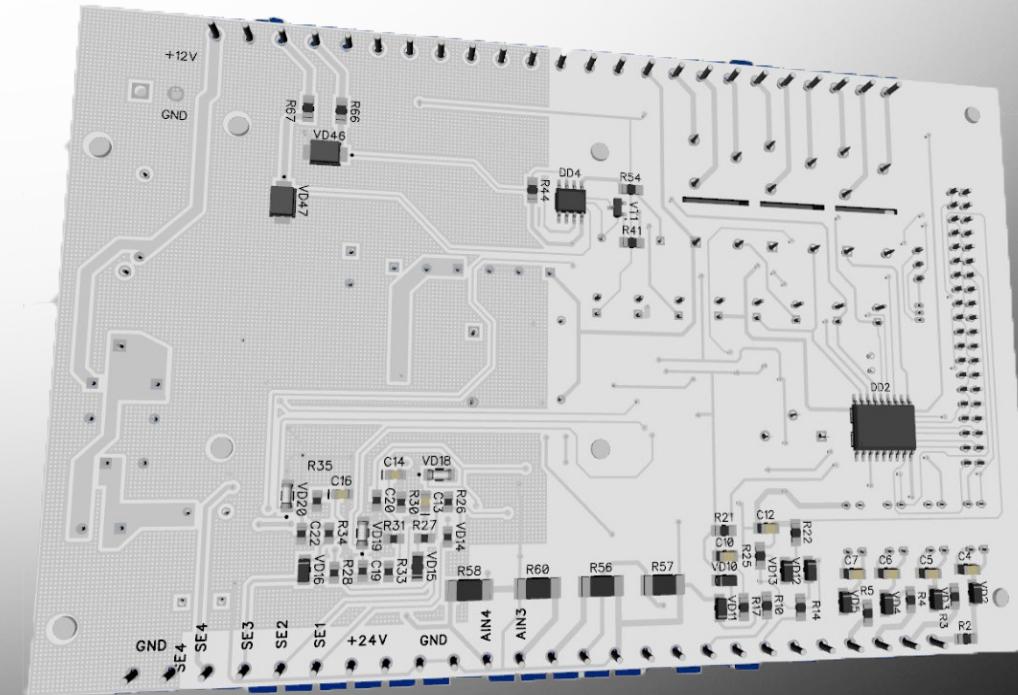
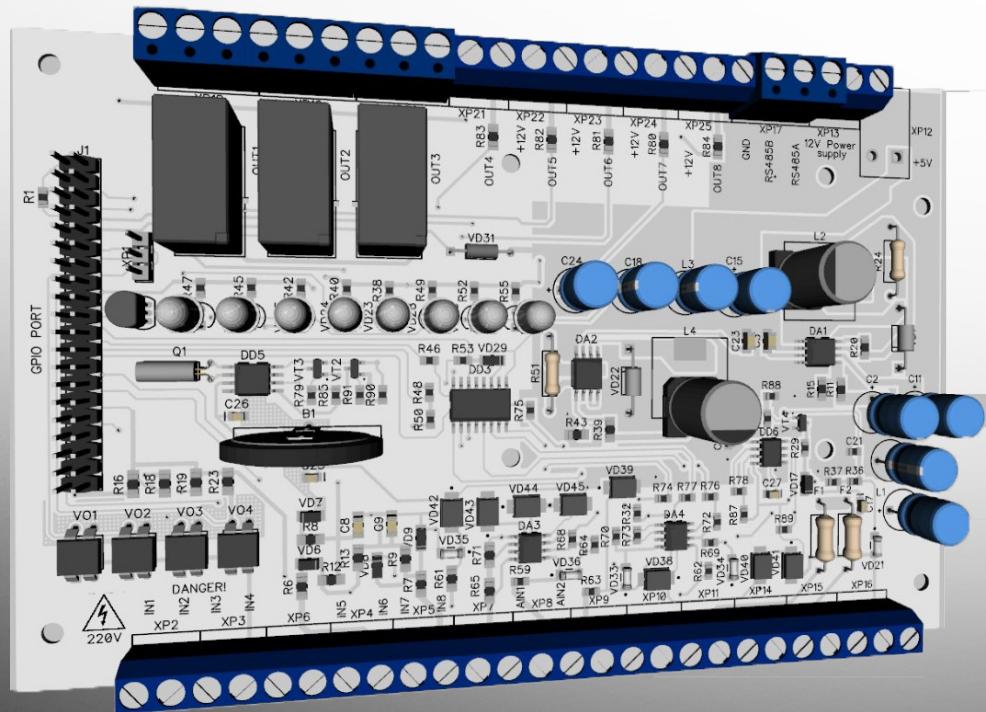
3A 5V DC step-down converter.

DC 24V 0.175A step-up converter.

Four AC 220V 50Hz inputs.

Five discrete inputs with overload protection.

Three 250V 5A NO-NC relay outputs.



7. PIC prototype based on Raspberry Pi II (programmable logic controller)

Power supply: DC 8-24V.

