



# *PiKoder/SSC RX*

## Construction Manual

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**Room for your notes...**

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**Room for your notes...**

## *Helpful Hints*

Before you begin with the construction of your PiKoder/SSC RX, it is recommended that you first read these instructions completely. Then you will know what matters and will be able to avoid mistakes which will be hard to fix afterwards.

A basic understanding of electronic parts, their handling, and soldering are required for the construction and the commissioning of the PiKoder/SSC RX.

Conduct the soldering and the wiring in an orderly and conscientious manner; don't use acidic solder of any kind. Make sure that there are no cold solder joints. Keep these things in mind, because an unclean or bad joint, a defective contact or a bad construction cause a time-consuming search for faults and could possibly cause a destruction of the components.

The possibility that something won't work after the assembly, can be drastically diminished by working conscientiously and orderly. Check every step before continuing. Follow the instructions! Only do the things written in the manual and do not skip any steps! Check every step twice: once for building and once to check.

Please take the time it needs to build this kit. Tinkering is not task work and should be enjoyable!

**Room for your notes...**

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# 2

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## ***Contents of the Kit and Tools needed***

The kit in front of you contains all the necessary components needed to build a PiKoder/SSC RX including the pre-programmed PIC16F628A and a Bluetooth transmitter/receiver module. Please verify the completeness with the help of the attached checklist.

### **Parts list PiKoder/SSC RX**

#### **Resistors**

1 k, 0,25 W	R1	<input type="checkbox"/>
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#### **Capacitors**

100 n	C1	<input type="checkbox"/>
22 p	C2,C3	<input type="checkbox"/>
2,2 $\mu$ F, 16 V	C4	<input type="checkbox"/>
1 $\mu$ F, 16 V	C5	<input type="checkbox"/>

#### **Semiconductors**

PIC16F628A	IC1	<input type="checkbox"/>
LP2950Z	IC2	<input type="checkbox"/>

#### **Misc.**

Crystal 4 MHz	Q1	<input type="checkbox"/>
IC socket 18 pin		<input type="checkbox"/>
Female header 4 pin		<input type="checkbox"/>
Bluetooth module HC06		<input type="checkbox"/>
Pin header 2x9 pin		<input type="checkbox"/>
Pin header 1x8 pin		<input type="checkbox"/>
Printed circuit board		<input type="checkbox"/>

You also need the following tools:

1. Electronic Soldering Iron
2. Electronic Solder
3. Side cutters to shorten the component connections

Additionally, to commission your programmer you will need:

1. Power supply 4.8 – 6 Volts (e.g. 4 AA batteries)
2. Standard hobby servo (analog)
3. PC with Bluetooth interface (or BT-Dongle) and application or smart phone with Bluetooth interface and app
- 4.

**Please refer to the PiKoder/SSC RX User Manual for commissioning.**



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# 3

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## ***Construction***

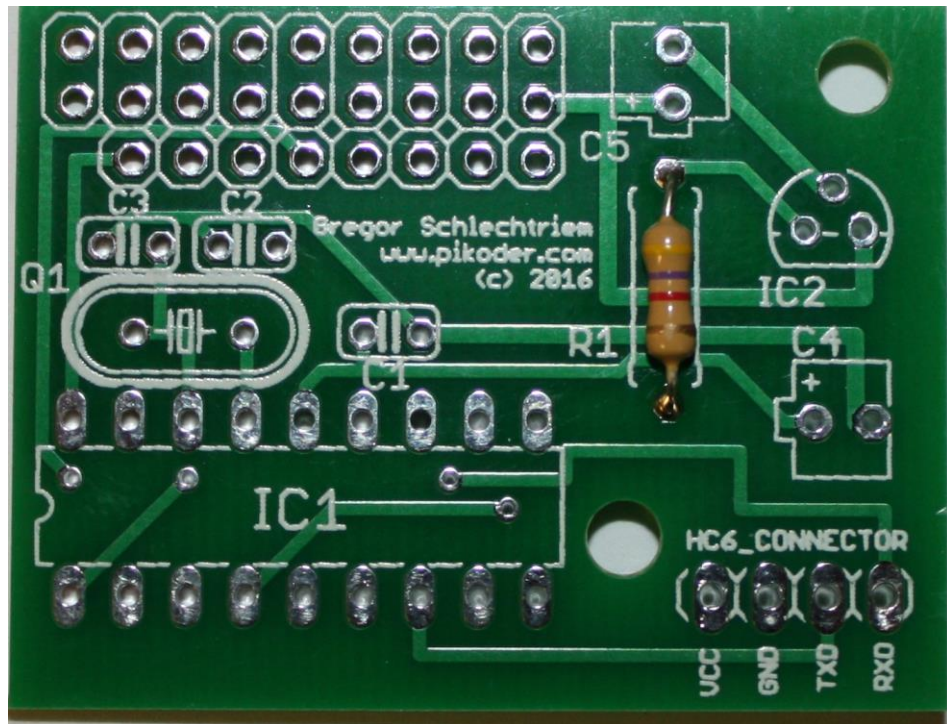
The following paragraphs will describe how to populate the components on the circuit board. The silk print on the circuit board will support this process. All parts are populated on the top side.

