DLP LightCrafter 4500 Control Software

Operating Mode: Pattern Sequence

LED Driver Control (click ‘Set’ when done):

Red: 0

Green: 0

Blue: 255

LED Selection

Manual, Blue

Pattern Sequence Tab

Sequence Settings

Pattern Source: Video port

Triggr Mode: Vsync

Individual Pattern Settings

Choose Color: Blue

Bit Depth: 6

Highlight G0-G5

Check ‘Clear DMD after exposure’

Click ‘Add Pattern to Sequence’

Timing

Given the refresh rate of the projector (set in NVIDIA control panel), the number of patterns presented and their exposure must fit within a single frame.

For example, at 80 Hz, the patterns must fit within 12.5 ms. If you’re presenting 3 patterns, one could set each pattern to be presented for 4.166 ms.

Pattern Exposure (us): the amount of time the pattern is presented/on

Pattern Period (us): the amount of time between start of patterns (can pad with blanks)

Exposure = Period (no blanks) or Period > Exposure + 230 us (min blank length)

Once you’re done setting everything in the pattern settings, click ‘Send’, which brings you to the ‘Pattern Sequence Start/Stop/Pause’ Tab

Click ‘Validate Sequence’, light should go green

Click ‘Play’, should display

All the System Control lights should be green or gray

In video mode, lightcrafter behaves as normal projector. Click ‘Apply Default Solution’

To set resolution and refresh rate (frame rate) of projector, go to Desktop and right click. Select ‘NVIDIA Control Panel’

Change resolution

Select lightcrafter (LCr 4500): 912 x 1140 (must be this resolution in pattern sequence mode), select refresh rate (currently, I have it ~working at 80Hz and 60 Hz but not at anything higher)

Note, at 80Hz refresh rate, pattern exposure = period must be < 4000 (but 3999 seems to work…)

NiDAQ card stays connected

When done, shut down lightcrafter program, then unplug all cables from lightcrafter. Put lightcrafter in static bag.

Matlab: data is aquired using Data Acquisition Toolbox: <http://www.mathworks.com/help/daq/index.html>

Software to install on stimulus computer

-Matlab

-Psychtoolbox: <http://psychtoolbox.org/download/>

-Install NI-DAQmx: <http://www.ni.com/nisearch/app/main/p/bot/no/ap/tech/lang/en/pg/1/sn/catnav:du,n8:3478.41.181.5495,ssnav:ndr/>

-DLP LightCrafter 4500 EVM GUI – Windows, version 3.0.1: <http://www.ti.com/tool/dlplcr4500evm>

-maybe, graphics card driver for NVIDIA QUADRO K2200

Useful references:

-Psychtoolbox tutorials: <http://peterscarfe.com/ptbtutorials.html>

-Manual for Ni-DAQ card: <http://www.ni.com/pdf/manuals/374259a.pdf>

-Manual for Lightcrafter: <http://www.ti.com/lit/ug/dlpu011e/dlpu011e.pdf>