

Figure 1: Arduino schematics and soldering

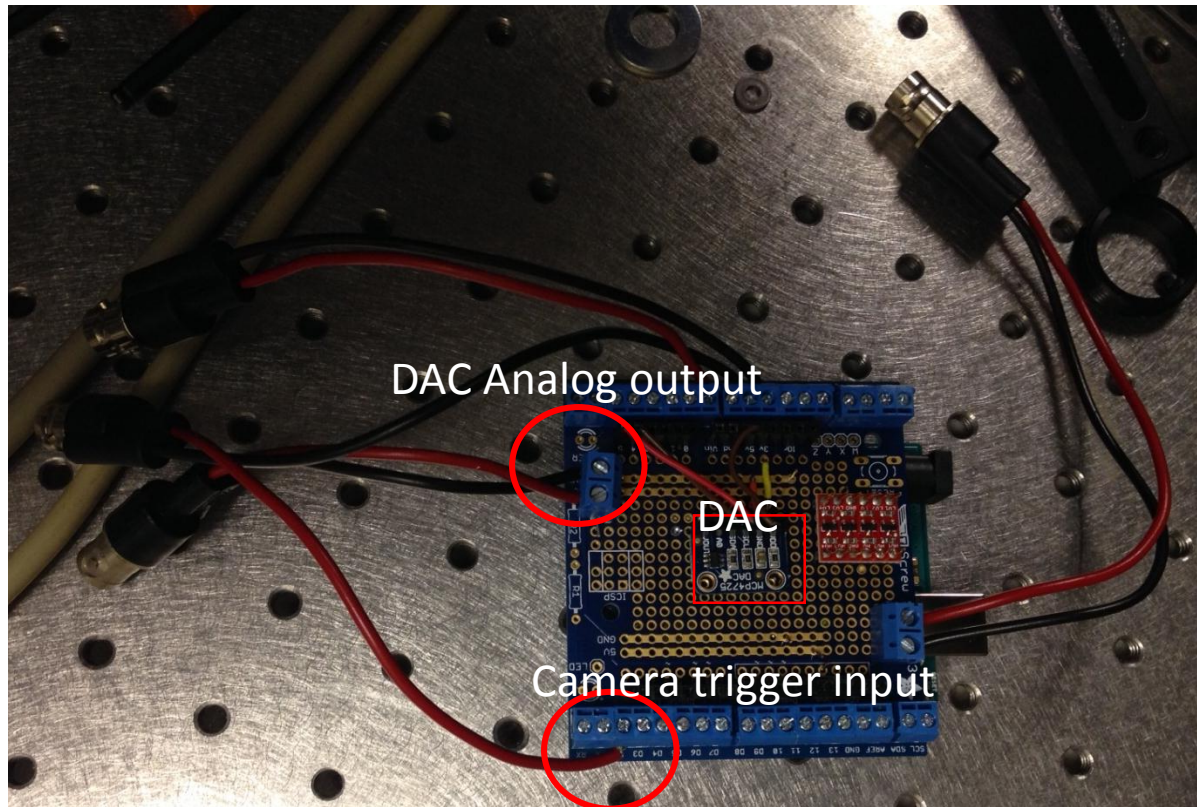


Figure 2: adding Arduino to uManager

Hardware Configuration Wizard

Step 2 of 6: Add or remove devices

Installed Devices:

Name	Adapter/Library	Description	Status
Core	MMCore/Default	Core controller	Default
HamamatsuHam_D...	HamamatsuHam_D...	Universal adapter ...	OK
Arduino-Hub	Arduino-Hub/Arduino	Hub (required)	OK
Arduino-Switch	Arduino-Switch/Ar...	Digital out 8-bit	OK
Arduino-Shutter	Arduino-Shutter/Ar...	Shutter	OK
Arduino-DAC1	Arduino-DAC1/Ard...	DAC channel 1	OK
Arduino-DAC2	Arduino-DAC2/Ard...	DAC channel 2	OK

Available Devices: list by vendor compact view

- AAAOTF
- ABSCamera
- AgilentLaserCombiner
- Aladdin
- Andor
- AndorLaserCombiner
- AndorSDK3
- AOTF
- Aquinas
- Arduino
- ASIFW 1000
- ASISStage
- ASITiger
- ASIWptr
- AxioCam

Buttons: Edit..., Peripherals..., Remove, Add..., Help

Adding or Removing Devices

- The list above shows the devices that are currently installed by Micro-Manager. You can add or remove devices from this list.
- If you are making a new configuration, please visit the Micro-Manager website (www.micro-manager.org) and look under the "Hardware" section for instructions for adding your devices.
- You can begin adding devices when you click "Add" (click "Add" to add more hardware which device you want to add a particular device to the list. Help (it really is that simple).
- While adding devices, you can choose to allow Micro-Manager to automatically recognize the devices or show all of the devices that are available.

