

# The Ant Compact PCB Maker

Connections scheme



The Ant Team

# Introduction

This document shows how to connect the different electronics parts of The Ant Machine. We strongly suggests you to watch these videos:

[https://youtu.be/eRefCvD\\_KVs](https://youtu.be/eRefCvD_KVs)

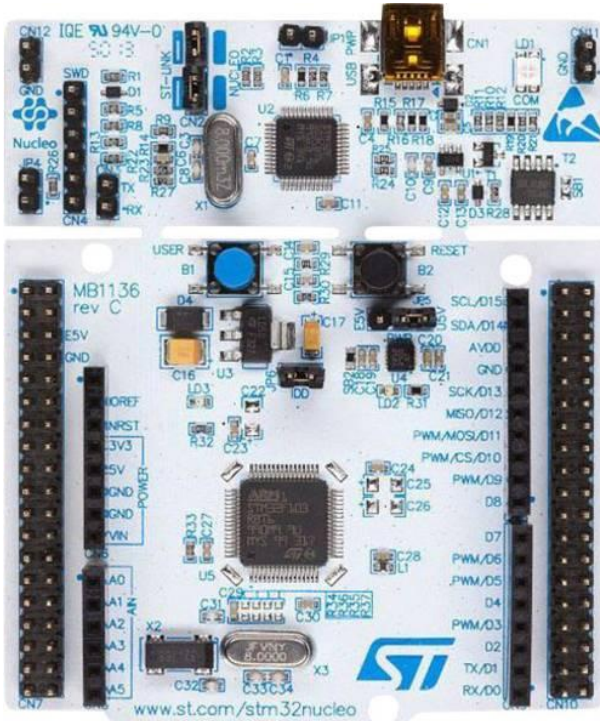
as a preparation for this stage of machine construction,

<https://youtu.be/ptuefynbbEo>

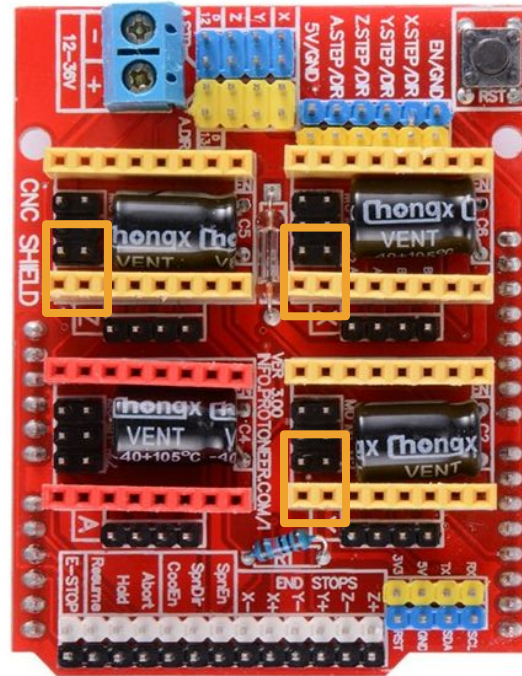
as connection instructions.

