PiKoder/SSCng
Development board

Building instructions

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General information

Before you start building the development board for the PiKoder/SSCng, please read these instructions through to the end. You will then know what is important and will avoid mistakes from the outset that can sometimes only be corrected with a lot of effort.

To build the development board, basic knowledge of electronic components and how to handle them, as well as experience in soldering, are required. To simplify the build, all SMD components are already assembled.

Carry out soldering and wiring absolutely cleanly and carefully; do not use acidic solder, soldering grease or similar. Make sure that there are no cold solder joints. This is because poor soldering or a bad solder joint, a loose connection or a bad structure mean complex and time-consuming troubleshooting and, under certain circumstances, the destruction of components.

The possibility of something not working after assembly can be drastically reduced by careful and clean assembly. Check each step before you go any further. Follow the assembly instructions! Do not change the steps described there and do not skip anything! Check off each step twice: once for building, once for checking.

Be sure to take your time: crafting is not piecework and should first and foremost be fun!

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Kit contents and tools

This kit contains all the components needed to build a development board for the PiKoder/SSCng, including the pre-programmed PIC16F1459 microcontroller. All components marked with (SMD) below are already mounted on the circuit board. Please first check that everything is complete using the following parts list:

		√
Resistances		
47k, 0.25W (SMD)	R1	☐
470R, 0.25W (SMD)	R2, R3	☐
10k, 0.25W (SMD)	R4	☐
2k7, 0.25W (SMD)	R5	☐
Capacitors		
100 n	C1	☐
470n	C2	☐
semiconductor		
PIC16F1459-I/P	IC1	☐
LED 3mm bi-color	IC2	☐
DO-214AC (SMD)	D1	☐
Miscellaneous		
Micro USB socket (SMD)	J1	☐
Pin header 8-pin		☐
Pin header 2x9pin		☐
Pin header 2-pin	J2	☐
Pin header 4-pin	UART	☐
jumper		☐
PCB assembled		☐

In addition, the following tools are required to assemble this kit:

1. Electronic soldering iron with fine tip
2. Electronic solder
3. Side cutters

To commission the PiKoder/SSCng you will also need:

1. USB cable
2. PC with application software (download from the Internet)

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Construction

The following sections describe the assembly of the components on the board. The required SMD components are already assembled. All other components are on the assembly side and the assembly process itself is supported by the assembly print on the circuit board. The order of assembly depends on the height of the components - the general rule is that the flattest components are assembled first.

Mounting the capacitor C1

First, insert capacitor C1. C1 is a non-polarized ceramic capacitor, so the orientation does not matter.

For wired components, it is recommended to angle the connections slightly to prevent them from falling out before soldering.
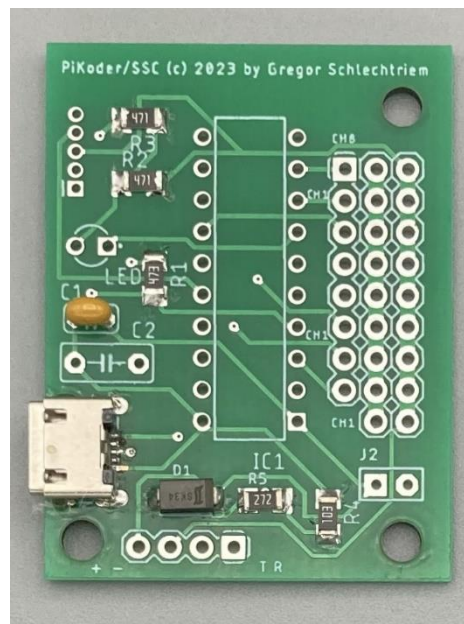
Equipping the controller

Insert the controller into the corresponding position on the component side of the circuit board. Pay attention to the notch (marked with a red arrow in the picture).

To prevent the controller from falling out again when the board is turned over for soldering, two diagonally opposite pins are bent slightly and then all connections are soldered.
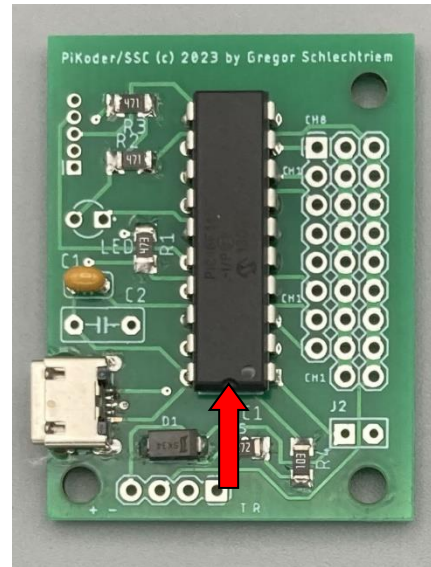
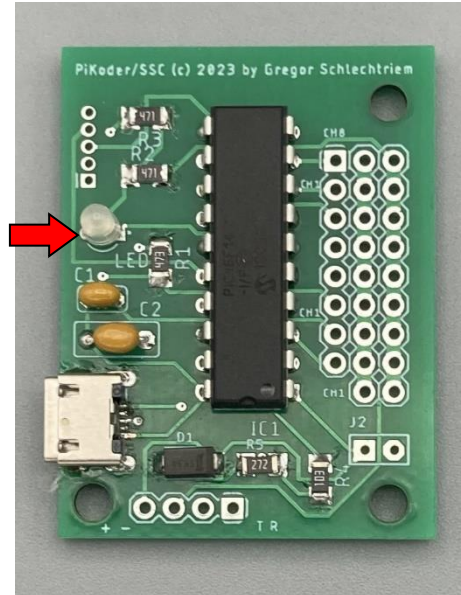## Mounting the capacitor C2

