

Introduction	1
Key Capabilities & Features	1
Driver Installation	2
ARC Triggerscope Software	2
Micromanager Setup	3

Introduction

Triggerscope V4 is a highly customizable DAC and TTL O/I/O device designed for control over common laboratory and industrial equipment. The system is built upon a Teensy 4.1 MCU board. Triggerscope can be controlled via serial commands using drivers for metamorph, Micromanager (built into MM), ImagePro, and other programs. Human-readable serial communication is used for all commands.

Key Capabilities & Features

- MCU runs @ 600Mhz
- 1024K MCU RAM
- 16GB External SD Card Memory Included
- Real Time Clock Included
- 500mA sources on TTL Lines 1-4
- 200mA sources on TTL lines 5-12
- 4x interrupt-capable inputs, 3.3-5V compliant, on TRIG inputs 1-4.
- 16x 16-Bit DAC outputs, settable to ranges:
 - 0-5V
 - -2.5/+2.5V
 - -5/+5V
 - 0-10V
 - -10-+10V
- Dac update rates can be overclocked, to a maximum frequency of 270kHz.

Driver Installation

There are two general options for supporting driver install. If you only need to communicate with the triggerscope using serial data, please use the serial driver installer for the Teensy family of microcontrollers found here - http://www.pjrc.com/teensy/serial_install.exe

If you intend to modify or upload new firmware, please download the “TeensyDuino Installer” found here - https://www.pjrc.com/teensy/td_download.html

For either package, download and follow the prompts to install drivers. Once installed, it's not a bad idea to unplug and then re-plug your Triggerscope, to confirm the new driver is loaded.

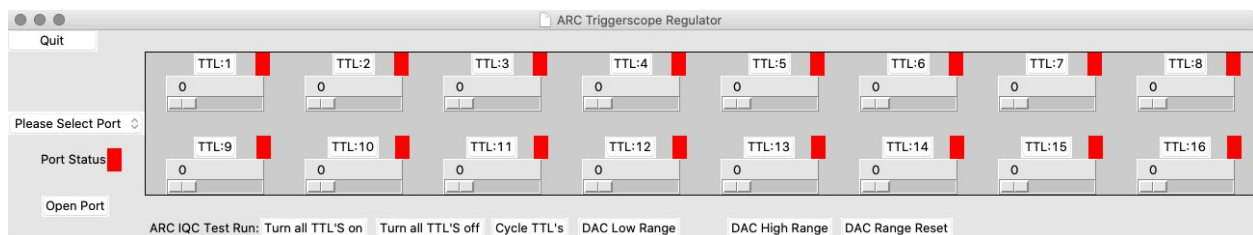
ARC Triggerscope Software

For simple test and debugging, we highly recommend you download the Triggerscope Test application for your OS. This application makes it quick and easy to begin working with the triggerscope.

You can find a compiled version for Windows from our public Github Repo Here - <https://github.com/AdvancedResearchConsulting/Triggerscope-GUI>

Download and install the software. Once installed open the new directory and run the EXE file.

1. Under “Please Select Port” choose your Triggerscope COM port.
2. Click the “Open Port” button. The Port Open light should turn Green.
3. As desired, use each TTL/DAC control section to drive a given TTL Line or DAC line to the desired value. An output and debugging window will show each command and that command's response on the Serial line.



Micromanager Setup

Micromanager has included drivers to support all triggerscope variants up to TG4. To set up the triggerscope in Micromanager, please [refer to the Version 3B guide](#), as there are no changes at this time.