# Space Cruiser 2022

**Construction description of the Space Cruiser:**

It is easiest to mount the parts from low to high. All resistors are mounted horizontally. To do this, bend both wires at an angle of 90 degrees taking into account the distance between the holes on the PCB. Insert the resistance through the PCB and gently bend the wires on the bottom of the PCB slightly apart. The PCB can now be turned over to solder without the resistance falling out of the print. After soldering, cut off the legs just above the soldering. Do this also for all other components with longer legs such as the LEDs and capacitors. If in doubt about the right placement, look at the photos.

**Tip 1**: The dots at the beginning of the line can be colored to indicate which parts have already been assembled.
**Tip 2:** When in doubt about the assembly of a component, look at the photo of the built-up print, once soldered incorrectly, repair can sometimes be very difficult.
**Tip 3:** For the resistors, a component bending mold can be of great service.

**Mounting order:**
Mount the following resistors successively:

- R1, R2, R3, R7: 8.2 KΩ(grey, red, red, gold)
- R4, R5, R6: 220 Ω(red, red, brown, gold)

- Mount the transistors Q1, Q2 and Q3.

**NOTE:** it must be mounted correctly. Take a good look at the drawing on the print. The flat side of the transistor is easily recognizable.

- Mount LED D1 and D6 (yellow).
- Mount LED D2 and D4 (red).
- Mount LED D3 and D5 (green).
- Mount LED D7 (see note below).

**NOTE:** the LEDs may only be mounted in one way otherwise they will not work. Look carefully at the drawing on the print. On the LED there is a flat side, on this flat side is also the short leg. The short leg must therefore be in the hole on the print on the flat side of the LED. The print is set up in such a way that with all LEDs the flat side must be on the side of the nose of the rocket, the long legs are on the side of the engine.
**NOTE:** LED D7 has a transparent housing but gives blue light. It is possible that D7 cannot be inserted all the way through the holes so that it comes flat on the pcb. With an electronics cutter, the protrusions on the legs can be slightly updated so that it fits. Optionally, you can also cut the legs just above the protrusions, pay attention to the flat side of the LED.

- Mount the electrolytic capacitors C1, C2 and C3.

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**NOTE:** these may only be mounted in one way. The long leg must be in the hole on the print where + is. On the capacitor, the – pole is indicated on the housing.

- Mount the 9V battery connection.

**NOTE:** on the supplied pcb at the connection BT1 it is indicated what the plus and the minus should be. To be on the safe side: the black wire comes on the side of the B (black) the red one on the side of the 1. Feed the wires from below through the PCB and then from above through the solder hole. Then solder the wires. The wires can then be tightened (see photos).



**The Space Cruiser is now ready to use!**
Plug in a 9 Volt battery and see what happens.

**TIP:** the holes in the fins or the nose can be used to hang the Space Cruiser with a string, for example.