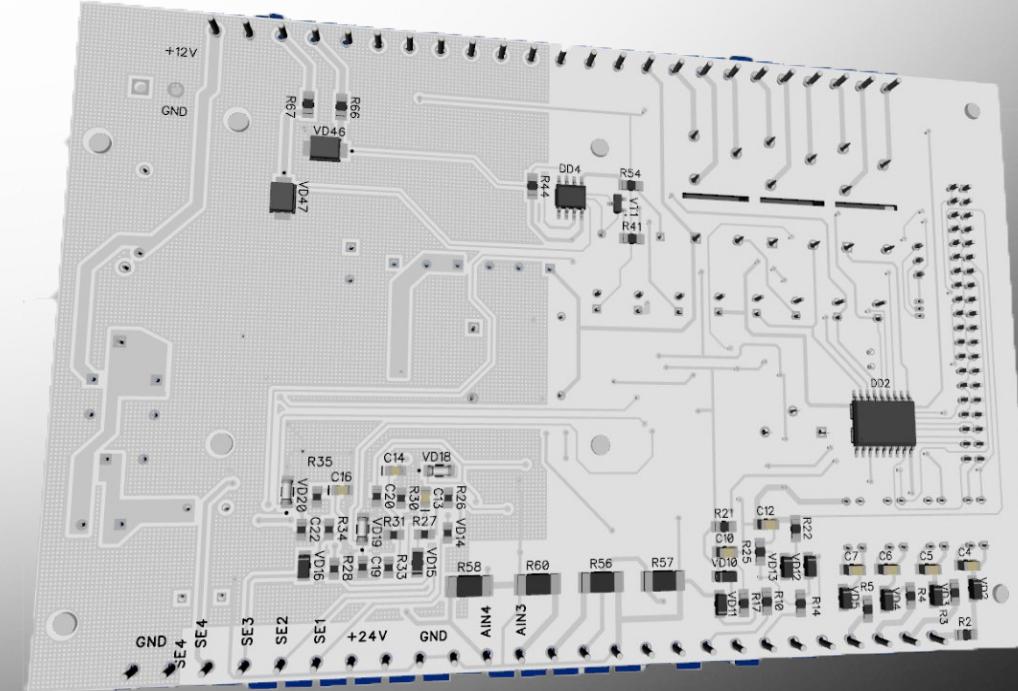
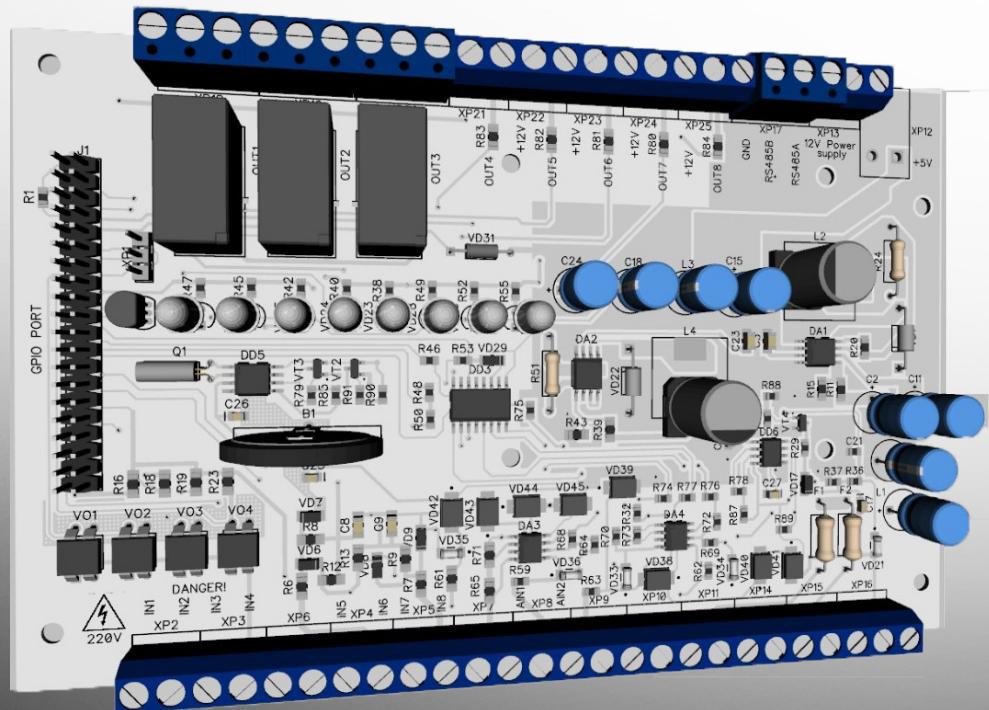
3A 5V DC step-down converter.

DC 24V 0.175A step-up converter.

Four AC 220V 50Hz inputs.

Five discrete inputs with overload protection.

Three 250V 5A NO-NC relay outputs.



7. PIC prototype based on Raspberry Pi II (programmable logic controller)

Five 12-24V 500Ma outputs.

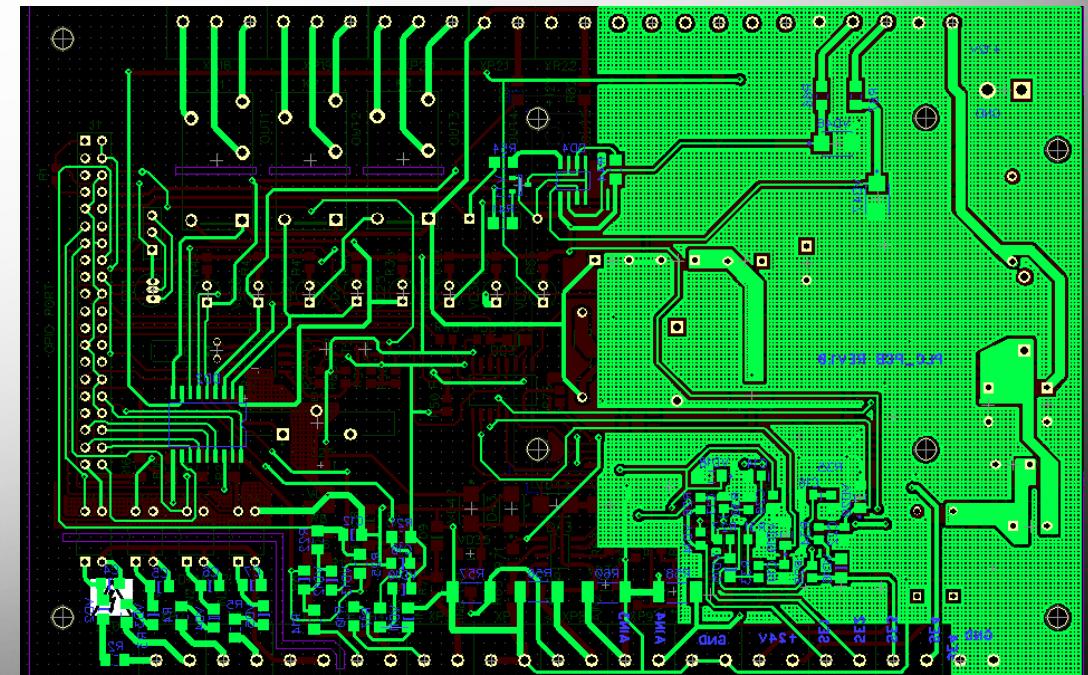
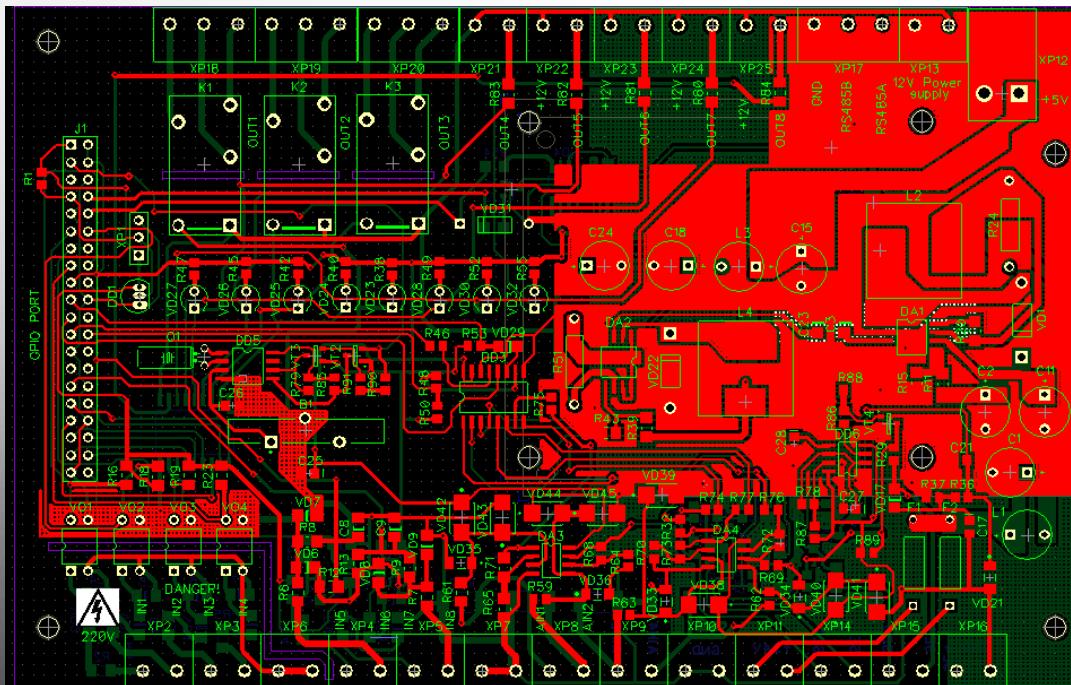
Four 4-20Ma analogue inputs.