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Hardware Configuration Wizard

Step 2 of 6: Add or remove devices

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Arduino-Switch	Arduino-Switch/Ar...	Digital out 8-bit	OK
Arduino-Shutter	Arduino-Shutter/Ar...	Shutter	OK

Buttons: Edit..., Peripherals..., Remove

Device: Arduino-Hub | Library: Arduino

Label: Arduino-Hub

Initialization Properties

Device	Property	Value
Arduino-Hub	Logic	Normal
Arduino-Hub	Port	COM43

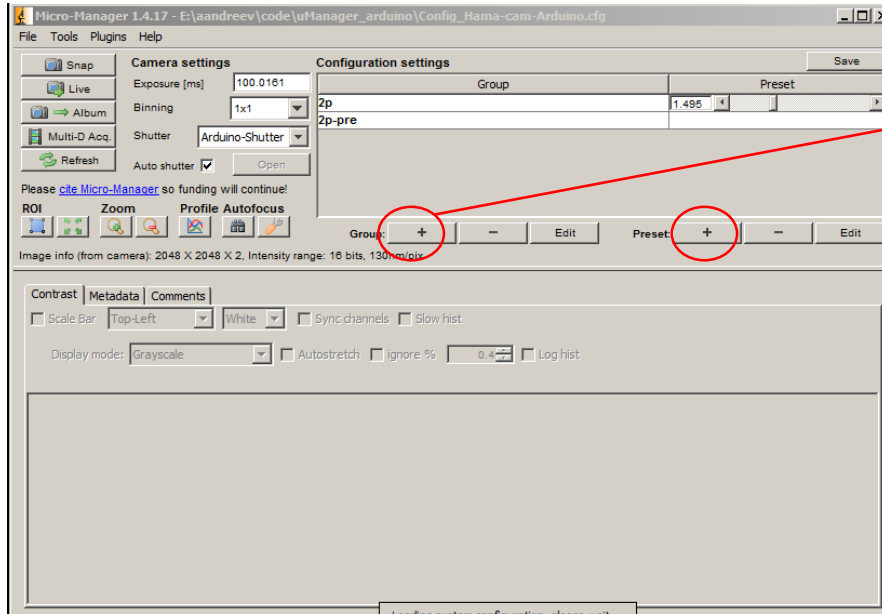
Port Properties (RS 232 settings)

Device	Property	Value
COM43	AnswerTimeout	500.0000
COM43	BaudRate	57600
COM43	DelayBetweenCharsMs	0.0000
COM43	Handshaking	Off
COM43	Parity	None
COM43	StopBits	1
COM43	Verbose	1