The order of the placement of the components depends on their height; generally the lower pieces will be placed first.

### **Step 1: Equipping of the resistor R1**

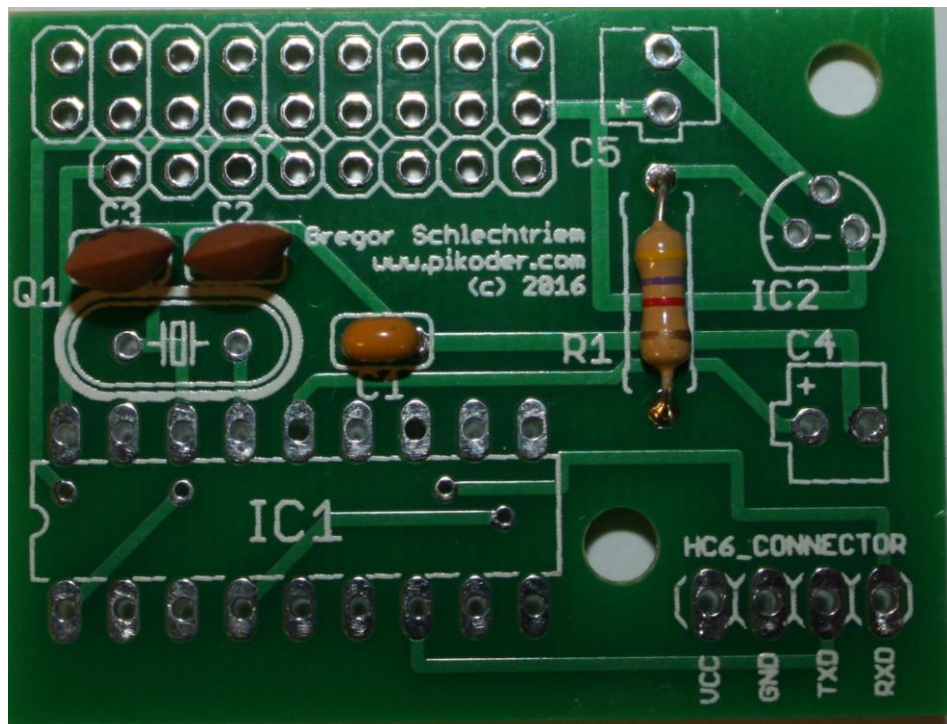
The resistor R1 will be equipped first. In order to do this, bend the connecting wires at a 90 ° angle based on the grid dimensions and then place the component in the designated holes (refer to the image below)

To ensure that the part does not fall of the circuit board when turning it around for soldering, bend the connecting wires at a roughly 45 ° angle apart and the solder them carefully with the conducting paths on the back of the circuit board. Afterwards cut off the excess wire.