Next, the missing capacitor C2 is inserted. C2 is also a non-polarized ceramic capacitor - so the orientation does not matter.
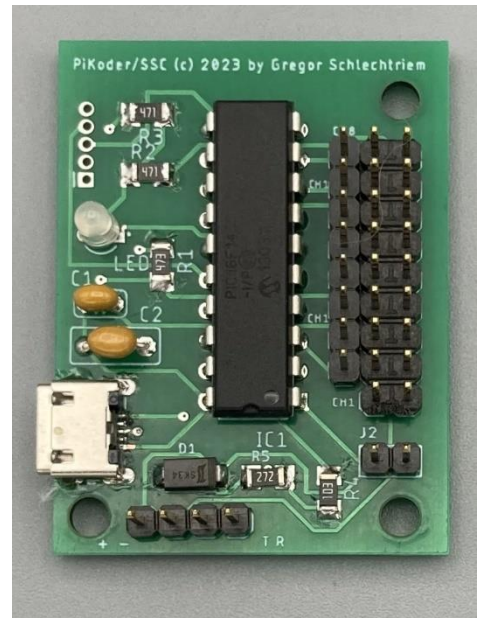
LED assembly

Now fit the LED onto the circuit board. This is a polarized component that should be inserted with the short connecting wire pointing to the left (see red arrow).

Equipping the pin headers

The last components to be soldered are the pin headers for the servo channels, the UART input and the jumper for the servo power supply .

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Installation

To start up the development board for the PiKoder/SSCng is connected to a PC with Windows 10 or 11 using a USB cable. Please note that the power of a USB port is usually not sufficient to operate servos. Therefore, when using only USB, jumper J2, which allows the controller to be supplied with servo voltage , should not be plugged in. If you plan to use PiKoder/SSCng to control servos via USB, please note the instructions below.

When connected for the first time, the PC installs the required drivers and assigns a COM port to the board. The PiKoder/SSCng is then ready for use. *PiKoder Control Center next generation* (PCCng), which is available free of charge from the Microsoft App Store, is the ideal solution for testing and programming the PiKoder/SSCng.

The operation and meaning of the parameters can be found in the PiKoder/SSCng User Manual.

Configuration USB with servos

If you use the PiKoder/SSCng to control servos via USB, you will need an additional power source with the supply voltage for the servos (see connection diagram on the right). Please make sure that J2 is not plugged in, otherwise the USB port could be destroyed by high compensation currents.
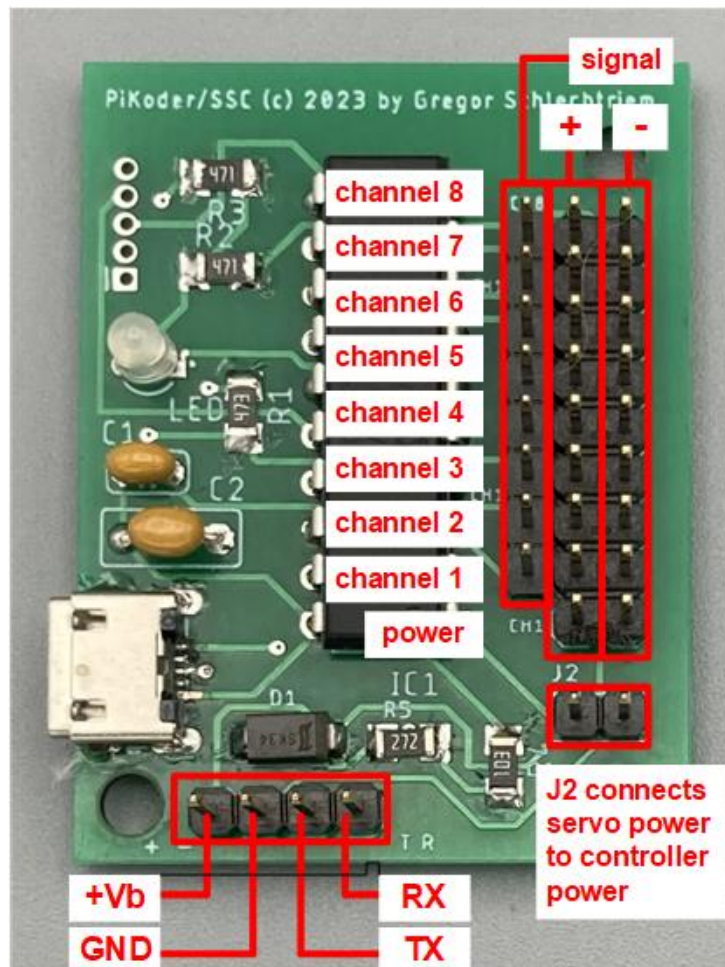
Configuration UART with servos

The PiKoder / SSCng requires a voltage of 5 volts. When controlled via UART, this voltage can be provided directly via + Vb and GND; jumper 2 is not plugged in and the servos are supplied with an independent voltage source (variant 1). Alternatively, use a sufficiently stable 5V servo voltage supply via jumper J2 to supply the controller (variant 2).

A

Connections

B

Circuit