Buttons: OK, Cancel, Scan

“Peripherals” should have at least Arduino-DAC1 selected

Figure 3: Setting proper groups/presets



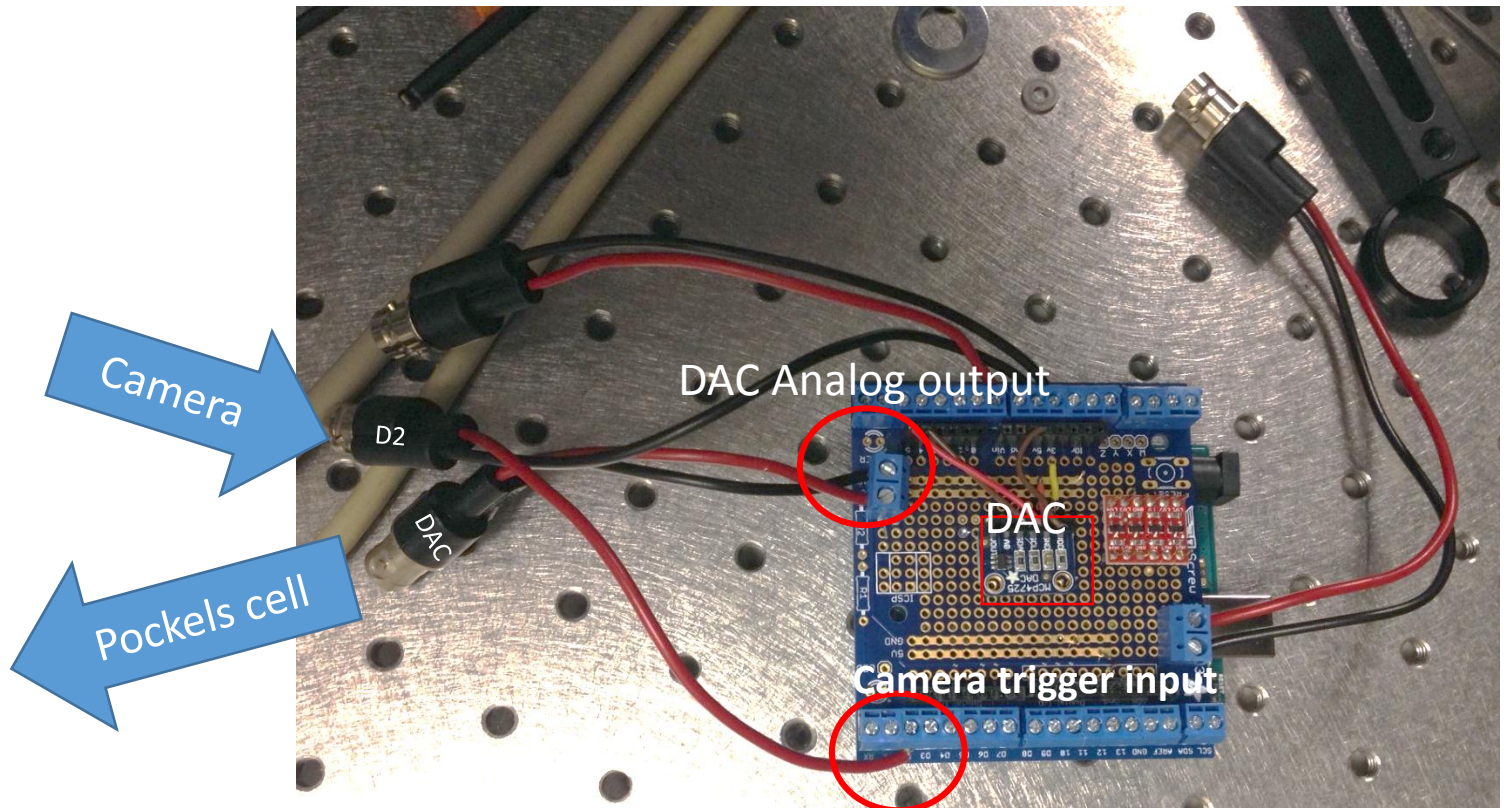
Arduino-DAC1-HubID	<input type="checkbox"/>	Arduino-Hub
Arduino-DAC1-Volts	<input checked="" type="checkbox"/>	0
Arduino-DAC2-HubID	<input type="checkbox"/>	Arduino-Hub
Arduino-DAC2-Volts	<input type="checkbox"/>	0
Core-AutoFocus	<input type="checkbox"/>	

Figure 4: Setting Hamamatsu camera properties

HamamatsuHam_DCAM-OUTPUT TRIGGER KIND[0]	EXPOSURE
HamamatsuHam_DCAM-OUTPUT TRIGGER KIND[1]	EXPOSURE
HamamatsuHam_DCAM-OUTPUT TRIGGER KIND[2]	EXPOSURE
HamamatsuHam_DCAM-OUTPUT TRIGGER PERIOD[0]	0.001
HamamatsuHam_DCAM-OUTPUT TRIGGER PERIOD[1]	0.001
HamamatsuHam_DCAM-OUTPUT TRIGGER PERIOD[2]	0.001
HamamatsuHam_DCAM-OUTPUT TRIGGER POLARITY[0]	POSITIVE
HamamatsuHam_DCAM-OUTPUT TRIGGER POLARITY[1]	POSITIVE
HamamatsuHam_DCAM-OUTPUT TRIGGER POLARITY[2]	POSITIVE

Trigger used for masking Arduino analog output should be set Exposure/Positive; other don't matter for this device

Figure 5: Connecting Arduino to camera and Pockels cells



BNC patch-panel preferred, e.g. from L-Com

1.75" Panel, 16 BNC Adapters Insulated (50 Ohm)
<http://www.l-com.com/patch-panel-server-rack-175-panel-16-bnc-adapters-insulated#>