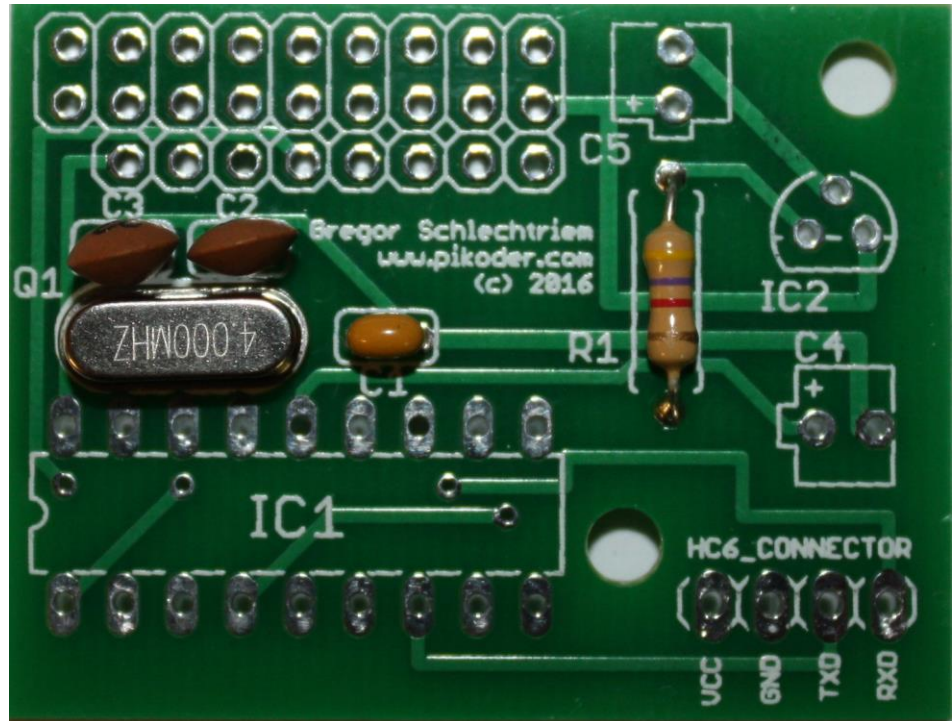
## Step 2: Equipping of the Capacitors C1, C2, and C3

Now, the Capacitors C1, C2, and C3 will be inserted followed by a mild angling of the connection wires in order to prevent the pieces falling out. All capacitors are non-polarized; therefore the alignment is irrelevant.



### Step 3: Equipment of the crystal

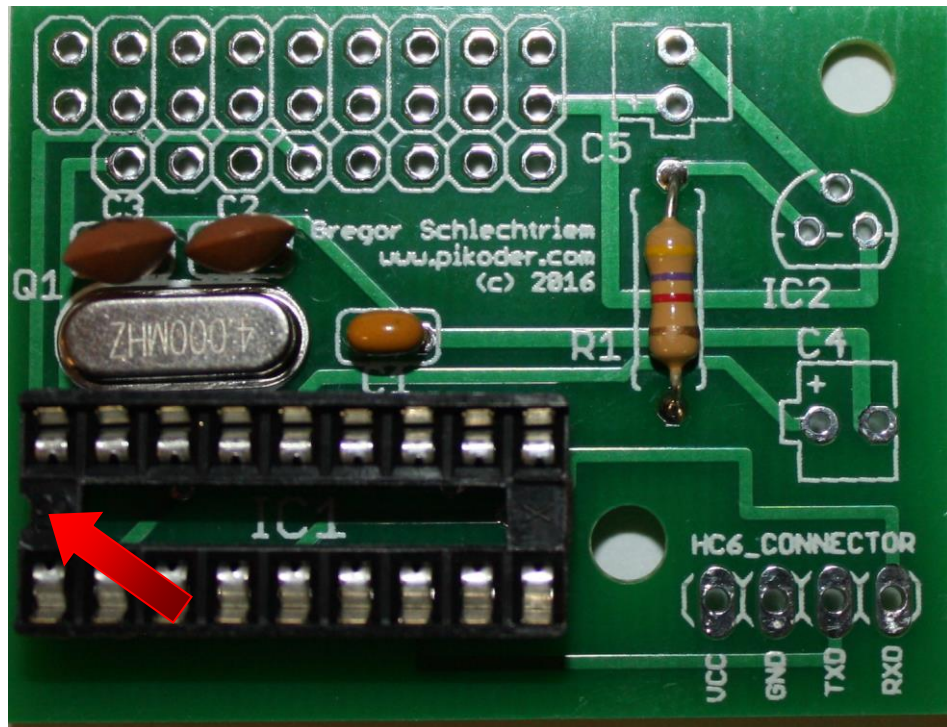
In this step, you would place the crystal, which is also a non-polarized is means that the alignment again is irrelevant.