Wi-Fi dongle.

Real-time clock.

Bit-bangig 1-Wire interface.

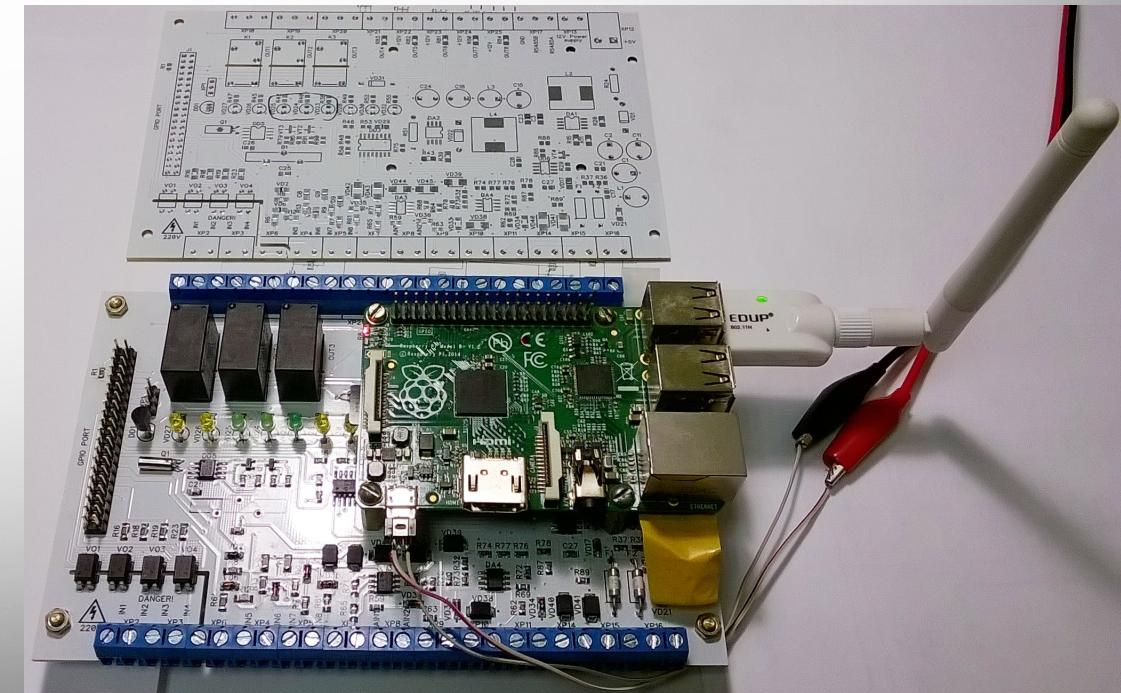
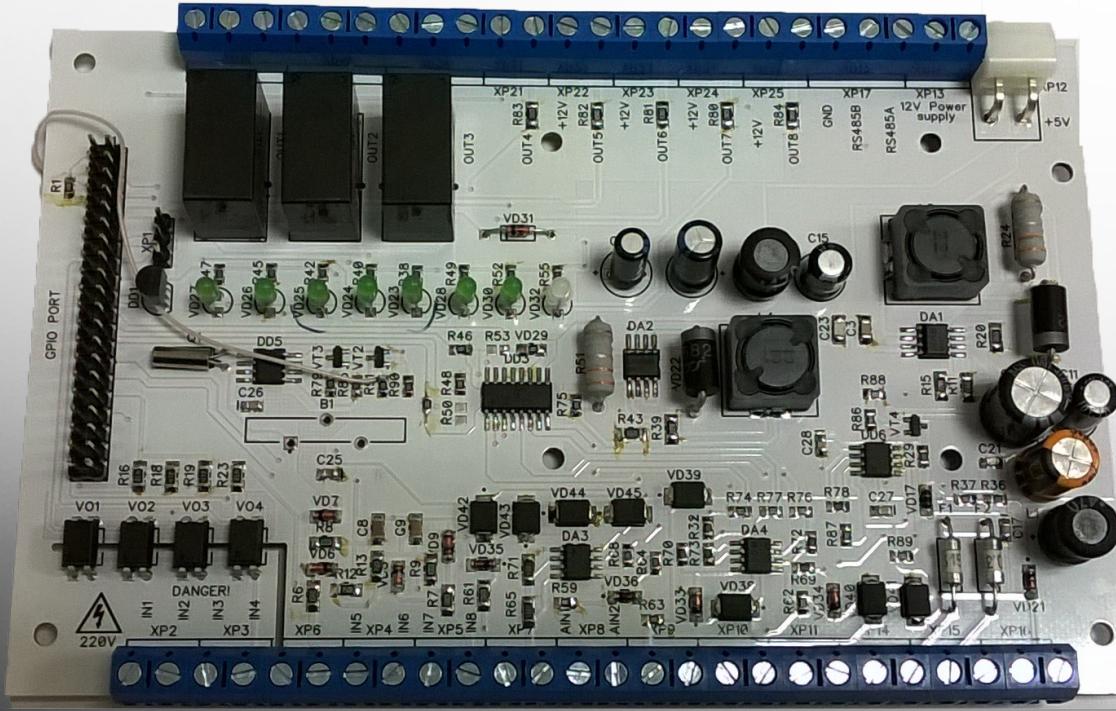
On board DS18B20 temperature sensor.



