

## This ULU

The *ULU.55 Light sensor* detects light when larger than a predefined threshold. In combination with the *ULU.56 Laser* it can be used to make a laser data connection.

## 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 light detection module;
- 1x 10K potentiometer;
- 1x 15mm knob.

## Construction

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

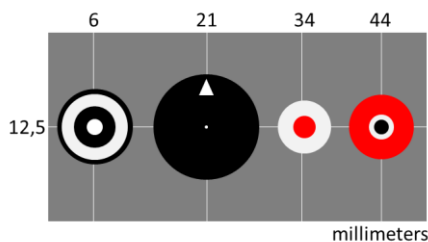


Figure 1 – Drill guide

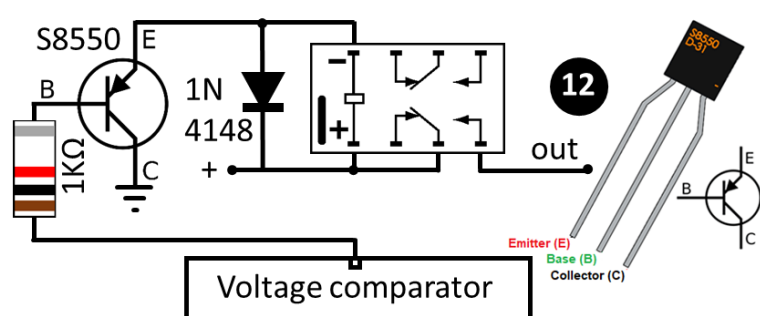


Figure 2 – Schematic

First, the pin header and potentiometer need to be desoldered from the used sensor (Figure 3). The easiest way is to cut both components to pieces and desolder the pins one by one. Then a surgical clamp is clamped on one of the pins 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. De solder connections of this potentiometer and relay are insulated with shrink fit tube.

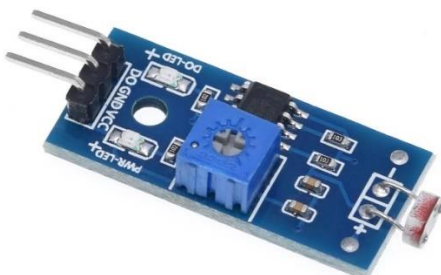


Figure 3 – The used sensor

In the bottom of the enclosure a 3mm hole is drilled and countersunk to fit a M3 countersink bolt. Be sure to drill this hole not too close to the end, otherwise the sensor will not fit. Also ensure that the hole is drilled at the correct end of the enclosure, otherwise the top part of the enclosure will not fit. The bolt is used to attach a 5mm female/male standoff to the casing. A nut is used to attach the PCB to the standoff. For the LDR-sensor another hole (5mm) is drilled in one of the cover plates.

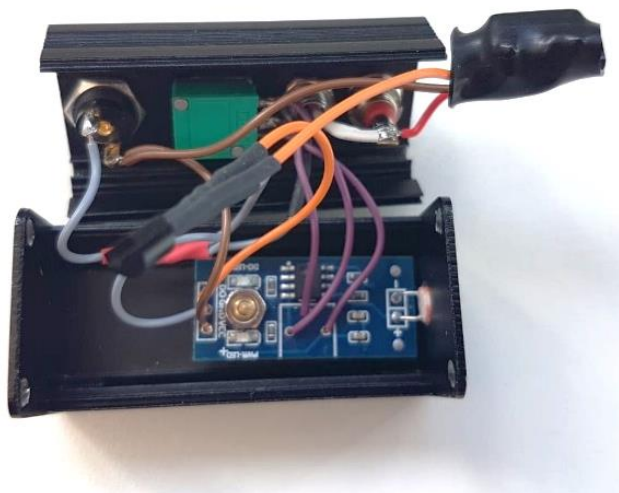


Figure 4 – ULU inside



Figure 5 – Finished ULU

### Usage

First calibrate the sensor to the ambient light, by turning the knob, so that the LED is off. Then when the light sensor (LDR) is hit with light or a laser beam, the output signal will be set to 1.

In combination with the *ULU.56 Laser*, this ULU can be used as laser detector beam that will detect if the beam is broken by an object. Another application is a laser data link, where information is transmitted by switching the laser beam on and off.

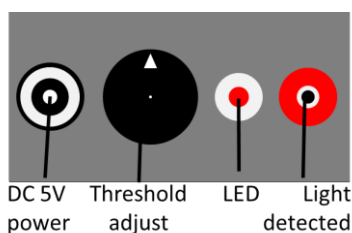


Figure 6 – Controls and connectors