### Step 4: Equipment of the IC socket

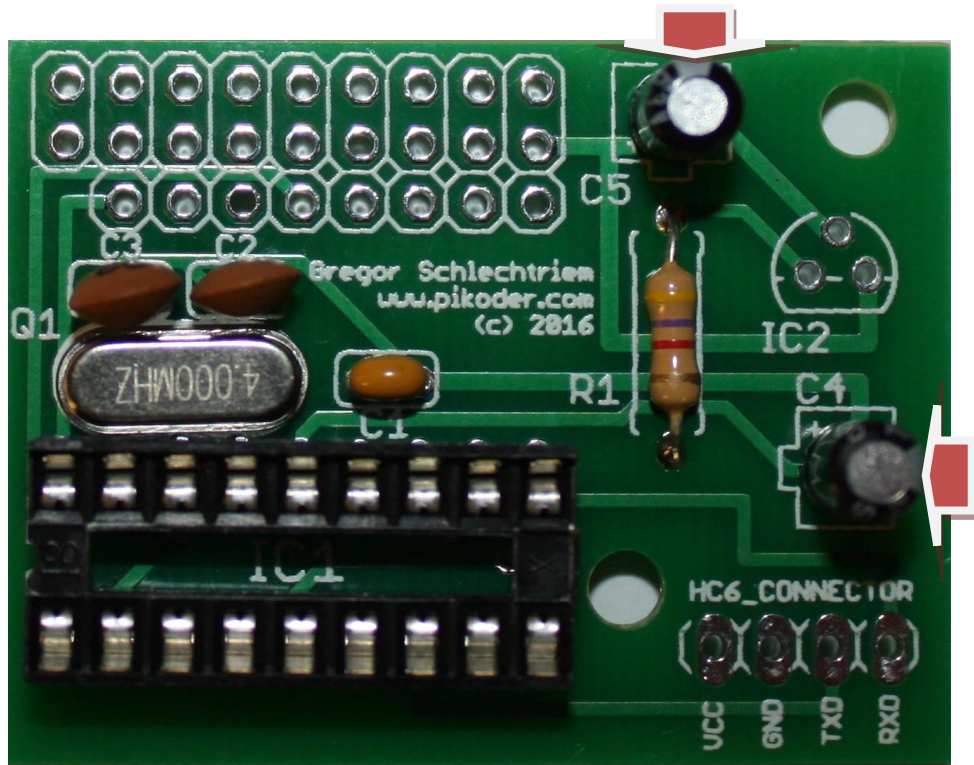
Place the socket in the position indicated on the top of the circuit board. Once again, verify the positioning: the notch (marked with a red arrow in the following image) needs to point to the left.

To avoid the socket from falling out of its position when turning the board slightly bend the two outer diagonal pins and then go ahead and solder all the other pins.



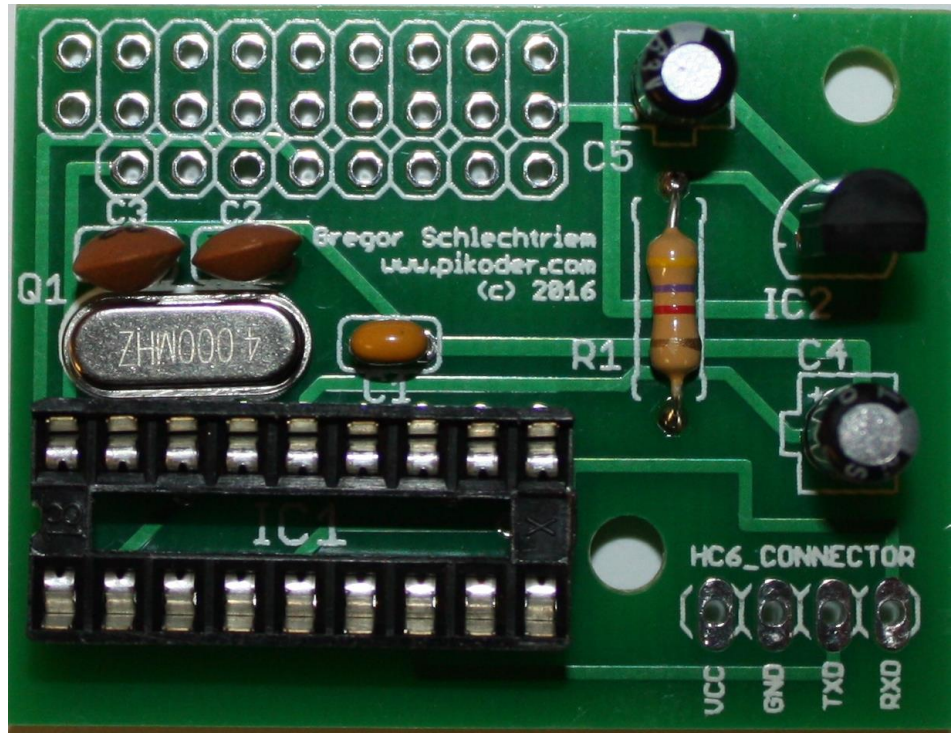
### Step 5: Equipping of the Capacitors C4 and C5