7. PIC prototype based on Raspberry Pi II (programmable logic controller)

DC 24V 0.175A power for industrial sensors.
TTL-LVTTL converter.
4Kb EEPROM memory.

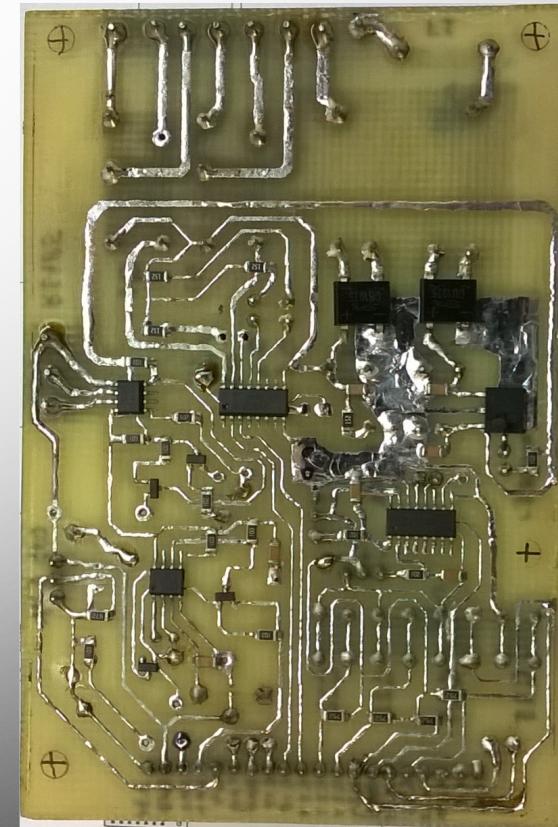
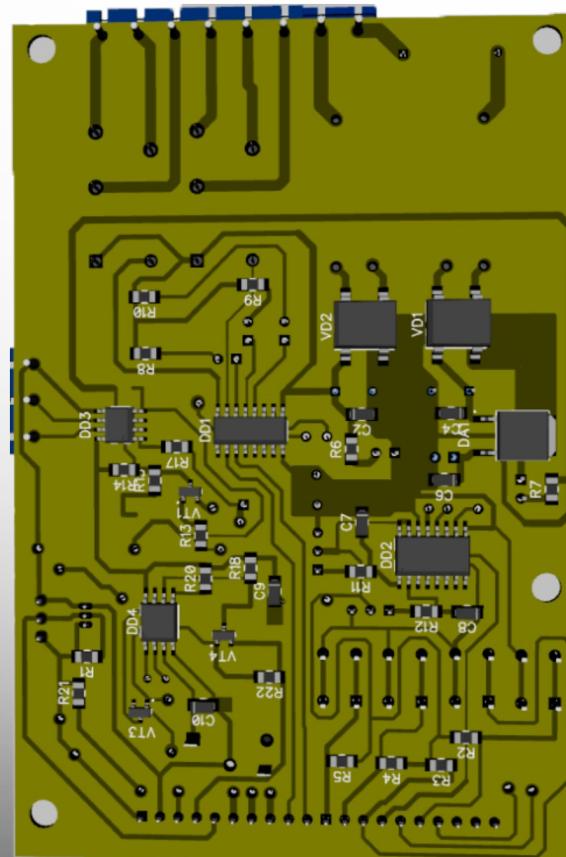
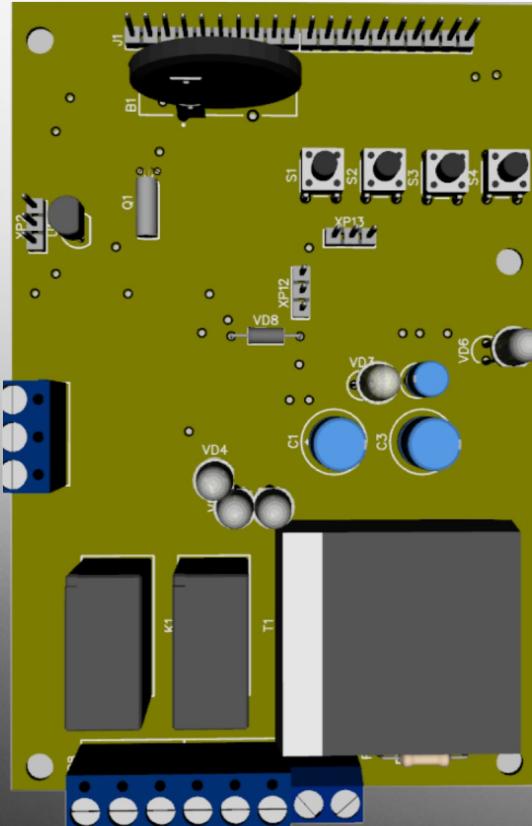
RS485 (Modbus RTU).
Four water detector inputs.
Real-time Linux OS.



