

# TEDDY CTRL

## BUILD GUIDE

### INTRODUCTION

Thank you for purchasing this TEDDY Modules kit. As with everything we release at TEDDY we try to keep it as simple as possible, yet useful in relation to music, sound or performance. Because the main philosophy of TEDDY Modules is that a module should be useful.

We don't want to hoard modules or create systems so complex that you need to take a second mortgage or 2 year study to understand and/or perform. It needs to be playable, functional and great sounding within its price range. So yeah. Thank you!

You will know there are much more suppliers for Synth DIY. One of our favourite places on the internet is from our friends from Leipzig based Exploding Shed. They have been selling kits and tools for soldering for many years now and parts of our own systems came from them.

So why are we writing all of this here? Because on their website there is a great introduction on what you all need and how you should do it. So we will not try to write something coherent and complete in these few pages Build Guide, but instead we will give you the link to their website:



**Exploding Shed guides on Synth DIY**  
<https://www.exploding-shed.com/synth-diy-guides>

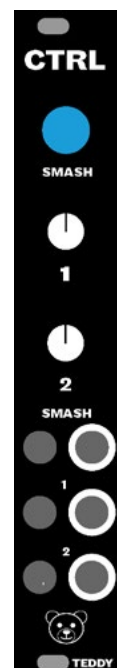
And as a thank you towards our Leipzig friends for letting us have this link in our Build Guides, we would again invite you to also visit their great shop with all kinds of kits, projects, tools and material in case you need some quality products for your (new) hobby.

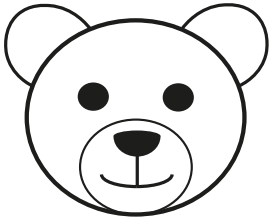
Sure, you can go anywhere on the web to educate yourself, but hey, if you don't know where to start we've at least pointed you to a place where we ourselves are happy about sharing with you.

### WHAT'S THIS MODULE ALL ABOUT?

The CTRL module is a tool for any case and directed towards manipulating CV signals. Whatever you do with those CV signals is your own mind that connects things. The CTRL has a button which enables you to send an "on/off" signal or gate if you prefer. You could for example trigger things or 'stutter' a CV or audio signal. If you don't connect anything on the input there is a 5 Volt out signal, but anything on the input will replace that standard 5 Volt into whatever is fed into it.

The other part of the CTRL is not one but two attenuators, but with a twist. This attenuator not only enables the signal to be muted from 'max' to zero (which it does when you use the right part of the 'centre position'), but it also gives you the possibility to do the same with the inverted signal. For this you use the knob left of 'centre position'. And when you leave the input unconnected, it will be a fade between negative 5 Volt to positive 5 Volt.





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### **BUILDING THE TEDDY CTRL MODULE**

The general rule in soldering is you go from low to high. No, this doesn't reflect on the values of the components, but it is about the height of the components. Though there might be moments we will advise you to not follow this general rule because it sometimes gets tricky to solder specific parts if everything else is in its place.

And yet again: If this is all new to you, please take some time to read and explore the previously mentioned guide on Synth DIY. Or do some research yourself on another platform of your choice. TEDDY Modules do NOT come with a guarantee of a working module if you yourself screw things up.

On the next page there is a BOM a.k.a. the Bill of Materials. This is the guideline of all the things that have to be soldered. You start with the resistors and the diodes. The stripe / line on the diodes should match the line on the PCB. After that it's best to do the IC-holders. Note the little dent on one of the short sides of the holder? Make sure that aligns with the dent / mark on the PCB. And also, important: Don't ever solder the IC's directly without the holder. It's way easier to replace the IC this way in case you mess things up. But don't put the IC's in there yet though, that's like the final step.

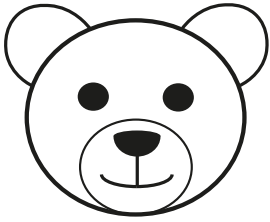
After the IC holders you do the capacitors, first the little yellow ones. They don't have any polarity but do watch the values (104 = 100nF, 105 = 1uF). The other capacitors - the big black ones - actually DO have polarity, so beware you put the long leg into the hole marked positive and the shorter leg into the negative one. The line on the side of the capacitor will affirm the polarity (being negative).

Finally you can solder the 78L05 which is a voltage regulator (flat side equals flat side on the PCB) and the plastic box for the power. The plastic box has a gap which should match the marking and then it's all done on one side of the PCB.

Turn over the PCB and add the headers. Feel free to click headers into each other and use the other PCB for perfect alignment.