# Electronics central unit parts

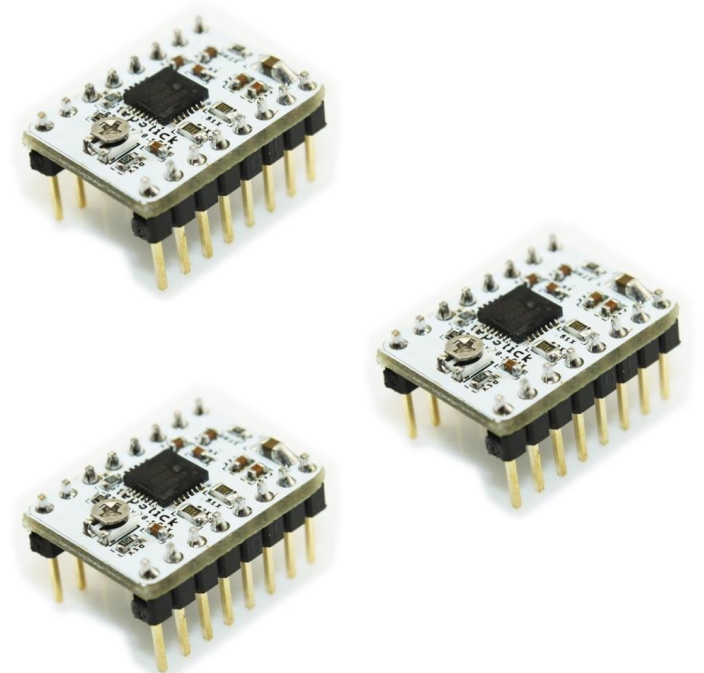
NUCLEO-F401RE



GRBL SHIELD V3.0

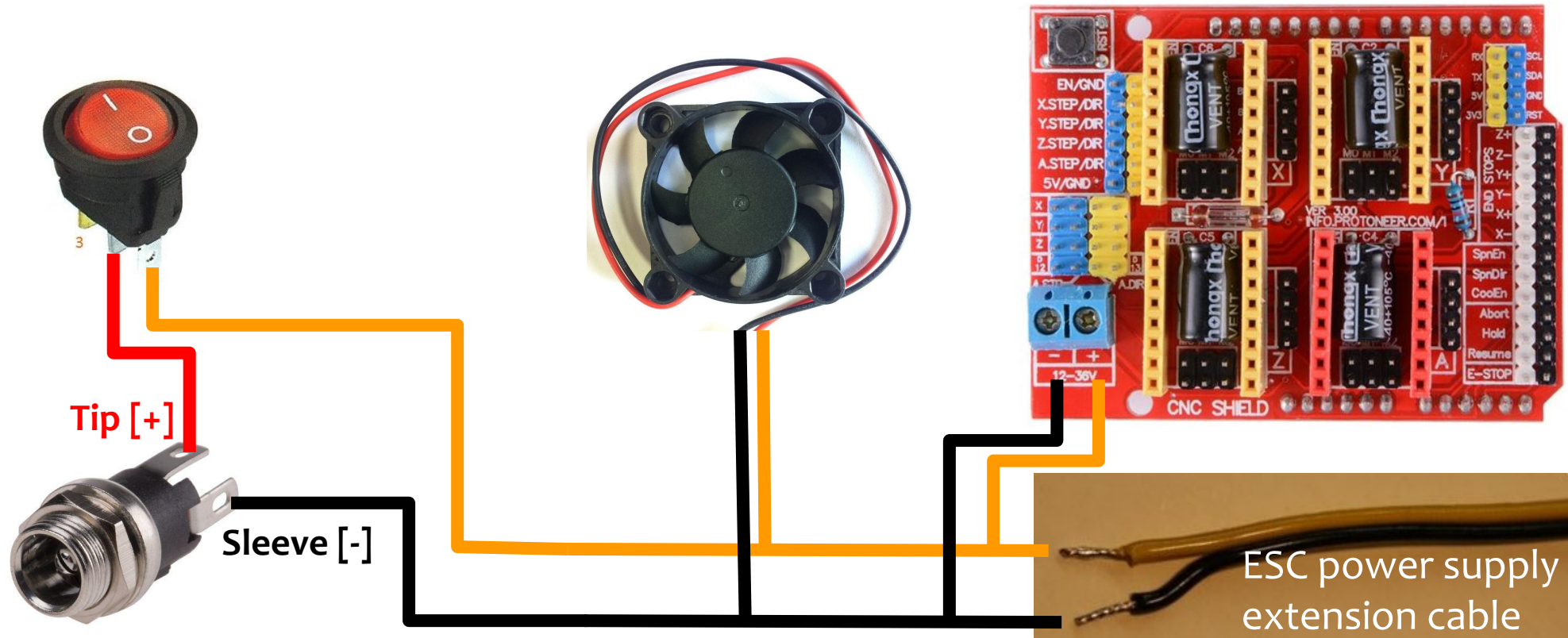


STEPSTICK COMPATIBLE BOARDS



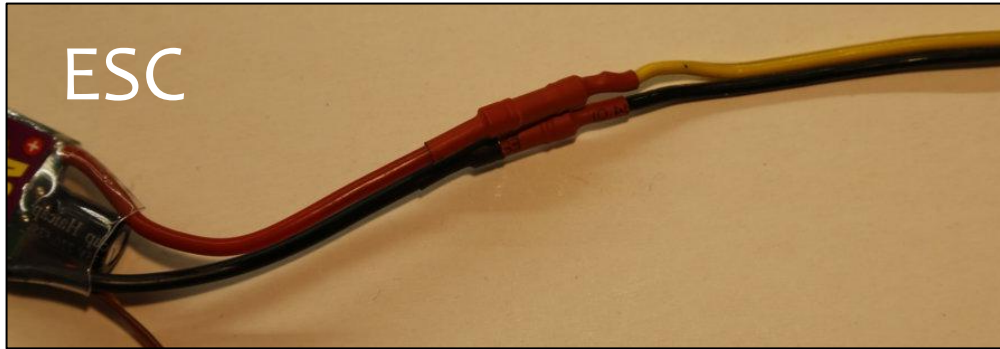
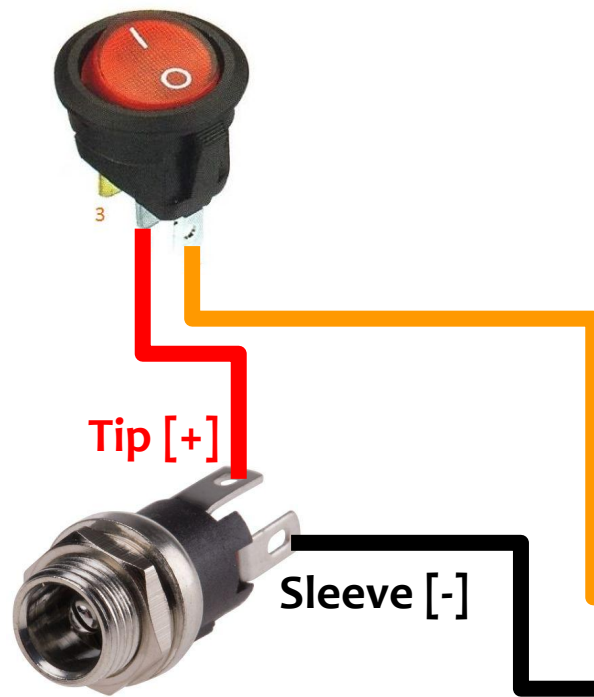
Before connecting the stepstick boards, set the micro-stepping **jumpers** on the shield. Set the X and Y drivers to 1/16th of a step, and the Z driver to 1/2 of a step. Check the chosen stepstick datasheet for more information. Also remove the push button caps from the nucleo board, before the shield connection.