8. Debugging board for Raspberry PI and Arduino

Power supply: AC 220V 50Hz.
Seven discrete inputs.
Five 500Ma common collector outputs.

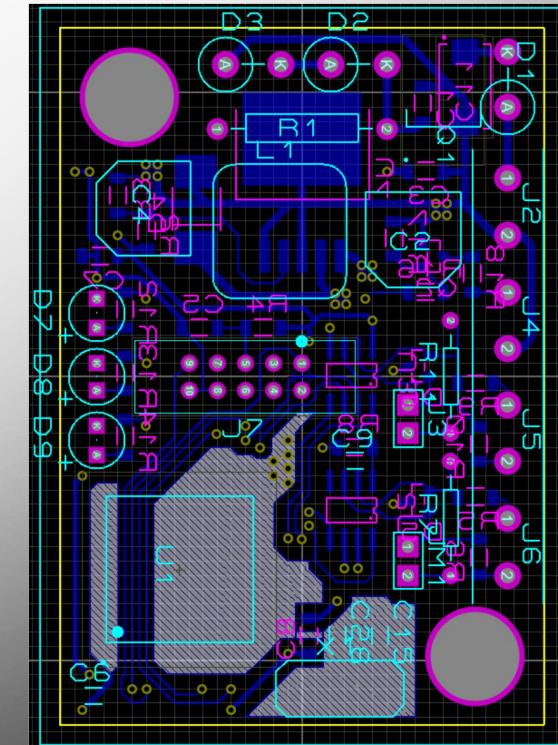
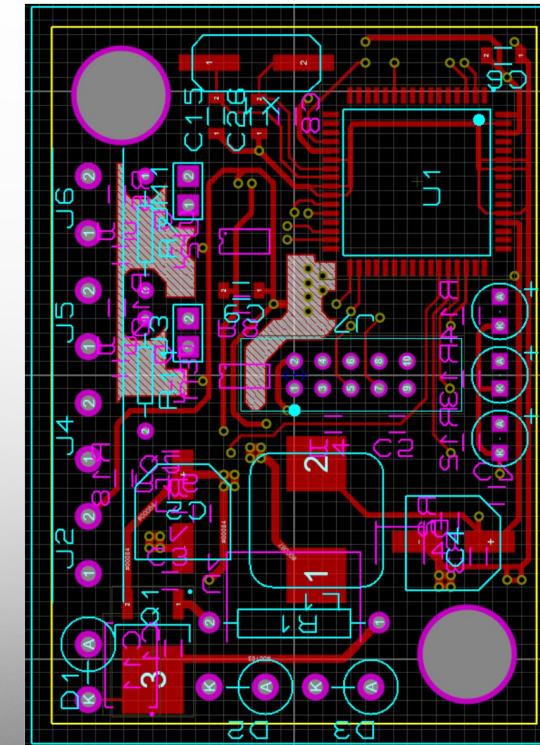
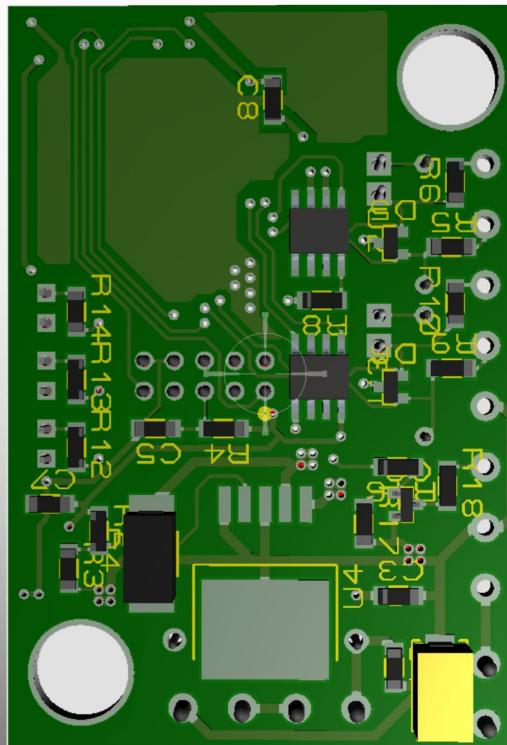
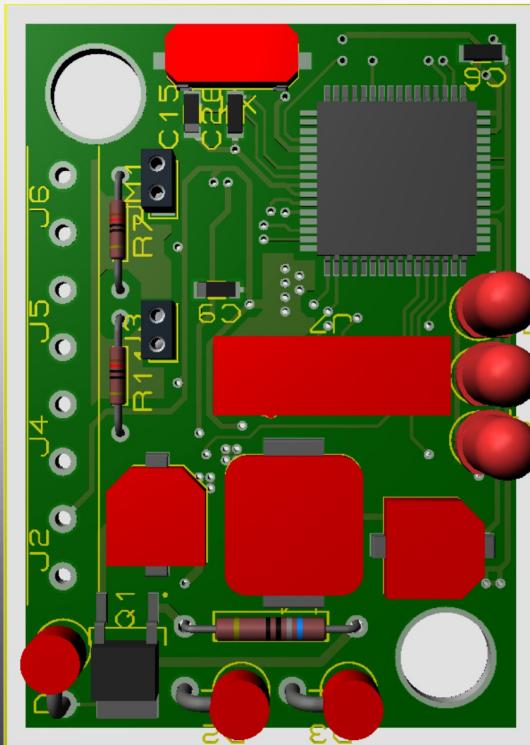
10 bit 8 channel ADC.
Two 250V 5A relay outputs.
Real-time clock.



9. CAN reader for vehicles (circuit and pcb)

Power supply: DC 10-40V.
CAN J1939.
RS485.
Open drain output.

