

<https://www.adafruit.com/product/935>

<https://www.adafruit.com/product/815>

To Analog Laser  
green = signal  
black GND

use shielded wire

Add 10 K Pullup Resistors  
from Input to +5V  
(these are not drawn)

To LASER PWM input  
yellow= signal  
black=GND

ULN 2003 is capable to draw up to 500 mA  
(Sum of all channels)

so you can drive up to 8 FANs on 1  
ULN2003

green to +12V

yellow to RAMPS SCL (Pin21)  
blue to RAMPS SDA (Pin20)  
black to RAMPS GND  
red to RAMPS +5V

Wires as short as possible, twisted  
pairs/shielded wire preferred

This is an example Setup for external PWM driver , DAC Converter  
and Bus extender .  
it's matching to my Custom Events written for REPETIER FIRMWARE

Tested on ARDUINO MEGA /RAMPS 1.4

although the components are 3.3 V capable you should use  
Level shifter from 3.3 to 5V when using this setup on 3.3 V Systems  
like Arduino DUE.

Reason is simply the higher Noise immunity on I2C Bus  
and matching TTL specs on Outputs

REFER DATASHEETS !!  
Example Setup , no warranty!!