Place the two remaining capacitors C4 and C5. These capacitors are polarized which means that you have to honor the orientation. The red arrow in the image below points to the “-“-pin.



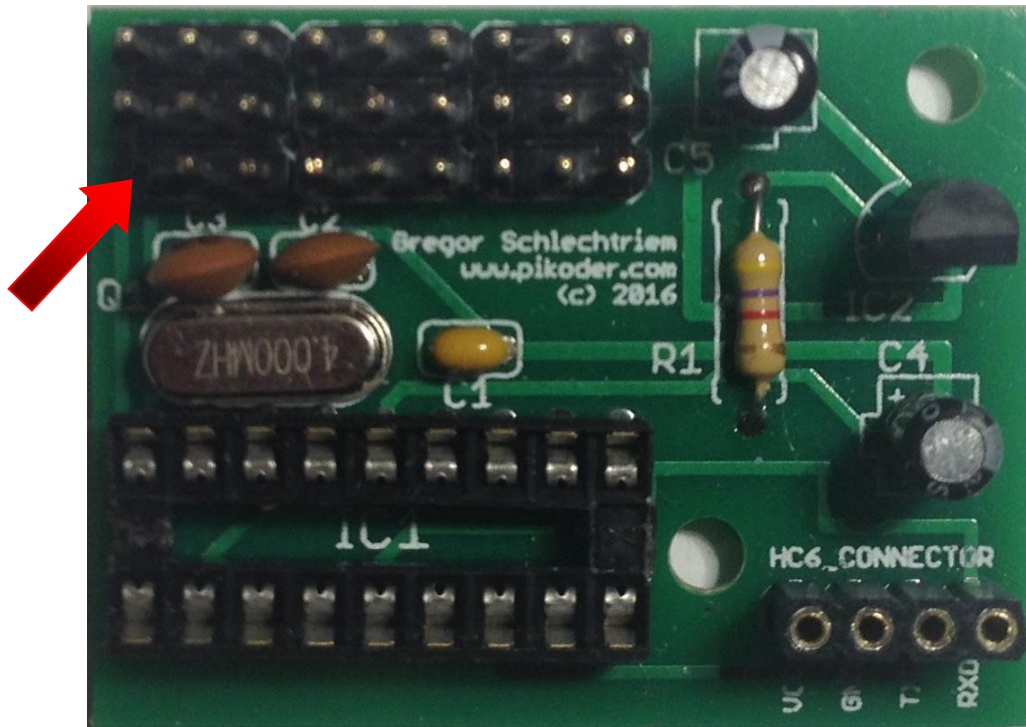
## Step 6: Equipment of the power regulator IC2

The power regulator again is a polarized components and you would have to make sure again that the placement of the IC transistor exactly matches the print on the circuit board. For placing of the part you might have to bend the middle pin slidely until it will fit into the respective drilling



