This ULU

The *ULU.05 Octal switch* offers eight toggle switches, switch enabling 8x singe signal as well as a dual 4-bit data bus output. The switch position is indicated with LED lights.

Used parts

Only standard parts are used:

1x casing 80 x 50 x 20mm;	8x 3mm round LED ;
9x 2mm signal connector;	8x resistor to dim the LED;
9x black O-ring 9 x 5 x 2mm;	8x LED holder;
2x 4-bit data connector;	9x 1-pole ON-ON switch;
2x colored O-ring 8 x 5 x 1.5mm;	1x Push switch;
1x power connector;	

Construction

The standard ULU specifications are applicable as specified in the datasheet *ULU.00 – Common specifications*. The drill guide differs from the standard specification, to accommodate 8 switches.
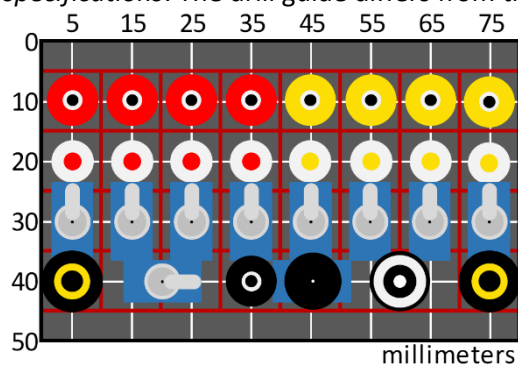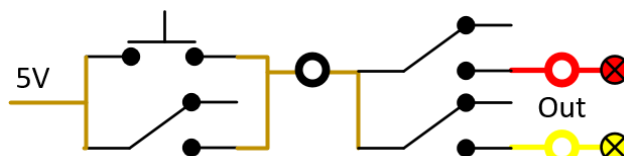

Figure 1 – Drill guide
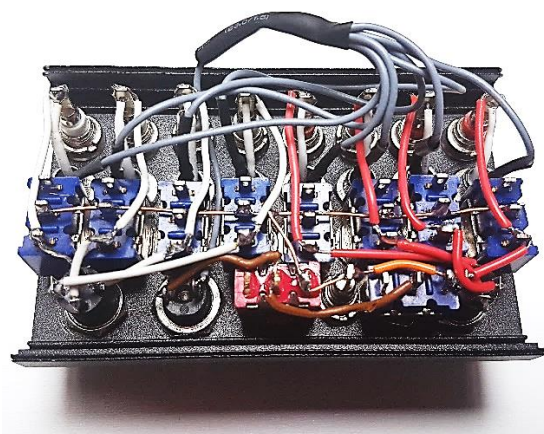

Figure 2 – Schematic

Figure 3 – ULU inside

Figure 4 – Schematic (ground is left out)

This is a high-density ULU, so the components are really packed tight together. All the switches must be mounted as high as possible. The eight grounds of the LEDs are connected by stripping one wire in the middle of the wire and solder the other seven to that blank wire. It is finished by a piece of shrink tube.

In Figure 1 the bottom row provides enabling. The top three rows (switches, LEDs and connectors) the signaling. The schematic consists out of two parts (see Figure 4): the bottom part provides the enabling, the top part the signaling. In this drawing only two of the eight lines are drawn.

Usage

When a data bus is used, components attached to this bus should not give data permanently, but only on request. That is when enabling comes into place. The eight switches can be enabled in three different ways, namely by:

1. Switching the lower left switch towards the black connector.
2. Connecting the black connector to a logical 1 or enabling signal.
3. Pushing the push button.

Furthermore, all the red connectors are connected to the corresponding poles in the left 4-bit data bus. The yellow connectors to the right 4-bit data bus. The leftmost signal connector is the MSB, the rightmost signal connector the LSB.

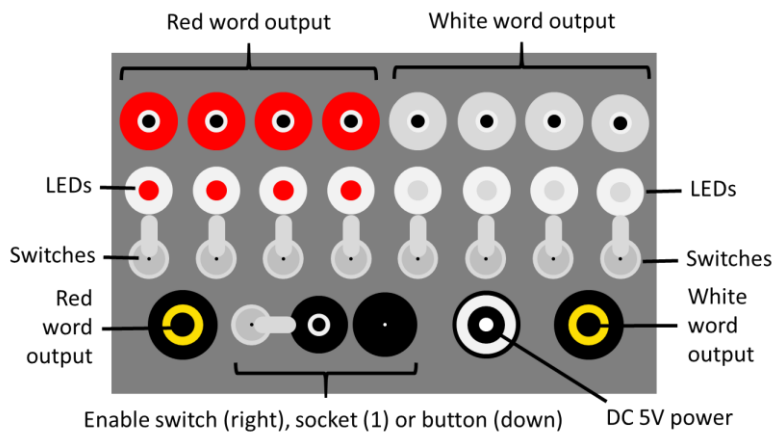When the switches are off, this ULU can also be used as an 8-bit LED indicator. Both the 4-bit data bus as well as the four signal connectors can be used to for this purpose.

Figure 5 – Controls and connectors