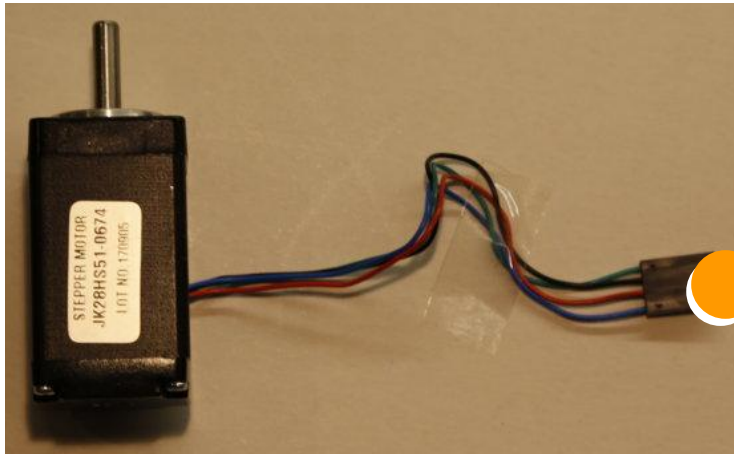
# Power Supply



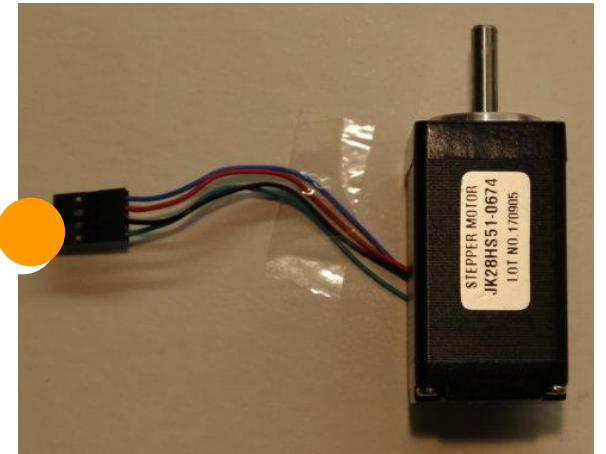
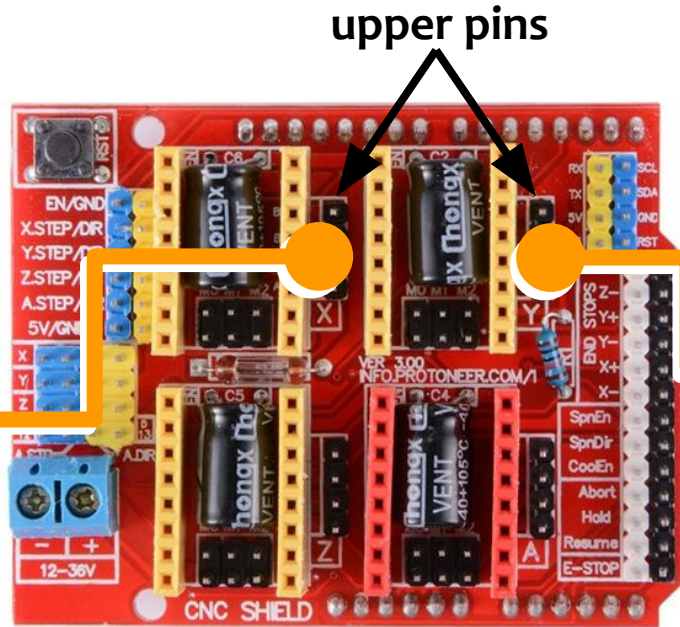


# ESC Power Supply





## Long Cable NEMA11 Motor



## Short Cable NEMA11 Motor

**For both the connectors, connect from upper pin to bottom one:  
blue - red - black - green**

# Z axis Stepper Motor

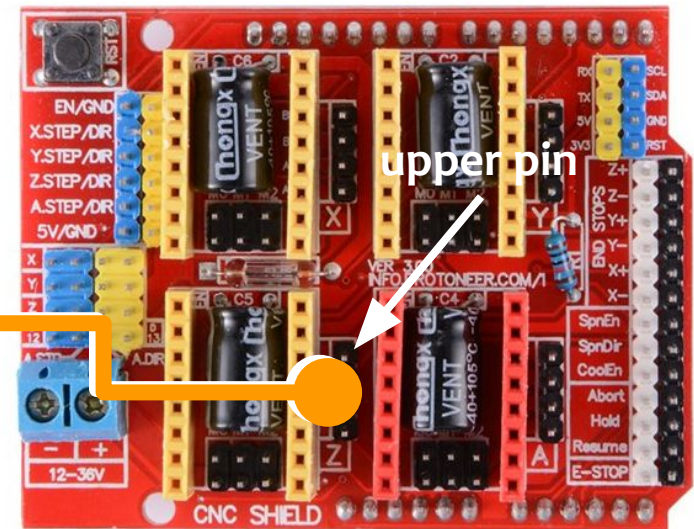
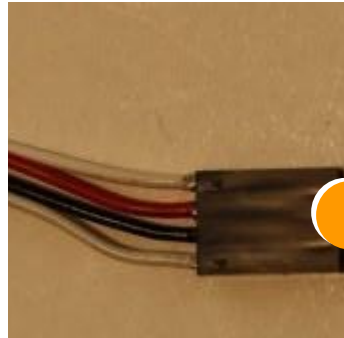
Connect the Z axis motor to the board through the appropriate extension cable



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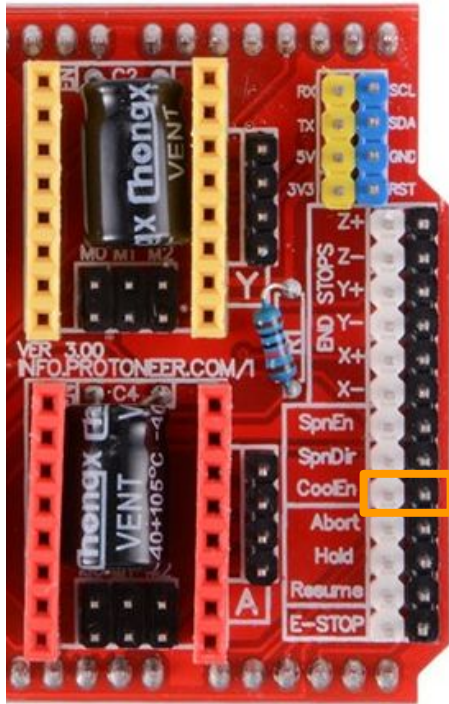