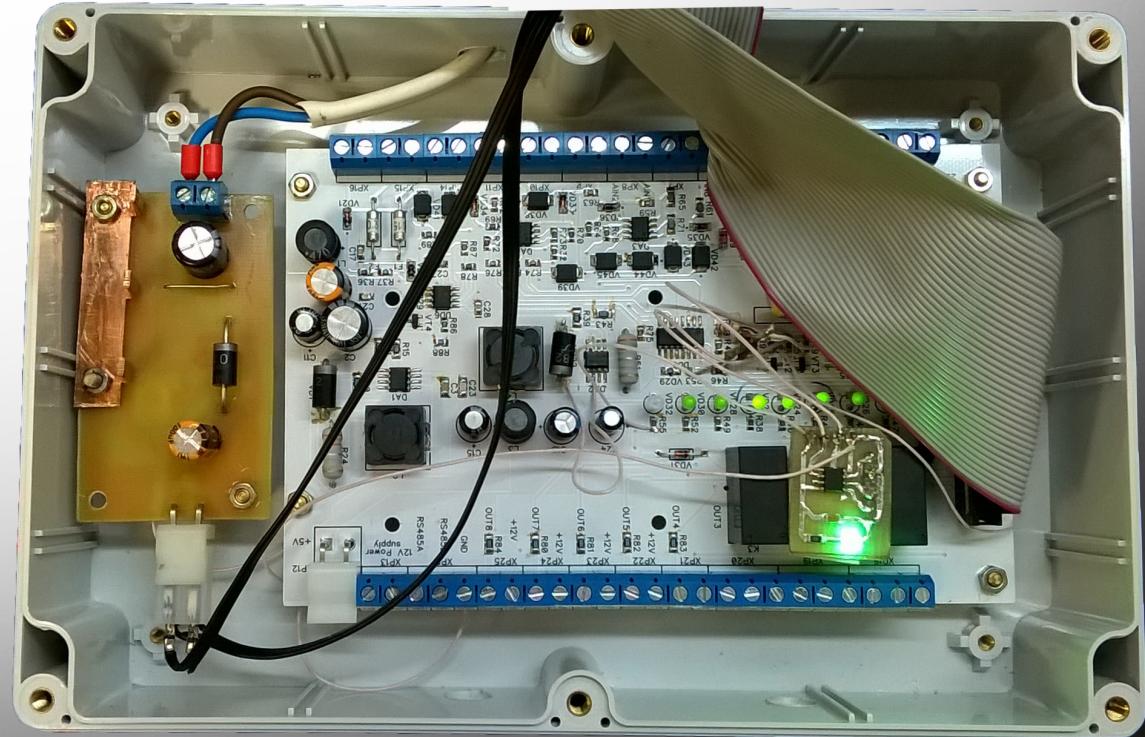
RS485 port protection.
CAN port protection.
Powered by ATMEL AT90CAN32 MCU.



10. Programmable logic controller with 7inch touch screen. Powered by Raspberry PI II

Power supply: DC 8-24V.
3A 5V DC step-down converter.
DC 24V 0.175A step-up converter.

Four AC 220V 50Hz inputs.
Five discrete inputs with overload protection.
Three 250V 5A NO-NC relay outputs.



10. Programmable logic controller with 7inch touch screen. Powered by Raspberry PI II

Five 12-24V 500Ma outputs.

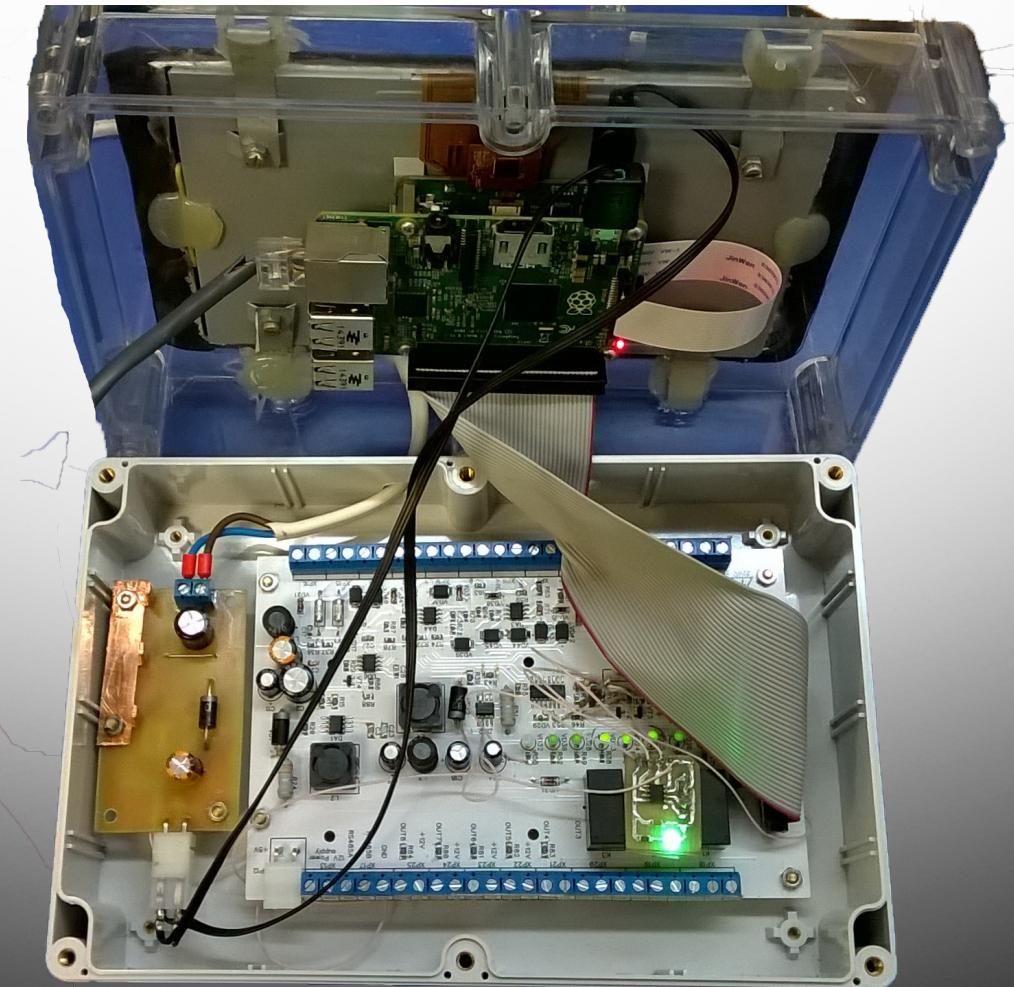
Four 4-20Ma analogue inputs.

Wi-Fi dongle

Real-time clock.

Bit-bangig 1-Wire interface.

