This ULU

The *ULU.51 Sensor trigger* can be used to connect ULUs to one of various resistance-based sensors. Think of a light dependent resistor, a moisture detector, a rain-detector or a thermistor (temperature).

The base of this ULU is a commercially available voltage comparator. Different versions are shown in Figure 4.

Used parts

The following standard parts are used:
1x casing 50 x 25 x 25mm;
2x 2mm signal connector;
2x black O-ring 9 x 5 x 2mm;
1x power connector;
1x 3mm round LED ;
1x resistor to dim the LED;
1x LED holder;
1x micro (G6K-2F-Y-5VDC) relay;
1x fly back diode (1N4148);
1x M3 5mm male/female standoff;
1x M3 countersunk bolt;
1x M3 nut.

The following extra parts are used:
1x 1K resistor;
1x s8850 transistor;
1x voltage comparator module;
1x 10K potentiometer;
1x female RSA socket;
1x 15mm knob.

Construction

The standard ULU specifications are applicable as specified in the datasheet *ULU.00 – Common specifications*.

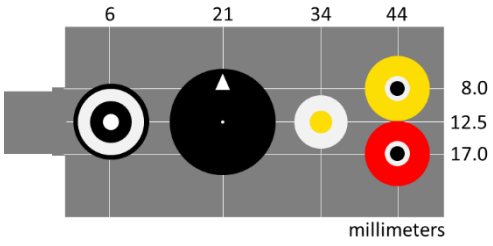

Figure 1 – Drill guide

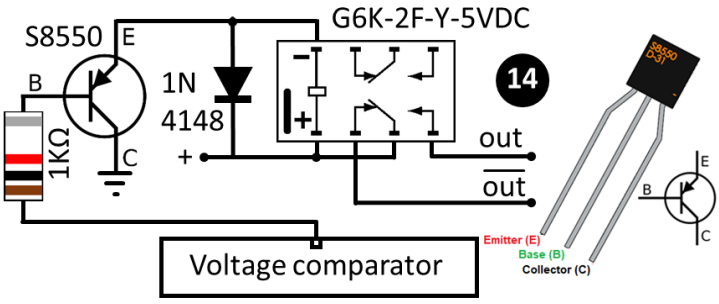

Figure 2 – Schematic

First, the pin header and potentiometer need to be desoldered from the used sensor (Figure 4). The easiest way is to cut both components to pieces and desolder the pins one by one. Therefore, a chirurgical clamp is clamped on the object to draw it downwards and this part can be desoldered with a common soldering iron. After that, a desoldering cleaning rod or a small PCB drill will open the hole

Wires are used to connect the three holes in the PCB to the corresponding pins of the panel mounted potentiometer. The solder connections of this potentiometer are insulated with shrink fit tube. In the same way the transistor with corresponding resistor and relay with corresponding diode are insulated with shrink fit tube (Figure 3). A piece of duct tape is used to insulate the back site of the sensor PCB (See Figure 6).

A hole is drilled in one of the front cover plates to facilitate the RSA socket.