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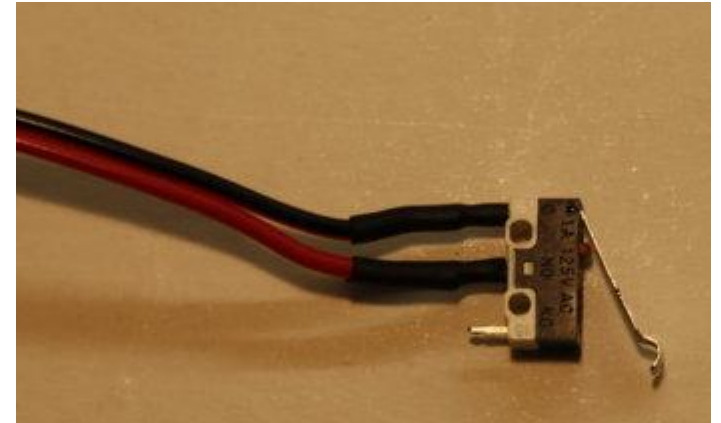


From upper pin to bottom one: white - red - black - white

# Z axis Limit Switch



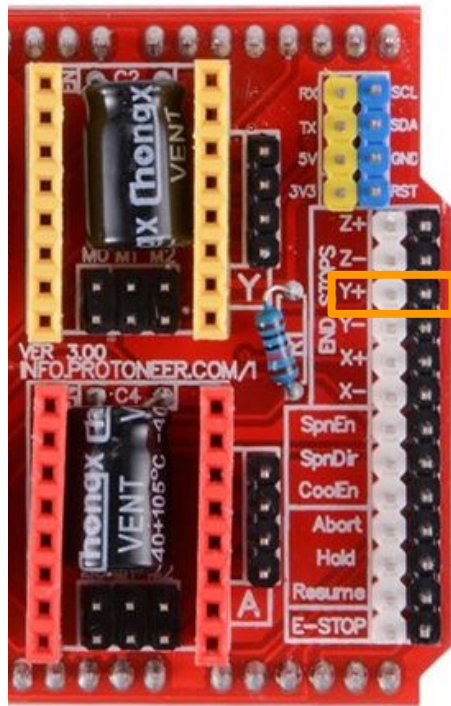
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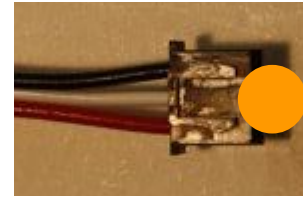
Black ground wire connected to the right pin,  
signal red wire connected to the left pin