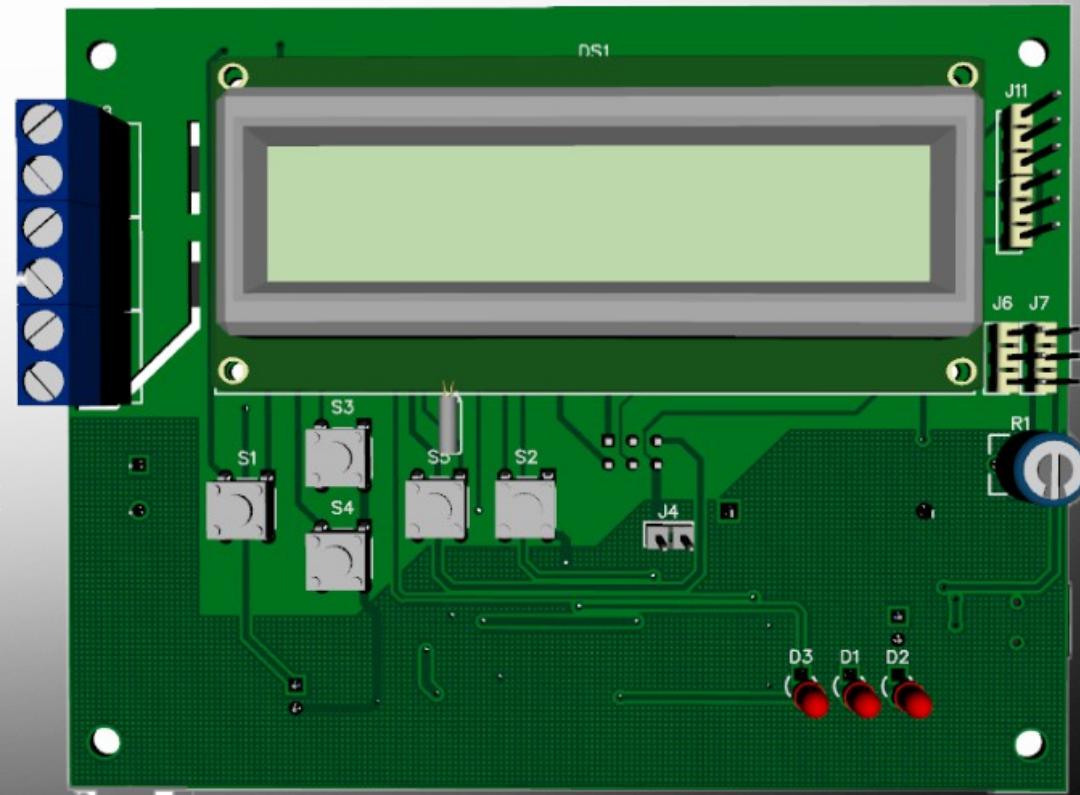
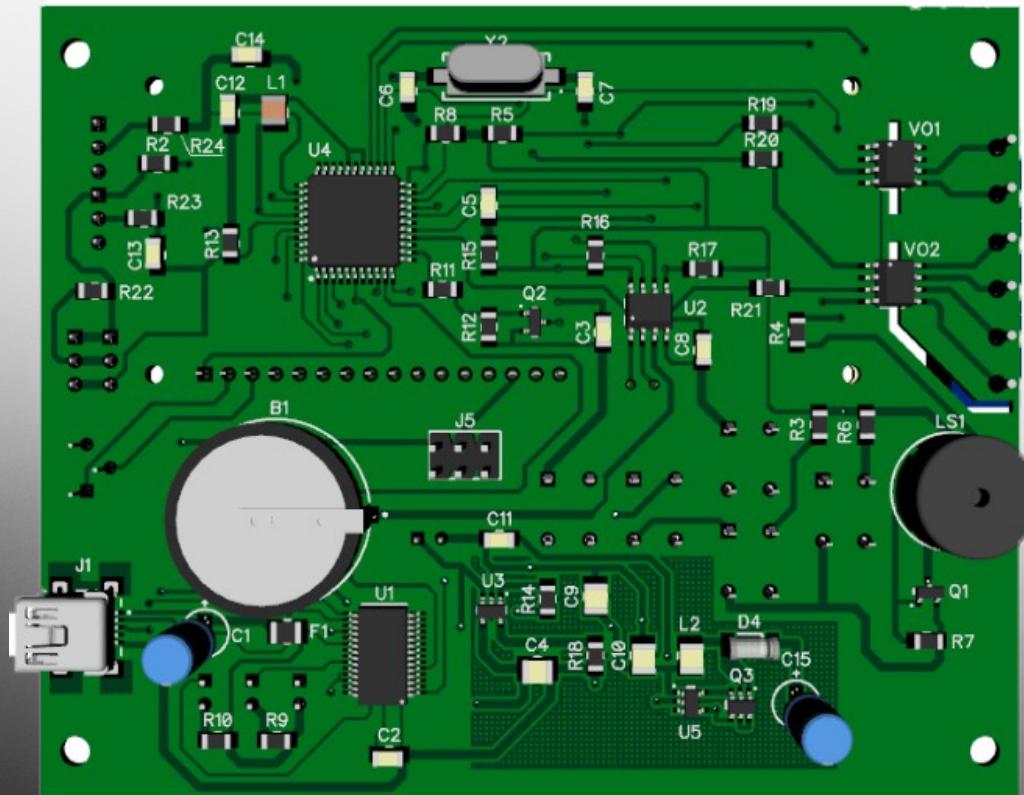
DS18B20 temperature sensor on board.