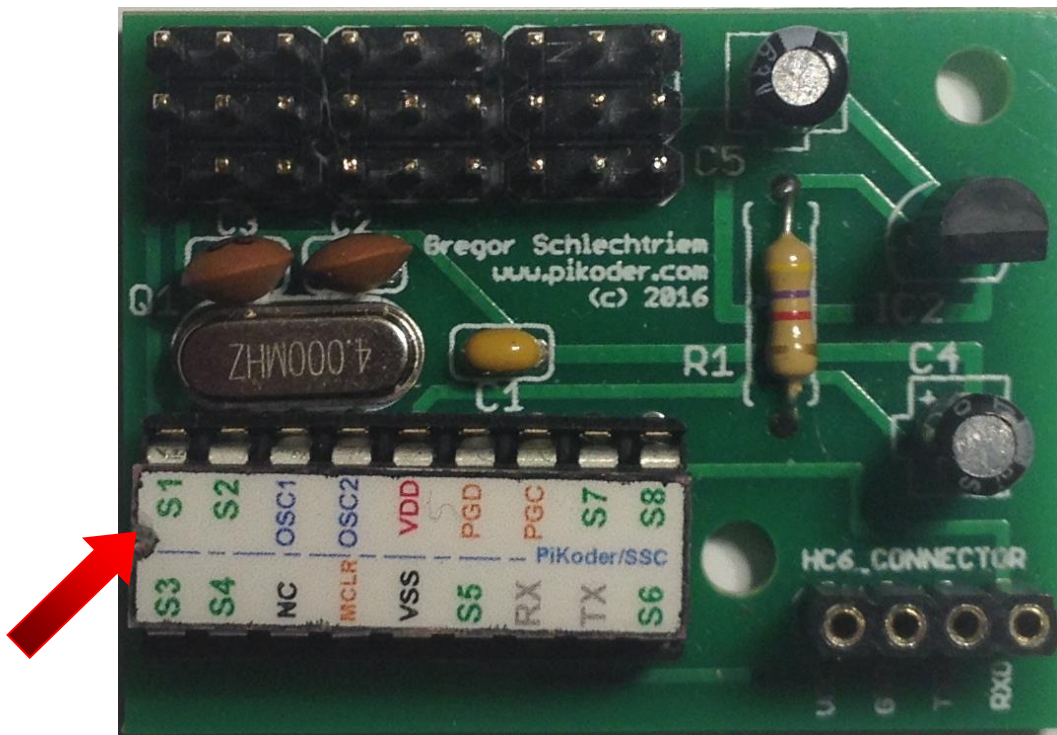
## Step 7: Equipment of the headers

Now the female header (4 pins) and the pin headers for connecting to the servos and the power supply would be placed. The connection to the servos is comprised of a 2x9 pin and a 1x8 pin header. The 8 pin header is located at the inner position (see red arrow in the image below). Please refer to the silk print for the correct placement.



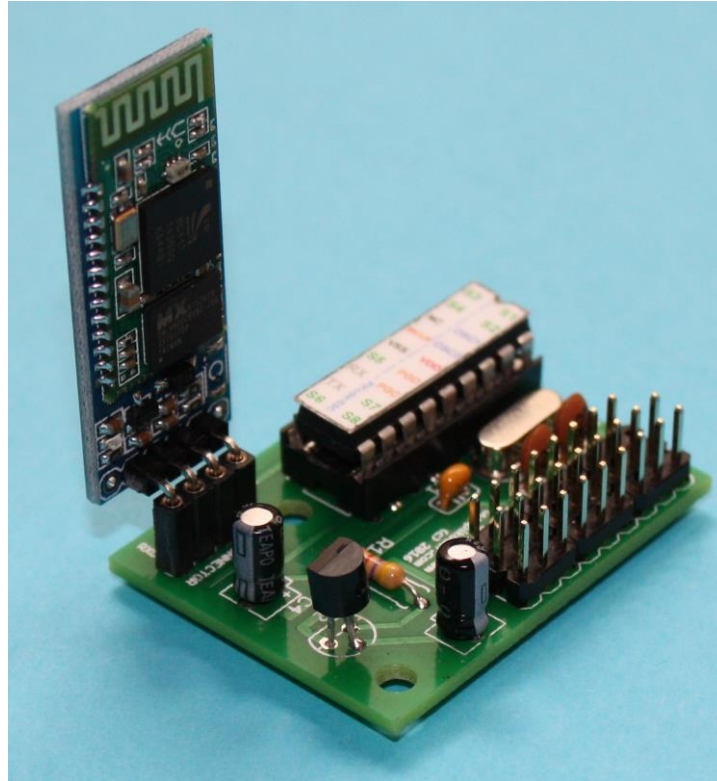
### Step 8: Insert the controller

The next to the last step of the construction would be to insert the pre-programmed controller. Again, the orientation is critical to function: the notch in the controller package has to match the notch in the socket as indicated by the red arrow below.



## Step 9: Plug in the Bluetooth-module

The last step would be to insert the Bluetooth module into the female header as shown on the following image.



This step completes the construction. **Please refer to the PiKoder/SSC RX User Manual for commissioning your receiver.**