# Y axis Limit Switch

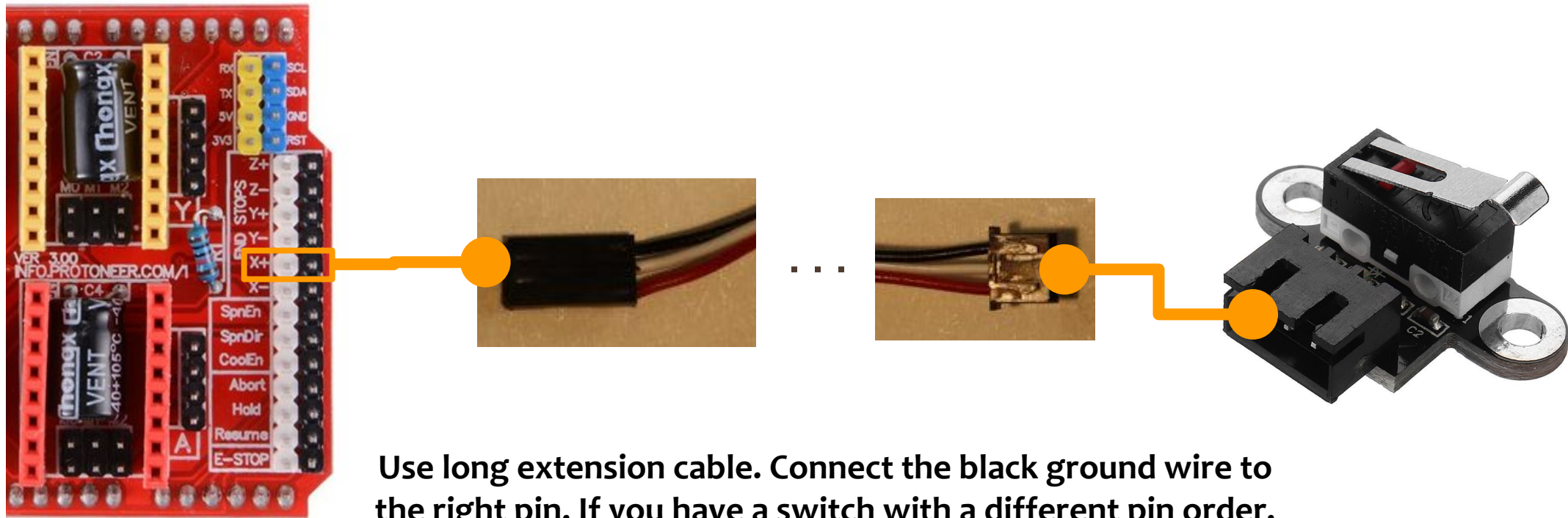


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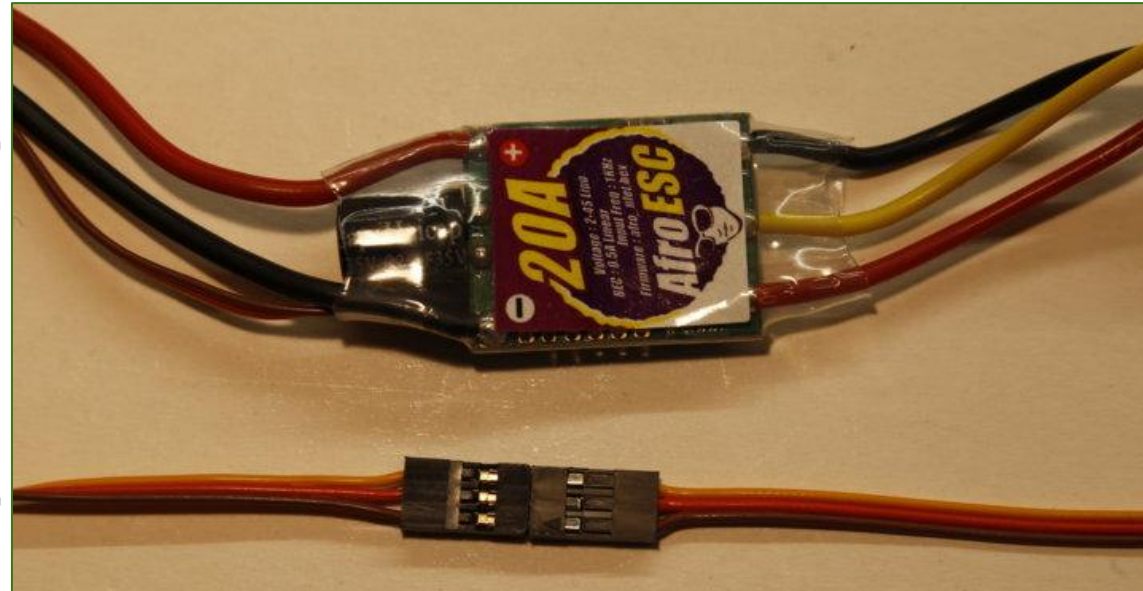
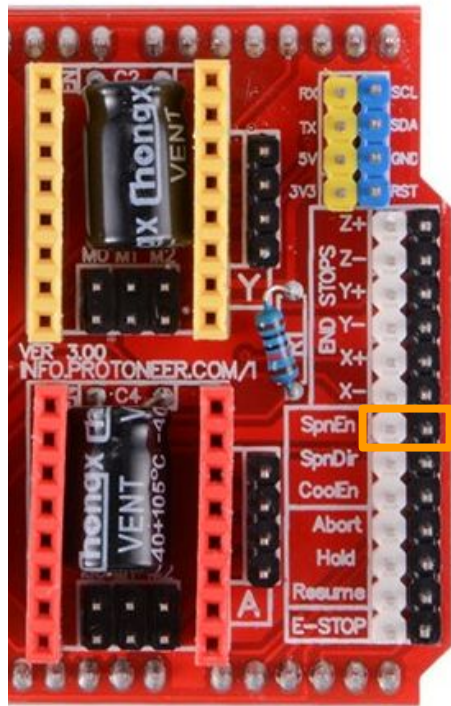
Use short extension cable. Connect the black ground wire to the right pin. If you have a switch with a different pin order, make sure that the NO pin of the switch is connected to the white pin of the board and the COM pin of the switch to the black one