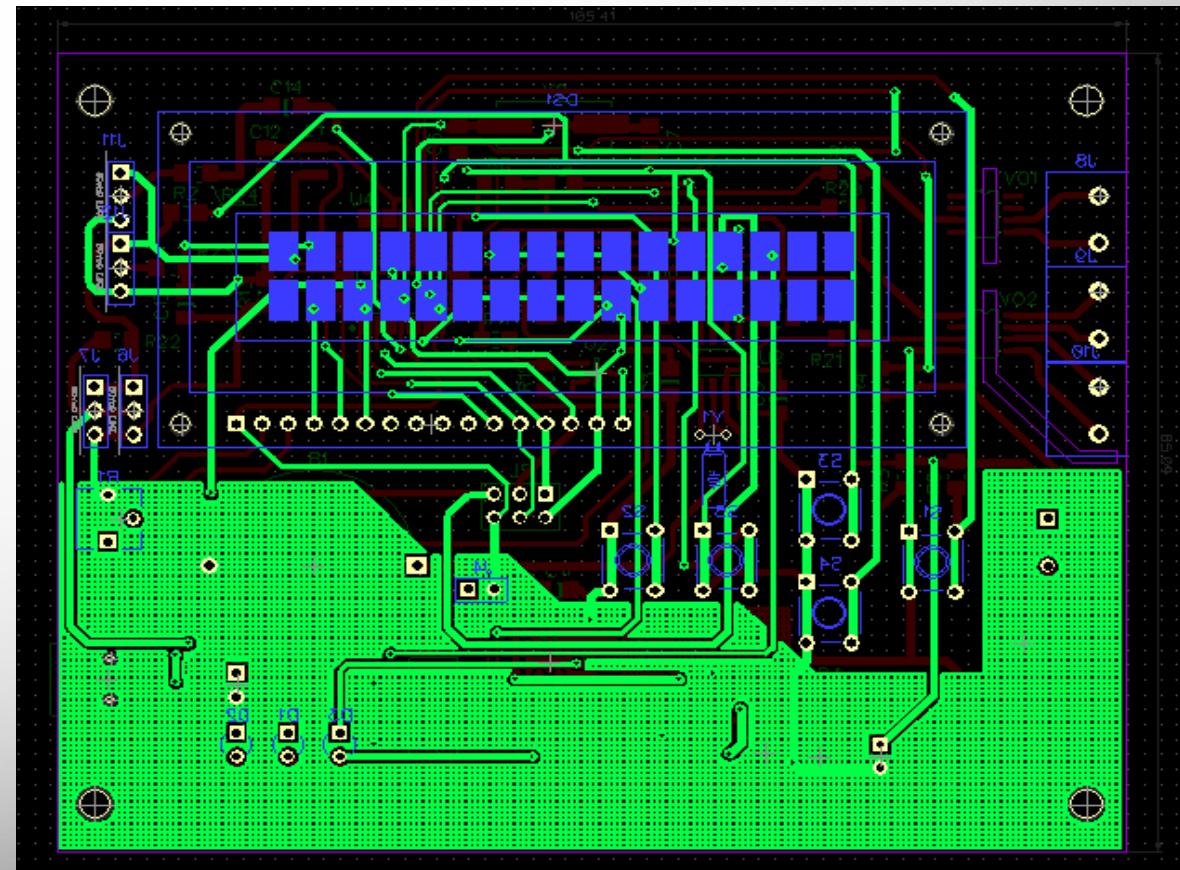
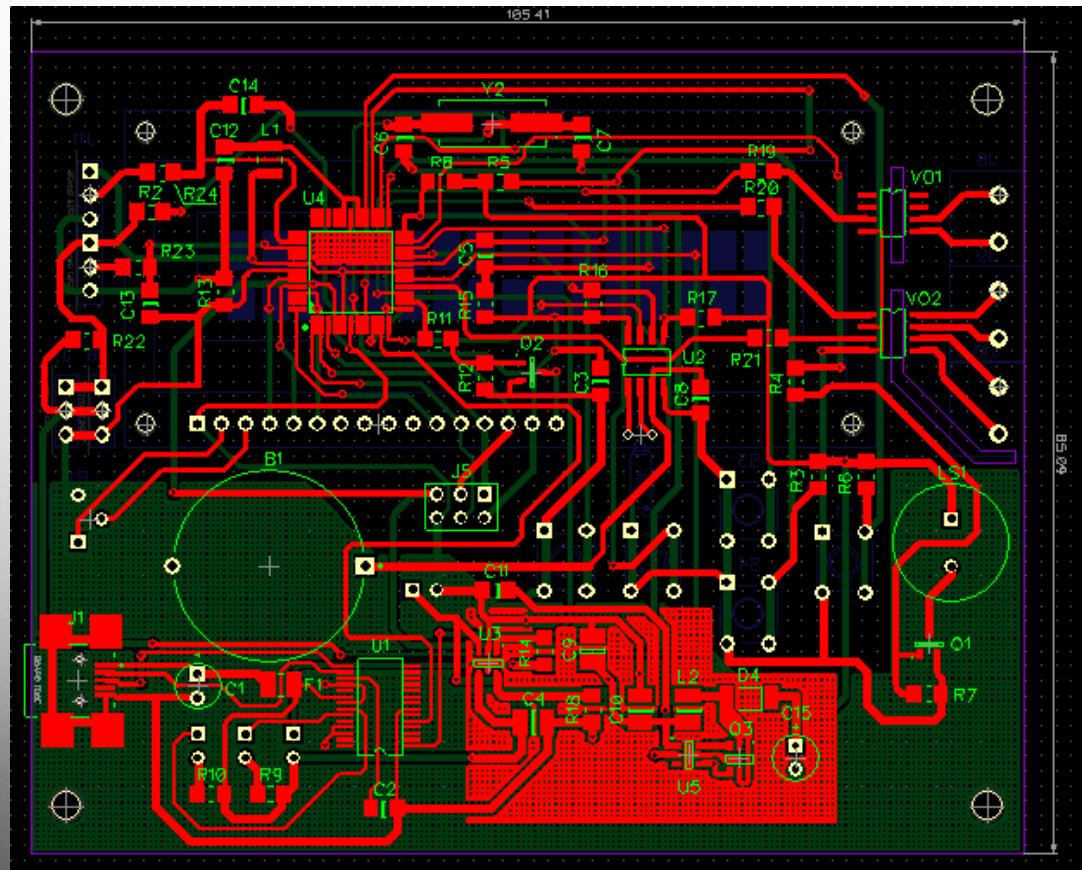
11. Meteostation (open source project)

Real-time clock DS1307.
Two discrete opto-isolated outputs .
One opto-isolated PWM output.
Mini USB.
Humidity measurement.
Clock, Date, Alarm.
16 x 2 LCD and 5 navigation buttons.
Windows application.

3.7V battery power supply.
Battery Li-Po charger via USB.
DS18B20 temperature sensor.
light level measurement.
5 midi tones for alarms.
Display brightness adjustment using PWM.
Powered by Atmel Atmega32 MCU.



11. Meteostation (open source project)



[Link to circuit diagram - CIRCUIT](#)