After soldering the headers on the electronics PCB it's time to start with the other one which controls the CTRL. For this one our advice would be to START with the headers, because one of them is a bit tight between the potentiometers and it will just make it a bit easier.

Next thing you should do is to put the jacks, pots and the button in their place (note the flat end on the push button), drop the faceplate over them and loosely tighten the nuts. Turn it over, stabilize it a bit and solder the points that need to be soldered. Make sure the button is flat to the PCB, so first do 1 pin, push it towards the PCB, reflow that one pin and only then do the other three pins.



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Finally tighten the nuts, put the knobs on the pots (when the gap is horizontally aligned with the three legs the pot is 'centered'), put the IC's into the holders and make sure the marking on the IC follows the marking / dent on the PCB / holder. And that's it. The module is done!

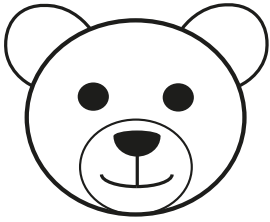
The cable is needed to power the module. You will notice that one of the sides of both the headers has a little expulsion. If this expulsion faces you, pin 1 which is standardised to be the red line is on the left. Most headers emphasize this with a little triangular marker, but in all fairness, it's really really small. Therefore the expulsion (and the lines) are the more certain way of identifying the orientation.

You just put the end of the cable in the header and make sure the red line is in place. Then use pliers (I personally use a small pipe wrench) to squeeze the header evenly and tighten the cable in its place. Do the same with the other header.

Very very VERY important: make sure that on the 16 pin header the cable is properly aligned and the red line is on the position of pin 1 as described earlier. You don't want to short circuit stuff because it might break the power supply or other modules. The Teddy modules are protected for this, but ... Other modules might react differently and we can't (and won't) take responsibility for your own mistakes.

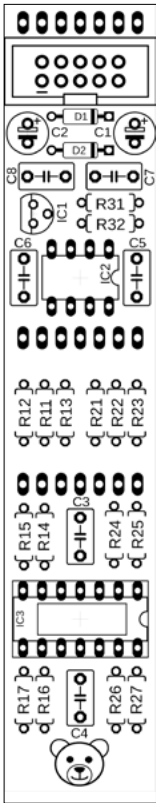
And there we have it, the final words that need to be said. Everything you do is your own responsibility. You are working with voltages, currents and high temperature molten metal. Be careful, be responsible, RTFM and if you are not sure, ask for help.

There is a FaceBook group called TEDDY Modules Support which is a community driven 'builders helping builders' and you can always send a mail to [teddy@modules.nu](mailto:teddy@modules.nu)

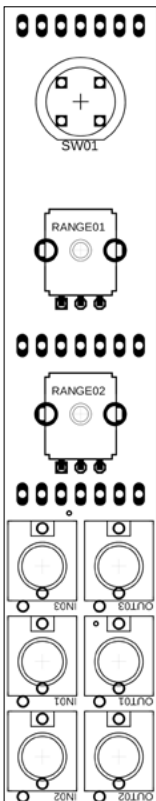


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## BILL OF MATERIALS



<b>RESISTORS</b>		
1k	3	R17, R27, R32
47k	2	R13, R23
100k	11	R11, R12, R14, R15, R16, R21, R22, R24, R25, R26, R31
<b>CAPS</b>		
100nF	5	C3, C4, C5, C6, C8
1uF	1	C7
10uF (elco)	2	C1, C2
<b>DIODES</b>		
1n4001	2	D1, D2
<b>ICS</b>		
78L05	1	IC1
TL072	1	IC2
TL074	1	IC3
<b>HARDWARE</b>		
1x7 MALE HEADER	3	JP2, JP4, JP6 (on the back)
POWERHEADER	1	



<b>POTMETERS</b>		
B100k	2	RANGE01, RANGE02
<b>HARDWARE</b>		
D6 BUTTON	1	SW1
THONKIES	6	IN01, IN02, IN03, OUT01, OUT02, OUT03
1x7 FEMALE HEADER	3	JP1, JP3, JP5 (on the back)

### TEDDY SYNTH DIY

website: [teddy.modules.nu](http://teddy.modules.nu)  
 mail: [teddy@modules.nu](mailto:teddy@modules.nu)  
 shop: [bearmodules.etsy.com](http://bearmodules.etsy.com)  
 fb support: [www.facebook.com/groups/teddymodulesupport](http://www.facebook.com/groups/teddymodulesupport)