# X axis Limit Switch



Use long extension cable. Connect the black ground wire to the right pin. If you have a switch with a different pin order, make sure that the NO pin of the switch is connected to the white pin of the board and the COM pin of the switch to the black one

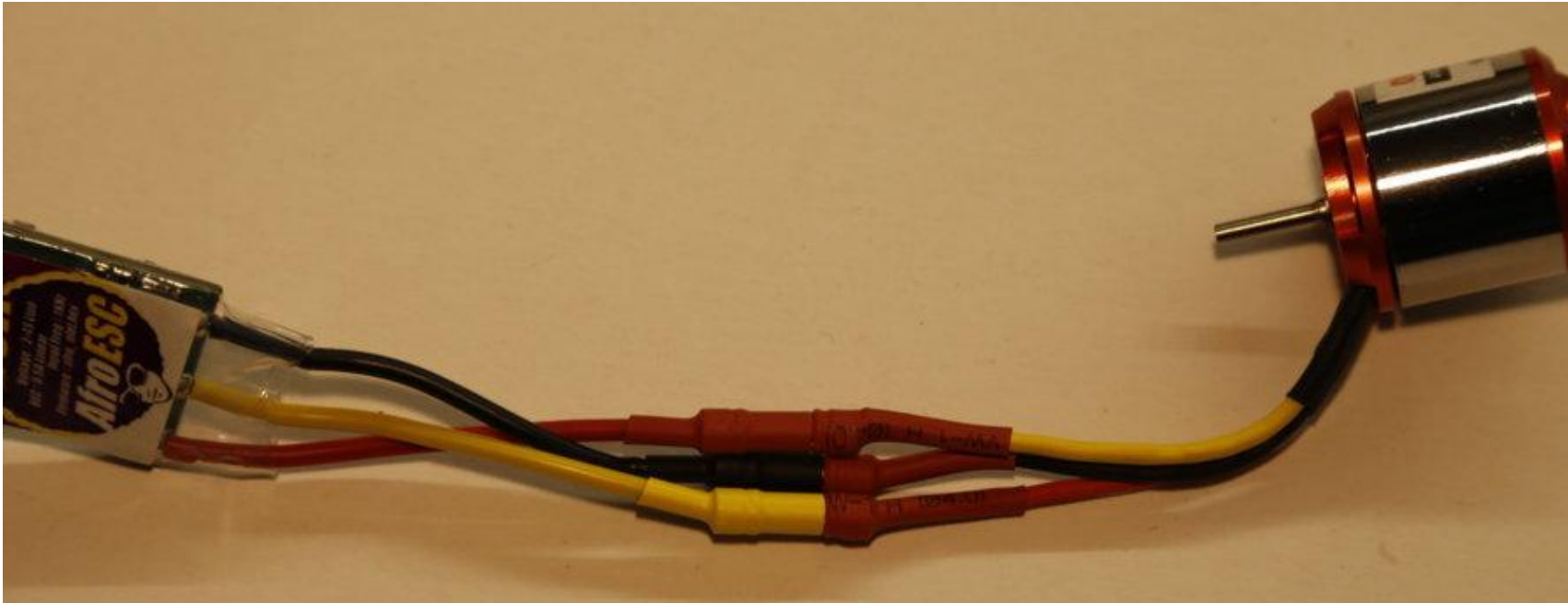
# Spindle PWM control



Use the ESC control extension cable.

Connect the black ground wire to the right pin and the yellow one to the left pin.

# Spindle ESC to brushless



Check the connections. For our configuration Red and Yellow wire must be inverted.  
The machining bit has to spin clockwise looking at it from the top of the machine.



# Probe jack connector

