CANFIELD Imaging Systems
a division of Canfield Scientific, Inc.
253 Passaic Avenue, Fairfield, New Jersey 07004-2524 USA
phone (USA) 800.815.4330 • phone +1.973.276.0336 • fax +1.973.276.0339 • e-mail: info@canfieldsci.com • www.canfieldsci.com

Lab Imaging System – Sample Command Sequences

1. The Lab Imager is an open platform device, controllable with Terminal Emulation programs with commands for sending and receiving data (text strings). The sample code below only provides the Lab Imager command text strings which need to be included in your Terminal Emulator's commands.
2. **It is strongly recommended that your Terminal Emulation program be configured to receive and display responses from the Controller.** Controller responses are informative and are especially important to assure Filter Wheels have finished moving.
3. Monitoring for the Controller's SYNC response is necessary when using multi-modality sequences which must wait for the current modality's image capture before changing set-up for the next image (see Example 2).
4. It is recommended to wait for the Controller's response to a command before sending a new command.
5. Depending upon on your set-up, use of delays between commands may be necessary to allow for smooth communications between the controller and the computer. Delays of 0.02 seconds are typical.

EXAMPLE 1: **One Modality using 2 Flashes**			Controller Response
1	**RESET**	A good idea to reset the system before starting	**"RESET COMPLETE"**
2	**FLASH01=75**	Sets FLASH01 output to 75%	**"FLASH01, OK"**
3	**FLASH02=75**	Sets FLASH02 output to 75%	**"FLASH02, OK"**
Flashes will fire with each Camera SYNC at 75% output.			

EXAMPLE 2: **Two Modalities using 4 Flashes + 1 Camera Filter Wheel**			
1	**RESET**	A good idea to reset the system before starting	**"RESET COMPLETE"**
2	**FW01=2**	Sets FILTER WHEEL 01 to position 2	**"FW01, OK"**
3	**FLASH01=75**	Sets FLASH01 output to 75%	**"FLASH01, OK"**
4	**FLASH02=75**	Sets FLASH02 output to 75%	**"FLASH02, OK"**
5	<wait for Controller's "SYNC_DETECT">	Use your Emulator's wait command configured so it holds until the Controller's response of "SYNC_DETECT". The response will occur when the camera captures the image, then the sequence will continue to step 6.	-
6	**FW01=4**	Sets FILTER WHEEL 01 to position 4	**"FW01, OK"**
7	**ALLFLASH=0**	Sets all flashes to 0 in one step. Needed for FLASH01 and FLASH02. Flashes 3 and 4 were still 0 from RESET.	**"ALLFLASH, OK"**
8	**FLASH03=100**	Sets FLASH03 output to 100%	**"FLASH03, OK"**
9	**FLASH04=100**	Sets FLASH04 output to 100%	**"FLASH04, OK"**
10	<wait for Controller's "SYNC_DETECT">	Use your Emulator's wait command configured so it holds until the Controller's response of "SYNC_DETECT". The response will occur when the camera captures the image, then the sequence will continue.	-
If the script ended here, then the last modality (lines 6-9) would continue to be used with each SYNC. Steps 11+12 show how to implement a loop.			
11	**ALLFLASH=0**	Sets FLASH03 + FLASH04 outputs back to 0 in one step avoiding Step 1 when looping.	**"ALLFLASH, OK"**
12	<loop to line 2">	Use your Emulator's LOOP command to go back to the first modality at Line 2.	-

All Commands to be in **CAPS** and terminate with a " **!** " or " **\r** ".

Controller is recognized on a **COM** port via the embedded USB to serial converter.

Communication **Baud Rate** = **38400** with **no flow control** and **no parity check**.

Send one command at a time. Wait for the Controller's response between commands.