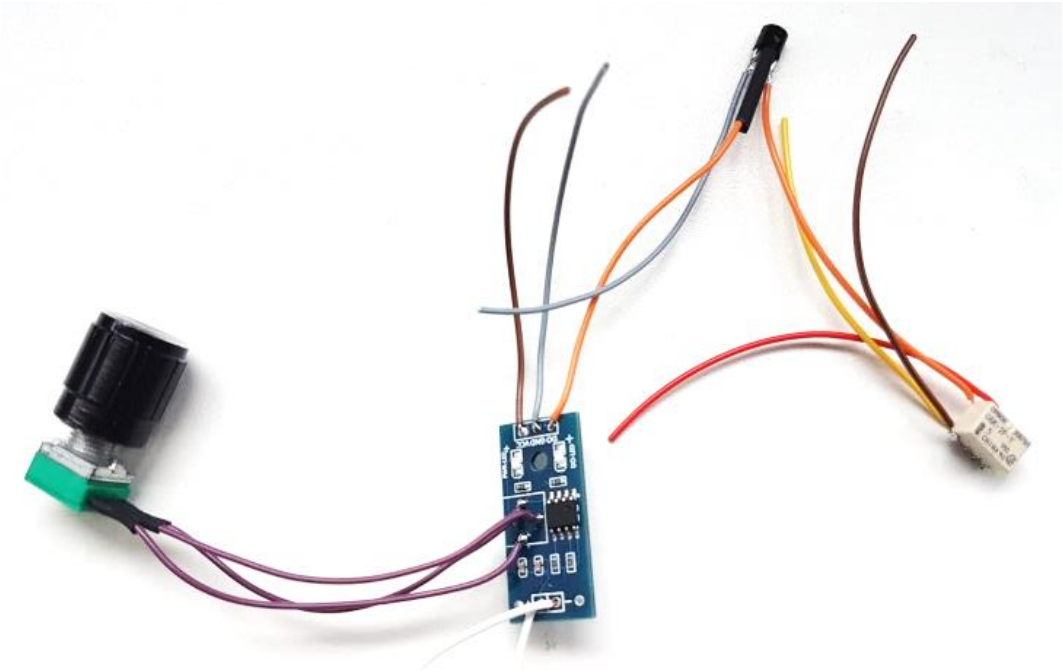

Figure 3 – Components connected

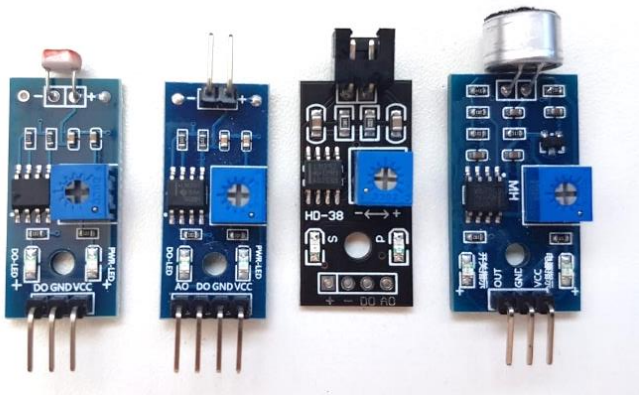

Figure 4 – Several voltage comparators

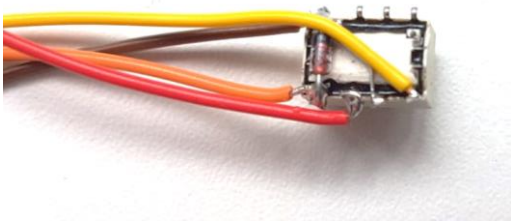

Figure 5 – Soldered relay

Figure 6 – ULU inside

Figure 7 – Finished ULU

Usage

This ULU can be used to connect several resistor-based sensors (Figure 9). It can be used to detect rain, moisture (drought), temperature or light. The rotary knob is used to adjust the sensitivity and make sure that in normal conditions the signal is off. When the sensor exceeds the threshold, the output 1 is switched between the two output sockets.

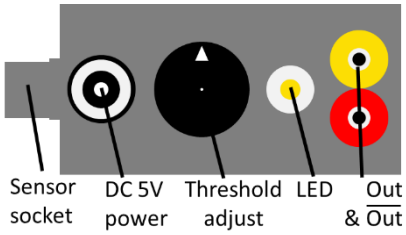

Figure 8 – Controls and connectors

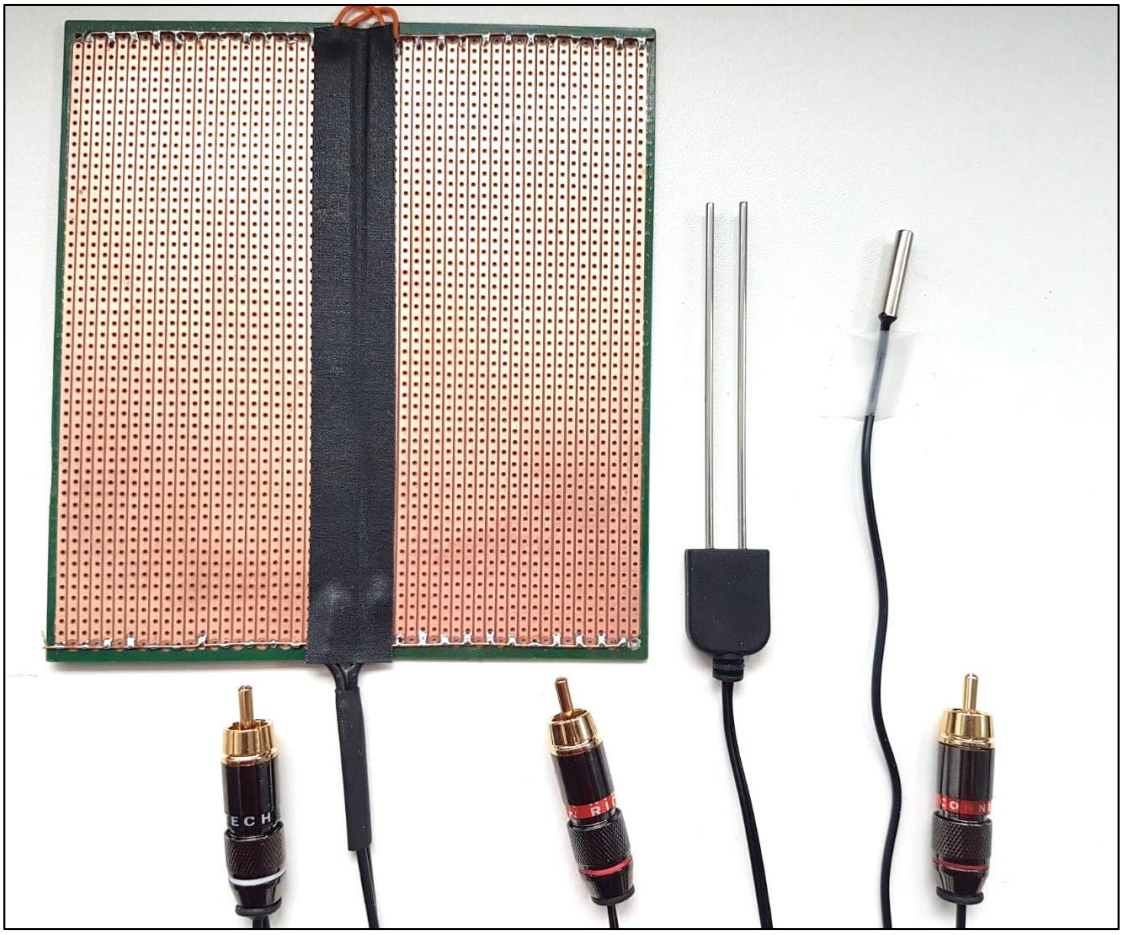

Figure 9 – Rain detector (left), moisture sensor (middle) and temperature sensor (right)